COMMUNITY DENTISTRY

Objectives

At the end of 3 years of training the candidate should be able to:

Knowledge

- Apply basic sciences knowledge regarding etiology, diagnosis and management of the prevention, promotion arid treatment of all the oral conditions at the individual and community level.
- Identify social, economic, environmental and emotional determinants in a given individual patient or a community for the purpose of planning arid execution of Community Oral Health Program.
- Ability to conduct Oral Health Surveys in order to identify all the oral health problems affecting the community and find solutions using multi - disciplinary approach.
- Ability to act as a consultant in community Oral Health, teach, guide and take part in research (both basic and clinical), present and publish the outcome at various scientific conferences and journals both national and international level.

Skills

The candidate should be able to

1. Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis.
2. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
3. Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
4. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
5. Develop appropriate person power at various Ievels and their effective utilization.
6. Conduct survey and use appropriate methods to impart Oral Health Education.
7. Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
8. Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

Values:

1. Adopt ethical principles in all aspects of Community Oral Health Activities
2. To apply ethical and moral standards while carrying out epidemiological researches.
3. Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
4. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach.
5. Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

Course Contents:
Paper I : Applied Basic Sciences
I. Applied Anatomy and Histology

A. Applied Anatomy in relation to:

- Development of face
- Bronchial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Salivary gland
- Tongue
- Hard and soft palate
- Infratemporal fossa
- Paranasal air sinuses
- Pharynx and larynx

- Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals

B. Oral Histology

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- Oral mucous membrane
- Pulp-periodontal complex

II. Applied Physiology and Biochemistry:

- Cell
- Mastication and deglutition
- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Fluid and electrolyte balance
- Pain pathway and mechanism-types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure
- Dynamics of blood flow
- Cardiovascular homoeostasis-heart sounds
- Respiratory system: Normal Physiology and and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

III. A. Applied Pathology:

- Pathogenic mechanism of molecular level
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosallesions, and malignancies. HIV
- Propagation of dental infection

B. Microbiology

- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology -basic concepts of immune system in human body

  - Cellular and humoral immunity
  - Antigen and antibody system
  - Hypersensitivity
  - Autoimmune diseases

C. Oral Pathology

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

IV. Physical and Social Anthropology

- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods

V. Applied Pharmacology:

- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodyanamics, pharmcokinetics.
- Chemotherapy of bacterial infections and viral infections -sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and anti pyretics
- Important hormones-ACTH, cortisone, insulin and oral anti diabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system- adrenaline, noradrenaline, atropine.
- Brief mention of anti hypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs

VI. Research Methodology and Biostatistics:

Health informatics : basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge.

Research methodology : definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis,

Biostatistics : introduction, applications, uses and limitations of biostatistics in Public Health dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques -types, errors, bias, trial and calibration.

COMPUTERS : Basic operative skills in analysis of data and knowledge of multimedia.

Paper II - Public Health

1. Public Health

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health

2. Health

- Definition, concepts and philosophy of health
- Health indicators
- Community and its characteristics and relation to health

3. Disease

- Definition, concepts
- Multifactorial causation, natural history, risk factors
- Disease control and eradication,evaluation and causation, infection of specific diseases.
- Vaccines and immunization

4.General Epidemiology

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist

- General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used.

5. Environmental Health:

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water, soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation
- Occupational hazards
- Waster disposal- various methods and sanitation

6. Public Health Education:

- Definition, aims, principles of health education
- Health education, methods. models, contents, planning health education programs

7. Public Health Practice and Administration System In India

8. Ethics And Jurisprudence

- Basic principles of law
- Contract laws - dentist -patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist
- Consumer protection act

9.Nutrition In Public Health:

- Study of science of nutrition and its application to human problem
- Nutritional surveys and their evaluations
- Influence of Nutrition and diet on general Health and Oral health, dental caries, pariodontal disease and oral cancers
- Dietary constituents and cariogenecity
- Guidelines for nutrition

10. Behavioral Sciences:

- Definition and introduction
- Sociology: social class. social group: family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

11. Hospital Administration:

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

12. Health Care Delivery System:

- International oral health care delivery systems -Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programme
- Primary health care -concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

13. Oral Biology And Genetics:

- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA

- Genetic counselling, gene typing
- Genetic approaches in the study of oral disorders
- Genetic Engineering -Answer to current health problems

Paper III: Dental Public Health

1. Dental Public Health:

- History
- Definition and concepts of dental public health
- Differences between clinical and Community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

2. Epidemiology of Oral Diseases and Conditions

- Dental caries, gingival, periodontal disease malocclusion. dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

3. Oral Survey Procedures:

- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation

4. Delivery of Dental Care

- Dental person power -dental auxiliaries
- Dentist -population ratios,
- Public dental care programs
- School dental health programs- Incremental and comprehensive care
- Private practice and group practice
- Oral health policy -National and international policy

5. Payment for Dental care

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

6. Evaluation of Quality of Dental care

- Problems in public and private oral health care system program
- Evaluation of quality of services, governmental control

7. Preventive Dentistry

- Levels of prevention
- Preventive oral health programs screening, health education and motivation
- Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies.
- Role of dentist in prevention of oral diseases at individual and community level.
- Fluoride
    - History
    - Mechanism of action
    - Metabolism
    - Fluoride toxicity
    - Fluorosis
    - Systemic and topical preparations
    - Advantages and disadvantages of each
    - Update regarding Fluorosis
    - Epidemiological studies

- Methods of fluoride supplements
- Defluoridation techniques .

- Plaque control measures
  - Health Education
  - Personal oral hygiene I
  - Tooth brushing technique
  - Dentifrices, mouth rinses
- Pit and fissure sealant, ART
- Preventive oral health care for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counselling

8. Practice Management

- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends

Structured Training Schedule
First Year
Seminars

- 5 seminars in basic sciences subject
- To conduct 10 journal clubs
- Library assignment on assigned topics 2
- Submission of synopsis for dissertation within 6 months
- Periodic review of dissertation at two monthly intervals

Clinical Training

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices -5 cases each
   - Oral Hygiene Index -Greene and Vermillion
   - Oral Hygiene Index -Simplified
   - DMF- DMF (T), DMF (S)
   - Def
   - Fluorosis Indices -Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe
   - WHO Oral Health Assessment Form -1997
   - Carrying out treatment (under comprehensive oral health care) of 10 patients -maintaining complete records.

Field Programme:

1. Carrying out preventive programs and health education for school children of the adopted school.
2. School based preventive programs -
   - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated , Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses.
   - Pit and Fissure Sealant -chemically cured (GIC), light cured
   - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
   - Organizing and carrying out dental camps in both urban and rural areas
3. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
4. In additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

Second Year

Seminars

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics - 2
- Periodic review of dissertation at monthly reviews

Clinical Training – Continuation of the clinical training

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices
   - Oral Hygiene Index -Greene and Vermillion
   - Oral Hygiene Index -Simplified
   - DMF- DMF (T), DMF (S)
   - Def t/s
   - Fluorosis Indices -Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe
   - WHO Oral Health Assessment Form -1987
   - Carrying out treatment (under comprehensive oral health care) of 10 patients
     -maintaining complete records

Field Program -Continuation of field program

1. Carrying out school dental health education .
2. School based preventive programs
   - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
   - Pit and Fissure Sealant -chemically cured (GIC); light cured
   - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
   - Organizing and carrying out dental camps in both urban and rural areas.
3. Assessing oral health status of various target groups like School children, Expectant mothers Handicapped, Underprivileged, and geriatric populations. Planning dental manpower and financing dental health care for the above group.
4. Application of the following preventive measures in clinic-10 Cases each.
   - Topical Fluoride application -Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride-varnishes
   - Pit and Fissure Sealant
5. Planning total health care for school children in an adopted school:
   a) Periodic surveying of school children
   b) Incremental dental care
   c) Comprehensive dental care
6. Organizing and conducting community oral health surveys for all oral conditions- 3 surveys.
7. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programmes.
8. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

Third Year

Seminars

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles -10 articles
- Completion and submission of dissertation

Clinical Training

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices - 5 each
   - Oral Hygiene Index -Greene and Vermillion

- Oral Hygiene Index -Simplified
- DMF- DMF (T), DMF (S)
- Def t/s
- Fluorosis Indices -Dean's Fiuorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
- Community Periodontal Index (CPI)
- Plaque Index-Silness and Loe
- WHO Oral Health Assessment Form -1987
- Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records

3. Carrying out school dental health education
4. School based preventive programs -
   - Topical Fluoride application -Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes
   - Pit and Fissure Sealant
   - Minimal Invasive Techniques -Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
5. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic
6. Exercise on solving community health problems -10 problems
7. Application of the following preventive measures in clinic -10 cases each
   - Topical Fluoride application -Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
   - Pit and Fissure sealants
8. Dental- health education training of school teachers, social workers, health workers
9. Posting at dental satellite centers / nodal centers.
10. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs

Before completing the third year M.D.S., a student must have attended two national conferences. Attempts should be made to present two scientific papers, publication of a scientific article in a journal.

Monitoring Learning Process:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using check lists that assess various aspects. Check lists are given in Section IV.

SYLLABUS OF PART – I

SUBJECT: CONSERVATIVE DENTISTRY AND ENDODONTICS

ANATOMY

1. Gross anatomy of the face:

a. Muscles of the face and neck including muscles of mastication and deglutition, muscles of facial expression and Facial spaces. EMBRYOLOGY: Development of face, paranasal sinuses and the associated structures and their anomalies.

b. Functional anatomy of mastication, deglutition and speech

c. Anatomy of Mandible and maxilla:

2. General and histological structure of bones.

3. TMJ anatomy and function

4. Oral Cavity:

4 a. Vestibule and oral cavity proper

4b. Tongue : development, anatomy, innervations, blood supply and histology

4c. Palate –: development, anatomy, innervations, blood supply and histology

5. Anatomy of Nasal Cavity, Nasal septum ,Lateral wall of nasal cavity and Paranasal air sinuses

6. Saliva and Salivary glands :

6a. Anatomic considerations. Salivary glands – structure, function, clinical considerations

6b. Saliva composition and applied aspects.

7. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures.

8.Arterial and venous drainage of head and neck

9. Classification of cranial nerves and autonomic nervous system of head and neck with special emphasis on Facial and Trigeminal Nerves

10. General Anatomy : Jugular system : Internal jugular External jugular

11. TEETH

- Detailed anatomy of deciduous and permanent teeth, general consideration in applied anatomy of permanent dentition, form, function, developmental anomalies.

- Internal anatomy of permanent teeth and its significance

- Enamel – development and composition, physical characteristics, chemical properties, histological features. Age changes and clinical considerations

- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.

- Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.

- Cementum – composition, cementogenesis, structure, function, clinical consideration. •
- Periodontal ligament – development, structure, function and clinical consideration
- 12. Development and Eruption of teeth.

13.Contacts, contours and Occlusion

14 HISTOLOGY: 1. Study of epithelium of oral cavity and the respiratory tract 2. Connective tissue 3. Muscular tissue 4. Nervous tissue 5. Blood vessels 6. Cartilage 7. Bone and tooth 72 8. Tongue 9. Salivary glands 10. Tonsil, thymus, lymph nodes

II. Physiology

General Physiology: Cell , Body Fluid Compartments - Classification - Composition and Cellular transport , Resting Membrane Potential and action potential

Muscle Nerve Physiology:

- Structure of a neuron and properties of nerve fibres
- Structure of muscle fibres and properties of muscle fibres
- Neuromuscular transmission
- Mechanism of muscle contraction

- Taste and Taste buds and pathways of taste sensation.

Blood:

- Composition, volume, functions, blood groups, RBC and Haemoglobin
- WBC – Structure and functions
- Platelets – functions and applied aspects
- Plasma proteins
- Blood Coagulation with applied aspects
- Blood transfusion, circulation, heart, pulse, blood pressure, shock.
- Lymph and applied aspects

Respiratory System:

- Respiration and respiration control
- Anoxia, hypoxia, asphyxia, artificial respiration .Hypoxia, effects of increased barometric pressure and decreased barometric pressure

Cardio-Vascular System:

- Cardiac Cycle and pulse.
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow and Electrocardiogram
- Regulation of blood pressure.
- Shock, hypertension, cardiac failure.

Excretory System:

- Renal function tests and their significance.

Gastro Intestinal System

- Composition, functions and regulation of: Saliva and Gastric juice

- Mastication and deglutition

Endocrine System:

- Hormones – classification and mechanism of action.
- General principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- Thyroid and Parathyroid hormones
- Pancreatic hormones
- Adrenal hormones

Central Nervous System:

- Ascending tract with special references to pain pathway
- SPECIAL SENSES: Taste, Gustation and Olfaction

Applied Physiology:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Physiology of saliva – composition, function, clinical significance
- Clinical significance of vitamins, diet and nutrition – balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.
- **Biochemistry:**
- Osmotic pressure, Electrolyte dissociation, Oxidation and Reduction.
- Carbohydrates – Disaccharides specifically maltose, lactose, sucrose - Digestion of starch/absorption of glucose - Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis - Blood sugar regulation - Glycogen storage regulation - Glycogen storage diseases - Galactosemia and fructosemia
- Lipids - Fatty acids- Essential/non essential - Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis - Outline of cholesterol metabolism- synthesis and products formed from cholesterol

- Protein - Amino acids- essential/non essential, complete/ incomplete proteins - Transamination/ Deamination
- Vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation and Repair

General Principles of Inflammation and Repair

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDS in inflammation
- Cellular changes in radiation injury and its manifestations

2. Hemostasis:

- Role of Endothelium in thrombo-genesis
- Arterial and venous thrombi , Disseminated Intravascular Coagulation
- Shock: •Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, oedema, infarction.

3.Wound Healing:

4.Hypersensitivity:

• Anaphylaxis • Type II Hypersensitivity • Type III Hypersensitivity

• Cell mediated Reaction and its clinical importance • Systemic Lupus Erythmatosis

5.Neoplasia:

- Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
- Grading and Staging of Cancer,
- Characteristics of benign and malignant tumors

6. **Aids** Management of Immune deficiency patients requiring surgical procedures

7. Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis
8. Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.

9. Developmental disturbances of Teeth,
10. Dental Caries, Regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
11. Bacterial, viral, mycotic infections of the oral cavity.
12. Oral manifestations of Systemic diseases.

Microbiology:

- General Bacteriology- Identification of bacteria, Culture media and culturing techniques
- Oral Microbial flora in health and disease
- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defence, bacterial virulence factors, healing, theory of focal infections,
- Microbes in relevance to dentistry – streptococci, staphylococci, lactobacilli, cornye bacterium, actinomycetes, clostridium, neisseria, vibrio, bacteroids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids.
- Identification and isolation of microorganisms from infected root canals.
- Virology: Herpes, Hepatitis and HIV viruses
- Mycology: Candidiasis

Pharmacology:

1. Definition of terminologies used
2. Dosage and routes of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS

5. Drug reactions and Interactions

6. General and local anesthetics:

- Local anesthesia – Ideal properties, agents and chemistry, pharmacological actions, fate and metabolism of anesthetic, techniques and complications.

- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.

- Anesthetic emergencies

7. Antihistamines, corticosteroids,

8. hypnotics, antiepileptics, and & tranquilizers

9. Chemotherapeutics and antibiotics

10. Analgesics , anti-inflammatory and antipyretics drugs.

11. Antiseptics, sialogogues, and anti – sialogogues

12. Haematinics

13. Anti – diabetic therapy

14. Vitamins – A B Complex, C, D, E, K

14. Steroids

15. Hemostasis, and haemostatic agents, anticoagulants

16. Management of medically compromised patients including medical emergencies in the dental chair

17. Drug therapy of Emergencies; Seizures, Anaphylaxis, Shock and Diabetic ketoacidosis

Research Methodology and Biostatistics:

- Essential features of a protocol for research in humans

- Experimental and non-experimental study designs
- Ethical considerations of research

Biostatistics:

- Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data.
- Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution.
- Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression

Applied Dental Materials:

- Physical and mechanical properties of dental materials.
- Impression materials
- Restorative materials,
- Composite resins and recent advances in composite resins,
- Principles of adhesion, bonding agents and recent developments
- Tarnish and corrosion,
- Dental amalgam,
- Dental Casting alloys,
- Inlay wax, Die materials and Investment materials
- Casting procedures and casting defects,
- Dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances,
- Finishing and polishing materials.

  Biocompatibility of Dental Materials and Methods of testing biocompatibility of materials used.
- Soldering and Welding.
- Dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.

- Dental ceramics-recent advances,
- Finishing and polishing materials.
- Biocompatibility of Dental Materials and Methods of testing biocompatibility of materials used.
- Soldering and Welding

SYLLABUS MDS PART – II
SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

(iv) CONSERVATIVE DENTISTRY AND ENDODONTICS

Part-II

Paper-I : Conservative Dentistry
Paper-II : Endodontics
Paper-III : Descriptive and analysing type question

4. CONSERVATIVE DENTISTRY & ENDODONTICS

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These are to be achieved by the time the candidate completes the course. These objectives may be considered under the following subtitles.

KNOWLEDGE:

At the end of 36 months of training, the candidates should be able to:

Describe aeitology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathoses including periodontal situations.

Demonstrate understanding of basic sciences as relevant to conservative / Restorative dentistry and Endodontics.

Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.

Ability to master differential diagnosis and recognize conditions that may require multidisciplinary approach or a clinical situation outside the realm of the specialty, which he or she would be able to recognize and refer to appropriate specialist.

Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry- Endodontics-Dental Materials and Restorative Dentistry.

Ability to teach/guide, colleagues and other students.

Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform

SKILLS:

Take proper chair side history, exam the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.

Perform all levels of restorative work and surgical and non-surgical Endodontics including endodontic endoosseous implants, as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.

Provide basic life saving support in emergency situations.

Manage acute pulpal and pulpo periodontal situations.

Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

Human Values, Ethical Practice and Communication Abilities

Adopt ethical principles in all aspects of restorative and contemporaries Endodontics including non-surgical and surgical Endodontics.

Professional honesty and integrity should be the top priority.

Dental care has to be provided regardless of social status, caste, creed or religion of the patient.

Develop communication skills in particular to explain various options available management and to obtain a true informed consent from the patient.

Apply high moral and ethical standards while carrying on human or animal research.

He / She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation

Respect patient's rights and privileges including patients right to information.

COURSE CONTENTS:

PAPER – I : APPLIED ANATOMY OF HEAD AND NECK

Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.

Internal anatomy of permanent teeth and its significance

Applied histology – histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

DEVELOPMENT OF TEETH:

Enamel – development and composition, physical characteristics, chemical properties, structure

Age changes – clinical structure

Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.

Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.

Cementum – composition, cementogenesis, structure, function, clinical consideration.

Periodontal ligament – development, structure, function and clinical considerations.

Salivary glands – structure, function, clinical considerations.

Eruption of teeth.

APPLIED PHYSIOLOGY:

Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.

Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.

Physiology of Saliva – composition, function, clinical significance.

Clinical significance of vitamins, diet and nutrition – balanced diet.

Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

PATHOLOGY:

Inflammation, repair, degeneration, necrosis and gangrene.

Circulatory disturbance – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.

Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread tumors.

Blood dyscrasias

Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.

Bacterial, viral, mycotic infections of the oral cavity.

MICROBIOLOGY:

Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actionmycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.

Cross infection, infection control, infection control procedure, sterilization and disinfection.

Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

PHARMACOLOGY:

Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.

Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anesthetic, ideal properties, techniques and complications.

General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used , assessment of anesthetic problems in medically compromised patients.

Anaesthetic emergencies

Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K, IRON), anti sialogogue, immunosuppressant, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

BIOSTATISTICS:

Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis),Correlation and regression, Use of computers.

RESEARCH METHODOLOGY:

Essential features of a protocol for research in humans
Experimental and non-experimental study designs
Ethical considerations of research

APPLIED DENTAL MATERIALS:

Physical and mechanical properties of dental materials, biocompatibility
Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding – recent developments – tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
Dental ceramics- recent advances, finishing and polishing materials.
Dental burs – design and mechanics of cutting – other modalities of tooth preparation.
Methods of testing biocompatibility of materials used.

PAPER –II : CONSERVATIVE DENTISTRY

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries – epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management - recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth reparation – recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Direct and indirect composite restorations.
9. Indirect tooth colored restorations – ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.
    a. Tissue management
10. Impression procedures used for indirect restorations.
11. Cast metal restorations, indications, contraindications, tooth preparation for class 2 inlay,
    Onlay full crown restorations.
    Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and
12. Direct gold restorations.
13. Recent advances in restorative materials and procedures.
14. Management of non-carious lesion.
15. Advance knowledge of minimal intervention dentistry.
16. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
17. Hypersensitivity, theories, causes and management.
18. Lasers in Conservative Dentistry
19. CAD-CAM & CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics
    - Color
    - Facial analysis
    - Smile design
    - Principles of esthetic integration
    - Treatment planning in esthetic dentistry

PAPER – III : ENDODONTICS

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Pathobiology of periapex.
6. Diagnostic procedure – recent advances and various aids used for diagnosis-
    a. Orofacial dental pain emergencies : endodontic diagnosis and management
7. Case selection and treatment planning
8. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc..
11. Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non – surgical Endodontics by calcium hydroloride.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management – endodontic treatment for young permanent teeth. Pediatric Endodontics – treatment of immature apex.
16. Endodontic surgeries, recent developments in technique and devices, endoosseous endodontic implants – biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management
18. Drugs and chemicals used in Endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric Endodontics
22. Endo emergencies and management.
23. Biologic response of pulp of various restorative materials and operative procedures.
24. Lasers in Endodontics.
25. Multidisciplinary approach to endodontics situations.
26. Endodontics radiology – digital technology in endodontics practice.
27. Local anesthesia in endodontics.
28. Procedural errors in endodontics and their management.
29. Endodontics failures and retreatment.
30. Resorptions and its management.
31. Microscopes in endodontics.
32. Single visit endodontics, current concepts and controversies.

TEACHING / LEARNING ACTIVITIES:

The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

First Year

Pre Clinical Work – Operative and Endodontics

Preclinical work on typhodont teeth

1. Class 2 amalgam cavities
    a. Conservative preparation -03
    b. Conventional preparation -03

2. Inlay cavity preparation on premolars
And molars – MO, DO, MOD -10
a. Wax pattern -06
b. Casing -04

3. Onlay preparation on molars -02
a. Casting -01

4. Full Crown
a. Anterior -05
b. Posterior -05
(2 each to be processed)

5. 7/8 crown -02
(1 to be processed)

6. 3 / 4 crown premolars -02
(1 to be processed)

Pre Clinical work on natural teeth

1. Inlay on molars and premolars MO, DO, and MOD -08
a. Casting -02
b. Wax pattern -02
2. Amalgam cavity preparation
a. Conventional -02
b. Conservative -02

3. Pin retained amalgam on molar teeth -02

4. Post and core build up
a. Anterior teeth -10
b. Posterior teeth -05

5. Casting
a. Anterior -04
b. Posterior -02

6. Onlay on molars -03
(1 to be processed)

7. Full crown premolars and molars -04

8. Full crown anterior -06
(2 and 3 to be processed)

9. Veneers anterior teeth (indirect method) -02

10. Composite inlay (class 2) -03
(1 to be processed)

11. Full tooth wax carving – all permanent teeth

ENDODONTICS:

1. Sectioning of all maxillary and mandibular teeth.
2. Sectioning of teeth – in relation to deciduous molar, 2nd primary upper and lower molar 1 each
3. Access cavity opening and root canal therapy in relation to maxillary and mandibular permanent teeth
4. Access cavity preparation and BMP
   Anterior
   a. Conventional prep
   b. Step back
   c. Crown down
   Obturation 03
5. BMP Premolar 06 (2 upper and 2 lower) obturation 1 each
6. BMP Molar 06 (3 upper – 2 first molars and 1 second molar, 3 lower -2 first molars and 1 second molar) obturation 1 each
7. Post and core preparation and fabrication in relation to anterior and posterior teeth
   a. Anterior 10 (casting 4)
   b. Posterior 05 (casting 2)
8. Removable dies 04

Note : Techniques work to be completed in the first four months

CLINICAL WORK :

A	Composite restorations	30
B	GIC Restorations	30
C	Complex amalgam restorations	05
D	Composite inlay + veneers (direct and indirect)	05
E	Ceramic jacket crowns	05
F	Post and core for anterior teeth	05
G	Bleaching vital	05
	Non vital	05
H	RCT Anterior	20
I	Endo surgery – observation and assisting	05

Presentation of :

Seminars- 5 seminars by each student – should include topics in dental materials, conservative dentistry and endodontics
Journal clubs – by each student
Submission of synopsis at the end of 6 months
Library assignment work
Internal assessment – theory and clinicals.

Second Year

Case discussion – 5

1	Ceramic jacket crowns	10
2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	05
5	Full crown for posterior teeth	15

6	Cast gold inlay	05
7	Other special types of work such as splinting -Reattachment of fractured teeth etc.	05
8	Anterior RCT	20
9	Posterior RCT	30
10	Endo surgery performed independently	05
11	Management of endo – Perio problems	05

Under graduate teaching program as allotted by the HOD
Seminars – 5 by each student
Journal club – 5 by each student
Dissertation work
Prepare scientific paper and present in conference and clinical meeting
Library assignment to be submitted 18 months after starting of the course
Internal assessment – theory and clinical

Third Year

Dissertation work to be submitted 6 months before final examination.

Clinical work

Cast gold inlay – Onlay, cuspal restoration	10
Post and core	20
Molar endodontics	50
Endo surgery	05

All other types of surgeries including crown lengthening, perioesthetics, hemi sectioning, splinting, replantation, endodontic implants.

Presentation of :

Seminars
Journal club
Teaching - lecture (under graduates)
Internal assessment – theory and clinical

MONITORING LEARNING PROGRESS :

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION :

A. Theory : 300 Marks

Written examination shall consist of four question papers each three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:*

PAPER – I : Applied Basic Sciences : Applied Anatomy, Physiology, Pathology Including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.

PAPER – II : Conservative Dentistry

PAPER – III : Endodontics
PAPER – IV : Essay

B. Clinicals : 200 Marks

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3rd day.

Day 1

Clinical Exercise I - 50 Marks

Cast core preparation

(i) Tooth preparation	-10 marks
(ii) Direct Wax Pattern	-10 marks
(iii) Casting	-10 marks
(iv) Cementation	-10 marks
(v) Retraction & Elastomeric Impression	-10 marks

Clinical Exercise II – 50 Marks

(Inlay Exercise)

(i) Tooth preparation for Class II Gold Inlay	-25 marks
(ii) Fabrication of Direct Wax Pattern	-25 marks

Day 2

Clinical Exercise III – 100 Marks

(Molar Endodontics)

(i) Local Anaesthesia and Ruber Dam application	-20 marks
(ii) Access Cavity	-20 marks
(iii) Working length determination	-20 marks
(iv) Canal Preparation	-20 marks
(v) Master bone selection	-20 marks

C. Viva Voce : 100 Marks

i. Viva –Voce examination : 80 marks

All examiners will conduct viva –voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/She is asked to make a presentation on the topic for 8-10 minutes.

Day 3

Viva –Voce (Continued if more than 4 students are taking examination or shortage of time on 2nd day).

SYLLABUS OF PART – I

SUBJECT: ORAL MEDICINE AND RADIOLOGY

Applied Anatomy

1. Gross Anatomy of the face

- Muscles of Mastication
- Facial nerve/artery/vein
- Parotid Gland and its relations
- Tongue
- TMJ and Infra Temporal fossa
- Vestibule and oral cavity
- Palate- Soft and hard

2. Neck Region

- Facial Spaces
- Lymphatic system

3. Cranial Nerve- V, VII, IX, XI, XII

4. Nasal Cavity

- Nasal Septum
- Lateral Wall
- Paranasal sinuses

5. Jaw Bones (Maxilla and Mandible)

- Development
- Anatomy
- Ossification
- Age Changes

6. Embryology

a. Development of;

- face
- tongue
- Palate
- Salivary glands

- Maxillary Sinus

b. Congenital anomalies

7. Tooth

- Development
- Anatomy
- Age changes

8. Histology

- Epithelium of Oral cavity and respiratory tract
- Connective tissue
- Muscular tissue
- Nervous tissue
- Blood vessels
- Cartilage
- Bone
- Tooth
- Tongue
- Salivary Gland
- Tonsil
- Lymph nodes

Physiology and Biochemistry

A. Physiology

1. General Physiology

- Cell
- Cellular transport

2. Muscle nerve Physiology

- Structure of neuron and properties of nerve fibres
- Structure of muscle fibres and properties of muscle fibres
- Neuromuscular transmission
- Mechanism of muscle contraction

3. Blood

- RBC and HB
- WBC- structure and functions
- Platelets- functions and applied aspects
- Plasma proteins
- Blood coagulation with applied aspects

- Blood Groups
- Lymph and applied aspects

4. Respiratory System

- Respiratory rate
- Hypoxia; effects of increased and decreased barometric pressure

5. Cardio-Vascular System

- Regulation of blood pressure
- Shock, hypertension, cardiac failure

6. Excretory System

- Renal Function tests

7. Gastro-Intestinal Tract

a. Composition, function and regulation of;

- Saliva
- Gastric juice

b. Mastication and deglutition

8. Endocrine System

a. Hormones- classification and mechanism of action and applied aspects

9. Central Nervous System

a. Ascending tracts with special reference to pain pathway

10. Special Senses

a. Gustation and Olfaction

B. Biochemistry

- **Metabolism of;**

  a. Carbohydrates

  b. Lipids

  c. Proteins

  d. Minerals

- **Energy Metabolism**

  a. Basic Metabolic Rate

- **Vitamins**

  a. Classification, source, metabolism and deficiencies

Pathology

- **Inflammation (Acute/Chronic)**
    - Repair and regeneration, necrosis and gangrene
    - Role of complement system in inflammation
    - Role of arachidonic acid and its metabolites in inflammation
    - Role of NASAIDS in inflammation
    - Cellular changes in radiation injury and its manifestations

- **Homeostasis**
    - Role of endothelium in thrombo-genesis
    - Arterial and venous thrombi
    - Disseminated intra vascular coagulation
    - AV malformation

- **Shock**

  a. Pathogenies and clinical presentation of;
    - Hemorrhagic shock
    - Neurogenic shock
    - Septic shock
    - Cardiogenic shock
    - Circulatory shock

  b. Edema

  c. Infarction

- **Hypersensitivity**

  a. Anaphylaxis

  b. Type II Hypersensitivity

  c. Type III Hypersensitivity

  d. Cell mediated reaction and its clinical importance (e.g. SLE/Infection/Infective granulomas)

- **Neoplasia**

  a. Classification of tumours

  b. Carcinogenesis and carcinogens; Chemical, Viral, Microbial

c. Grading and staging of cancers

d. Spread of tumours

e. Characteristics of benign and malignant tumours

Applied Immunology

- Antigen
- Antibody
- Heptane's
- Complement
- Types of reaction
- Cellular Vs humoral
- Complication
- Management of Immune deficiency patients

Applied Common Investigations

- CBC
- Coagulation Profile
- Biochemical
- KFT
- LFT

Microbiology

Oral Microbial Flora

- Commensal flora
- Conditions causing alterations in flora

Sterilization and Asepsis

- Aseptic care
- Physical and chemical methods of sterilization
- Antiseptics
- Handling of sterile material

Pharmacology

1. Definition and terminology
2. Mechanism, action and dosage of;
   - Antibiotics

- Analgesics
- Steroids
- Anti-histaminic
- Anti-coagulants
- Sedatives and tranquilizers
- Hematinics
- Desensitizers
- Sialagogues and anti-sialagogues

3. Drug tolerance, interaction and hypersensitivity reaction

Research Methodology and Biostatistics

Research Methodology

1. Introduction and purpose of research
2. Types of research
    a. Selection of subject
3. Scientific methods (Standardization)
4. Ideal requirements
5. Preparing the protocol
6. Sampling
    a. Sampling methods
    b. Sample size
7. Data
    a. Type of data
    b. Collection of data
    c. Presentation of data
8. Documentation and Writing the report
9. Good clinical practices and ethics

Biostatistics

- Introduction
- Applications
- Statistical averages
- Measures of Dispersion
- Distribution/Normal curve
- Tests of Significance
- Correlation and Interpretation

SYLLABUS MDS PART – II
SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

(ix) ORAL MEDICINE AND RADIOLOGY

Part-II

Paper-I : Oral and Maxillofacial Radiology
Paper-II : Oral Medicine, therapeutics and laboratory investigations
Paper-III : Descriptive and analysing type question

ORAL MEDICINE AND RADIOLOGY

Objectives:

At the end of 3 years of training the candidate should be able to acquire

Knowledge:

Theoretical, Clinical and practical knowledge of all orofacial lesions, diagnostic procedures pertaining to them and latest information of imaging modules and recent advances in treatment modalities.

Skills and Attitude: Three important skills need to be imparted

1. Diagnostic skill in recognition of oral lesions and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives

Attitudes:

The positive mental attitude and the persistence of continued learning need to be inculcated

Course Contents

Paper I:

Applied Anatomy

1. Gross anatomy of the face:
   a. Muscles of Facial Expression and Muscles of Mastication
   b. Tempero Mandibular Joint
   c. Facial nerve
   d. Facial artery
   e. Facial vein
   f. Major and Minor salivary glands
2. Neck region:
   a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
   b. Facial spaces
   c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
   d. Jugular system

Internal jugular

External jugular

e. Lymphatic drainage

f. Cervical plane

g. Muscles derived from Pharyngeal arches

h. Endocrine glands

i Sympathetic chain

j. Cranial nerves- V, VII, IX, XI, & XII.

3. Oral Cavity:

a. Vestibule and oral cavity proper

b. Tongue and teeth

c. Palate -soft and hard

4. Nasal Cavity

a. Nasal septum

b. Lateral wall of nasal cavity

5. Pharynx:

6. Paranasal air sinuses

Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem

Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII

Osteology: Comparative study of fetal and adult skull

Mandible: Maxilla frontal temporal & zygomatic bones.

Development, ossification, age changes and evaluation of mandible in detail

Embryology

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.
6. Development of the tongue.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract

2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology:
    a. Cell
    b. Body Fluid Compartments
    c. Classification
    d. Composition
    e. Cellular transport
    f. RMP and action potential
2. Muscle Nerve Physiology
    a. Structure of a neuron and properties of nerve fibers
    b. Structure of muscle fibers and properties of muscle fibers
    c. Neuromuscular transmission
    d. Mechanism of muscle contraction

Blood

1. RBC and Hb
2. WBC -Structure and functions
3. Platelets -functions and applied aspects
4. Plasma proteins
5. Blood Coagulation with applied aspects
6. Blood groups
7. Lymph and applied aspects

Respiratory System:

1. Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes

2. Lung volumes and capacities and applied aspects
3. Oxygen and carbon dioxide transport
4. Neural regulation of respiration
5. Chemical regulation of respiration
6. Hypoxia, effects of increased barometric pressure and decreased barometric pressure

Cardio-Vascular System:

1. Cardiac Cycle
2. Regulation of heart rate/ Stroke volume / cardiac output / blood flow
3. Regulation of blood pressure
4. Anaphylaxis, hypertension, cardiac failure

Excretory system

1. Renal function tests

Gastro- intestinal tract:

1. Composition, functions and regulation of:
2. Saliva
3. Gastric juice
4. Pancreatic juice
5. Bile and intestinal juice
6. Mastication and deglutition

Endocrine system:

1. Hormones -classification and mechanism of action
2. Hypothalamic and pituitary hormones
3. Thyroid hormones
4. Parathyroid hormones and calcium homeostasis
5. Pancreatic hormones
6. Adrenal hormones

Central Nervous System:

1. Ascending tract with special references to pain pathway

Special Senses:

1. Gustation and Olfaction

Biochemistry

1. **Carbohydrates -Disaccharides specifically maltose, lactose, sucrose**

- Digestion of starch/absorption of glucose

- Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
- Blood sugar regulation
-Glycogen storage regulation
-Glycogen storage diseases
-Galactosemia and fructosemia ,

2. Lipids

-Fatty acids – Essential / non essential
- Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
- Outline of cholesterol metabolism- synthesis and products formed from cholesterol

3. Protein

- Amino acids- essential/non essential, complete/ incomplete proteins
- Transamination/ Deamination (Definition with examples)
- Urea cycle
- Tyrosine – Hormones synthesized from tyrosine
- In born errors of amino acid metabolism
- Methionine and transmethylation

4. Nucleic Acids

- Purines / Pyrimidines
- Purine analogs in medicine
- DNA / RNA – Outline of structure
- Transcription / translation
- Steps of protein synthesis
- Inhabitors of protein synthesis
- Regulation of gene functional

5. Minerals

- Calcium / Phosphorus metabolism specifically regulation of serum calcium levels
- Iron metabolism
- Iodine metabolism
- Trace elements in nutrition

6. Energy Metabolism

- Basal metabolic rate
- Specific dynamic action (SDA) of foods

7. Vitamins

- Mainly these vitamins and their metabolic role-specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology :

1. Inflammation :

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Cronic inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDS in inflammation
- Cellular changes in radiation injury and its manifestations

2. Homeostasis

- Role of Endothelium in thrombo -genesis
- Arterial and venous thrombi
- Disseminated Intravascular Coagulation

3. Shock

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

4. Chromosomal Abnormalities:

- Mar fan's syndrome
- Ehler's Danlos Syndrome
- Fragile X Syndrome

5. Hypersensitivity:

- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity
- Cell medicated Reaction and its clinical importance
- Systemic Lupus Erythmatosus
- Infection and infective granulomas

6. Neoplasia:

- Classification of Tumors
- Carcinogenesis & Carcinogens -Chemical, Viral and Microbial
- Grading and Staging of Cancer, tumor Algiogenesis, Paraneoplastic Syndrome
- Spread of tumors
- Characteristics of benign and malignant tumors

7. Others:

- Sex linked agamaglobulinemia
- AIDS
- Management of Immune deficiency patients requiring surgical procedures
- De George's Syndrome
- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis

Pharmacology:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, analeptics, and & tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti -pyretics
9. Antiseptics, sialogogues, and anti -sialogogues
10. Haematinics
11. Antacids
12. Antiviral drugs
13. Anti -diabetics
14. Vitamins -A B Complex, C, D, E, K
15. Steroids

Paper II: Oral and Maxillofacial Radiology

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x-ray tube, production of x-rays, properties of x-rays

2. Biological effects of radiation
3. Filtration of collimation, grids and units of radiation
4. Films and recording media
5. Processing of image In radiology
6. Design of x -ray department, dark room and use of automatic processing units
7. Localization by radiographjc techniques
8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra -oral-imaging techniques
11. OPG and other radiologic techniques
12. Advanced imaging technique like CT Scan, MRI, Ultrasound & thermo graphy
13. Radionuclide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its advantages

Paper III: Oral Medicine, therapeutics and laboratory investigations

1. Study includes seminars / lectures / discussion
2. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques
3. Laboratory investigations including special investigations of oral and oro -facial ; diseases
4. Teeth in local and systemic diseases, congenital, and hereditary disorders
5. Oral manifestations of systemic diseases
6. Oro -facial pain
7. Psychosomatic aspects of oral diseases
8. Management of medically compromised patients including medical emergencies in the dental practice.
9. Congenital and Hereditary disorders involving tissues of oro facial region
10. Systemic diseases due to oral foci of infection
11. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations

12. Neuromuscular diseases affecting oro-facial region
13. Salivary gland disorders
14. Tongue in oral and systemic diseases
15. TMJ dysfunction and diseases
16. Concept of immunity as related to oro -facial lesions, including AIDS
17. Cysts, Neoplasms, Odontomes, and fibro -osseous lesions
18. Oral changes in Osteo -dystrophies and chondro – dystrophies
19. Pre malignant and malignant lesions and conditions of oro facial region
20. Allergy and other miscellaneous conditions
21. Therapeutics in oral medicine - clinical pharmacology
22. Forensic odontology
23. Computers in oral diagnosis and imaging
24. Evidence based oral care in treatment planning

Essential Knowledge

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology, Techniques and Inter -Operation, Diagnosis of Oro -facial Disorders

Procedural and Operative Skills:

(The numbers mentioned are minimum to be performed by each candidate)

1st Year:

1. Examination of Patient -Case history recordings -50
   - FNAC & Biopsy - 5 each
   - Observe, Assist and Perform under supervision
2. Intra & Extra oral radiographs: -Perform and interpretation -100

2nd Year:

1. Dental treatment to medically compromised patients -10
   -Observe, assist, and perform under supervision
2. Intra & Extra - oral radiographs, digital radiography -25
   -Observe, assist and perform under supervision

Operative skills:

1. Giving intra -muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients

3. Performing basic CPR and certification by Red Cross

3rd Year

All the above

Performed independently –

- Case history: Routine cases -25
- Interesting Cases -25
- Intra -oral Radiographs -100
  - Periapical view -50
  - Bitewing view -25
  - Occlusal view -25
- Extra -oral radiographs of different views -50

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal. and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SYLLABUS OF PART – I

SUBJECT: ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

Applied Anatomy:

- Temporomandibular Joint.
- Osteology of skull and mandible.
- Trigeminal and Facial nerve-extracranial course.
- Muscles of Mastication and facial expression.
- Tongue.
- Salivary glands.
- Nerve supply, blood supply, lymphatic drainage and venous drainage of Orodental tissues.
- Maxillary sinus.

Embryology:

- Development of face, palate, mandible, maxilla, tongue, salivary gland and applied aspect of the same.
- Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth.

Genetics:

- Introduction, mode of inheritance, chromosomal anomalies of oral tissues and single gene disorder.

Immunology:

- Basic principles of immunity, antigens, and antibody reactions.
- Cell mediated immunity and humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of autoimmune phenomenon.

Physiology:

- Saliva.
- Pain.
- Mastication.
- Taste.
- Deglutition.
- Vitamins (Influence on growth, Development and structure of Oral soft and hard tissues and para oral tissues.)
- Calcium metabolism.
- Theories of mineralization.

- Hormones (Influence on growth, Development and structure of Oral soft and hard tissues and para oral tissues.)
- Blood and its constituents.

Cell Biology:

- Cell structure and function (Ultra structural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell to cell extra cellular matrix interactions.
- Detailed molecular aspects of DNA, RNA and intracellular organelles, transcription and translation.
- Molecular biology techniques.
- Experimental aspects – DNA extraction, PCR, Western blotting.

Biochemistry:

- Chemistry of carbohydrates, lipids and proteins.
- Biological oxidation.
- Various biochemical techniques.

Pathology and Microbiology:

- **General Pathology**: Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, Wound healing, degeneration, blood dyscrasias. Carcinogenesis and neoplasia (General considerations).

- **General Microbiology**: Definitions of various types of infections, Routes of infection and spread, Sterilization, disinfection and antiseptics, Physiology and growth microorganisms.

- **Systemic Microbiology:** Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media.
- Staphylococci
- Streptococci
- Mycobacteria
- Clostridia, bacteroids and fusobacteria
- Actinomycetales
- Spirochetes

Mycology:

- General properties of fungi, classification, superficial subcutaneous and deep opportunistic infections.

- General principles of fungal infections.

Virology:

General Properties: structure, broad classification of viruses, pathogenesis, pathology of viral infections.

Basic Histo-techniques and Microscopy:

- Routine hematological tests and clinical significance of the same.
- Biopsy procedures for oral lesions.
- Processing of tissues for paraffin embedding.
- Stains, principles and theories of staining techniques.
- Microscope and principle of microscopy.
- Light microscopy and various other types including electron microscopy.
- Methods of tissue preparation for ground sections, decalcified sections.

Applied Pharmacology:

Research Methodology and Bio Statistics:

- Basic Principles of Biostatistics and study as applied to dentistry and Research.
- Collection /organization of data/ measurement scales presentation data and analysis.
- Measures of central tendency (Mean, Median Mode).
- Measures of variability.
- Sampling, designing and methods.
- Probability, normal distribution and indicative statistics.
- Tests of significance (Parametric/nonparametric qualitative methods).
- Analysis of variance.
- Association, correlation and regression.
- Research ethics.
- Informed consent.

Applied Dental Anatomy and Histology:

- Study of morphology of permanent and deciduous teeth.
- General Histology**:** Light and electron microscopy considerations of epithelial tissue and connective tissue structures and functions of oral, dental and paraoral tissues including their ultra structure, molecular and physio-biochemical aspects.

SYLLABUS MDS PART – II
SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

(vi) ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

Part-II

Paper-I : Oral pathology, Oral Microbiology and Immunology and Forensic Odontology
Paper-II : Laboratory techniques and Diagnosis and Oral Oncology
Paper-III : Descriptive and analysing type question

ORAL PATHOLOGY AND MICROBIOLOGY

Oral Pathology deals with the nature of oral diseases, their causes, processes and effects. I t relates the clinical manifestation of oral diseases to physiologic and anatomic changes associated with these diseases. It deals with commonly occurring pre malignancies and malignancies and serves commonly with the scientifically based information. It also deals with application of dental science to the administration of law and the furtherance of justice.

Objectives:

- To train a graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimen relating to oral and peri oral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current database, automate data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field , in conferences both as poster and verbal presentations and to take part in group discussions etc.
- He / she is expected to deal with the correct professional handling , examination, interpretation and presentation of dental an oral evidences which may came before the legal authorities.
- Since oral cancer continues to occupy a central stage of oral pathology, he/she should be capable of clinically correlating oral pre cancer with emphasis on early diagnosis using scientifically based information.

Broad outline of theoretical, clinical and practical courses:

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, immnunohistochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.

2. Advanced histological an histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, pathology, prognosis and management of oral oncology. concepts of oral pre malignancies.

3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.

4. Oral microbiology and their relationship to various branches of dentistry.

5. Oral microbiology affecting hard and soft tissues, Study of clinical changes and their significance to dental and oral diseases as related to oral pathology

6. Forensic odontology.

7. Inter institutional posting such as cancer hospital, dermatology clinics, regional HIV detection centres, sophisticated instrumentation centres for electron microscopy and other techniques.

8. Intra institutional posting in Oral Medicine and Radiology, Oralsurgery and Periodontology..

9. Maintenance of records of all post graduate activities.

10. Library dissertation.

11. University dissertation/Thesis.

GENERAL INFORMATION:

- The duration of the post graduate degree course in oral pathology and microbiology will be of three years.
- It will consist of three modules of one year each.
- The library dissertation should be completed by the end of tenth month and evaluation to be done at the end of first year.
- The university dissertation should start in second year and should be completed and submitted to the university six months before the final university examination.
- There shall be one institutional / university examination at the end of first year in the subject of Basic sciences subjects (Research Methodology and Biostatistics) .

A. Course Content

FIRST YEAR

1. Biostatistics n Research methodology

- Basic Principles of Biostatistics and study as applied to dentistry and Research
- Collection /organization of data/ measurement scales presentation data and analysis.
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution and indicative statistics.
- Estimating population values.
- Tests of significance (Parametric/nonparametric qualitative methods).
- Analysis of variance.
- Association, correlation and regression.

Approach:

- Didactic lectures on Biostatistics an discussion on Research methodology.
- Two day Post graduate orientation course including General approach PG course ,library , Main dissertation, journal club topics selection and presentation, seminars, clinicopathological meetings, teaching technology and use of audiovisual aids.

2. Applied Gross Anatomy of Head and Neck including Histology:

- Temporomandibular Joint
- Trigeminal nerve and Facial nerve.
- Muscles of Mastication.
- Tongue
- Salivary glands
- Nerve supply, blood supply, lymphatic drainage and venous drainage of Orodental tissues
- Embryology
    - Development of face, palate, mandible, maxilla, tongue and applied aspect of the same.
    - Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth.

- Maxillary sinus.
- Jaw muscles and facial muscles

Genetics:

Introduction , mode of inheritance, chromosomal anomalies of oral tissues and single gene disorder.

Approach:

- To be covered as didactic lectures.
- Posting in department of Anatomy for demonstration of dissection of Head, face and neck.

3. Physiology (General and Oral)

- Saliva
- Pain.
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (Influence on growth, Development and structure of Oral soft and hard tissues and para oral tissues.)
- Calcium metabolism.
- Theories of mineralization
- Tooth eruption and shedding
- Hormones((Influence on growth, Development and structure of Oral soft and hard tissues and para oral tissues.)
- Blood and its constituents.

Approach:

To be covered as didactic lectures.

4. Cell Biology:

- Cell structure and function (Ultra structural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell to cell extra cellular matrix interactions.
- Detailed molecular aspects of DNA, RNA and intracellular organelles, transcription and translation and molecular biology techniques.

Approach:

To be covered as seminars.

5. **General Histology:**

Light and electron microscopy considerations of epithelial tissues and gland, bone, hemopoietic system, lymphatic system, muscle, neural tissue, endocrinal system(Thyroid, pituitary, parathyroid)

Approach:

- Topics to be covered as didactic lectures.
- Postings in the dept of Anatomy and histology for slide discussion.
- Record book to be maintained.

6. **Biochemistry:**

- Chemistry of carbohydrates, lipids and proteins.
- Methods of identification and purification.
- Metabolism of carbohydrates, lipids and proteins.
- Biologicaloxidation.
- Various techniques- cell fractionation and ultra filtration, centrifugation, electrophorosis, spectrophotometry and radioactive techniques.

Approach:

- Topics to be covered as didactic lectures.
- Posting I the dept of Biochemistry to familiarize with various techniques.
- Record book to be maintained.

7. **General Pathology:**

- Inflammations and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration , shock, hemorrhage, pathogenic mechanisms at molecular level and blood dyscrasias, carcinogenesis and neoplasia.

Approach:

To be covered as seminars and didactic lectures.

8. **General Microbiology:**

- Definitions of various types of infections.
- Routes of infection and spread.
- Sterilization, disinfection and antiseptics.
- Bacterial genetics.
- Physiology and growth microorganisms.

Approach:

- To be cover as didactic lectures.
- Record book to maintained.

9. Basic Immunology:

- Basic principles of immunity, antigens, and antibody reactions.
- Cell mediated immunity and humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of autoimmune phenomenon.
- Immunodeficiency with relevance to opportunistic infections.
- Basic principles of transplantation and tumour immunity.

Approach:

To be covered as didactic lecture.

10. Systemic microbiology /Applied microbiology:

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Cornybacterium diphtheria
- Mycobacteria.
- Clostridia, bacteroids and fusobacteria.
- Actinomycetales.
- Spirochetes.

Virology:

General properties: structure, broad classification of viruses, pathogenesis, pathology of viral infections.

Herpes virus: List of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.

Hepatitis virus: List of viruses, pathogenesis, mode of infection, list of diagnostic tests an their interpretations, methods of prevention and control.

Human Immunodefiency Virus: Structure with relevance to laboratory diagnosis, types of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

Mycoloy:

- General properties of fungi, classification bases of diseases, superficial subcutaneous and deep opportunistic infections.
- General principles of fungal infections, diagnosis, rapid diagnosis method collection of sample and examination for fungi.

Approach:

- To be covered as seminars and didactic lectures.
- Posting in the dept of microbiology to familiarize with relevant diagnostic methods.
- Record book to be maintained.

11. Oral Biology (Oral and Dental Histology)

- Structure and functions of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects.
- Study of morphology of permanent and deciduous teeth.(Lectures and practicals to be given by P students)

Approach:

- To be covered as seminars and didactic lectures
- Record book to be maintained.

12. Basic molecular biology and techniques.

Experimental aspects – DNA extraction , PCR, Western blotting.

Approach:

- To be covered as didactic lectures.
- Posting in the centres where facilities are available for demonstration of routine , molecular biology techniques.
- Record book to be maintained.

13. **Basic Histotechniques and microscopy:**

- Routine hematological tests and clinical significance of the same.
- Biopsy procedures for oral lesions.
- Processing of tissues for paraffin embedding.

- Microtomes and principles of microtomy.
- Routine stains, principles and theories of staining techniques.
- Microscope and principle of microscopy.
- Light microscopy and various other types including electron microscopy.
- Methods of tissue preparation for ground sections, decalcified sections.

Approach:

- Topics to be covered as seminars.
- Preparation of ground and decalcified sections, tissue processing , sectioning and staining.
- Record book to be maintained.

Academic Activities:

- Submission of synopsis of dissertation in the 10 month of first year.
- Journal clubs and seminars to be presented by every post graduate student by turn.
- To attend the interdepartmental meetings.
- To attend dental camps based on survey to be done.
- Part 1 year ending examination to be conducted by college/university at the end of the academic year in optional subjects.

SECOND YEAR

Oral Pathology

- Developmental defects of oral and maxillofacial region and abnormalities of teeth.
- Dental caries(Introduction, Epidemiology, microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response to dentine-pulp unit, histopathology root caries, sequelae and immunology)
- Pulpal and perapical diseases.
- Infections of oral para oral regions (bacterial, viral and fungal infections)
- Non neoplastic disorders of salivary glands.
- Bone pathology
- Hematological disorders.
- Physical and chemical injuries, allergic and immunological diseases.
- Cysts of odontogenic origin
- Dermatologic diseases.
- Periodontal diseases.
- Oral manifestations of systemic diseases.
- Facial and neuromuscular disorder including TMJ disorders.
- Regressive alteration of teeth.

Clinical Pathology:

- Laboratory investigations-hematology, microbiology and urine analysis.
- Posting in clinical pathology to relevant training.

- Record book to be maintained.

Specialized histotechniques and special stains:

Specialized staining technique for different tissues.
Immunohistochemistry.
Preparation of frozen sections and cytological smears.

Approach:

Training to imparted in the department or in the institutions having facility.
Record book to be maintained.

Recording of case history and clinicopathological discussions:

Approach

Posting to the department of Oral Medicine, Medicine and Radiology and Oral and Maxillofacial surgery for 15 days.
Record book to be maintained.

Dermatology

Study of selected mucocutenous lesions-etiopathogenesis, pathology clinical presentation and diagnosis.

Approach:

- Posting to dept dermatology of medical college for 15 days.
- Topics to be covered as seminars.
- Record book to be maintained.

Oral Oncology

Detailed study including pathogenesis, molecular and biochemical changes of various tumours, tumour like lesions and premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues tumour markers.

Approach:

- To be covered as seminars..
- Posting in cancer centres to familiarize with the pathological appearances, diagnosis radiodiognosis and treatment modalities.

Oral Microbiolgy and Immunology

- Normal Oral microbial flora
- Defence mechanism in the oral cavity
- Microbiology and immunology of dental caries and periodontal diseases.
- Tumour immunology
- Infections of pulp and periapical and periodontal tissues.
- Oral sepsis and bacterimia

- Infections of oral and paraoral regions (Bacterial,viral and fungal infections)

Approach:

To be covered as seminars.

Forensic Odontology:

Legal procedures like inquest, medicolegal evidences, post mortam examination of violence around mouth and neck, identification of deceased indivisuals –dentalimportance bitemaks, rugae patterns and lip prints.

Approach:

To be covered as seminars.

Histopathology slide discussion
Record book to be maintained.

Other topics in Oral Pathology

- Detailed description of diseases affecting oral mucosa, teeth supporting tissues and jaws.
- Cysts of oral and paraoral regions.
- Systemic diseases affecting oral cavity.

Approach:

Seminars and slide discussions. Record book to be maintained. Training in histopathology slide reporting.

Experimental aspects of oral diseases

Approach: Posting desirable in the centres where animal experimentation is carried out to familiarize with laboratory techniques , upkeep and care of experimental animals.

Academic activities:

- Library assignment to be submitted at the end of 6 months.
- Commencement of dissertation work.
- Journal club and seminars to be presented by every PG students turn by turn.
- Clinicopathological discussions once in a month by every PG student.
- To attend the interdepartmental meetings.
- Lectures and practical classes and slide discussion to be taken for ii BDS students in oral anatomy and histology, physiology.

THIRD YEAR

- Non neoplastic disorders of salivary glands.
- Bone pathology
- Physical and chemical injuries, allergic and immunological diseases.
- Cysts of odontogenic origin.
- Oral manifestation of systemic diseases.

Approach:

- To be covered as seminars
- Slide discussion of the same.
- Record book to be maintained.

Academic activities:

- Visit to centre where animal experimentation is carried out to familiarize with laboratory techniques , upkeep and care of experimental animals.
- Completion of dissertation work and submission of the same six months before the final university examination.
- Study of journals, internet browsing and group discussion to update knowledge in recent advances in oral pathology.
- Lectures and practical demonstration for third BDS students in oral pathology.
- Reporting of histopathology slides.

3. ORAL & MAXILLOFACIAL SURGERY

OBJECTIVES:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives-

- Knowledge
- Skills
- Attitude
- Communicative skills and ability
- Research

KNOWLEDGE:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature
- To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice of oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the Oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

SKILLS:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

ATTITUDE:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

COMMUNICATION SKILLS:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.

COURSE CONTENT:

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

APPLIED BASIC SCIENCES:

A through knowledge both on theory and principles in general and particularly the basic medical subjects as relevant to the practice of maxillofacial surgery It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

ANATOMY:

Development of face, Para nasal sinuses and associated structures and their anomalies: surgical anatomy of scalp, temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial and facial bones and its surroundings soft tissues, cranial nerves tongue, temporal and infratemporal region, orbits and its contents, muscles of face and neck, Para nasal sinuses, eyelids and nasal septum, teeth, gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagital sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation. Histology of skin, oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

PHYSIOLOGY:

Nervous system- physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition homeostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; Digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia –types and management; CVS – cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology – metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, entrails nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism-body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes & treatment of acidosis and alkalosis.

BIOCHEMISTRY

General principles governing the various biological principles of the body such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins minerals and antimetabolites.

GENERAL PATHOLOGY:

Inflammation – Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; Wound management – Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; homeostasis – role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogens and Carcinogenesis, grading and staging to tumors, various laboratory investigation.

GENERAL MICROBIOLOGY:

Immunity, Hepatitis B and its prophylaxis, knowledge of organisms, commonly associated with disease of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

ORAL PATHOLOGY AND MICROBIOLOGY:

Developmental disturbances of oral and para structures, regressive changes of teeth, bacterial, viral, mycotic, infection of oral cavity, Dental caries , diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases & role of laboratory investigation in oral surgery.

PHARMACOLOGY AND THERAPEUTICS:

Definition of terminology used, pharmacokinetics and pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitivity reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, Vitamins A,B-complex, C,D,E,K.

COMPUTER SCIENCE:

Use of computers in surgery, components of computer and its use in practice, principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent / medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients – understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement.

- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery – understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery – developing a surgical diagnosis, basis necessities for surgery, aseptic technique, incisions, tissue handling, homeostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Post operative care – Concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management – Would healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction / management – Anatomy of the airway, principles of keeping the airway patent, mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain, Facial palsy and nerve injuries.
- Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- General patient management – competence in physical assessment of patient of surgery competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre – Prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- Neurological disorders of maxillofacial region – diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries

- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- Assessment of trauma – multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction onteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck, anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the managements of craniofacial anomalies.
- Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology – principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

ALLIED SPECIALITES:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal disease, Blood dyscrasias
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT / Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseased and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesia: Evaluation of patient for GA technique and management of emergencies, various IV sedation techniques

Academic Clinical programme (*applicable for all three years):*

- **Seminars** to presented & attended once in a week.
- **Journal clubs** (departmental and interdepartmental) to be conducted once in fifteen days.
- **Departmental and interdepartmental** discussions to be held once in a mouth.
- Minimum 2 **scientific papers** should be presented.
- Every candidate shall maintain a logbook to record his / her work or participation in all activities such as journal clubs, seminars, CDE programs etc. This work shall be scrutinized and certified by the head of the department and head of the institution and presented to the university every year

YEAR BY YEAR PROGRAMME:

I Year

First term:

Dissection, basic, sciences, basic computer science, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T. and ward rounds, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Second term (rotation and postings in other department):

Oncology	- 2 months
Emergency	- 1 month
General medicine	-15 days
General surgery / anesthesia	- 15 days
Ophthalmology	- 15 days
Neurology	- 15 days
ENT	- 15 days
Orthopedic	- 15 days

Examination of basic science – one paper of three hours duration to be conducted by the college

II Year

Minor oral surgery and higher surgical training

Submission of library assignment by the end of first term

Examination on minor oral surgical procedures – one paper of three hours duration to be conducted by the college

III Year

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final examination to the university

Examination of three hours duration three months before the final examination to be conducted by the college It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by MUHS in the revised ordinance governing MDS degree course

Final examination at the end of the third year:

Sl. No	Procedure	Category	Year	Number
1	Injection I.M. and I.V.	PI	I,II	50,20
2	Minor suturing and removal of sutures	PI	I	N, A
3	Incision & drainage of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I,II	20,10

6	Pre prosthetic surgery- a) corrective procedures b) ridge extension c) ridge reconstruction	PI PI PA A	 I I,II II.III	 15 3 3
7	OAF closure	PI, PA	I, II	3,2
8	Cyst enuleation	PI, PA	I, II	5,5
9	Mandibular fractures	PI, PA	I.II	10,10
10	Peri – apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I.II	N,A
12	Biopsy procedures	PI	I,II	N,A
13	Removal of salivary calculi	PA	I, II	3,5
14	Benign tumors	PA, A	II, III	3,3
15	Mid face fractures	PA, A	II, III	3,5
16	Implants	PA, A	II, III	5,5
17	Tracheotomy	PA,A	II, III	2,2
18	Skin grafts	PA	III	3,5
19	Orthognathic surgery	PA, A	II, III	3
20	Harvesting bone & cartilage grafts a) Iliac crest b) Rib c) Calvarial d) Fibula	 PA A A A,O	 III III III III	3,5 3 2 2
21	T.M. Joint surgery	PA, A	II, I	1
22	Jaw resections	PA, A	III, II	3,3
23	Onco surgery	A,O	III, III	3,3
24	Micro vascular anastomosis	A,O	III	5,10
25	Cleft lip & palate	PA, A	II,III	10,15
26	Distraction osteogenesis	A,O	II,III	2,3
27	Rhinoplasty	A,O	III	3,5
28	Access osteotomies and base of skull surgeries	A,O	III	1,3

ORAL AND MAXILLOFACIAL SURUGERY
PAPER – I

APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and oral Pathology and Microbiology and Pharmacology

APPLIED ANATOMY:
1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and it's applied aspects

9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, Paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

PHYSIOLOGY:

1. Nervous system
- Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

2. Blood
- Composition
- Haemostasis, various blood dyscrasias and management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation
- Blood grouping, transfusing procedures.

3. Digestive system
- Saliva – composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. Respiration
- Control of ventilation, anoxia, asphyxia, artificial respiration
- Hypoxia – types and management

5. Cardio Vascular System
- Cardiac cycle,
- Shock
- Heart sounds,
- Blood pressure,
- Hypertension:

6. Endocrinology
- General endocrinal activity and disorder relating to thyroid gland,
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
- Metabolism of calcium

7. Nutrition
- General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure,
electrolytes, dissociation, oxidation, reduction etc
General composition, of the body
Intermediary metabolism
Carbohydrates, proteins, lipids, and their metabolism

Nucleoproteins, nucleic, acid and nucleotides and their metabolism
Enzymes, vitamins and minerals
Hormones
Body and other fluids
Metabolism of inorganic elements
Detoxification in the body
Antimetabolites.

PATHOLOGY:

1. Inflammation –

- Repair and regeneration, necrosis and gangrene
- Role of component system in acute inflammation,
- Role of arachidonic acid its metabolites in acute inflammation,
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDs in radiation injury and its manifestation:
- Cellular changes in radiation injury and its manifestation:

2. Haemostasis

- Role of endothelium in thrombogenesis,
- Arterial and venous thrombi,
- Disseminated Intravascular coagulation

3. Shock:

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia hyperemia , venous congestion, edema, infarction

4. Chromosomal abnormalities:

- Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X-Syndrome

5. Hypersensitivity:

- Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
- Infection and infective granulomas

6. Neoplasia:

- Classification of tumors.
- Carcinogenesis and carcinogen – chemical, viral and microbial
- Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- Characteristics of benign and malignant tumors

7. Others:

- Sex linked agammaglobulinemia.
- AIDS
- Management of immun deficiency patients, requiring surgical procedures
- De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

8. Oral pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth
- Bacterial, viral and mycotic infection of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances

- Diseases of jawbones and TMJ
- Diseases of blood forming organs in relation to oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

9. Microbiology:

- Immunity
- Knowledge of organisms commonly associated with disease of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and monsiliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures,
- Urine analysis and cultures.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

1. Definition of terminologies used
2. Dosage and made of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotic drugs.
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, Sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C,D, E,K

PAPER-II: Minor Oral Surgery and Trauma

MINOR ORAL SURGERY:

- **PRINCIPLES OF SURGERY:** DEVELOPING A SURGICAL DIAGNOSIS, BASIC NECESSITIES FOR SURGERY, ASEPTIC TECHNIQUE, INCISIONS, FLAP DESIGN TISSUE HANDLING HAEMOSTASIS, DEAD SAPCE MAMAGMENT, DECONTAMINATION AND DEBRIDEMENT, SUTURING, OEDEMA CONTROL, PATIENT GENERAL HEALTH AND NUTRITION.
- **MEDICAL EMERGENCIES:** prevention and management of altered consciousness (syncope orthostatic hypertension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. **EXAMINATION AND DIAGNOSIS:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic of systemic diseases, implications of systemic diseases in surgical patients.
2. **HAEMORRHAGE AND SHOCK:** applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
3. **EXODONTIA:** principles of extraction, indications and contraindications, types of extraction, complication and their management, principles of elevators used in oral surgery.

4. **IMPACTION:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
5. **SURGICAL AIDS TO ERUPTION OF TEETH:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. **TRANSPLANTATION OF TEETH**
7. **SURGICAL ENDODONTICS:** indications and contraindication, diagnosis, procedures of periradicular surgery
8. **PREPROSTHETIC SURGERY :** requirements, types (alvoloplasty, tuberosity reduction mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. **PROCEDURES TO IMPROVE ALVEOR SOFT TISSUES:** hypermobile tissues – operative sclerosing method, equlis fissuratum, frenectomy and frenotomy
10. **INFECTIONS OF HEAD AND NECK:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. **CHRONIC INFECTIONS OF THE JAWS:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. **MAXILLARY SINUS:** maxillary sinusitis – types, pathology, treatment, closure of Oro – antral fistula, Caldwell – luc operation
13. **CYSTS OF THE OROFACIAL REGION:** classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
14. **NEUROLOGY DISORDERS OF THE MAXILLOFACIAL REGION:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **IMPLANTOLOGY:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **ANESTHESIA**

    LOCAL ANESTHESIA:

    Classification of local anesthetic drugs, made of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management.

    GENERAL ANESTHESIA:

    Classification stages of GA, mechanism of action, indications and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA
17. **TRAUMA**
18. **SURGICAL ANATOMY OF HEAD AND NECK.**
19. **ETIOLOGY OF INJURY.**
20. **BASIC PRINCIPLES OF TREATMENT**
21. **PRIMARY CARE:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. **DIAGNOSIS:** clinical, radiological
23. **SOFT TISSUE INJURY OF FACE AND SCALP:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. **DENTO ALVEOALR FRACTURES:** examination and diagnosis, classification, treatment, prevention.
25. **MANDIBULAR FRACTURES:** classification, examination and diagnosis, general principles of treatment, complications and their management
26. **FRACTURES OF ZYGOMATIC COMPLEX:** classification, examination and diagnosis, general principles of treatment, complications and their management.
27. **ORBITAL FRACTURES:** blow out fractures
28. **NASAL FRACTURES**

29. **FRACTURES OF MIDDLE THIRD OF THE FACIAL SKELETON:** emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
30. **OPTHALMIC INJURIES:** minor injuries, non – performing injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
31. **TRAUMATIC INJURIES TO FRONTAL SINUS:** diagnosis, classification, treatment
32. **MAXILLOFACIAL INJURIES IN GENRIATRIC AND PEDIATRIC PATIENTS.**
33. **GUN SHOT WOUNDS AND WAR INJURIES**
34. **OSSEOINTEGRATION IN MAXILLOFACIAL RECONSTRUCTION**
35. **METABOLIC RESPONSE TO TRAUMA:** neuro endocrine responses, inflammatory mediators, clinical implications
36. **HEALING OF TRAUMATIC INJURIES:** soft tissues, bone, cartilage, response of peripheral nerve to injury
37. **NUTRITIONAL CONSIDERATION FOLLOWING TRAUMA.**
38. **TRACHEOSTOMY:** indications and contraindications, procedure, complications and their management.

PAPER – III: MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

Oncology

- Biopsy
- Management of pre – malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, Paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segment osteotomies

- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

Cysts and tumor of oro facial region

- Odontogenic and non-Odontogenic tumors and their management
- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The applications of laser technology in surgical treatment of lesions

Cryosurgery

- Principles, application of cryosurgery in surgical management

Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recountouring, etc.

Craniofacial surgery

- Basic knowledge of development anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies.

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in section IV.

SCHEME OF EXAMINATION:

A. Theory : 400 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the Papers. Distribution of topics for each paper will be as follows:*

PAPER-I : Applied Basic Science: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology
PAPER-II : Minor Oral Surgery and Trauma
PAPER-III : Maxillofacial Surgery
PAPER-IV : Essay

B. Practical / Clinical Examination : 200 Marks

1. Minor Oral Surgery - 100 Marks

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyst enuleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2. (a) One long case - 60 marks
   (b) Two short cases - 20 marks each

C. Viva Voce - 100 marks

i. Viva-Voce examination: 80 marks

All examiners will conduct Viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

3. ORAL & MAXILLOFACIAL SURGERY

OBJECTIVES:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives-

- Knowledge
- Skills
- Attitude
- Communicative skills and ability
- Research

KNOWLEDGE:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature
- To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice of oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the Oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

SKILLS:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

ATTITUDE:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

COMMUNICATION SKILLS:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.

COURSE CONTENT:

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

APPLIED BASIC SCIENCES:

A through knowledge both on theory and principles in general and particularly the basic medical subjects as relevant to the practice of maxillofacial surgery It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

ANATOMY:

Development of face, Para nasal sinuses and associated structures and their anomalies: surgical anatomy of scalp, temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial and facial bones and its surroundings soft tissues, cranial nerves tongue, temporal and infratemporal region, orbits and its contents, muscles of face and neck, Para nasal sinuses, eyelids and nasal septum, teeth, gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagital sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation. Histology of skin, oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

PHYSIOLOGY:

Nervous system- physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition homeostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; Digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia –types and management; CVS – cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology – metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, entrails nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism-body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes & treatment of acidosis and alkalosis.

BIOCHEMISTRY

General principles governing the various biological principles of the body such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins minerals and antimetabolites.

GENERAL PATHOLOGY:

Inflammation – Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; Wound management – Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; homeostasis – role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogens and Carcinogenesis, grading and staging to tumors, various laboratory investigation.

GENERAL MICROBIOLOGY:

Immunity, Hepatitis B and its prophylaxis, knowledge of organisms, commonly associated with disease of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

ORAL PATHOLOGY AND MICROBIOLOGY:

Developmental disturbances of oral and para structures, regressive changes of teeth, bacterial, viral, mycotic, infection of oral cavity, Dental caries , diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases & role of laboratory investigation in oral surgery.

PHARMACOLOGY AND THERAPEUTICS:

Definition of terminology used, pharmacokinetics and pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitivity reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, Vitamins A,B-complex, C,D,E,K.

COMPUTER SCIENCE:

Use of computers in surgery, components of computer and its use in practice, principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent / medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients – understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement.

- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery – understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery – developing a surgical diagnosis, basis necessities for surgery, aseptic technique, incisions, tissue handling, homeostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Post operative care – Concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management – Would healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction / management – Anatomy of the airway, principles of keeping the airway patent, mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain, Facial palsy and nerve injuries.
- Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- General patient management – competence in physical assessment of patient of surgery competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre – Prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- Neurological disorders of maxillofacial region – diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries

- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- Assessment of trauma – multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction onteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck, anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the managements of craniofacial anomalies.
- Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology – principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

ALLIED SPECIALITES:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal disease, Blood dyscrasias
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT / Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseased and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesia: Evaluation of patient for GA technique and management of emergencies, various IV sedation techniques

Academic Clinical programme (*applicable for all three years):*

- **Seminars** to presented & attended once in a week.
- **Journal clubs** (departmental and interdepartmental) to be conducted once in fifteen days.
- **Departmental and interdepartmental** discussions to be held once in a mouth.
- Minimum 2 **scientific papers** should be presented.
- Every candidate shall maintain a logbook to record his / her work or participation in all activities such as journal clubs, seminars, CDE programs etc. This work shall be scrutinized and certified by the head of the department and head of the institution and presented to the university every year

YEAR BY YEAR PROGRAMME:

I Year

First term:

Dissection, basic, sciences, basic computer science, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T. and ward rounds, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Second term (rotation and postings in other department):

Oncology	- 2 months
Emergency	- 1 month
General medicine	-15 days
General surgery / anesthesia	- 15 days
Ophthalmology	- 15 days
Neurology	- 15 days
ENT	- 15 days
Orthopedic	- 15 days

Examination of basic science – one paper of three hours duration to be conducted by the college

II Year

Minor oral surgery and higher surgical training

Submission of library assignment by the end of first term

Examination on minor oral surgical procedures – one paper of three hours duration to be conducted by the college

III Year

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final examination to the university

Examination of three hours duration three months before the final examination to be conducted by the college It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by MUHS in the revised ordinance governing MDS degree course

Final examination at the end of the third year:

Sl. No	Procedure	Category	Year	Number
1	Injection I.M. and I.V.	PI	I,II	50,20
2	Minor suturing and removal of sutures	PI	I	N, A
3	Incision & drainage of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I,II	20,10

6	Pre prosthetic surgery- a) corrective procedures b) ridge extension c) ridge reconstruction	PI PI PA A	 I I,II II.III	 15 3 3
7	OAF closure	PI, PA	I, II	3,2
8	Cyst enuleation	PI, PA	I, II	5,5
9	Mandibular fractures	PI, PA	I.II	10,10
10	Peri – apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I.II	N,A
12	Biopsy procedures	PI	I,II	N,A
13	Removal of salivary calculi	PA	I, II	3,5
14	Benign tumors	PA, A	II, III	3,3
15	Mid face fractures	PA, A	II, III	3,5
16	Implants	PA, A	II, III	5,5
17	Tracheotomy	PA,A	II, III	2,2
18	Skin grafts	PA	III	3,5
19	Orthognathic surgery	PA, A	II, III	3
20	Harvesting bone & cartilage grafts a) Iliac crest b) Rib c) Calvarial d) Fibula	 PA A A A,O	 III III III III	3,5 3 2 2
21	T.M. Joint surgery	PA, A	II, I	1
22	Jaw resections	PA, A	III, II	3,3
23	Onco surgery	A,O	III, III	3,3
24	Micro vascular anastomosis	A,O	III	5,10
25	Cleft lip & palate	PA, A	II,III	10,15
26	Distraction osteogenesis	A,O	II,III	2,3
27	Rhinoplasty	A,O	III	3,5
28	Access osteotomies and base of skull surgeries	A,O	III	1,3

ORAL AND MAXILLOFACIAL SURUGERY
PAPER – I

APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and oral Pathology and Microbiology and Pharmacology

APPLIED ANATOMY:
1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and it's applied aspects

9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, Paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

PHYSIOLOGY:

1. Nervous system
- Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

2. Blood
- Composition
- Haemostasis, various blood dyscrasias and management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation
- Blood grouping, transfusing procedures.

3. Digestive system
- Saliva – composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. Respiration
- Control of ventilation, anoxia, asphyxia, artificial respiration
- Hypoxia – types and management

5. Cardio Vascular System
- Cardiac cycle,
- Shock
- Heart sounds,
- Blood pressure,
- Hypertension:

6. Endocrinology
- General endocrinal activity and disorder relating to thyroid gland,
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
- Metabolism of calcium

7. Nutrition
- General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure,
electrolytes, dissociation, oxidation, reduction etc
General composition, of the body
Intermediary metabolism
Carbohydrates, proteins, lipids, and their metabolism

Nucleoproteins, nucleic, acid and nucleotides and their metabolism
Enzymes, vitamins and minerals
Hormones
Body and other fluids
Metabolism of inorganic elements
Detoxification in the body
Antimetabolites.

PATHOLOGY:

1. Inflammation –

- Repair and regeneration, necrosis and gangrene
- Role of component system in acute inflammation,
- Role of arachidonic acid its metabolites in acute inflammation,
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDs in radiation injury and its manifestation:
- Cellular changes in radiation injury and its manifestation:

2. Haemostasis

- Role of endothelium in thrombogenesis,
- Arterial and venous thrombi,
- Disseminated Intravascular coagulation

3. Shock:

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia hyperemia , venous congestion, edema, infarction

4. Chromosomal abnormalities:

- Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X-Syndrome

5. Hypersensitivity:

- Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
- Infection and infective granulomas

6. Neoplasia:

- Classification of tumors.
- Carcinogenesis and carcinogen – chemical, viral and microbial
- Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- Characteristics of benign and malignant tumors

7. Others:

- Sex linked agammaglobulinemia.
- AIDS
- Management of immun deficiency patients, requiring surgical procedures
- De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

8. Oral pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth
- Bacterial, viral and mycotic infection of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances

- Diseases of jawbones and TMJ
- Diseases of blood forming organs in relation to oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

9. Microbiology:

- Immunity
- Knowledge of organisms commonly associated with disease of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and monsiliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures,
- Urine analysis and cultures.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

1. Definition of terminologies used
2. Dosage and made of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotic drugs.
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, Sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C,D, E,K

PAPER-II: Minor Oral Surgery and Trauma

MINOR ORAL SURGERY:

- **PRINCIPLES OF SURGERY:** DEVELOPING A SURGICAL DIAGNOSIS, BASIC NECESSITIES FOR SURGERY, ASEPTIC TECHNIQUE, INCISIONS, FLAP DESIGN TISSUE HANDLING HAEMOSTASIS, DEAD SAPCE MAMAGMENT, DECONTAMINATION AND DEBRIDEMENT, SUTURING, OEDEMA CONTROL, PATIENT GENERAL HEALTH AND NUTRITION.
- **MEDICAL EMERGENCIES:** prevention and management of altered consciousness (syncope orthostatic hypertension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. **EXAMINATION AND DIAGNOSIS:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic of systemic diseases, implications of systemic diseases in surgical patients.
2. **HAEMORRHAGE AND SHOCK:** applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
3. **EXODONTIA:** principles of extraction, indications and contraindications, types of extraction, complication and their management, principles of elevators used in oral surgery.

4. **IMPACTION:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
5. **SURGICAL AIDS TO ERUPTION OF TEETH:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. **TRANSPLANTATION OF TEETH**
7. **SURGICAL ENDODONTICS:** indications and contraindication, diagnosis, procedures of periradicular surgery
8. **PREPROSTHETIC SURGERY :** requirements, types (alvoloplasty, tuberosity reduction mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. **PROCEDURES TO IMPROVE ALVEOR SOFT TISSUES:** hypermobile tissues – operative sclerosing method, equlis fissuratum, frenectomy and frenotomy
10. **INFECTIONS OF HEAD AND NECK:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. **CHRONIC INFECTIONS OF THE JAWS:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. **MAXILLARY SINUS:** maxillary sinusitis – types, pathology, treatment, closure of Oro – antral fistula, Caldwell – luc operation
13. **CYSTS OF THE OROFACIAL REGION:** classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
14. **NEUROLOGY DISORDERS OF THE MAXILLOFACIAL REGION:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **IMPLANTOLOGY:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **ANESTHESIA**

    LOCAL ANESTHESIA:

    Classification of local anesthetic drugs, made of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management.

    GENERAL ANESTHESIA:

    Classification stages of GA, mechanism of action, indications and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA
17. **TRAUMA**
18. **SURGICAL ANATOMY OF HEAD AND NECK.**
19. **ETIOLOGY OF INJURY.**
20. **BASIC PRINCIPLES OF TREATMENT**
21. **PRIMARY CARE:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. **DIAGNOSIS:** clinical, radiological
23. **SOFT TISSUE INJURY OF FACE AND SCALP:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. **DENTO ALVEOALR FRACTURES:** examination and diagnosis, classification, treatment, prevention.
25. **MANDIBULAR FRACTURES:** classification, examination and diagnosis, general principles of treatment, complications and their management
26. **FRACTURES OF ZYGOMATIC COMPLEX:** classification, examination and diagnosis, general principles of treatment, complications and their management.
27. **ORBITAL FRACTURES:** blow out fractures
28. **NASAL FRACTURES**

29. **FRACTURES OF MIDDLE THIRD OF THE FACIAL SKELETON:** emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
30. **OPTHALMIC INJURIES:** minor injuries, non – performing injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
31. **TRAUMATIC INJURIES TO FRONTAL SINUS:** diagnosis, classification, treatment
32. **MAXILLOFACIAL INJURIES IN GENRIATRIC AND PEDIATRIC PATIENTS.**
33. **GUN SHOT WOUNDS AND WAR INJURIES**
34. **OSSEOINTEGRATION IN MAXILLOFACIAL RECONSTRUCTION**
35. **METABOLIC RESPONSE TO TRAUMA:** neuro endocrine responses, inflammatory mediators, clinical implications
36. **HEALING OF TRAUMATIC INJURIES:** soft tissues, bone, cartilage, response of peripheral nerve to injury
37. **NUTRITIONAL CONSIDERATION FOLLOWING TRAUMA.**
38. **TRACHEOSTOMY:** indications and contraindications, procedure, complications and their management.

PAPER – III: MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

Oncology

- Biopsy
- Management of pre – malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, Paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segment osteotomies

- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

Cysts and tumor of oro facial region

- Odontogenic and non-Odontogenic tumors and their management
- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The applications of laser technology in surgical treatment of lesions

Cryosurgery

- Principles, application of cryosurgery in surgical management

Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recountouring, etc.

Craniofacial surgery

- Basic knowledge of development anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies.

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in section IV.

SCHEME OF EXAMINATION:

A. Theory : 400 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the Papers. Distribution of topics for each paper will be as follows:*

PAPER-I : Applied Basic Science: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology
PAPER-II : Minor Oral Surgery and Trauma
PAPER-III : Maxillofacial Surgery
PAPER-IV : Essay

B. Practical / Clinical Examination : 200 Marks

1. Minor Oral Surgery - 100 Marks

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyst enuleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2. (a) One long case - 60 marks
   (b) Two short cases - 20 marks each

C. Viva Voce - 100 marks

i. Viva-Voce examination: 80 marks

All examiners will conduct Viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

3. ORAL AND MAXILLOFACIAL SURGE RY

Objectives:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives

- Knowledge
- Skills
- Attitude
- Communicative skills and ability

Knowledge:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature.
- To have understood the general surgical principles like pre and post surgical management particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice or oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

Skills:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

Attitude:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Wiling to adopt new and techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when

required.

Communication skills:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time.
- Develop the ability to communicate with professional colleagues
- Develop ability to teach undergraduates.

Course content:

The program outlines addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgeon competently and have the ability to intelligently pursue further apprenticeship towards advance Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

Applied Basic Sciences:

A thorough knowledge both on theory and principles in general and in particular the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in bio-statistics. Epidemiology. research methodology, nutrition and computers.

- **Anatomy**

Development of face, paranasal sinuses and associated structures and their anomalies; surgical anatomy of scalp temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial facial bones and its surrounding soft tissues, cranial nerves tongue, stemporal and infratemporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum teeth gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagital sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation, Histology of skin oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

- **Physiology**

  Nervous system-physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia - types and management; CVS - cardiac cycle, shock, heart sounds. blood pressure, hypertension; Endocrinology-metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic, responses to stress, need for nutritional support, entrails nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism - the body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes for treatment of acidosis and alkalosis.

- **Biochemistry**

  General principles governing the various biological principles of the body, such as osmotic; pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.

- **General Pathology**

  Inflammation - Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; wound management - Wound healing factors influencing healing; properties if suture materials, appropriate uses of sutures; hemostasis -role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogenesis, grading and staging of tumors, various laboratory investigation.

- **General microbiology**

  Immunity, Hepatitis B and its prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques - Smears and cultures, urine analysis and culture.

- **Oral pathology and microbiology:**

  Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, dental caries, diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like the cysts odontogenic infection, benign, malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases, role of laboratory investigation in oral surgery.

- **Pharmacology and therapeutics:**

  Definition of terminology used, pharmacokinetics and pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitive reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, vitamins A, B-complex, C,D,E,K.

- **Computer science:**

  Use of computers in surgery, components of computer and its use in practice-principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent/medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients - understanding clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- Principles of surgical audit - understanding the audit of process and outcome. Methods adopted for the same Basic statistics.
- Principles of evidence bases surgery - understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery - developing a surgical diagnosis, basic necessities for surgery, aseptic techniques, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies - Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup - Concept of fitnes-s for surgery; basic medical work up; work up in

special situation like diabetes renal failure, cardiac and respiratory illness; risk stratification

- Surgical sutures, drains
- Post operative care - concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardiovascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management - Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections - Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV Infection and cross infection.
- Airway obstruction / management - Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Orpharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anaesthesia - stages of Anaesthesia, pharmacology of inhalation, intravenous and regional anaesthetics, muscle relaxants.
- Facial pain; Facial palsy and nerve injuries.
- Pain control - acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia.
- General patient management - competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anaesthesia.
- Clinical oral surgery - all aspects of dento alveolar surgery
- Pre-prosthetic surgery - A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders - TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting -Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting. Reconstructive oral and maxillofacial surgery - hard tissue and soft tissue reconstruction.
- Anaesthesia - Stages of anaesthesia, pharmacology of inhalation, intravenous and regional anaesthesia, muscle relaxants.
- Cyst and tumors of head and neck region and their management - including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesion of jaw lesions.
- Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries.
- Maxillofacial trauma - basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive, management including polytrauma patients.
- Assessment of trauma-multiple injuries patients/closed abdominal and chest injuries/penetrating injuries, pelvic fractures, urological injuries, vascular injuries.

- Orthognathic surgery -The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery - The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries - Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques In the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery - detailed knowledge of structures of facial neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc. surgical management of post acne scaring, face lift; blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery - basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes etc. Current concepts in the management of craniofacial anomalies.
- Head and neck oncology - understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology - principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

Allied specialties:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases endocrinal and metabolic respiratory and renal diseases, Blood dyscrasias.
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro - surgery: Evaluation of a patient with head injury, examination of various Neuro-surgical procedures
- ENT/Ophthalmology: Examination of ear, nose throat. exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures
- Orthopaedic: basic principles of orthopaedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound

- Anesthesia: Evaluation of patients for GA techniques and management of emergencies, various IV sedation techniques.

Academic Clinical programme *(applicable for all three years):*

- Seminars to be presented attended once in a week.
- Journal clubs (departmental and interdepartmental) to be conducted once in fifteen days.
- Departmental and Interdepartmental discussions to be held once in a month.
- Minimum 2 scientific papers should be presented.
- Every candidate shall maintain a logbook to record his/hers wok or participation in all activities such as journal clubs, seminars, CDE programs etc. this work shall be scrutinized and certified by the head of the departmental and head of the institution and presented to the university every year.

Year by year programme:

I Year

First term:

Dissection, basic sciences, basic computer sciences, exodontias, seminars on basic topics, selection of dissertation topic, library assignment topic. attending O.T and ward rounds, preparation of synopses and its submission within the six months after admission to the university as per calendar of events.

Second term (rotation and postings in other department):

Oncology	- 2 months
Emergency	- 1 month
General medicine	- 15 days
General surgery / anaesthesia	- 15 days
Ophthalmology	- 15 days
Neurology	- 15 days
ENT	- 15 days
Orthopaedic	- 15 days

Examination of basic sciences - one paper of three hours duration to be conducted by the college.

II Year

Minor oral surgery and higher surgical training.

Submission of library assignment by the end of first term.

Examination on minor oral surgical procedures - one paper of three hours duration to be conducted by the college.

III year

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final

examination to the university.

Examination of three hours duration three months before the final examination to be conducted by the college. It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by MUHS in the revised ordinance governing MDS degree course.

Final examination at the end of the third year.

Sl. No.	Procedure	Category	Year	Number
1	Injection I.M. and I.V.	PI	I, II	50, 20
2	Minor suturing and removal of sutures	P I	I	NA
3	Incision & drainage of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I, II	20, 10
6	Pre prosthetic surgery -	PI		
	a) corrective procedures	PI	I	15
	b) ridge extension	PA	I, II	3
	c) ridge reconstruction	A	II, III	3
7	OAF closure	PI, PA	I, II	3, 2
8	Cyst enuleation	PI, PA	I, II	5, 5
9	Mandibular fractures	PI, PA	I, II	10,10
10	Peri-apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I, II	NA
12	Biopsy procedures	PI	I, II	NA
13	Removal of salivary calculi	PA	I, II	3, 5
14	Benign tumors	PA, A	II, III	3, 3
15	Mid face fractures	PA, A	II, III	3, 5
16	Implants	PA, A	II. III	5, 5
17	Tracheotomy	PA, A	II, III	2, 2
18	Skin grafts	PA	III	3, 5
19	Orthognathic surgery	PA, A	II, III	3
20	Harvesting bone & cartilage grafts			
	a) Iliac crest	PA	III	
	b) Rib	A	III	3
	c) Calvarial	A	III	2
	d) Fibula	A, O	III	2
21	T.M. Joint surgery	PA, A	II, I	1
22	Jaw resections	PA, A	III, II	3, 3
23	Onco surgery	A, O	III, III	3, 3
24	Micro vascular anastomosis	A, O	III	5, 10
25	Cleft lip& palate	PA, A	II, III	10, 15

26	Distraction osteogenesis	A, O	II, III	2, 3
27	Rhinoplasty	A, O	III	3, 5
28	Access osteotomies and base of skull surgeries	A, O	III	1, 3

ORAL AND MAXILLOFACIAL SURGERY

Paper I : Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology.

Applied Anatomy

1. Surgical anatomy of the scalp temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of the head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and its applied aspects
9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

Physiology:

1. Nervous system

- Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

2. Blood

- Composition
- Haemostasis, various blood dyscrasias and its management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation.

- Blood grouping, transfusing procedures.

3. Digestive system

- Saliva - composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. Respiration

- Control of ventilation anoxia, asphyxia, artificial respiration
- Hypoxia - types and management

5. Cardio Vascular System

- Cardiac cycle
- Shock
- Heart sounds
- Blood pressure
- Hypertension

6. Endocrinology

- General endocrinal activity and disorder relating to thyroid gland
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads
- Metabolism of calcium

7. Nutrition

- General principles balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus
- Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

Biochemistry

- General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
- General composition of the body
- Intermediary metabolism
- Carbohydrates, proteins, lipids, and their metabolism
- Nucleoproteins, nucleic acid and nucleotides and their metabolism
- Enzymes, vitamins and minerals
- Hormones
- Body and other fluids
- Metabolism of inorganic elements.
- Detoxification in the body.

- Antimetabolites.

Pathology:

1. **Inflammation**
   - Repair and regeneration, necrosis and gangrene
   - Role of component system in acute inflammation
   - Role of arachidonic acid and its metabolites in acute inflammation
   - Growth factors in acute inflammation
   - Role of molecular events in cell growth and intercellular signalling cell surface receptors
   - Role of NSAIDs in inflammation
   - Cellular changes in radiation injury and its manifestation
2. **Haemostasis**
   - Role of endothelium in thrombogenisis
   - Arterial and venous thrombi
   - Disseminated Intravascular coagulation
3. **Shock:**
   - Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
   - Circulatory disturbances, ischemia hyperemia, venous congestion, edema, infarction
4. **Chromosomal abnormalities:**
   - Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X-Syndrome
5. **Hypersensitivity:**
   - Anaphylaxis, type 2 hypersensitivity, type 3 sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
   - Infection and infective granulomas.
6. **Neoplasia:**
   - Classification of tumors
   - Carcinogenesis and carcinogen - chemical, viral and microbial
   - Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
   - Characteristics of benign and malignant tumors.
7. **Others:**
   - Sex linked a gamma globulinemia
   - AIDS
   - Management of immune deficiency patients requiring surgical procedures
   - De George Syndrome

- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis.

8. Oral Pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth
- Bacterial, viral and mycotic infections of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances
- Diseases of jawbones and TMJ
- Diseases of blood and blood forming organs in relation ot oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

9. Microbiology:

- Immunity
- Knowledge of organisms commonly associated with disease of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures
- Urine analysis and cultures.

Applied Pharmacology and Therapeutics:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitive reactions.
5. Drugs acting on the CNS
6. General and local anaesthetics, hypnotics, analeptics, and tranquillizers
7. Chemotherapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics

13. Vitamins A, B-complex, C, D, E, K.

Paper II: Minor Oral Surgery and Trauma

MINOR ORAL SURGERY

- **Principles of Surgery:** Developing a surgical diagnosis, basic necessities for Surgery, Aseptic Technique, Incisions, Flap Design Tissue handling, Haemostasis, dead space management, decontamination and debridment, Suturing, Oedema control, patient general health and nutrition.
- **Medical Emergencies:** prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. **Examination and Diagnosis:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
2. **Haemorrhage and Shock:** applied physiology, clinical abnormalities coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management, secondary hemorrhage, shock.
3. **Exodontia:** principles of extraction, indications and contraindications types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
4. **Impaction:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management,
5. **Surgical Aids to Eruption Of Teeth:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. **Transplantation of Teeth**
7. **Surgical Endodontics:** indications and contraindications, diagnosis, procedures of periradicular surgery
8. **Precedures To Impove Alveolar soft tissues:** requirements, types, (alveloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. **Procedures to Improve Alveloar soft Tissues:** hypermobile tissues – operative/ sclerosing method, epulis fissuratum, frenectomy and frenotomy
10. **Infection of Head and Neck:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavemous sinus thrombosis.
11. **Chronic Infections of the Jaws:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. **Maxillary Sinus:** maxillary sinusitis - types, pathology, treatment, closure of Oro -antral fistula, Caldwell - luc operation.
13. **Cysts of the Orofacial region:** classification, diagnosis, management of OKC, dentigerous, radicular non Odontogenic, ranula.

14. **Neurological Disorders of the maxillofacial region:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **Implantlogy:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **Anaesthesia**

Local Anaesthesia: classification of local anaesthetic drugs, modes of action indications and contra indications, advantages and disadvantages, techniques, complications and their management.

General Anaesthesia: classification, stages of GA, mechanism of action, indications, and contraindications, advantages and disadvantages, post anaesthetic complications and emergencies, anaesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA.

17. **Trauma**
18. **Surgical Anatomy of head and Neck**
19. **Etiology of Injury**
20. **Basic Principles of Treatment**
21. **Primary Care:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. **Diagnosis:** clinical, radiological
23. **Soft Tissue Injury of Face and Scalp:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. **Dento Alveoalr Fractures:** examination and diagnosis, classification, treatment, prevention.
25. **Mandibular Fractures:** classification, examination and diagnosis. general principles of treatment, complications and their management
26. **Fracture of Zygomatic Complex:** classification, examination and diagnosis, general principles of treatment, complications and their management.
27. **Orbital Fractures:** blow out fractures
28. **Nasal Fractures**
29. **Fractures of Middle third of the Facial Skeleton:** emergency care, fracture of maxilla and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
30. **Opthalmic Injuries:** minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
31. **Traumatic Injuries to Frontal sinus:** diagnosis, classification, treatment
32. **Maxillofacial injuries in Geriatric and paediatric Patients**
33. **Gun shot wounds and War Injuries**
34. **Osseointegration in Maxillofacial,Reconstruction**
35. **Matabolic response to Trauma:** neuro endocrine responses, inflammatory mediators, clinical implications
36. **Healing of Traumatic Injuries:** soft tissues, bone, cartilage. response of peripheral nerve to

injury

37. **Nutritional Consideration following Trauma**
38. **Tracheostomy:** indications and contraindications, procedure, complications and their management.

PAPER III : MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland - developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy - different procedures
- Various approaches to TMJ
- Recurrent dislocations - Etiology and Management

Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radial Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis

- Model surgery Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis
- Cysts and tumor of oro facial region
- Odontogenic and non-Odontogenic tumors and their management
- Giant lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The application of laser technology in surgical treatment of lesions Cryosurgery
- Principles, applications of cryosurgery in surgical management Cleft lip and palate surgery
- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone. Eyelids external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc.

Craniofacial surgery

- Basic knowledge of developmental anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies

Monitoring Learning Progress

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

3. ORAL & MAXILLOFACIAL SURGERY

OBJECTIVES:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives-

- Knowledge
- Skills
- Attitude
- Communicative skills and ability
- Research

KNOWLEDGE:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature
- To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice of oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the Oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

SKILLS:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

ATTITUDE:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

COMMUNICATION SKILLS:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.

COURSE CONTENT:

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

APPLIED BASIC SCIENCES:

A through knowledge both on theory and principles in general and particularly the basic medical subjects as relevant to the practice of maxillofacial surgery It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

ANATOMY:

Development of face, Para nasal sinuses and associated structures and their anomalies: surgical anatomy of scalp, temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial and facial bones and its surroundings soft tissues, cranial nerves tongue, temporal and infratemporal region, orbits and its contents, muscles of face and neck, Para nasal sinuses, eyelids and nasal septum, teeth, gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagital sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation. Histology of skin, oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

PHYSIOLOGY:

Nervous system- physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition homeostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; Digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia –types and management; CVS – cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology – metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, entrails nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism-body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes & treatment of acidosis and alkalosis.

BIOCHEMISTRY

General principles governing the various biological principles of the body such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins minerals and antimetabolites.

GENERAL PATHOLOGY:

Inflammation – Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; Wound management – Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; homeostasis – role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogens and Carcinogenesis, grading and staging to tumors, various laboratory investigation.

GENERAL MICROBIOLOGY:

Immunity, Hepatitis B and its prophylaxis, knowledge of organisms, commonly associated with disease of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

ORAL PATHOLOGY AND MICROBIOLOGY:

Developmental disturbances of oral and para structures, regressive changes of teeth, bacterial, viral, mycotic, infection of oral cavity, Dental caries , diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases & role of laboratory investigation in oral surgery.

PHARMACOLOGY AND THERAPEUTICS:

Definition of terminology used, pharmacokinetics and pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitivity reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, Vitamins A,B-complex, C,D,E,K.

COMPUTER SCIENCE:

Use of computers in surgery, components of computer and its use in practice, principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent / medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients – understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement.

- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery – understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery – developing a surgical diagnosis, basis necessities for surgery, aseptic technique, incisions, tissue handling, homeostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Post operative care – Concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management – Would healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction / management – Anatomy of the airway, principles of keeping the airway patent, mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain, Facial palsy and nerve injuries.
- Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- General patient management – competence in physical assessment of patient of surgery competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre – Prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- Neurological disorders of maxillofacial region – diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries

- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- Assessment of trauma – multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction onteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck, anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the managements of craniofacial anomalies.
- Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology – principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

ALLIED SPECIALITES:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal disease, Blood dyscrasias
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT / Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseased and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesia: Evaluation of patient for GA technique and management of emergencies, various IV sedation techniques

Academic Clinical programme (*applicable for all three years):*

- **Seminars** to presented & attended once in a week.
- **Journal clubs** (departmental and interdepartmental) to be conducted once in fifteen days.
- **Departmental and interdepartmental** discussions to be held once in a mouth.
- Minimum 2 **scientific papers** should be presented.
- Every candidate shall maintain a logbook to record his / her work or participation in all activities such as journal clubs, seminars, CDE programs etc. This work shall be scrutinized and certified by the head of the department and head of the institution and presented to the university every year

YEAR BY YEAR PROGRAMME:

I Year

First term:

Dissection, basic, sciences, basic computer science, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T. and ward rounds, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Second term (rotation and postings in other department):

Oncology	- 2 months
Emergency	- 1 month
General medicine	-15 days
General surgery / anesthesia	- 15 days
Ophthalmology	- 15 days
Neurology	- 15 days
ENT	- 15 days
Orthopedic	- 15 days

Examination of basic science – one paper of three hours duration to be conducted by the college

II Year

Minor oral surgery and higher surgical training

Submission of library assignment by the end of first term

Examination on minor oral surgical procedures – one paper of three hours duration to be conducted by the college

III Year

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final examination to the university

Examination of three hours duration three months before the final examination to be conducted by the college It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by MUHS in the revised ordinance governing MDS degree course

Final examination at the end of the third year:

Sl. No	Procedure	Category	Year	Number
1	Injection I.M. and I.V.	PI	I,II	50,20
2	Minor suturing and removal of sutures	PI	I	N, A
3	Incision & drainage of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I,II	20,10

6	Pre prosthetic surgery- a) corrective procedures b) ridge extension c) ridge reconstruction	PI PI PA A	 I I,II II.III	 15 3 3
7	OAF closure	PI, PA	I, II	3,2
8	Cyst enuleation	PI, PA	I, II	5,5
9	Mandibular fractures	PI, PA	I.II	10,10
10	Peri – apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I.II	N,A
12	Biopsy procedures	PI	I,II	N,A
13	Removal of salivary calculi	PA	I, II	3,5
14	Benign tumors	PA, A	II, III	3,3
15	Mid face fractures	PA, A	II, III	3,5
16	Implants	PA, A	II, III	5,5
17	Tracheotomy	PA,A	II, III	2,2
18	Skin grafts	PA	III	3,5
19	Orthognathic surgery	PA, A	II, III	3
20	Harvesting bone & cartilage grafts a) Iliac crest b) Rib c) Calvarial d) Fibula	 PA A A A,O	 III III III III	3,5 3 2 2
21	T.M. Joint surgery	PA, A	II, I	1
22	Jaw resections	PA, A	III, II	3,3
23	Onco surgery	A,O	III, III	3,3
24	Micro vascular anastomosis	A,O	III	5,10
25	Cleft lip & palate	PA, A	II,III	10,15
26	Distraction osteogenesis	A,O	II,III	2,3
27	Rhinoplasty	A,O	III	3,5
28	Access osteotomies and base of skull surgeries	A,O	III	1,3

ORAL AND MAXILLOFACIAL SURUGERY
PAPER – I

APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and oral Pathology and Microbiology and Pharmacology

APPLIED ANATOMY:
1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and it's applied aspects

9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, Paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

PHYSIOLOGY:

1. Nervous system
- Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

2. Blood
- Composition
- Haemostasis, various blood dyscrasias and management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation
- Blood grouping, transfusing procedures.

3. Digestive system
- Saliva – composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. Respiration
- Control of ventilation, anoxia, asphyxia, artificial respiration
- Hypoxia – types and management

5. Cardio Vascular System
- Cardiac cycle,
- Shock
- Heart sounds,
- Blood pressure,
- Hypertension:

6. Endocrinology
- General endocrinal activity and disorder relating to thyroid gland,
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
- Metabolism of calcium

7. Nutrition
- General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure,
electrolytes, dissociation, oxidation, reduction etc
General composition, of the body
Intermediary metabolism
Carbohydrates, proteins, lipids, and their metabolism

Nucleoproteins, nucleic, acid and nucleotides and their metabolism
Enzymes, vitamins and minerals
Hormones
Body and other fluids
Metabolism of inorganic elements
Detoxification in the body
Antimetabolites.

PATHOLOGY:

1. Inflammation –

- Repair and regeneration, necrosis and gangrene
- Role of component system in acute inflammation,
- Role of arachidonic acid its metabolites in acute inflammation,
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDs in radiation injury and its manifestation:
- Cellular changes in radiation injury and its manifestation:

2. Haemostasis

- Role of endothelium in thrombogenesis,
- Arterial and venous thrombi,
- Disseminated Intravascular coagulation

3. Shock:

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia hyperemia , venous congestion, edema, infarction

4. Chromosomal abnormalities:

- Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X-Syndrome

5. Hypersensitivity:

- Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
- Infection and infective granulomas

6. Neoplasia:

- Classification of tumors.
- Carcinogenesis and carcinogen – chemical, viral and microbial
- Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- Characteristics of benign and malignant tumors

7. Others:

- Sex linked agammaglobulinemia.
- AIDS
- Management of immun deficiency patients, requiring surgical procedures
- De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

8. Oral pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth
- Bacterial, viral and mycotic infection of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances

- Diseases of jawbones and TMJ
- Diseases of blood forming organs in relation to oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

9. Microbiology:

- Immunity
- Knowledge of organisms commonly associated with disease of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and monsiliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures,
- Urine analysis and cultures.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

1. Definition of terminologies used
2. Dosage and made of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotic drugs.
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, Sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C,D, E,K

PAPER-II: Minor Oral Surgery and Trauma

MINOR ORAL SURGERY:

- **PRINCIPLES OF SURGERY:** DEVELOPING A SURGICAL DIAGNOSIS, BASIC NECESSITIES FOR SURGERY, ASEPTIC TECHNIQUE, INCISIONS, FLAP DESIGN TISSUE HANDLING HAEMOSTASIS, DEAD SAPCE MAMAGMENT, DECONTAMINATION AND DEBRIDEMENT, SUTURING, OEDEMA CONTROL, PATIENT GENERAL HEALTH AND NUTRITION.
- **MEDICAL EMERGENCIES:** prevention and management of altered consciousness (syncope orthostatic hypertension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. **EXAMINATION AND DIAGNOSIS:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic of systemic diseases, implications of systemic diseases in surgical patients.
2. **HAEMORRHAGE AND SHOCK:** applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
3. **EXODONTIA:** principles of extraction, indications and contraindications, types of extraction, complication and their management, principles of elevators used in oral surgery.

4. **IMPACTION:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
5. **SURGICAL AIDS TO ERUPTION OF TEETH:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. **TRANSPLANTATION OF TEETH**
7. **SURGICAL ENDODONTICS:** indications and contraindication, diagnosis, procedures of periradicular surgery
8. **PREPROSTHETIC SURGERY :** requirements, types (alvoloplasty, tuberosity reduction mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. **PROCEDURES TO IMPROVE ALVEOR SOFT TISSUES:** hypermobile tissues – operative sclerosing method, equlis fissuratum, frenectomy and frenotomy
10. **INFECTIONS OF HEAD AND NECK:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. **CHRONIC INFECTIONS OF THE JAWS:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. **MAXILLARY SINUS:** maxillary sinusitis – types, pathology, treatment, closure of Oro – antral fistula, Caldwell – luc operation
13. **CYSTS OF THE OROFACIAL REGION:** classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
14. **NEUROLOGY DISORDERS OF THE MAXILLOFACIAL REGION:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **IMPLANTOLOGY:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **ANESTHESIA**

    LOCAL ANESTHESIA:

    Classification of local anesthetic drugs, made of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management.

    GENERAL ANESTHESIA:

    Classification stages of GA, mechanism of action, indications and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA
17. **TRAUMA**
18. **SURGICAL ANATOMY OF HEAD AND NECK.**
19. **ETIOLOGY OF INJURY.**
20. **BASIC PRINCIPLES OF TREATMENT**
21. **PRIMARY CARE:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. **DIAGNOSIS:** clinical, radiological
23. **SOFT TISSUE INJURY OF FACE AND SCALP:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. **DENTO ALVEOALR FRACTURES:** examination and diagnosis, classification, treatment, prevention.
25. **MANDIBULAR FRACTURES:** classification, examination and diagnosis, general principles of treatment, complications and their management
26. **FRACTURES OF ZYGOMATIC COMPLEX:** classification, examination and diagnosis, general principles of treatment, complications and their management.
27. **ORBITAL FRACTURES:** blow out fractures
28. **NASAL FRACTURES**

29. **FRACTURES OF MIDDLE THIRD OF THE FACIAL SKELETON:** emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
30. **OPTHALMIC INJURIES:** minor injuries, non – performing injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
31. **TRAUMATIC INJURIES TO FRONTAL SINUS:** diagnosis, classification, treatment
32. **MAXILLOFACIAL INJURIES IN GENRIATRIC AND PEDIATRIC PATIENTS.**
33. **GUN SHOT WOUNDS AND WAR INJURIES**
34. **OSSEOINTEGRATION IN MAXILLOFACIAL RECONSTRUCTION**
35. **METABOLIC RESPONSE TO TRAUMA:** neuro endocrine responses, inflammatory mediators, clinical implications
36. **HEALING OF TRAUMATIC INJURIES:** soft tissues, bone, cartilage, response of peripheral nerve to injury
37. **NUTRITIONAL CONSIDERATION FOLLOWING TRAUMA.**
38. **TRACHEOSTOMY:** indications and contraindications, procedure, complications and their management.

PAPER – III: MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

Oncology

- Biopsy
- Management of pre – malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, Paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segment osteotomies

- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

Cysts and tumor of oro facial region

- Odontogenic and non-Odontogenic tumors and their management
- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The applications of laser technology in surgical treatment of lesions

Cryosurgery

- Principles, application of cryosurgery in surgical management

Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recountouring, etc.

Craniofacial surgery

- Basic knowledge of development anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies.

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in section IV.

SCHEME OF EXAMINATION:

A. Theory : 400 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the Papers. Distribution of topics for each paper will be as follows:*

PAPER-I : Applied Basic Science: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology
PAPER-II : Minor Oral Surgery and Trauma
PAPER-III : Maxillofacial Surgery
PAPER-IV : Essay

B. Practical / Clinical Examination : 200 Marks

1. Minor Oral Surgery - 100 Marks

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyst enuleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2. (a) One long case - 60 marks
   (b) Two short cases - 20 marks each

C. Viva Voce - 100 marks

i. Viva-Voce examination: 80 marks

All examiners will conduct Viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

ORTHODONTICS

Objectives

The training programme in Orthodontics is to structure and achieve the following four objectives

Knowledge of

1. The dynamic interaction of biologic processes and mechanical forces acting on they stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics preventive interceptive and corrective
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro - facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

Skills

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacial deformities.
2. To be competent to fabricate and manage the most appropriate appliance -intra or extra oral, removable or fixed, mechanical or functional, and active or passive - for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.

Attitudes:

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to b fostered
3. Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues
4. Willingness to share the knowledge and clinical experience with professional colleagues
5. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

Communication skills

1. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.
2. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialities through various media like correspondence, Internet, e-video, conference, etc. To render the best possible treatment.

Course Content

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specifies, will equip the trainee with skill and knowledge at its completion to be able to practice basic Orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced Orthodontics

Spread of the Curriculum

Six months teaching of basic subjects including completion of pre -clinical exercises 2 ½ years of coverage of all the relevant topics in Orthodontics, clinical training involving treatment of patients and submission of dissertation. These may be divided into blocks of 6 to 8 months duration each, depending on the training policies of each institution.

I. Applied Anatomy

- Prenatal growth of head:

  Stages of embryonic development, origin of head, origin of face, origin of teeth
- Postnatal growth of head:

  Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.
- Bone growth:

  Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone.
- Assessment of growth and development:

  Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.
- Muscles of mastication:

  Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion
- Development of dentition and occlusion:

  Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.
- Assessment of skeletal age

  The carpal bones, carpal x -rays, cervical vertebrae

II. Physiology

- Endocrinology and its disorders

  (Growth hormone, thyroid hormone, parathyroid hormone, ACTH) pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones
- Calcium and its metabolism
- Nutrition-metabolism and their disorders: proteins, carbohydrates, fats, vitamins and minerals.
- Muscle physiology
- Craniofacial Biology: ell adhesion molecules and mechanism of adhesion
- Bleeding disorders in orthodontics: Hemophilia

III. Dental materials:

- Gypsum products: dental plaster, dental stone and their properties, setting reaction etc.
- impression materials: impression materials in general and particularly of alginate impression material
- Acrylics: chemistry, composition physical properties
- Composites: composition types, properties setting reaction
- Banding and bonding cements: Zn (PO4)2, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass lonomer cements
- Wrought metal alloys: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
- Orthodontic arch wires: stainless steel gold, wrought cobalt chromium nickel alloys, alpha & beta titanium alloys
- Elastics: Latex and non-latex elastics.
- Applied physics, Bioengineering and metallurgy.
- Specification and tests methods used for materials used in Orthodontics
- Survey of all contemporary literature and Recent advances in above -mentioned materials.

IV. Genetics:

- Cell structure, DNA, ANA, protein synthesis, cell division
- Chromosomal abnormalities
- Principles of orofacial genetics
- Genetics in malocclusion
- 5 Molecular basis of genetics
- Studies related to malocclusion
- Recent advances in genetics related to malocclusion
- Genetic counseling
- Bioethics and relationship to Orthodontic management of patients.

V. Physical Anthropology:

- Evolutionary development of dentition
- Evolutionary development of jaws

VI. Pathology:

- Inflammation
- Necrosis
- Repair and healing with detailed tissue changes in soft tissue and bone
- Histochemistry
- Patho physiology of healing

VII. Biostatistics:

- Statistical principles
- Data Collection
- Method of presentation
- Method of Summarizing
- Methods of analysis -different tests / errors
- Sampling and Sampling technique
- Experimental models, design and interpretation

- Development of skills for preparing clear concise and cognent scientific abstracts and publication

VIII. Applied research methodology in Orthodontics

- Experimental design
- Animal experimental protocol
- Principles in the development, execution and interpretation of methodologies in Orthodontics
- Critical Scientific appraisal of literature.

IX. Applied Pharmacology:

- Analgesics
- Anti Inflammatory Agents
- Antibiotics
- Antiseptics
- Styptics and Haemostatics
- Astringents
- Disinfectants and Sterilization Agents
- Steroids

X. Orthodontic history:

- Historical perspective,
- Evolution of orthodontic appliances,
- Pencil sketch history of Orthodontic peers
- History of Orthodontics in India

XI. Concepts of occlusion and esthetics:

- Structure and function of all anatomic components of occlusion,
- Mechanics of articulation,
- Recording of masticatory function,
- Diagnosis of Occlusal dysfunction,
- Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

XII. Etiology and Classification of malocclusion:

- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

XIII. Dentofacial Anomalies:

- Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

XIV. Child and Adult Psychology:

- Stages of child development.
- Theories of psychological development.
- Management of child in orthodontic treatment.
- Management handicapped child
- Motivation and Psychological problems related to malocclusion / orthodontics
- Adolescent psychology
- Behavioral psychology and communication

XV. Diagnostic procedures and treatment planning in orthodontics

- Emphasis on the process of data gathering, synthesis and translating it into a treatment plan

- Problem cases - analysis of cases and its management
- Adult cases, handicapped and mentally retarded cases and their special problems
- Critique of treated cases.

Cephalometrics

- Instrumentation
- Image processing
- Tracing and analysis of errors and applications
- Radiation hygiene
- Advanced Cephalometrics techniques
- Comprehensive review of literature
- Video imaging principles and application.
- Computerised Cephometrics / Digitization

XVII. Practice management in Orthodontics

- Economics and dynamics of solo and group practices
- Personal management
- Materials management
- Public relations
- Professional relationship
- Dental ethics and jurisprudence
- Office sterilization procedures
- Community based Orthodontics.

XVIII. Clinical Orthodontics

Myofunctional Orthodontics:

- Basic principles
- Contemporary appliances -their design and manipulation
- Case selection and evaluation of the treatment results
- Review of the current literature.

Dentofacial Orthopedics

- Principles
- Biomechanics
- Appliance design and manipulation
- Review of contemporary literature

Cleft lip and palate rehabilitation:

- Diagnosis and treatment planning
- Mechanotherapy
- Special growth problems of cleft cases
- Speech physiology, pathology and elements of therapy as applied to orthodontics
- Team rehabilitative procedures.

Biology of tooth movement:

- Principles of tooth movement-review
- Review of contemporary literature
- Applied histophysiology of bone, periodontal ligament
- Molecular and ultra cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:

- Orthodontist role in conjoint diagnosis and treatment planning
- Pre and post-surgical Orthodontics
- Participation in actual clinical cases, progress evaluation and post retention study
- Review of current literature

Ortho / Perio / Prostho inter relationship

- Principles of interdisciplinary patient treatment
- Common problems and their management

Basic principles of Mechanotherapy Includes Removable appliances and fixed appliances

- Design
- Construction
- Fabrication
- Management
- Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics

- Caries and periodontal disease prevention
- Oral hygiene measures
- Clinical procedures

Interceptive Orthodontics

- Principles
- Growth guidance
- Diagnosis and treatment planning
- Therapy emphasis on:
    a. Dento-facial problems
    b. Tooth material discrepancies
    c. Minor surgery for Orthodontics

Retention and relapse

- Mechanotherapy - special reference to stability of results with various procedures
- Post retention analysis
- Review of contemporary literature

XIX. Recent advances like:

- Use of implants
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis

Skills:

II. Pre- Clinical Exercises

A general outline of the type of exercises is given here. Every institution can decide the details of exercises under each category.

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.

5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished preferably as per specifications of Tweed or A.B.O.
7. Cephalometric tracing and various Analyses, also superimposition methods
8. Fixed appliance typhodont exercises.

a) Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure to other techniques.

b) Typhodont exercise
   i. Band making
   ii. Bracket positioning and placement
   iii. Different stages in treatment appropriate to technique taught

9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems.
12. Handling of equipments like vacuum forming appliances and hydro solder etc.

First Year

I. Basic Pre-Clinical Exercise Work for the MDS Students:

First 6 Months

1. **Non-appliance exercises**

All the following exercises should be done with 0.7 or 0.8mm wire

Sl. No.	Exercise	No.
1	Straightening of 6” & 8” long wire	1 each
2	Square	1
3	Rectangle	1
4	Triangle of 2” side	1
5	Circle of 2” side	1
6	Bending of 5U's	1
7	Bending of 5V's	1

2. Clasps

Sl. No.	Exercise	No.
1	¾ Clasps	2
2	Full clasps	2
3	Triangular Clasps	2
4	Adam's- clasp -upper molar	2
5	Adam's Clasp -lower molar	2
6	Adam's Clasp -Pre-molar	2
7	Adam's Clasp -Incisor	2
8	Modification of Adam's -With Helix	2
9	Modification of Adam's -With distal extension	2
10	Modification of Adam's -With soldered tube	2
11	Duyzing Clasps on Molars	2
12	Southend Clasp	1

3. LABIAL BOWS

Sl. No.	Exercise	No.
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3	Robert's retractor	1
4	High labial bow-with apron spring's	1
5	Mill's labial bow	1
6	Reverse loop labial bow	1
7	Retention labial bow soldered to Adam's clasp	1
8	Retention labial bow extending distal to second molar	1
9	Fitted labial bow	1
10	Split high labial bow	1

4. SPRINGS

Sl. No.	Exercise	No.
1	Finger spring-mesial movement	2
2	Finger spring-distal movement	2
3	Double cantilever spring	2
4	Flapper spring	2
5	Coffin spring	2
6	T spring	2

5. CANINE RETRACTORS

Sl. No.	Exercise	No.
1	U loop canine retractor	2 PAIRS
2	Helical canine retractor	2 PAIRS
3	Palatal canine retractor	2 PAIRS
4	Self -supporting canine retractor	2 PAIRS
5	Self -supporting canine retractor	2 PAIRS

6. APPLIANCES

Sl. No.	Exercise
1	Hawley's retention appliance with anterior bite plane
2	Upper Hawley's appliance with posterior bite plane
3	Upper expansion appliance with coffin spring
4	Upper expansion appliance with coffin spring
5	Upper expansion appliance witn expansion screw
6	Habit breaking appliance with tongue crib
7	Oral screen & double Oral screen
8	Lip bumper
9	Splint for Bruxism
10	Catalans appliance
11	Activator

12	Bionator
13	Frankel-FR 2 appliance
14	Twin block
15	Lingual arch
16	TPA
17	Quad helix
18	Bihelix
19	Utility arches
20	Pendulum appliance

7. Soldering exercises

Sl. No.	Exercise	No.
1	Star	1
2	Comb	1
3	Christmas Tree	1
4	Soldering buccal tube on molar bands	1

8. Welding exercises

Sl. No.	Exercise
1	Pinching and welding of molar, premolar, canine and Incisor bands
2	Welding of buccal tubes and brackets on molar bands and incisor bands

9. Impression of upper and lower arches in alginate

10. Study model preparation

11. Model analysis

Sl. No.	Exercise
1	Impression of upper and lower dental arches
2	PREPARATION OF STUDY MODEL -1 And all the permanent dentition analyses to be done.
3	PREPARATION OF STUDY MODEL -2And all the permanent dentition analyses to be done.
4	PREPARATION OF STUDY MODEL -3And all the mixed dentition analyses to be done

12. Cephalometrics

Sl. No.	Exercise
1	Lateral cephalogram to be traced in five different colors and super imposed to see the accuracy of tracing
2	Steiner's analysis
3	Down's analysis
4	Tweed analysis
5	Rickett's analysis
6	Burrstone analysis
7	Rakosi's analysis
8	Mc Namara analysis
9	Bjork analysis
10	Coben's analysis

11	Harvold's analysis
12	Soft tissue analysis -Holdaway and Burstone

13. **Basics of Clinical Photography including Digital Photography**

14. **Light wire bending exercises for the Begg technique**

Sl. No.	Exercise
1	Wire bending technique on 0.016' wire circle "Z" Omega
2	Bonwill-Hawley diagram
3	Making a standard arch wire
4	Inter maxillary hooks- Boot leg and Inter Maxillary type
5	Upper and Lower arch wire
6	Bending a double back arch wire
7	Bayonet bends (vertical and horizontal offsets)
8	Stage - III arch wire
9	Torquing auxiliary (upper)
10	Reverse Torquing (lower)
11	Up righting spring

15. **Typhodont exercises**
(Begg or P.E.A. method)

Sl. No.	Exercise
1	Teeth setting in Class - II division I malocclusion with maxillary anterior Proclination and mandibular anterior crowding
2	Band pinching, welding brackets and buccal tubes to the bands
3	Stage - I
4	Stage - II
5	Pre Stage - III
6	Stage - III

CLINICAL WORK:

Once the basic pre-clinical work is completed the students can take up clinical cases and the clinical training is for the two and half years.

Each postgraduate student should start with a minimum of 50 cases of his / her own. Additionally he / she should handle a minimum of 20 transferred cases.

The type of cases can be as follows:

i. Removable active appliances - 5cases
ii. Class - I malocclusion with Crowding
iii. Class - I malocclusion with bi-maxillary protrusion
iv. Class - II division-1
v. Class - II division-2
vi. Class - III (Orthopedic, Surgical, Orthodontic cases)
vii. Inter disciplinary cases
viii. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
ix. Fixed functional appliances - Herbst appliance, jasper jumper etc - 5 cases
x. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion niti expander etc., -

5 cases

xi. Appliance for arch development such as molar distalization -m 5 cases

xii. Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise)

Retention procedures of above treated cases.

Other work to be done during FIRST YEAR

1. **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
2. **Journal club:** One Journal club per week to re conducted in the department. A minimum of five seminars should be presented by each student each year
3. **Protocol for dissertation to be submitted on or before the end of six months from the date of admission.**
4. **Under graduate classes:** Around 4- 5 classes should be handled by each post-graduate student
5. **Field survey:** To be conducted and submit the report.
6. **Inter-departmental meetings:** should be held once in a month.
7. **Case discussions**
8. **Field visits:** To attend dental camps and to educate the masses
9. **Basic subjects classes**
10. **Internal assessment or Term paper**

Second Year:

The clinical cases taken up should be followed under the guidance. More case discussions and cases to be taken up. Other routine work as follows.

1. **Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. **Journal club:** One Journal club per eek to be conducted in the department. Each student should present a minimum of five seminars each year.
3. **Library assignment** to be submitted on or before the end of six months.
4. **Undergraduate classes:** each post-graduate student should handle Around 4-5 classes.
5. **Inter-departmental meetings:** Should be held once in a month
6. **Case discussions**
7. **Field visits:** To attend dental camps and to educate the masses.
8. **Internal assessment or term paper**
9. **Dissertation work:** On getting the approval from the university work for the dissertation to be started.

Third Year:

The clinical cases taken up should be followed under the guidance. More cases discussions and cases to be taken up. Other routine work as follows:

1. **Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. **Journal Club:** One Journal club per week to be conducted in the department. A minimum of five seminars should be presented by each student each year.
3. **Under graduate classes:** each post -graduate student, should handle Around 4-5 classes.
4. **Inter-departmental meetings**: Should be held once in a month.
5. **The completed dissertation *should* be sub~!t_t~~~~~ months before the *final* examination**
6. **Case discussions**
7. **Field visits:** To attend dental camps and to educate the masses.

8. **Finishing and presenting the cases taken up.**
9. **Preparation of finished cases and presenting the cases (to be presented tor the examination)**
10. **Mock examination**

Dissertation:

a. The protocol for dissertation should be submitted on or before the end of six months from the date of admission as per calendar of events to the Registrar, Maharashtra University of Health Sciences, Nashik, through proper channel.
b. The completed dissertation should be submitted 6 months before the final examination as per calendar of events to the Controller of Examinations, Maharashtra University of Health Sciences, Nashik, through proper channel.
c. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects.
d. Approval of dissertation is essential before a candidate appears for the University examination.

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

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1. The subject of orthodontics should read as orthodontics & dentofacial orthopedics.
2. Part 1 examination at the end of 1 year, one paper on biostatistics \, research methodology & bioinformatics to be conducted by college.
3. final exam to have 4 papers unchanged,
4. list of changed details to be attached as annexure a 1
5. Page 100 typhodont exercises to be Begg & PEA
6. synopsis of final dissertation to be submitted after 1 year.

(For the basic subject there should be departmental subject evaluation – ONE SUBLECT every month)

4. O RTHODONTICS & DENTAL ORTHOPAEDICS

COURSE OBJECTIVE :

Undergraduate programme in orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above objectives.

1. Introduction, Definition, Historical Background, aims and Objectives of Orthodontics and Need for Orthodontics care
2. Growth and Development: In General
    a. Definition
    b. Growth spurts and Differential growth
    c. Factors influencing growth and Development
    d. Methods of measuring growth
    e. Growth theories (Genetic, Sicher's, Scott's, Moss's, Petrovics, Multifactorial)
    f. Genetic and epigenetic factors in growth
    g. Cephalocaudal gradient in growth
3. Morphologic Development of Craniofacial structures
    a. Methods of bone growth
    b. Prenatal growth of craniofacial structures
    c. Postnatal growth and development of : cranial base, maxilla, mandible, dental arches and occlusion.
4. Functional Development of Dental Arches and Occlusion
    a. Factors influencing functional development of dental arches and occlusion

b. Forces of Occlusion

c. Wolf's law of transformation of bone

d. Trajectories of forces

e. Clinical Application of Growth and development

6. Malocclusion - In General

a. Concept of normal occlusion

b. Definition of malocclusion

c. Description of different types of dental, skeletal and functional malocclusion.

7. Classification of Malocclusion

Principle, description, advantages and disadvantages of classification of malocclusion by Angle's simon's, Licher's and Ackerman and Proffitt's

8. Normal and Abnormal Function of Stomatognathic system

9. Etiology of Malocclusion

a. Definition, importance, classification, local and general etiological factors.

b. Etiology of following different types of malocclusion:

1. Midline diastema
2. Spacing
3. Crowding
4. Cross - Bite: Anterior / Posterior
5. Class III Malocclusion
6. Class II Malocclusion
7. Deep Bite
8. Open Bite

10. Diagnosis And Diagnostic Aids

a. Definition, Importance and classification of diagnostic aids

b. Importance of case history and clinical examination in orthodontics

c. Study Models: - Importance and uses - Preparation and preservation of study models

d. Importance of intraoral X-rays in orthodontics

e. Panoramic radiographs:- Principles, Advantages, disadvantages and uses

11. Cephalometrics: Its advantages, disadvantages

1. Definition

2. Description and use of cephalostat

3. Description and uses of anatomical landmarks lines and angels used in cephalometric analysis

4. Analysis - Steiner's, Down's, Tweed's, Ricket's-E- line

g. Electromyography and its uses in orthodontics

h. Wrist X-rays and its importance in orthodontics

12. General Principles in Orthodontic Treatment Planning Of Dental And Skeletal Malocclusions

13. Anchorage In Orthodontics - Definition, Classification, Types and Stability Of Anchorage

14. Biomechanical Principles In Orthodontics Tooth movement

a. Different types of tooth movements

b. Tissue response to orthodontic force application

c. Age factor in orthodontic tooth movement

14. Preventive Orthodontics

a. Definition

b. Different procedures undertaken in preventive orthodontics and their limitations.

15. Interceptive Orthodontics

    a. Definition

    b. Different procedures undertaken in interceptive orthodontics

    c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.

    d. Role of muscle exercises as an interceptive procedure

16. Corrective Orthodontics

    a. Definition, factors to be considered during treatment planning.

    b. Model analysis: Pont's, Ashley Howe's, Bolton, Careys, Moyer's Mixed Dentition Analysis

    c. Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions

    d. Extractions in Orthodontics - indications and selection of teeth for extraction.

17. Orthodontic Appliances: General

    a. Requisites for orthodontics appliances

    b. Classification, indications of Removable and Functional Appliances

    c. Methods of force application

    d. Materials used in construction of various orthodontic appliances - uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.

    e. Preliminary knowledge of acid etching and direct bonding,

18. Removable Orthodontic Appliances

    a. Components of removable appliances

    b. Different types of clasps and their uses

c. Different types of labial bows and their uses

d. Different types of springs and their uses

Expansion appliances in orthodontics:

i) Principles

ii) Indications for arch expansion

iii) Description of expansion appliances and different types of expansion devices and their uses.

iv) Rapid maxillary expansion

19. Fixed Orthodontic Appliances

    1. Definition, Indications & Contraindications

    2. Component parts and their uses

    3. Basic principles of different techniques: Edgewise, Begg's, straight wire.

20. Extraoral Appliances

    a. Headgears

    b. Chincup

    c. Reverse pull headgears

21. Myofunctional Appliances

    1. Definition and principles

    2. Muscle exercise and their uses in orthodontics

    3. Functional appliances:

    i) Activator, Oral screens, Frankels function regulator, bionatar twin blocks, lip bumper

    ii) Inclined planes - upper and lower

22. Orthodontic Management of Cleft Lip And Palate

23. Principles of Surgical orthodontics

Brief Knowledge of correction of:

a. Mandibular Prognathism and Retrognathism

b. Maxillary Prognathism and Retrognathism

c. Anterior open bite and deep bite

d. Cross bite

24. Principle, Differential diagnosis and methods of Treatment of :

1. Midline diastema

2. Cross bite

3. Open bite

4. Deep bite

5. Spacing

6. Crowding

7. Class II -Division 1, Division 2

8. Class III Malocclusion - True and Psuedo Class III

25. Retention And Relapse

Definition, Need for retention, causes of relapse, Methods of retention, Different types of retention devices, Duration of retention, Theories of retention.

CLINICALS AND PRACTICALS IN ORTHODONTICS

PRACTICAL TRAINING DURING III YEAR B.D.S.

I. **Basic wire bending exercises gauge 22 or 0.7 mm**

1. Straightening of wires (4 Nos.)
2. Bending of a equilateral triangle
3. Bending of a rectangle
4. Bending of a square
5. Bending of a circle
6. Bending of U.V.

II. **Construction of Clasps (Both sides upper / lower) Gauge 22 or 0.7 mm**

1. ¾ clasp (C-clasp)
2. Full clasp (Jackson's Crib)
3. Adam's Clasp
4. Triangular clasp

III. **Construction of Springs (on upper bother sides) Gauge 24 or 0.5mm**

1. Finger Spring
2. Single Cantelever Spring
3. Double Cantelever Spring (Z-spring)
4. T-Springs on premolars

IV. **Construction of Canine retractors Gauge 23 or 0.6mm**

1. U-Loop Canine retractor

(Both sides on upper & lower)

2. Helical canine retractor

(Both sides on upper & lower)

3. Buccal canine retractor self supported buccal canine retractor with

a) Sleeve - 5mm wire or 24 gauge

b) Sleeve - 19 gauge needle on any one side.

4. Palatal canine retractor on upper both sides Gauge 23 or 0.6mm

V. Labial Bow Gauge 22 or 0.7 mm

One on both upper and lower

CLINICAL TRAINING DURING III YEAR B.D.S.

1. Making upper Alignate impression

2. Making lower Alignate impression

3. Study moral preparation

4. Model Analysis

    a) Pont's analysis

    b) Ashley Howe's Analysis

    c) Carey's Analysis

    d) Bolton's Analysis

    e) Moyer's Mixed Dentition Analysis

CLINICAL TRAINING DURING FINAL YEAR B.D.S.

1. Case History taking
2. Case discussion
3. Discussion on the given topic
4. Cephalometric tracings
    a. Down's Analysis
    b. Steiner's Analysis
    c. Tweed's Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S

1. Adam's Clasp on Anterior teeth Gauge 0.7 mm
2. Modified Adam's Clasp on upper arch Gauge 0.7 mm
3. High Labial bow with Apron spring on upper arch

(Gauge of Labial bow - 0.9 mm, Apron spring - 0.3 mm)

4. Coffin spring on upper arch Gauge 1 mm

Appliance construction in Acrylic

1. Upper and Lower Hawley's Appliance
2. Upper Hawley's with Anterior bite plane
3. Upper Habit breaking Appliance
4. Upper Hawley's with Posterior bite plane with 'Z' Spring
5. Construction of Activator
6. Lower inclined plane / Catalan's Appliance
7. Upper Expansion plate with Expansion screw

RECOMMENDED AND REFERENCE BOOKS

1. CONTEMPORARY ORTHODOTICS WILLIAM R. PROFIT

2. ORTHODONTICS FOR DENTAL STUDENTS WHITE AND GARDINER

3. HANDBOOK OF ORTHODONTICS MOYERS

4. ORTHODONTICS - PRINCIPLES AND PRACTICE GRABER

5. DESIGN, CONSTRUCTION AND USE OF REMOVABLE

6. ORTHODONTIC APPLIANCES C. PHILIP ADAMS

7. CLINICAL ORTHODONTICS: VOL 1 & 2 SALZMANN

8. PAEDONTICS & PREVENTIVE DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the Principles of preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

SKILLS:

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the need of individual requirement and conditions.
5. To acquire skills in managing efficiency life threatening condition with emphasis on basic life support measure.

ATTUTUDES:

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

COURSE CONTENTS:

1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied pathology
4. Nutrition and Dietics
5. Growth & Development: Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion, Dimensional changes in dental arches. Cephalometric evaluation of growth.
6. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological, child development, fear anxiety, apprehension & its management
7. Behavior Management: Non – Pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect

9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal disease. Diet & Nutrition as related to dental caries. Diet Counseling
11. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
12. Microbiology & Immunology as related to oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal lesions etc.
13. Gingival & Periodontal diseases in Children.
    Normal Gingiva & Periodontium in children:
    Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management
14. Pediatric Of Operative Dentistry
    Principle Of Operative Dentistry along with modifications of materials / past, current & latest including tooth colored materials.
    Modifications required for cavity preparations in primary and young permanent teeth.
    Various Isolation Techniques
    Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composite, Sliver, Amalgam & latest materials (gallium)
    Stainless steel, Polycarbonate & Resin Crowns / Veneers & fiber pvit systems.
15. Pediatric Endodontics:
    a. Primary Dentition: - Diagnosis of pulpal disease and their management –Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
    b. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
    c. Recent advances in Pediatric diagnosis and Endodontics.
16. Prosthetic consideration in Pediatric Dentistry.
17. Traumatic Injuries in Children:
    Classification & Importance.
    Sequalae & reaction of teeth to trauma
    Management of Traumatized teeth with latest concepts.
    Management of jaw fracture in children.
18. Interceptive Orthodontics:
    a. Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulation, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
    b. A comprehensive review of the local and systemic factors in the causation of malocclusion.
    c. Reorganization and management of normal and abnormal developmental occlusions in primary mixed and permanent dentitions in children (occlusal Guidance).

d. Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
e. Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
f. Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
g. Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
h. Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

19. Oral Habits in Children:
    Definition, Etiology & Classification
    Clinical features of digit sucking, tongue trusting, mouth breathing and various other Secondary habits.
    Management of oral habits in children
20. Dental care of children with special needs:
    Definition Etiology, Classification, Behavioral, Clinical features & management of children with:
    Physically handicapping conditions
    Mentally compromising conditions
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    Role of diet and nutrition in Dental Caries
    Dietary modifications & Diet counseling.
    Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications.
25. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of development dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.
26. Congenital Abnormalities in children: Definition, Classification, Clinical features & Management.
27. Dental Emergencies in Children and their Management.
28. Dental Materials used in Pediatric Dentistry.
29. Preventive Dentistry:
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    Principles & Scope
    Types of prevention
    Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.
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    Systemic & Topical fluorides
    Mechanism of action
    Toxicity & Management.
    Defluoridation techniques.
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34. Counseling in Paediatric Dentistry
35. Case History Recording, Outline of principles of examination, diagnosis & treatment planning.
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37. Comprehensive Infant Oral Health care.
38. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
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40. Setting up of Pedodontics & Preventive Dentistry Clinic.
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(Duration – first 6 Months of First Year MDS)
(One On Each Exercise)

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2. Basic wire bending exercises
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    b. Maxillary expansion screw appliance
    c. Canine retractor appliance
    d. All habit breaking appliances
        i. Removable type
        ii. Fixed type
        iii. Partially fixed and removable
    e. Two Myofunctional appliance
    f. Making of inclined plane appliance
    g. Feeding appliance
4. Basic soldering exercise I – making of a lamppost of stainless steel wire pieces of different gauges soldering on either side of heavy gauge main post.
5. Fabrication of space maintainers
    a. Removable type –
        Unilateral Non – Functional space maintainer
        Bilateral Non – Functional space maintainer
        Unilateral functional space maintainer
        Bilateral functional space maintainer
    b. Space Regainers –
        Hawley's appliances with Helical space regainer

Removable appliances with Slingshot space regainer
Removable appliances with Dumbell space regainer

c. Fixed Space maintainer

Band & long loop space maintainer
Band & short loop space maintainer
Mayne's space maintainer
Transpalatal arch space maintainer
Nance Palatal holding arch
Nance Palatal holding arch with canine stoppers
Gerber space regainer
Distal shoe appliance

a. Active space maintainers
b. For guiding the eruption first permanent molar
c. Arch holding device
d. Functional space maintainer

6. Basic for spot welding exercise
7. Collection of extracted deciduous and permanent teeth
   a) Sectioning of the teeth at Various levels and planes
   b) Drawing of section and shapes of pulp
   c) Phantom Head Excersies: Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
   d) Performing Pulpotomy, root canal treatment and Apexification procedure
      i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
      ii) Preparation of teeth for various types of crowns
      iii) Laminates / veneers
      iv) Bonding & banding exercise

5. Performing of behavioral rating and IQ tests for children.
6. Computation of: -
   a. Caries index and performing various caries activity test.
   b. Oral Hygiene Index
   c. Periodontal Index
   d. Fluorris Index
7. Surgical Exercises: a. Fabrication of splints b. Type of Wiring c. Suteering, Various pvit system, prcing & perm. tuli
8. a. Taking of periapical, occlusal, bitewing radiographs of children
   b. Developing and processing of films, thus obtained
   c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs is analysis.
   d. Mixed dentition cast analysis
8. Library assignment
9. Synopsis

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S. Examinations:

No.	Clinical Work	Total	7 To 12 Months	13 To 24 Months	25 To 36 Months
1.	Behavior Management of different age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health & Motivation.	7	1	4	2
5.	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations	100	20	50	30
	(b) Management of traumatized anterior teeth	15	04	06	05
	(c) Aesthetic Restorations	25	05	10	10
	(d) Pediatric Endodontic Procedures Deciduous teeth Pulpotomy / Pulpectomy Permanent Molars Permanent Incisor Apexification & Apexogenesis	 150 20 15 20	 30 3 2 02	 50 7 3 08	 70 10 10 10
6.	Stainless Steel Crowns	50	10	20	20
7.	Other Crowns	05	01	02	02
8.	Fixed : Space Maintainers Habit breaking appliances	30	08	12	10
9.	Removable : Space Maintainers Habit breaking appliances	20	05	07	08
10.	Functional Appliances	05	01	02	02
11.	Preventive measures like fluoride applications & pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments (i) School Dental Health Programmes	03	01	01	01
13.	(ii) Campus etc.,	02	01	01	-

13. Library usage
14. Laboratory usage
15. Continuing Dental Health Programmes

(The figures given against Sl. No. 4 to 12 are the minimum number of recommended procedure to be performed)

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION:

A. Theory 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: -

PAPER-I : Applied Basic Sciences : Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition & Dietics, Growth & Development and Dental plague, Genetics.

PAPER-II : Clinical Paedodontics

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children
6. Interceptive Orthodontics
7. Oral Habits in Children
8. Dental Care of Children with special needs
9. Oral Manifestations of systemic Conditions in Children & their Management
10. Management of Minor Oral Surgical Procedures in Children
11. Dental Radiology as Related to Pediatric Dentistry
12. Pediatric Oral Medicine & Clinical Pathology
13. Congenital Abnormalities in Children
14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

PAPER-III: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cardiology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides

9. Epidemiology
10. Comprehensive Infant Oral Health Care / Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

PAPER-IV: Essay

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical Examination: 200 Marks

The Clinical / Practical and Viva – Voce Examination are conducted for a minimum of two days.

First Day:

1. Case Discussion, Pulp Therapy i.e. Pulpectomy in a Primary Molar

Case Discussion	: 20 marks
Rubber Dam application	: 10 marks
Working length x-ray	: 20 marks
Obturation	: 20 marks
Total	70 marks

2. Case Discussion, Crown preparation on a Primary Molar for Stainless steel Crown and cementation of the same.

Case discussion	:	10 marks
Crown Preparation	:	20 marks
Crown Selection and Cementation:		20 marks
Total		50 marks

Case Discussion, band adaptation for fixed type of space maintainer and impression making.

Case discussion	: 20 marks
Band adaptation	: 20 marks
Impression	: 20 marks
Total	60 marks

Second Day:

1. Evaluation of fixed Space Maintainer and Cementation : 20 Marks

C. Viva Voce : 100 Marks

i. Viva – Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

8. PAEDONTICS & PREVENTIVE DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the Principles of preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

SKILLS:

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the need of individual requirement and conditions.
5. To acquire skills in managing efficiency life threatening condition with emphasis on basic life support measure.

ATTUTUDES:

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

COURSE CONTENTS:

1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied pathology
4. Nutrition and Dietics
5. Growth & Development: Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion, Dimensional changes in dental arches. Cephalometric evaluation of growth.
6. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological, child development, fear anxiety, apprehension & its management
7. Behavior Management: Non – Pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect

9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal disease. Diet & Nutrition as related to dental caries. Diet Counseling
11. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
12. Microbiology & Immunology as related to oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal lesions etc.
13. Gingival & Periodontal diseases in Children.
    Normal Gingiva & Periodontium in children:
    Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management
14. Pediatric Of Operative Dentistry
    Principle Of Operative Dentistry along with modifications of materials / past, current & latest including tooth colored materials.
    Modifications required for cavity preparations in primary and young permanent teeth.
    Various Isolation Techniques
    Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composite, Sliver, Amalgam & latest materials (gallium)
    Stainless steel, Polycarbonate & Resin Crowns / Veneers & fiber pvit systems.
15. Pediatric Endodontics:
    a. Primary Dentition: - Diagnosis of pulpal disease and their management –Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
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    c. Reorganization and management of normal and abnormal developmental occlusions in primary mixed and permanent dentitions in children (occlusal Guidance).

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    Clinical features of digit sucking, tongue trusting, mouth breathing and various other Secondary habits.
    Management of oral habits in children
20. Dental care of children with special needs:
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    Mentally compromising conditions
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First Year

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(Duration – first 6 Months of First Year MDS)
(One On Each Exercise)

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    b. Maxillary expansion screw appliance
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4. Basic soldering exercise I – making of a lamppost of stainless steel wire pieces of different gauges soldering on either side of heavy gauge main post.
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a. Active space maintainers
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6. Basic for spot welding exercise
7. Collection of extracted deciduous and permanent teeth
   a) Sectioning of the teeth at Various levels and planes
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9. Synopsis

Clinical work Requirements from 7 to 36 months

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5.	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
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	(III) Other Restorations	100	20	50	30
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8.	Fixed : Space Maintainers Habit breaking appliances	30	08	12	10
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11.	Preventive measures like fluoride applications & pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments (i) School Dental Health Programmes	03	01	01	01
13.	(ii) Campus etc.,	02	01	01	-

13. Library usage
14. Laboratory usage
15. Continuing Dental Health Programmes

(The figures given against Sl. No. 4 to 12 are the minimum number of recommended procedure to be performed)

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SCHEME OF EXAMINATION:

A. Theory 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: -

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PAPER-II : Clinical Paedodontics

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5. Traumatic Injuries in Children
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14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

PAPER-III: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cardiology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides

9. Epidemiology
10. Comprehensive Infant Oral Health Care / Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

PAPER-IV: Essay

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical Examination: 200 Marks

The Clinical / Practical and Viva – Voce Examination are conducted for a minimum of two days.

First Day:

1. Case Discussion, Pulp Therapy i.e. Pulpectomy in a Primary Molar

Case Discussion	: 20 marks
Rubber Dam application	: 10 marks
Working length x-ray	: 20 marks
Obturation	: 20 marks
Total	70 marks

2. Case Discussion, Crown preparation on a Primary Molar for Stainless steel Crown and cementation of the same.

Case discussion	:	10 marks
Crown Preparation	:	20 marks
Crown Selection and Cementation:		20 marks
Total		50 marks

Case Discussion, band adaptation for fixed type of space maintainer and impression making.

Case discussion	: 20 marks
Band adaptation	: 20 marks
Impression	: 20 marks
Total	60 marks

Second Day:

1. Evaluation of fixed Space Maintainer and Cementation : 20 Marks

C. Viva Voce : 100 Marks

i. Viva – Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

SYLLABUS OF PART – I

SUBJECT : PROSTHODONTICS AND CROWN & BRIDGE

Applied Anatomy

- Anatomy of the stomatognathic system. - Maxilla, Mandible, Maxillary sinus, Face (muscles & nerve supply) , Trigeminal ganglion, Cranial nerves, Salivary glands, Larynx, Pharynx, Trachea and esophagus, Muscles of mastication, Maxillary artery, TemperoMandibular Joint, Mandibular Nerve, sympathetic & parasympathetic ganglion,
- Anatomy of T.M.J. its movements, disorders and its management.
- Anatomy physiology and function of the masticator system.

Embryology

- Derivatives of Neural Crest, Pharyngeal arches

Growth & Development Genetics

- Growth and development of face jaws and teeth.
- Growth and development of Maxilla, Mandible ,Face, Hard Palate, Soft Palate, Tongue
- Consequences and management of age changes in the dentition
- Principles of orofacial genetics
- molecular basis of genetic defects

Immunology

- Basic principles of immunity, antigen and antibody reactions
- Immunological disorders,
- Sensitivity, Delayed Hypersensitivity
- Cell mediated immunity

Physiology

- Mastication, swallowing, Speech and deglutition mechanism.
- Salivary glands and saliva,
- Healing of wound & Fracture
- Blood: Composition , volume , functions , blood groups , RBC and haemoglobin , WBC: Structure and Functions , Platelets : Function and applied aspects and Plasma Proteins

- Physiology of pain , sympathetic and para-sympathetic nervous systems , physiology of pulpal pain and non odontogenic pain , pain disorders-typical and atypical

Nutrition & Biochemistry

- Role of Vitamin A, C and B complex in oral mucosal and periodontal health.
- Role of Calcium and Vitamin D in growth and development of teeth and jaws.
- Balanced diet
- Nutrition in geriatric patients

Pathology & Microbiology

- Pathology of the periodontal, Pulp and peri-apical tissues
- Pathology of dental tissues and oral cavity.
- Dental plaque in relation to dental disease.
- Sensory perception and pain
- Oral pre-cancerous lesions.
- Malignant lesions of the oral cavity and head and neck region.
- Developmental anomalies of face, jaws and teeth
- Microbiological & virological effects & its treatment options.
- Biomedical waste disposal system
- Sterilization & Disinfection
- Staphylococci, Streptococci, Fungi- Candida ,Tuberculosis
- Blood Coagulation with applied aspects , Blood Transfusion , shock, lymph and applied aspects , Inflammation , Repair and regeneration , necrosis and Gangrene , Neoplasm , classification of tumors and carcinogenesis.

Virology

- Microbiological & virological effects & its treatment options.
- HIV, Hepatitis, Herpes Virus

Applied Pharmacology

- Medical conditions and medications affecting dental treatment in Geriatric patients
- Antihypertensive
- NSAIDS

- Anti-Histaminics
- Anti-cholinergic
- Adrenergic drugs
- Antibiotics
- Antacids
- Anticoagulants
- Dosage and mode of administration of drugs
- Brief Pharmacology of : drugs acting on Central Nervous System, general anesthetics ,hypnotics, analeptics and tranquilizers, Local anesthetics, antibiotics, analgesics and antipyretics, antiseptics, styptics , Sialogogues and anti-sialogogues, Haematinics , Cortisone , ACTH , Insulin and other ant diabetics
- Chemotherapy and Radiotherapy

Applied Dental Materials:

- Physical, mechanical and biological properties of modem dental materials.
- Gypsum products used in prosthodontics.
- Die and counter die materials.
- Various resins used in prosthodontics including Denture base materials
- Impression materials used in Dentistry.
- Duplicating materials.
- Metals and alloys used in Dentistry.
- Dental Waxes including inlay casting wax
- Investments.
- Casting machines procedures and defects.
- Soldering and Welding
- Cements - restorative and looting
- Composites - various generations and system in order of development.

  Composition, uses and manipulation.
- Tissue conditioner and soft reline.
- Porcelain Including Porcelain fused to Metal alloys.

- Porcelain furnace, firing and techniques.
- Mechanics of tooth cutting (burs and points)
- Cutting, polishing and finishing agents.
- Implant materials.
- Bonding agents – enamel and dentin bonding agents and various other adhesives.
- CAD-CAM System & material science & digital scanning systems

Research Methodology and Biostatistics

- Scope and need for statistical application to biological data.
- Definition of selected terms- scale of measurements related to statistics.
- Methods of collecting data.
- Presentation of data statistical diagrams and graphs

Applied Dental Anatomy and Histology

- Biology and anatomy of dental tissues
- Biology and physiology enamel, dentine Cementum, pulp and periodontium
- Anatomy and histology of oral mucous membrane.
- Anatomy of T.M.J. its movements, disorders and its management.
- Anatomy physiology and function of the masticator system.
- Normal occlusion, development of occlusion in deciduous, mixed and permanent
- Dentitions.

Oral Pathology & Oral Microbiology

- Pathology of the periodontal, Pulp and peri-apical tissues
- Pathology of dental tissues and oral cavity.
- Dental plaque in relation to dental disease.
- Sensory perception and pain
- Oral pre-cancerous lesions.

- Malignant lesions of the oral cavity and head and neck region.
- Developmental anomalies of face, jaws and teeth
- Microbiological & virological effects & its treatment options.
- Regressive changes of teeth
- Bacterial ,viral and mycotic infections of oral cavity
- Dental caries
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances
- Diseases of blood and blood forming organisms in relation to oral cavity
- Diseases of skin, nerves and muscles in relation to oral cavity
- Anatomy of TMJ, its movements , disorders and its management

Prosthodontics Including Removable, Fixed, Maxillofacial & Implantology.

Goals:-

The goals of postgraduate training is to train B.D.S. graduates who will:

- ❖ Practice specialty efficiently and effectively, backed by scientific knowledge and skill.
- ❖ Exercise empathy and a caring attitude and maintain high ethical standards.
- ❖ Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- ❖ Willing to share the knowledge and skill with any leaner, junior or a colleague.

Objectives:-

The objective is to train a candidate so as to ensure high degree of competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology.

The above objectives are to be achieved by the time the candidate competes the course.

The objectives may be considered as under:-

1. Knowledge (Cognitive Domain)
2. Skills (Psycho motor domain)
3. Human Values, ethical practice and communication abilities.

Knowledge

- ❖ Demonstrate understanding of basic science relevant to specialty.
- ❖ Describe etiology, pathophysiology, and principles of diagnosis and management of common problems within the specialty in adults & children.
- ❖ Identify social, economic, environmental and emotional determinants in a given case and take them in to account for planning treatment.
- ❖ Recognise conditions that may be outside the area of competence and to refer them to an appropriate specialist.
- ❖ Undertake audit, use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

Skills

1. Take a proper clinical history, examine the patient, perform essential diagnostic procedure and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.
2. Acquire adequate skills and competence in performing various procedures and required in the competence.

Human values, ethical, practice and Communication abilities:-

- ❖ Adopt ethical principles in all aspects of practice.
- ❖ Foster professional honesty and integrity.
- ❖ Deliver patient care irrespective of social status, caste, creed or religion of patient.
- ❖ Develop communication skills, to explain various options available in management and to obtain true informed consent from the patient.
- ❖ Provide leadership and get the best out of his team in a congenial working atmosphere.
- ❖ Apply high moral and ethical standards while carrying out human or animal research.
- ❖ Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- ❖ Respect patient's rights and privilege including patient's right to information and right to seek a second opinion.

2. Eligibility

A candidate for admission to the M.D.S. course (Master of Dental Surgery) must have a degree of B.D.S. (Bachelor of Dental Surgery) from a college and university recognised by a Dental Council of India. Candidates not possessing, a recognised dental qualification for the above purpose should secure the prior approval of his / her qualification by the Dental Council of India before admission to the M.D.S. course.

Minimum 50% of marks in entrance test for all categories.

3. Criteria for Selection for Admission:

As per the instructions of the Govt. of India / State Govt.

4. Eligibility Certificate:

As per the eligibility criteria fixed by the Dental Council of India for admission in the M.D.S. courses.

A Candidate who has been admitted to Postgraduate course should register his / her name with the University within the month of admission after paying the registration fee.

5. Course Duration:

- ❖ Students to take cross faculty module of their interest and choice.
- ❖ Curriculum to nurture not only knowledgeable graduate but one with sense of confidence and pride in his profession and independent learner with commitments towards continuing education.

The course shall comprise of minimum of three years or 36 months during which the student will be deemed to have acquire:

a) An updated knowledge of Prosthodontics including Removable, Fixed, Maxillofacial Prosthodontics and Implantology, growth and development of teeth, jaws periodontics, T.M.J. and occlusion.

b) Competence at running independently Prosthodontics services and Maxillofacial Prosthodontics.

c) Working knowledge of some of the important instrument, equipment in the scientific investigations of dental materials, prosthodontics rehabilitation including Masticatory efficiency, TMJ dysfunction syndromes & craniofacial anomalies.

d) Familiarity with the modem methods and assessment strategies for teaching of undergraduate students.

e) Clinical training in major disciplines including Oral Cancer and Plastic Surgery. The students shall be rotated for training in different sections i.e. Radio diagnosis (roentgeno-cephalometric,panoramic), Paediatric Surgery (cleft lip and palate repair) and Head & Neck Cancer.

f) The student shall write at least two papers and a thesis on a research project under the perceptorship of the guide.

6. Attendance, Progress and Conduct:

A candidate pursuing degree course should work as a full time student. No candidate is permitted to run a clinic or work in clinic / laboratory / Nursing home while studying in a postgraduate course. Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend symposia, seminars, conference, journal review meetings, grand rounds, case presentation, clinics and lectures during each year as prescribed by the department **(Minimum one seminar, one journal , one case discussion and one demonstration per week)** and not absent himself / herself from work without valid reasons.

Every candidate shall not have less than **85%** of attendance in each year of the course. However, candidates should not be absent continuously as the course a full time one.

7. Monitoring Progress of Studies:

Work diary/Log Book:

Every candidate shall maintain a work diary and record of his/.her participation in the training programme conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate. The work diary shall be scrutinized and certified by the Guide and Head of Department, and presented in University Practical/Clinical Examination.

8. The course shall be given in the following forms:

1) Didactic Lectures, seminars, demonstrations on clinical & Laboratory techniques once a week (each)
2) There will be Journal Club once a week. Each student will be assigned a Journal of Prosthetic Dentistry, the International Journal of Prosthodontics, Oral Rehabilitation or of allied sciences to review the most important articles that have appeared in the Journals Irrespective of topic to give practice to the student in comprehension and presentation of the data and his own views before a group.
3) Clinical case conference once a week – the student will present all data including case records, models, the radiographs of photographs.
4) The students will work on patients in the clinics, both in the mornings and in the afternoons under the supervision of teachers.
5) The student will undertake the Laboratory work for the patients who are under their treatment.
6) Lectures in basic sciences-attendance at this course given by the basic science disciplines will be compulsory. This is usually given once every year and attendance at these courses will be essential.
7) Concurrent clinical training each student will be required to undergo compulsory concurrent clinical training for this purpose in Plastic Surgery, Otolaryngology and Radio diagnosis in the general hospital or Medical college.
8) Training in methodology of teaching - the postgraduate will attend the undergraduate classes to learn the methodology teaching and they will be encouraged to teach the undergraduate students after preparing lectures and getting it corrected by a faculty member under whom he will work.
9) The candidate will get training in various aspects of Prosthodontics during the three years both in the clinics and laboratory.

10)Internal assessment examination will be conducted every 6 months.

9. Dissertation:

Every candidate pursuing **MDS** degree course is required to carry out work on a selected research project under the guidance of a recognized graduate teacher. The result of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions. Every candidate shall submit to the Registrar of the University in the prescribed performa, a synopsis containing particulars of proposed dissertation work within four months from the date of commencement of the course on or before the date notified by the University. The synopsis shall be sent through the proper channel such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

The dissertation should be written under the following headings:

1) Introduction
2) Aims and Objectives of Study
3) Review of Literature
4) Materials and Methods
5) Results
6) Discussion
7) Conclusion
8) References
9) Tables
10) Annexure

The written text of the dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size,8.27" X 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department.

Six copies of dissertation will be prepared by the students. One copy will be submitted to the department & four copies shall be submitted to the registrar(Evaluation),Six months before final examination on or before the dates notified by the University. One will be student's own copy.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate appear in the University examination.

Guide:

The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by Dental council of India.

Co-guide:

A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution recognized for teaching / training by Dental Council of India.

Change of guide:

In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with permission from the university.

Scientific Publication Skils (publication/presentation)

The paper should be prepared to be published(based on dissertation) before appearing for the final examination. It is in addition to at least two publications of papers in indexed journals during the course of study as a first writer of the paper. Two-paper/ poster /table, clinic must be presented by the candidate in P.G. convention/ National level conference.

10. SYLLABUS OR COURSE IN PROSTHODONTICS

A. Basic sciences

1. Biology and anatomy of dental tissues
   - ❖ Anatomy of the stomatognathic system.
   - ❖ Biology and physiology enamel, dentine Cementum, pulp and periodontium.
   - ❖ Pathology of the periodontal, Pupil and periapical tissues
   - ❖ Anatomy and histology of oral mucous membrane.
   - ❖ Anatomy of T.M.J. its movements and Myofacial pain dysfunction syndrome.
   - ❖ Anatomy physiology and function of the masticator system.
2. Growth and development of face jaws and teeth.
3. Endocrine glands in particular reference to Pituitary, Parathyroid and Thyroid glands.
4. Pathology of dental tissues and oral cavity.
   - ❖ Dental plaque in relation to dental disease.
   - ❖ Sensory perception and pain
   - ❖ Oral pre-cancerous lesions.

- ❖ Malignant lesions of the oral cavity and head and neck region.
- ❖ Developmental anomalies of face, jaws and teeth.

5. Gerodontics
   - ❖ Consequences and management of age changes in the dentition.
   - ❖ Medical conditions and medications affecting dental treatment
   - ❖ Nutrition in geriatric patients
6. Anthropology as applied to craniofacial region.
7. Genetics in Dentistry.
8. Normal occlusion, development of occlusion in deciduous, mixed and permanent dentitions.
9. Nutrition.
   - ❖ Role of Vit A, C and B complex in oral mucosal and periodontal health.
   - ❖ Role of Calcium and Vit D in growth and development of teeth and jaws.
10. Mastication, swallowing, Speech and deglutition mechanism.
11. Salivary glands and saliva,
12. Indices in diagnosis of dental caries and periodontal diseases.
13. Sterilization in dentistry
14. Tooth numbering systems.
15. Introduction to Biostatistics.
    - ❖ Scope and need for statistical application to biological data.
    - ❖ Definition of selected terms- scale of measurements related to statistics.
    - ❖ Methods of collecting data.
    - ❖ Presentation of data statistical diagrams and graphs.
16. Dentist technician communication- Lab work authorization form and instruction.

Dental Materials:

1. Physical, mechanical and biological properties of modem dental materials.
2. Gypsum products used in prosthodontics.
3. Die and counter die materials.
4. Various resins used in prosthodontics including Denture base materials
5. Impression materials used in Dentistry.
6. Duplicating materials.
7. Metals and alloys used in Dentistry.
8. Dental Waxes including inlay casting wax
9. Investments.
10. Casting machines procedures and defects.
11. Soldering and Welding
12. Cements - restorative and looting
13. Composites - various generations and system in order of development. Composition, uses and manipulation.

14. Tissue conditioner and soft reline.
15. Porcelain Including Porcelain fused to Metal alloys.
16. Porcelain furnace, firing and techniques.
17. Mechanics of tooth cutting (burs and points)
18. Cutting, polishing and finishing agents.
19. Implant materials.
20. Bonding agents – enamel and dentin bonding agents and various other adhesives.

B. Complete Denture Prosthodontics:

1. Anatomy and physiology of edentulous mouth.
2. Diagnosis and treatment planning for a completely edentulous mouth.
3. Oral aspects of systemic diseases of prosthodontic interest.
4. The problem of reduction of residual ridges.
5. Preprosthetic surgery.
6. Impressions in Complete Denture Prosthodontics.
   - ❖ Objectives and principals of impression making.
   - ❖ Philosophies and concepts of impression making
   - ❖ Materials and techniques of impression making
7. Posterior palatal seal – principles and techniques.
8. Articulators
   - ❖ Brief history and classification
   - ❖ Requirements and limitations
   - ❖ Role in CD fabrication
9. Face bow in complete denture construction.

- ❖ Different type of face bows.
- ❖ How to orient face bow
- ❖ Role of face bow record in complete denture fabrication

10. Hinge axis
    - ❖ Concept of hinge axis with knowledge about different schools of thought
    - ❖ Method to locate
- ❖ Significance in CD fabrication

11. Recording of mandibular movements and maxillo – mandibular relations in edentulous patients.

- ❖ Definitions and changing concepts of centric relation
- ❖ Methods to record CR.
- ❖ Vertical relation – methods to record and verify.

12. Selection and arrangement of anterior teeth including guidelines for complete denture esthetics.

13. Complete denture occlusion.
14. Selection and arrangement of posterior teeth
15. Varification of maxillo – mandibular relation records.
16. Try in of complete dentures.
17. Laboratory procedures involved in complete denture construction.
18. Denture Insertion.
19. Patient's education and complete denture maintenance
20. Compliance associated with dentures.
21. Relining and rebasing of denture.
22. Denture repair.
23. Immediate dentures.
24. Transitional dentures.
25. Overlay dentures.
26. Obturators on complete denture.
27. The single complete denture.
28. Implants for the edentulous arches.
29. Geriatrics complete denture patients.
30. Preventive prosthodontics
31. Epidemiology of edentulous ness.
32. Role of computers in prosthodontics

C. Partial Denture Prosthodontics

1. Introduction and terminology used in partial denture prosthodontics.
2. Examination, Diagnosis and treatment planning in partial denture prosthodontics.
3. Classification of partially edentulous arches.
4. Components of removable partial dentures and their functions.
    a. Major connectors
    b. Minor connectors
    c. Rests and rest seats
    d. Direct retainers
    e. Indirect retainers
    f. Denture base considerations and teeth.
    g. Stress brakers.
5. Principles of removable partial denture (R.P.D.) design and RPI concept.
6. Surviving.

7. Mouth preparation for removable partial denture including preparation of abutment teeth.
8. Impression material and procedures for partially edentulous mouth.
9. Support for the distal extension denture base.
10. Occlusal relationship and arrangement of teeth.
11. Laboratory procedures involved in cast partial dentures.
12. Trying in and adjustment of cast frame work.
13. Processing, finishing, delivery and instructions about maintenance of removable partial dentures.
14. Repairs and additions to removable partial dentures.
15. Acrylic partial dentures.
16. Immediate partial dentures

D. Fixed Prosthodontics:

1. Diagnosis and Treatment Planning.
2. Periodontal considerations in fixed prosthodontics.
3. Fundamental of Occlusion.
4. Bio-mechanical principles of tooth preparation.
5. Individual tooth preparation.
    a. Complete Metal Crown
    b. Partial veneer crown for Ant. and post teeth.
    c. Porcelain jacket crown
6. Preparations for intra-coronal restorations.
7. Preparations for extensively damaged or endodontically treated teeth.
8. Provisional or temporary restorations.
9. Fluid control and soft tissue management.
10. Impression material and techniques.
11. Working casts and dies.
12. Interocclusal records techniques and material
13. Articulation of casts.
14. Wax patterns.
15. Articulators in fixed partial denture prosthodontics
16. Precision and semiprecision attachment.
17. Connectors in FPD
18. Investing and casting
19. Occlusal equilibration.

20. Finishing and cementation.
21. Pontics.
22. Cementing Medium.
23. Full mouth rehabilitation-philosophies, techniques, clinical and lab procedure.
24. Porcelain fused to metal restorations.
25. Porcelain Laminates.
26. Resin bonded retainers(Maryland bridges)
27. Fixed removable Prosthodontics.
28. Solder joints and other connectors.

E. Maxillofacial Prosthodontics:

1. Dentist and Patient interaction Psychological status of the patient Social support system.
2. Chemotherapy, radiation therapy their effect on oro-dental tissue.
3. Prosthodontic reconstruction of Acquired mandibular defects.
    - ❖ Mandibular Guidance appliance
    - ❖ Speech prosthesis
    - ❖ Rehabilitation
    - ❖ Clinical and laboratory steps for their fabrication.
4. Prosthodontic reconstruction of Acquired developmental defect of maxilla
    - ❖ Obturators
    - ❖ Speech appliance
    - ❖ Clinical and laboratory steps for their fabrication.
5. Restoration of Acquired and developmental Facial defects
    - ❖ Eye
    - ❖ Auricular
    - ❖ Nasal
    - ❖ Lip
    - ❖ Clinical and laboratory steps for their fabrication.
6. Cranial and Facial implants
7. Recostructive pre prosthetic surgery
8. Maxillofacial prosthesis materials
9. Miscellaneous prosthesis
    - ❖ Splints and stents
    - ❖ Radiation carrier prosthesis.
10. Methods of Retention for maxillofacial prosthesis.

F. Evidence based practice in Dentistry

1. Introduction to EBD
2. How to search for evidence
3. evidence based practice in FPD
4. evidence based practice in CD
5. evidence based practice in RPD
6. evidence based practice in Implantology and MFP
7. evidence based practice in esthetic dentistry
8. Basic Knowledge about how to screen literature for evidence.

G. Implants in prosthodontics:

1. Introduction to Implantology
2. Brief History and evolution.
3. DIAGNOSIS AND TREATMENT PLANNING

    - ❖ Rationale for dental Implants
    - ❖ Medical Evaluation of the Implant Patient
    - ❖ Prosthetic Options
    - ❖ Diagnostic Imaging and techniques
    - ❖ Divisions of Available Bone
    - ❖ Bone Density
    - ❖ Dental Evaluation

4. FUNDAMENTAL SCIENCE.
    - ❖ Bone Physiology and Metabolism.
    - ❖ Pharmacologic for Dental Implants
    - ❖ Bone Response to Mechanical Loads.
    - ❖ Osseo integration, bio integration and Fibrosseointegration

5. IMPLANT PROSTHODONTICS AND MAINTENANCE
    - ❖ Principles of Cement-Retained and Screw-Retained Fixed Implant Prosthodontics.
    - ❖ Occlusal Considerations for Implant-Supported and tissue supported Prostheses
    - ❖ Implant supported prosthesis-clinical and lab procedures.
    - ❖ Maintenance of Dental Implants.

H. Esthetic Dentistry

1. Principles of esthetics
    - ❖ Light and Shadow

- ❖ Colour principles
- ❖ The principle of form
- ❖ The principle of perception.

2. Dentin bonding agents
   - ❖ Composition and clinical considerations

3. Colour modifier and Opaquers
4. Composite resins
   - ❖ Composition and manipulation
   - ❖ Technique for direct and indirect composite restorations

5. Porcelain Fused to metal restorations
6. All ceramic restorations
7. Laminates-Clinical and Laboratory procedure for porcelain and composite laminates
8. Bleaching
9. Dynesthetic concept of smile.

11. Preclinical Exercises

The student would be asked to complete the following preclinical exercises in Prosthodontics in first six months.

- ❖ **Setting up of teeth in balances occlusion (Complete Denture)**
  a. Class I Jaw Relation (Dentogenic concept)
  b. Class II Jaw Relation
  c. Class III Jaw Relation
  d. Balanced class I complete denture
  e. Break and repair of maxillary complete denture
  f. Relining of mandibular complete denture
  g. Immediate denture using lower dentulous and upper semi-edentulous casts with upper anterior missing.

B. Fixed

Partial Denture Work: Typodont & Laboratory:

a. Occlusal carving using cone waxing technique on mounted casts for Maxillary and Mandibular Premolars & molars
b. Post and core preparation on upper right Central incisor with casting and PFM crown
c. Three quarter crown for Maxillary canine(preparation and casting)
d. Anterior PFM 3 units FPD replacing upper right lateral incisor using modified ridge lap pontic.

e. PFM crown on maxillary molar (preparation and casting).
f. Laminate preparation on upper left lateral incisor with porcelain facing /Composite.
g. Full metal crown for mandibular molar (preparation and casting)
h. Posterior 3 Unit PFM FPD replacing right lower first molar using spheroidal pontic with 4/5 crown on preparation full crown on second molar.
i. Maryland bridge preparation to replace lower left lateral incisor
j. Soldering of a 3-unit metal bridge.
k. Fabrication of a semiprecision / precision attachment retained prosthesis

C. Removable Partial Dentures

a. Surveying, designing & wax up of one each of Kennedy's Class I,II,III, IV plaster casts.

b. Casting finishing and polishing etc. of any one of the above.

12. Clinical Load During Training

1. Complete Dentures.	**-25**
2. Partial Dentures	
a. Cast partial dentures	-2
b. Interim partial dentures	-5
c. Transitional partial dentures	-5
d. Immediate dentures	-5
3. Crown	**-30**
a. Post Full metal crowns	-10
b. Post Full metal ceramic crown	-5
c. Ant metal ceramic crowns	-5
d. All ceramic crowns	-5
4. Fixed partial dentures	**-10**
5. Maxillofacial prosthesis	**-05**

13. ASSESSMENT

A) Periodic tests.

During the course of three years, the departments will conduct three tests, two of them by annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may

include written papers, practical/clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, when called for.

B) Internal assessment:

100 credit points could be spread over a period of three years as given below.

Topic	Credit points.
Seminars presented(3 credit points per seminar)	15
Seminars attended (1 per seminar)	10
Clinical case presentation and discussions (3/presentation)	15
Pre clinical work	20
Publications/oral presentation / table Presentation/poster	10
Literature review/ Journal club	10
Pase documentations with Photographs	10
Pommunity programs (old age homes /hospital patients etc).	10

14. University Examination

Eligibility

The following requirements shall be fulfilled by every candidate to become eligible to appear for final examination.

i) Attendance:

Every candidate shall have fulfilled the attendance as prescribed during each academic year of the postgraduate course. In case of failure in the final examinations of MDS, the unsuccessful candidate will have to maintain full attendance till the next scheduled exam.

ii) Progress and conduct:

Every candidate shall have participated in seminar journal review meetings, symposia conference, case presentation, clinics and didactic lectures during each year as designed by the department.

iii) Work diary and Logbook:

Every candidate shall maintain a work diary and logbook for recording his/her participation in the training programmes conducted by the department. The work diary and logbook shall be verified and certified by the Guide & Head of the Department. The Certification of satisfactory progress by the Guide, Head of Department and Head of the Institution shall be based on (i),and (ii)and (iii) as mentioned above.

1. PROSTHODONTICS AND CROWN & BRIDGE

AIM:

To train dental graduates so as to ensure higher competence in both general and special areas of Prosthodontics and Prepare a candidate for teaching, research and clinical abilities, including prevention and after care in prosthodontics including crown and bridge and implantology.

GENERAL OBJECTIVES OF THE COURSE:

Training programme in Prosthetic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.

To have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.

The postgraduate will be able to provide Prosthodontic therapy, for patient with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialities, to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medical sciences.

On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology and Microbiology, virology, health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics , Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental material science.

Ability to diagnose and planned treatment for patients requiring a Prosthodontic therapy.

Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.

Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed Prosthodontics and maxillofacial and Craniofacial Prosthodontics, implant and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetic and biomaterials, craniofacial disorders, problems of psychogenic origin.

Age changes and Prosthodontic Therapy for the aged.

Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.

Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics.

General health conditions and emergency as related to prosthodontics treatment.

Identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.

Identify cases, which are outside the area of his specialty / competence and refer them to appropriate specialists.

Advise regarding case management involving surgical, interim treatment etc.

Competent specialization in team management of craniofacial design.

To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.

Should attend continuing education programmes, seminars and conferences related Prosthodontics, thus updating himself.

Teach and guide his / her team, colleague and other students.

Should be able to use information technology tools and carry out research both basic and clinical, with the aims of publishing his / her work and presenting his / her work at various scientific forums.

Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.

Should have an ability to plan to establish Prosthodontics clinic / hospital teaching department and practice management.

Should have a sound knowledge for the application of pharmacology. Effects of drug on oral tissue and systems of a body and medically compromised patients.

The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialities to demonstrate, evaluative and judgment skills in making appropriate decisions regarding prevention, treatment after care and referral to deliver comprehensive care to patients.

SKILLS:

The candidate should be able to examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results, radiography, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.

Understand the prevalence and prevention of diseases of craniomandibular system related to Prosthetic dentistry.

The candidate should be able to restore lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.

The candidate should be able to interact with other specialty including medical speciality for a planned team management of patients for a craniofacial and oral acquired and congenital defects, temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin,

Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area.

Identify target diseases and awareness amongst the population for Prosthodontic therapy.

Perform clinical and Laboratory procedures with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics Prosthodontics.

Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instrument management.

To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.

ATTITUDES:

Adopt ethical principle in all Prosthodontics practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.

Willing to share are knowledge and clinical experience with professional colleagues.

Willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.

Respect patient's rights and privileges including patient's right to information and right to seek second opinion.

COMMUNICATIVE ABILITIES:

Develop communication skills, in particular, to explain treatment option available in management.

Provide leadership and get the best of his group in a congenial working atmosphere explain the principles of prosthodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.

Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

COURSE CONTENTS:

The candidates shall under go training for 3 academic years with satisfactory attendance of 80% for each year.

The course includes epidemiology and demographic studies, research and teaching skills.

Ability to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of Stomatognathic system by Prosthodontic therapy.

The program out line addresses the knowledge, procedural and operative skills needed in Masters Degree in Prosthodontics. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to achieve. Masters Degree in Prosthodontics including Crown & Bridge and Implantology, Competently and have the necessary skills / knowledge to update themselves with advancement in the field. The course content has been identified and categorized as Essential knowledge as given below.

ESSENTIAL KNOWLEDGE:

The topics to be considered are: Basic Sciences, Prosthodontics including Crown and Bridge Implantology and Material Science.

APPLIED BASIC SCIENCES:

A through knowledge on the applied of Anatomy, Embryology, History particularly to head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology.

Pharmacology, Health & systematic diseases principals in surgery medicine and anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material

Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering and Bio-medical and Research Methodology as related to Masters degree prosthodontics including crown & bridge and implantology.

It is desirable to have adequate knowledge in Bio-statistics, Research Methodology and use of computers. To develop necessary teaching skills in Prosthodontics including crown and bridge and Implantology.

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy – Gross Anatomy, anatomy of Head and Neck in detail. Cranial and facial bones, TMJ and function, muscles and mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses with relation to the V th Cranial nerve. General consideration of the structure and function of the brain. Brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx Trachea, Esophagus Functional Anatomy of mastication, Deglutition, Speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, of movements and myofacial pain dysfunction syndrome.

Embryology – Development of the face, tongue, jaws, TMJ, Paranasal Sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation.

Growth & Development – Facial from and facial growth and development overview of Dentofacial growth process and physiology from period to maturity and old age, comprehensive study of craniofacial biology. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal, relationship between development of the dentition and facial growth.

Dental Anatomy – Anatomy of primary and secondary dentition, concept of occlusion mechanism of articulation, and masticatory function Detailed structural and functional Study of the oral dental and Para oral tissue. Normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root, configuration, tooth – numbering system.

Histology – histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.
Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc.

Muscle and neural tissues, Endocrinal system including thyroid, Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

Anthropology & Evolution – Comparative study of tooth, joints, jaws, muscles, of mastication and facial expression, tongue, palate, facial, profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo – skeletal system, neuromuscular coordination, posture and gait – planti gradee and ortho gradee posture.

Applied Genetics and Heredity – Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to Orthodontic Management. Dentofacial anomalies, Anatomical, psychological and pathological characteristic of major groups of developmental defects of the orofacial structures.
Cell biology – Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of inter cellular junctions. Cell cycle and division, cell-to-cell and cell-extra cellular matrix interactions.

APPLIED PHYSIOLOGY AND NUTRITION:

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance, Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation, shock, respiration, control , anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and vit D in growth and development of teeth, bone and jaws. Role of vit. A, C and B complex in oral mucosal and periodontal health. Physiology and physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, swallowing and deglutition mechanism, salivary glands and Saliva

ENDOCRINES:

General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and formation, normal and abnormal constituents, Physiology of pain, sympathetic and parasympathetic nervous system. Neuromuscular co-ordination of the stomatognathic system.

APPLIED NUTRITION:

General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization, diet for elderly patients.

APPLIED BIOCHEMISTRY:

General principles, governing the various biological activities of the body, such as osmotic pressure electrolytic dissociation, oxidation-reduction, etc. general composition of the body, intermediary metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood and other body fluids, Metabolism of inorganic elements, Detoxication in the body, Anti metabolites.

APPLIED PHARAMACOLOGY AND THERAPEUTCS:

Definition of terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and syphilitic drugs, Analgesics, and antipyretics, Antiseptics, Styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C and K etc. Chemotherapy and Radiotherapy

APPLIED PATHOLOGY:

Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

APPLIED MICROBIOLOGY:

Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, pneumo, gono and meningococci, Clostridia group of organisms, Spirochetes, organism of tuberculosis, leprosy, diphtheria, actinomycosis and monsiliasis etc. Virology, Cross infection control, sterilization and hospital waste management

a) Applied oral pathology:

Developmental disturbances of oral and Para oral structures, Regressive changes of teeth Bacterial, viral and mycotic infections of oral cavity, Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the oral cavity.

b) Laboratory determinations:

Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures – urine analysis and culture

BIOSTATISTICS:

Study of Biostatistics as applied to dentistry and research Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data

INTRODUCTION TO BIOSTATISICS:

Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, binominal distributions normal distribution and Poisson distribution, Tests of significance.

RESEARCH METHODOLOGY:

Understanding and evaluating dental research scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgments, Judgment under uncertainty, clinical vs., scientific judgment, problem with clinical judgment, forming scientific judgments, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgment : Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

APPLIED RADIOLOGY:

Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of x-ray production, Applied principles of radio therapy and after care.

ROENTGENOGRAPHIC TECHNIQUES:

Intra oral: Extra oral roentgenography, Methods of localization digital radiology and ultra sound, Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

APPLIED MEDICINE:

Systemic diseases and its influence on general health and oral and dental health. Medical emergencies in the dental offices – prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premeditation, and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens. Assessment of case, premaliation, inhibition, monitoring, extubalin, complication assists in O.T. for anesthesia.

APPLIED SURGERY & ANESTHSIA:

General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts etc, surgical techniques, nursing assistance, anesthetic assistance.

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

PLASTIC SURGERY:

Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIAL:

All material used for treatment of craniofacial disorders – clinical, treatment, and laboratory materials associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.

Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities includes honorable accepted methods of diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.

Understanding all applied aspects for achieving physical, psychological well being of the patient for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient

The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology

Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and Prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.

TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.

Student shall acquire knowledge of testing biological, mechanical and other physical property of all material used for the clinical and laboratory procedures in Prosthodontic therapy.

Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.

All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waster management.

1) REMOVABLE PROSTHODONTICS AND IMPLANTS

a. Prosthodontic treatment for completely edentulous patients - Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous
b. Prosthodontic treatment for partially edentulous patients:- Clasp – retained partial dentures, intra, coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

Prosthodontic treatment for edentulous patients:- Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis – Definitions, terminology, G.P.T., Boucher's clinical dental terminology

Scope of Prosthodontic – the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,

Infection control, cross infection barrier – Clinical and laboratory and hospital and lab waste management

a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete denture, Biological considerations Functional and para functional considerations, esthetics, behavioral and adaptive responses, Temporomandibular joints changes.
b) Effects of aging of edentulous patients – aging population, distribution and edentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age
c) Sequalae caused by wearing complete denture – the denture in the oral environment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional deficiencies, nutritional status and masticatory functions.

d) Temporomandibular disorders in edentulous patients – Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities.

e) Nutrition Care for the denture wearing patient – Impact of dental status of older adults, Calcium and Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, Vitamin and herbal supplementation, dietary counseling and risk factor for bone health, vitamin and herbal supplementation, dietary counseling and risks factor for malnutrition in patients with dentures and when teeth are extracted.

f) Preparing patient for complete denture patients – Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification, data, problem identification, prognosis and treatment identification data problem identification, prognosis and treatment planning – contributing history – patient's history, Social information, medical status – systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, attitude, psychological changes, adaptability, geriatric changes – physiologic, pathologic, pathological, pathological and intra oral changes. Intra oral health – mucose membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement – sulci or fosse, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.

Specific observations – existing denture, soft tissue health, hard tissue health – teeth bone

Biomechanical considerations - jaw relations, border tissues, saliva, and muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

g) Pre prosthetic surgery – Improving the patients denture bearing areas and ridge relations:- Non surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods – Corrections of conditions, that preclude optimal prosthetic function – hyperplasic ridge – epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation maxillary and Mandibular oral implants, correction of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with O integrated denture implants.

h) Immediate Denture – Advantages, disadvantages, contra indication, diagnostic treatment plan and prognosis, Explanation to the patient, oral examinations, examinations of existing prosthesis, tooth modification, prognosis, referral / adjunctive care, oral prophylaxis and other treatment needs.

First extraction / surgical visit, preliminary impressions and diagnosis casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flaking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implant attachments.

i) Over denture (tooth supported complete dentures) – indications and treatment planning, advantages and disadvantages, selection of abutment teeth, lose of abutment teeth, tooth supposed complete dentures. Non-coping abutment, abutment with

copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to appose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and mental trauma.

k) Art of communication in the managements of the edentulous predicament – Communication – scope, a model of communication, why communication important, what are the elements of effective communications, special significant of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

l) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases-base metal alloys.

m) Articulators – Classification, selection, limitations, precision, accuracy and sensitivity and functional activities of the lower member of the articulator and uses,

n) Fabrications of complete dentures – complete denture impressions – muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives – preservation, support, stability, aesthetics, and retention. Impression materials and technique – need of 2 impressions the preliminary impression and final impression.

Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-Mandible – anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray / , final impressions.

o) Mandibular movements, Maxillo mandibular relation and concepts of occlusion – Gnathology, identification of shape and location of arch form – Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusal, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records, from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position, Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical

dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow records, Significance and requirement, principles and biological considerations and securing on articulators.

p) Selecting and arranging artificial teeth and occlusion for the edentulous patient – anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, factors governing position of teeth– horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.

q) The Try in – verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

r) Speech considerations with complete dentures – speech production – structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

s) Waxing contouring and processing the dentures their fit and insertion and after care – laboratory procedure – wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors, special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, speaking with dentures, oral hygiene with dentures, preserving of residual ridges and educational materials for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty – four hours oral examination and treatment and preventive Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

t) Implant supported Prosthesis for partially edentulous patients – Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.

u) Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing and complications.

Introduction and Historical Review
Biological, clinical and surgical aspects of oral implants
Diagnosis and treatment planning
Radiological interpretation for selection of fixtures
Radiological interpretation for selection of fixtures
Splints for guidance fort surgical placement of fixtures
Intra oral plastic surgery
Guided bone and Tissue generation consideration for implants fixture
Implants supported prosthesis for complete edentulism and partial edentulism
Occlusion for implants support prosthesis

Peri-implant tissue and management
Maintenance and after care
Management of failed restoration
Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontic –

a) Scope definition and terminology, Classification of partially edentulous arches – requirements of an acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification.

b) Components of RPD – major connector – mandibular and maxillary, minor connectors, design, functions, from and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

Rest and rest seats – from of the Occlusal rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

Direct retainer – Internal attachment, extracoronal direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing – reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

Indirect Retainer – denture rotation about an axis, factors influencing effectiveness of indirect retainers, from of indirect retainers, auxiliary occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – Indirect retention.

Principles of removable partial Denture design – bio mechanic considerations, and the factors influence after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partial to gain support.

c) Education of patient

d) Diagnosis and treatment planning

e) Design, treatment sequencing and mouth preparation

f) Surveying – Description of dental surveyor, purpose of surveying, Aims and objective in surveying of diagnosis cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout, and relief.

g) Diagnosis and treatment planning – Infection control and cross infection barriers – clinical and laboratory and hospital waste management, objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal

considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth reduction of unfavorable tooth contours, differential diagnosis: fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials.

h) Preparation of Mouth for removable partial dentures – Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, Periodontal surgery.

i) Preparation of Abutment teeth – Classification of abutment teeth, sequence of abutment preparation on sound enamel or existing restorations, conservative restoration < using crown, splinting abutment teeth, utilization, temporary crown to be used as abutment.

j) Impression Materials and Procedures for Removable partial Dentures – Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.

k) Support for the Distal Extension Denture Base – Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.

l) Laboratory Procedures – Duplicating a stone cast, Waxing the partial denture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record, bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, type of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

m) Initial placement, adjustment and servicing of the removable partial denture – adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient follow – up services.

n) Relining and Rebasing the removable partial dentures – Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.

o) Repairs and additions to removable partial dentures - Broken clasp arms, fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.

p) Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, class II resection, mandibular flange prosthesis, jaw relation record

q) Management of failed restoration and work authorization.

II. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions – clinical and patient – Cancer Chemotherapy: Oral Manifestations, Complications, and management, Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration) – Acquired defects of the mandible, acquired defects of hard palate, soft palate, Clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palace, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalomos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible compromise by radiotherapy, Craniofacial Osseo integration, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

III. OCCLUSION

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical physiological, neuro – muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosis intra articular problem, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-mann-schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth functionally generated path techniques for recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalmetric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

IV. FIXED PROTHODONTICS

Scope definitions and terminology, classification and principles, design, mechanical and biological consideration of components – Retainers, connectors, pontics, work authorization.

Diagnosis and treatment planning – patient history and interview, patients desires and expectations, and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast,

radiographic interpretation, Anesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments, for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles mastication and comprehensive planning and prognosis.

Management of Carious teeth – caries in aged, caries control, removal carious, protection of pulp, reconstruction measure for compromising teeth – retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.

Periodontal considerations – attachment units, ligaments, gingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingiva, interdental papilla, gingival embrasures, gingival / periodontal Prosthesis radiographic interpretations of Periodontia, intraoral, Periodontal splinting – fixed Prosthodontics with periodontially compromised dentitions, placements of margin restorations.

Biomechanical principle of tooth preparations – individual tooth preparations – Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incerem etc. porcelain jacket crowns partial 3/4, fronional half, radicular 7/8, telescopic, pin-ledge, laminates, inlays, onlays and preparations for restoration of teeth-amalgam, glass Ionomer and composite resins, Resin Bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – Intracoronal retainer and precision attachments – custom made and ready made

Isolation and fluid control – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of Occlusal relations, cementing of restoration.

Resins, Gold and gold alloys, glass Ionomer, restorations.

Restoration of endodontically treated teeth, Stomatognathic Dysfunction and management

Management of failed restorations

Osseo integrated supported fixed Prosthodontics – Osseo integrated supported and tooth supported fixed Prosthodontics

V. TMJ – Temporomandibular joint dysfunction – Scope, definitions, and terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds. temporomandibular joint disorders

Anatomy related, trauma, disc displacement, Osteoarthrosis / Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrrosis disease, Ostonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

Etiology, diagnosis and Cranio mandibular pain, differential diagnosis and management of physiologic – endogenous control, acupuncture analgesia, Placebo effects in analgesia, Trigeminal neuralgia, Temporal arteritis

Occlusal splint therapy – construction and fitting of occlusal splints and physical muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.

Occlusal adjustment procedures – Reversible – Occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy of irreversible therapy – occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment Indication for occlusal adjustment, special nature of orofacial pain, indication for occlusal adjustment special nature of orofacial pain, psychopathological considerations, occlusal adjustment, significance of a slide in centric Preclinical procedures, clinical procedures for occlusal adjustment.

VI. AESTHETIC

SCOPE, DEFINITIONS:

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components and physical components, Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercise Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, from size, shape, color, embrasures, contact point.

TEACHING AND LEARNING ACTIVITIES:

All the candidates registered for MDS course shall pursue the course for a period of three years as full – time students. During this period each student shall take part actively in learning and teaching activities designed by the Institution / University. The following teaching and learning activities in each speciality

Prosthodontic treatment should be practiced by developing skills by teaching various and more number of patients to establish skill for diagnose and treatment and after care with bio – mechanical, biological, bio- esthetics, Bio-phonetics and all treatment should be carried out in more number for developing clinical skill

1. **Lectures:** There shall be didactic lectures both in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics
2. **Journal club:** The journal review meeting shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. Each trainee should make presentations from the allotted journal of selected articles at least 5 times in a year
3. **Seminars:** The seminars shall be held at least twice a week in the department, all trainees associated with postgraduate teaching are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5 – seminar presentation in each year.
4. **Symposium:** It is recommended to hold symposium on topics covering multiple disciplines one in each academic year

5. **Workshop:** It is recommended to hold workshop on topics covering multiple disciplines one in each academic year.
6. **Clinical Posting:** Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated be a specialist
7. **Clinico Pathological Conference:** The Clinico pathological conference should be held once in a mouth involving the faculties of oral biology, oral medicine and radiology, oral pathology, oral surgery, period-ontology, endodontia and concerned clinical department. The trainees should be encouraged to present the clinical detail, radiological and histo-pathological interpretations and participation in the discussions.
8. **Interdepartmental Meetings:** To bring in more integration among various specialities there shall be interdepartmental meeting chaired by the dean with all heads of postgraduate departments atleast once a month.
9. **Rural oriented prosthodontics health care**: To carry out a prosthodontic therapy interacting with rural centers and the institution.
10. **Teaching skills:** All the trainees shall be encouraged to take part in undergraduate teaching programme either in the from of lectures or group discussions
11. **Evaluation skills:** All the trainees shall be encouraged to enhance their skills and knowledge in clinical, laboratory practice including theory by formulating question banks and model answers.
12. **Continuing dental Education programme:** Each Postgraduate department shall organize these programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.
13. **Conference / Workshop / Advanced courses:** The trainee shall be encouraged not only to attend conference / Workshop / advance course but also to present atleast two papers at state / national speciality meeting during their courses but also to present atleast
14. **Rotational posting in other Departments:** To bring in more integration between the speciality and allied fields each post graduate department shall workout a programme to rotate the trainees in related disciplines and craniofacial and maxillofacial ward
15. **Dissertation:** Trainees shall prepare a dissertation based on the clinical or laboratory experimental work or any other study conducted by them under the supervision of the post graduate guide.

I YEAR M.D.S.

Theoretical exposure of all applied of study

Clinical and non-clinical exercise involved in Prosthodontics therapy for assessment and acquiring higher competence

Commencement of library assignment within six month.

Short epidemiological study relevant to prosthodontics.

Acquaintance with books, journals and referrals to acquire knowledge of published books, journals and website for the purpose of gaining knowledge and reference – in the fields of Prosthodontics including Crown & bridge and implantology

Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.

To acquire knowledge of Dental Materials Science – Biological and biomechanical & bioesthetics, knowledge of using materials in laboratory and clinics including testing methods for dental materials.

Participation and presentation in seminars, didactic lectures

Evaluation – Internal Assessment examinations on Applied subjects.

II YEAR M.D.S.

Acquiring confidence in obtaining various phase and techniques for providing Prosthodontic therapy.

Acquiring confidence by clinical practice with sufficient numbers of patients requiring tooth and tooth surface restorations.

Fabrication of Adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.

Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.

Adequate numbers of R.P.D. covering all partially edentulous situation

Adequate number of Crowns, Inlays, laminates, F.P.D. Covering all clinical situation

Selection of cases and principles in treatment of partially of complete edentulous patients by implants supported prosthesis.

Treating single edentulous arch situation by implants supported prosthesis

Diagnosis and treatment planning for implants prosthesis

1st stage and 2nd stage implants surgery

Understanding the maxillofacial Prosthodontics

Tranning Craniofacial defects

Management of failed restoration

Prosthetic management of TMJ syndrome

Occlusal rehabilitation

Management of failed restoration

Prosthodontic Managements of patient with psychogenic disorder.

Practice of child and geriatric prosthodontics

Participation and presentation in seminars, didactics lectures

Evaluation – Internal Assessment examinations

III YEAR M.D.S.

Clinical and laboratory practice continued from 2nd year

Occlusion equilibration producers – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.

Practice of dental, oral and facial esthetics

The clinical practice of all aspects of Prosthodontic therapy for elderly patients.

Implants Prosthodontics – Rehabilitation of partial Edentulous, Complete edentulism and for craniofacial Prosthodontics

Failures in all aspects of Prosthodontics and its managements and after care.

Team managements for esthetics, TMJ syndrome and Maxillofacial and Craniofacial Prosthodontics

Managements of Prosthodontics emergencies, resuscitation.

Candidate should complete the course by attending by large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation requiring different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D. FPD. Immediate dentures over dentures implant supported prosthesis, maxillofacial of TMJ syndrome

Prosthetic management of TMJ syndrome

Management of failed restorations
Complete and submit Library Assignment 6 month prior to examination
Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshop and reading.
Participation and presentation in seminars, didactic lectures
Evaluation – Internal Assessment examination three months before University examinations

PROSTHODOTIC TREATMENT MODALITES

1. Diagnosis and treatment plan in prosthodontics
2. Tooth and tooth surface restorations
   - Fillings
   - Veneers – composite and ceramics
   - Inlays – composite, ceramic and alloys
   - Onlay – composite, ceramic and alloys
   - Partial crowns – ¾ th, 4/5 th, 7/8 th, ½ crowns
   - Pin ledge
   - Radicular crowns
   - Full crowns

3. Tooth replacements

	PARTAL	**COMPLETE**
Tooth supported	Fixed partial denture	Overdenture
Tissue supported	Interim partial denture	Complete denture
	Intermediate partial denture	Immediate denture
		Immediate complete denture
Tooth and tissue Supported	Cast partial denture Precision attachment	Overdenture
Implant supported	Cement retained Screw retained Clip attachment	Bar attachment Ball attachment
Tooth and implant Supported	Screw retained Cement retained	
Root supported	Dowel and core Pin retained	Overdenture

- Precision attachments

Intra coronal attachments
Extra coronal attachments
Bar – slide attachments
Joints and hinge joints attachments

4. Tooth and tissue defects (Maxillo – facial and Cranio-facial prosthesis)

A. Congenital Defects

a. Cleft lip and palate
b. Pierre Robin syndrome
c. Ectodermal dysphasia
d. Hemifacial microsomia
e. Anodontia
f. Oligonontia
g. Malformed teeth

→ cast partial denture
→ implants supported prosthesis
→ complete dentures
→ fixed partial dentiures

B. Acquired defects

a. Head and neck cancer patient – Prosthodontics splints and stents
b. Restoration of facial defects
   - Auricular prosthesis
   - Nasal prosthesis
   - Orbital prosthesis
   - Craniofacial implants
c. Midfacial defects
d. Restoration of maxillofacial trauma
e. Hemimandibulectomy → cast partial denture
f. Maxillectomy → implant supported dentures
g. Lip and cheek support prosthesis → complete dentures
h. Ocular prosthesis
i. Speech and Velopharyngeal prosthesis
j. Laryngectomy aids
k. Esophageal Prosthesis
l. Nasal stents
m. Tongue prosthesis
n. Burn stents
o. Auditory inserts
p. Trismus appliances

5. T.M.J. and Occlusal disturbances

a. Occlusal equilibration
b. Splints – Diagnostics
   - Repositioners / Deprogrammers
c. Anterior bite plate
d. Posterior bite plate
e. Bite raising appliances
f. Occlusal rehabilitation

6. Esthetic / Smile designing

a. Laminates / Veneers
b. Tooth contouring (peg laterals, malformed teeth)
c. Tooth replacement
d. Team management

7. Psychological therapy

a. Questionnaires
b. Charts, papers, photographs
c. Models

d. Case report
e. Patient counseling
f. Behavioral modifications
g. Referrals

8. Geriatric Prosthodontics

a. Prosthodontics for the elderly
b. Behavioral and psychological counseling
c. Removable and psychological counseling
d. Fixed Prosthodontics
e. Implants supported Prosthodontics
f. Maxillofacial Prosthodontics
g. Psychological and physiological considerations

9. Preventive measures

a. Diet and nutrition modulation and counseling
b. Referrals

The bench work should be completed before the clinical work starts during the first years of the MDS Course

I. Complete dentures

1. Arrangements in adjustable articular for
   Class I
   Class II
   Class III
2. Various face bow transfer to adjustable articulators
3. Processing of characterized anatomical denture

II. Removable partial denture

1. Design for Kennedy's Classification
   (Survey, block out and design)
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
2. Designing of Various components of RPD
3. Wax pattern on refractory cast
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
4. Casting and finishing of metal frameworks
5. Acrylisation on metal frameworks for
   Class I
   Class III with modification

III. Fixed Partial Denture

1. Preparation in ivory teeth / natural teeth
   FVC for metal
   FVC for ceramic
   Porcelain jacket crown

Acrylic jacket crown
PFM crown
3/4th (canine, premolar and central)
7/8th posterior
Proximal half crown
Inlay – class I,II,V
Onlay – Pin ledged, pinhole
Laminates

2. Preparation of different die system
3. Fabrication of wax pattern by drop wax build up technique.
   Wax in increments to produce wax coping over dies of tooth preparations on substructures
   Wax additive technique
   3 – unit wax pattern (maxillary and mandibular)
   Full month
4. Pontic design in wax pattern
   Ridge lap
   Sanitary
   Modified ridge lap
   Modified sanitary
   Spheroidal or conical
5. Fabrication of metal framework
   Full metal bridge for posterior (3 units)
   Coping for anterior (3 units)
   Full metal with acrylic facing
   Adhesive bridge for anterior
   Coping for metal margin ceramic crown
   Pin ledge crown
6. Fabrication crowns
   All ceramic crowns with characterisation
   Metal ceramic crowns with characterisation
   Full metal crown
   Precious metal crown
   Post ledge crown
7. Laminates
   Composites with characterisation
   Ceramic with characterisation
   Acrylic
8. Preparation for composites
   Laminates
   Crown
   Inlay
   Onlay
   Class I
   Class II
   Class III
   Class IV
   Fractured anterior tooth

IV. Maxillofacial prosthesis

1. Eye
2. Ear
3. Nose
4. Face
5. Body
6. Cranial
7. Maxillectomy
8. Hemimandibulectomy
9. Finger prosthesis
10. Guiding flange
11. Obturator

V. Implant Supported prosthesis

1. Step by step procedures – laboratory phase

VI. Other exercises

1. TMJ splints – stabilization appliances, maxillary and Mandibular repositioning appliances
2. Anterior disclusion appliances
3. Chrome cobalt and acrylic resin stabilization appliances
4. Modification in accommodation in irregularities in dentures
5. Occlusal splint
6. Periodontal splint
7. Precision attachment – custom made
8. Over denture coping
9. Full month rehabilitation (by drop wax technique, ceramic buildup)
10. TMJ appliances – stabilization appliances

ESSENTIAL SKILLS:

*** Key**

O – Washes up and observes
A – Assists a senior
PA- Performs procedure under the direct supervision
PI – Performs independently

PROCEDURE	**CATEGORY**			
	O	A	PA	PI
Tooth and tooth surface restoration a) Composites – fillings, laminates, inlay, onlay b) Ceramics – laminates, inlays, onlays c) Glass Ionomer	 2 2 1	 2 2 1	 2 2 1	 10 10 10
CROWNS				
FVC for metal	1	2	2	10
FVC for ceramic	1	2	2	10
Previous metal crown	1	-	1	5
Galvanofomed crown	-	-	1	1
3/4th crowns (premolars, canines and centrals)	1	-	-	5
7/8th posterior crown	1	-	-	5
Proximal half crown	1	-	-	5
Pinledge and pinhole crowns	1	-	-	5

Telescopic crowns	1	-	-	5
Intraradicular crowns (central, lateral, canine, premolar, and molar)	1	-	-	5
Crown as implant supported prosthesis	1	-	1	5
FIXED PARTIAL DENTURES				
Cast porcelain (3 unit)	1	-	-	5
Cast metal – precious and non precious (3 unit posterior)	1	-	-	5
Porcelain fused metal (anterior and posterior)	1	1	1	10
Multiple abutment – maxillary and Mandibular full arch	1	1	1	5
Incorporation of custom made and ready made precision joint or attachment	1	1	1	4
Adhesive bridge for anterior / posterior	1	-	1	10
Metal fused to resin anterior FPD	-	-	1	5
Interim provisional restoration (crown and FPD)	1	1	1	10
Immediate fixed partial dentures (interim)	1	-	-	5
Fixed prosthesis a retention and rehabilitation for acquired and congenital defects – maxillofacial prosthetics	1	1	1	5
Implant supported prosthesis	1	-	1	1
Implant – tooth supported prosthesis	1	-	1	1
REMOVBLE PARTIAL DENTURE				
Provisional partial denture prosthesis	1	1	1	10
Cast removable partial denture (for Kennedy's Applegate classification with modification)	1	1	1	6
Removable bridge with precision attachments and telescopic crowns for anterior and posterior	1	1	2	4
Immediate RPD	1	1	1	5
Partial denture for medically compromised and handicapped patients	1	1	1	5
COMPLETE DENTURES				
Neurocentric occlusion & characterized prosthesis	-	-	1	5
Anatomic characterized prosthesis (by using semi adjustment articulator)	-	-	1	25
Single dentures	-	-	1	5
Overlay dentures	-	-	1	5
Interim complete dentures as a treatment prosthesis for abused denture supporting tissues	-	-	1	5
Complete denture prosthesis (for abnormal ridge relation, ridge from and ridge size)	-	-	1	5
Complete dentures for patients with TMJ syndromes	-	-	1	5
Complete dentures for medically compromised and handicapped patients	-	-	1	5

GENRIARIC PATIENTS				
Tooth and tooth surface restorations, crowns, fixed prosthesis, removable prosthesis	-	-	1	5
IMPLANT SUPPORTED COMPLETE PROSTHSIS				
Implant supported complete prosthesis (maxillary and Mandibular)	-	-	1	1
MAXILLOFACIAL PROSTHESIS				
Guiding flange and Obturators	-	-	1	4
Speech and palatal lift prosthesis	-	-	1	2
Eye prosthesis	-	-	1	2
Ear prosthesis	-	-	1	2
Nose prosthesis	-	-	1	2
Face prosthesis	-	-	-	1
Maxillectomy	-	-	1	2
Hemimandibulectomy	-	-	1	2
Cranioplasty	-	-	1	1
Finger / hand, foot	-	-	1	2
Body prosthesis	-	-	1	1
Management of burns, scars	-	-	-	1
TMJ SYNDORME MANAGEMENT				
Splint – periodontal, teeth , jaws	-	-	1	4
TMJ Supportive and treatment prosthesis	-	-	1	1
Stabilization appliance for maxilla and mandible with freedom to move from IP to CRCP	-	-	-	1
In IP without the freedom to move to CRCP	-	-	-	1
Responding appliance, anterior disclusion	-	-	-	1
Chrome cobalt and acrylic resin stabilization appliances for modification to accommodate for the irregularities in the dentition	-	-	-	2
Occlusal adjustment and occlusal equilibrium	-	-	1	4
FULL MOUTH REHABILITAION				
Full mouth rehabilitation – restoration of esthetics and function of stomatognathic system	-	-	1	4
INTER-DISCIPLINARY TREATMENT MODALITES				
Inter – disciplinary management – restoration of Orocraniofacial defect for esthetics, phonation, mastication and psychological comforts.	-	-	1	2
MANAGEMANT OF FAILD RESTORATION				
Tooth and tooth surface restoration	-	-	-	5
Removable prosthesis	-	-	-	10
Crowns and fixed prosthesis	-	-	-	5
Maxillofacial prosthesis	-	-	-	2
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	2

Restoration failure of psychogenic origin	-	-	-	5
Restoration failure of age changes	-	-	-	2

SCHEME OF EXAMINATION:

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all papers. Distribution of topics for each paper will be as follows:*

Paper I : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetic, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology , Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Paper II : Removable Prosthodontics and Implant supported prosthosis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper III : Fixed Prosthodontics, occlusion, TMJ and esthetics

Paper IV : Essay

**The topics assigned to the different papers are generally evaluated under those sections. However a Examination of the subjects may not be possible and some overlapping of topics is inevitable. Students should be prepared be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 marks

Examination shall be for three days. If there are more than 6 candidates, If may be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours day including viva voce.

1. Presentation of treated patients and records during their 3 years training period - 25 marks

a) C.D. -1 marks
b) R.P.D. - 2 marks
c) F.P.D. including single tooth and surface restoration - 2 marks
d) I.S.P - 5 marks
e) Occlusal rehabilitation - 5 marks
f) T.M.J. - 5 marks
g) Maxillofacial Prosthesis - 5 marks

2. Present actual treated patients C.D. Prosthesis and Insertion – 90 Marks

1. Discussion on treatment plan and patient review -10 marks
2. Tentative jaw relation records - 5 marks
3. Face Bow – transfer - 5marks
4. Transferring it on articulators - 5 marks
5. Extra oral tracing and securing centric and protrusive / lateral, record - 25marks
6. Transfer in on articular - 5 marks
7. Selection of teeth - 5 marks
8. Arrangement of teeth - 15 marks
9. Waxedup denture trial -10 marks
10. Fit, insertion and instruction of previously processed characterized, anatomic complete denture prosthesis - 5 marks

All Steps will include chairside, lab and viva voce

3. Fixed partial Denture - 50 Marks

a) Case discussion and selection of patients for F.P.D. - 5 marks
b) Abutment Preparation isolation and fluid control - 25 marks
c) Gingival retraction and impressions - 10 marks
d) Cementation of provisional restoration - 10 marks

4. Removable Partial Denture - 35 Marks

a) Surveying and designing of partial denture cast. - 10 marks
b) Discussion on components and material selection including occlusal scheme - 15 marks

C. Viva Voce: 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach expression interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: -20 marks

A topic be given to each candidate in the beginning of clinical examination. He/She is asked to make a presentation on the topic for 8-10 minutes.

SYLLABUS MDS PART – II
SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

(i) PROSTHODONTICS AND CROWN & BRIDGE

Part-II

Paper-I : Removable Prosthodontics and Implant supported prosthosis(Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper-II : Fixed Prosthodontics, occlusion, TMJ and esthetics.

Paper-III : Descriptive and analysing type question

[Published in the Gazette of India, Part III, Section 4.]

DENTAL COUNCIL OF INDIA

NOTIFICATION

New Delhi, dated 5th November, 2017.

No.DE-87-2017–In exercise of the powers conferred by clauses (g), (h) and (ha) of sub-section (2) of section 20 of the Dentists Act, 1948 (16 of 1948), the Dental Council of India, after consultation with the State Governments as required under clause (g) and (h) of the said Act, and in supersession of the Dental Council of India Revised MDS Course Regulations, 2007 except as respects things done or omitted to be done before such supersession, the Dental Council of India with the approval of the Central Government hereby makes the following regulations, namely:–

PART– I

PRELIMINARY

1. Short title and commencement.– (1) These regulations may be called the Dental Council of India, Master of Dental Surgery Course Regulations, 2017.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions – In these regulations unless the context otherwise requires:-

(a) "Act" means the Dentists Act, 1948 (16 of 1948)
(b) "the Council" means the Dental Council of India constituted under section 3 of the Act;
(c) "dentistry" includes._
  (i) the performance of any operation on, and the treatment on any disease, deficiency or lesion of, human teeth or jaws, and the performance of radiographic work in connection with human teeth or jaws or the oral cavity;
  (ii) the giving of any anesthetic in connection with any such operation or treatment;
  (iii) the mechanical construction or the renewal of artificial dentures or restorative dental appliances;
  (iv) the performance of any operation on, or the giving of any treatment, advice or attendance to, any person preparatory to, or for the purpose of, or in connection with, the fitting, inserting, fixing, constructing, repairing or renewing of artificial dentures or restorative dental appliances, and the performance of any such operation and the giving of any such treatment, advice or attendance, as is usually performed or given by dentists;
(d) "NEET" means the National Eligibility-cum-Entrance Test conducted by the National Board of Examination for admission to post-graduate courses;
(e) "University" means a university established or incorporated by or under a Central Act, a Provincial Act or a State Act, and includes any such institution as may, in consultation with the university concerned, be recognised by the University Grant Commission in accordance with the regulations made in this behalf under this Act.

PART - II

GENERAL CONDITIONS TO BE OBSERVED BY POST GRADUATE TEACHING INSTITUTIONS

3. GENERAL CONDITIONS._ (1) The institutions recognised by the Central Government and after consultation with the Council shall be eligible for conducting the post-graduate degree or diploma course(s).

(2) The maximum number of students for a post-graduate course, for training for the award of post-graduate degree or diploma by the affiliating university, shall be determined by the facilities available in the department in terms of infrastructure, teaching staff and clinical teaching material. However, to start with, a maximum of three post-graduate students, (one Unit) shall be permitted in a speciality department. The annual intake capacity recommended by the Council and approved by the Central Government for the academic year shall be final. No institution shall be permitted to increase more than three seats at a time in its annual intake capacity in a particular speciality in a given academic year. Not more than two units consisting of six seats (including increase of seats) shall be granted to any dental institutions for each speciality.

(3) The students undergoing post-graduate courses shall be exposed to the following:-

(i) basics of bio-statistics and research methodology;
(ii) basics of human behaviour studies;
(iii) basics of pharmaco-economics;
(iv) introduction to the non-linear mathematics.

4. ETHICS IN DENTISTRY._

There is a definite shift from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

5. ELIGIBILITY FOR ADMISSION._

A candidate for admission to the Master in Dental Surgery course, must possess a recognised degree of Bachelor in Dental Surgery awarded by a university or institute in India and registered with the State Dental Council and has obtained provisional or permanent registration and has undergone compulsory rotatory internship of a year in an approved/recognised dental college:

Provided that in the case of a foreign national, the following procedure shall be followed:-

The Council may, on payment of the prescribed fee for registration, grant temporary registration for the duration of the post-graduate training restricted to the dental college/institution to which he or she is admitted for the time being exclusively for post-graduate studies:

Provided further that temporary registration to such foreign national shall be subject to the condition that such person is duly registered as medical practitioner in his/her own country from which he/she has obtained his/her basics dental qualification and that his/her degree is recognized by the corresponding state dental council or concerned authority.

6. SELECTION OF CANDIDATE FOR POST-GRADUATE COURSES._

There shall be a uniform NEET for admission to the post-graduate dental courses in each academic year conducted in the manner, as prescribed by the National Board of Examination or any other authority appointed by the Central Government in this behalf. The overall superintendence, direction and control of the NEET shall vest with the Council.

7. QUALIFYING CRITERIA FOR ADMISSION TO POST-GRADUATE COURSES._ (1) The candidate has to secure the following category-wise minimum percentile in NEET for admission to post-graduate courses held in a particular academic year.

General	50th Percentile
Person with locomotory disability of lower limbs	45th Percentile
Scheduled Castes, Scheduled Tribes, Other Backward Classes	40th Percentile

Provided that the percentile shall be determined on the basis of highest marks secured in the All-India common merit list in NEET for post-graduate courses:

~~Provided further, that when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in NEET held for any academic year for admission to post-graduate courses, the Central Government in consultation with the Council may, at its discretion lower the minimum marks required for admission to post-graduate courses for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.~~

The above proviso has been substituted in terms of (1st Amendment) notification published on 15.03.2018 in the Gazette of India and the same is as under:-

Provided further that when the number of qualifying candidates in the respective categories on the basis of the above mentioned percentile are less than three times the number of vacancies, the cut-off percentile will be automatically lowered in such a manner that the number of eligible candidates shall be minimum three times the number of seats in each respective category.

(2) The reservation of seats in dental college/institutions for respective categories shall be as per applicable laws prevailing in States/Union territories. An all India merit list as well as State-wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in NEET Test and candidates shall be admitted to post-graduate courses from the said merit list only:

The following words has been substituted in terms of (2nd Amendment) notification published on 18.09.2018 in the Gazette of India

Provided that in determining the merit of candidates who are in service of Government/public authority, weightage in the marks may be given by the Government/competent authority as an incentive upto 10% of the marks obtained for each year of service in ~~remote and/or difficult areas~~ remote and/or difficult or rural areas upto the maximum of 30% of the marks obtained in NEET. The ~~remote and difficult areas~~ remote, difficult and rural areas shall be as defined by State Government / competent authority from time to time.

(3) A candidate who has failed to secure the minimum percentile as prescribed in these regulations, shall not be admitted to any post-graduate courses in any academic year.

(4) Minimum 5% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50% to 70%:

Provided that in case any seat in this quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50% to 70% then any such unfilled seat shall be filled up by persons with locomotory disability of lower limbs between 40% to 50% - before they are included in the annual sanctioned seats for general category candidates:

Provided further that this entire exercise shall be completed by each dental college/institution as per the statutory time schedule for admissions.

8. COMMENCEMENT OF ACADEMIC SESSION AND CUT-OFF DATE FOR ADMISSION._

(1) The academic session shall be commenced from 1st of May and the cut-off date for admission, even for stray vacancies, in the Master of Dental Surgery course shall be 31st of May, every year. The universities and other institutions shall start the admission process in such a way that teaching in post-graduate courses starts by 1st May each year for which they shall strictly adhere to the time schedule specified in the Dental Council of India (Establishment of new dental colleges, opening of higher courses of study and increase of admission capacity in existing dental colleges) Regulations, 2006.

(2) There shall be no admission of students in respect of any academic session beyond the 31st May for post-graduate courses under any circumstances. The universities or institute shall not register any student beyond the said date; in case, any institution which grants admission to any student after the last date specified for the same shall also be liable to face such action including surrender of seats equivalent to the extent of such admission made from its sanctioned intake capacity for the succeeding academic year.

(3) The Council may direct, that any student identified as having obtained his/her admission after the last date for closure of admission be discharged from the course of study, or any dental qualification granted to such a student shall not be a recognised qualification for the purpose of the Act.

9. COMMON COUNSELING. – (1) There shall be a common counseling for admission to all post-graduate courses (Diploma/MDS) in all dental educational institutions on the basis of merit list of the NEET.

(2) The designated authority for counseling for the 50% All India Quota seats of the contributing States, as per the existing scheme for post graduate (Diploma/MDS) courses shall be the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India. Further Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India shall conduct counseling for all post-graduate (Diploma/MDS) Courses in Dental Educational Institutions of the Central Government, Universities established by an Act of Parliament and the Deemed Universities.

(3) The counseling for admission to post-graduate (Diploma/MDS) courses in all dental Educational Institutions in a State/Union Territory, including dental educational institutions established by the State Government, University established by an Act of State/Union Territory Legislature, Trust, Society, Minority Institutions shall be conducted by the State/Union Territory Government.

(4) In case, any dispute arises on such common counseling, the matter to the Central Government and its decisions shall be final, in this regard.

10. INFORMATION ON ADMISSION AND SCHEDULE OF EXAMINATION._ Every dental institution and its affiliating university shall furnish information on admissions in the courses of study, schedule of examinations to the Council, in such form as the Council may specify, within stipulated period from time to time.

11. PERIOD OF TRAINING._ (1) The period of training for the award of the MDS course shall be of three years duration for three academic years as full time candidates in an institution including the period of examination:

Provided that the time period required for passing out of the MDS course shall be a maximum of six years from the date of admission in said course:

Provided further that the duration of the post-graduate course for the post-graduate Diploma holders shall be of two years in the respective speciality. The syllabus and curriculum shall be the same as MDS Course in the concerned speciality except that they are not required (i) to undergo study and training in Basic Sciences and (ii) pass the PART-I Examination of MDS Course. However, they have to submit the dissertation work, as part of the post-graduate programme.

(2) During the period, each student shall take part actively in learning and teaching activities design of training, by the institution or the university. The teaching and learning activities in each speciality, shall be as under:-

(a) LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles. A model check list for the evaluation of journal review presentation is annexed at Schedule-I of these regulations.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook. A model check list for the evaluation of seminar presentation is annexed at Schedule-II of these regulations.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases, A model check list for evaluation of clinical postings is annexed at Schedule-III of these regulations.

(f) CLINICO- PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions. A model check list for evaluation of teaching skills is annexed at Schedule-IV of these regulations.

(i) DENTAL EDUCATION PROGRAMMES:

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

(j) CONFERENCES / WORKSHOPS / ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State / national level speciality and allied conferences / conventions during the training period.

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialities and allied fields, each department shall workout a programme to rotate the trainees in related disciplines.

(l) DISSERTATION / THESIS:

The trainees shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the guide. A model check list for evaluation of dissertation presentation and continuous evaluation of dissertation work by guide / co-guide is annexed at Schedule-V of these regulations. A model overall assessment sheet to be filled by all the trainees undergoing post-graduate course is annexed at Schedule-VI of these regulations.

(3) All the students of the speciality departments shall complete the minimum quota for the teaching and learning activities, as follows:-

(a)	Journal Clubs	: 5 in a year
(b)	Seminars	: 5 in a year
(c)	Clinical Case Presentations	: 4 in a year

(d)	Lectures taken for undergraduates	:	1 in a year
(e)	Scientific Paper / Poster Presentations In State / National Level Conferences /	:	4 papers/posters during three years of training workshop period
(f)	Clinico Pathological Conferences	:	2 presentations during three years of training period
(g)	Scientific Publications (optional)	:	one publication in any indexed scientific journal
h)	Submission of Synopsis	:	one synopsis within six months from the date of commencement of the course
(i)	Submission of Dissertation months	:	one dissertation within six before appearing for the university examination
(j)	Submission of Library Dissertation	:	one dissertation within eighteen months from the date of commencement of the course

12. STIPEND._ The post-graduate students shall be paid stipend only for duration of three years of the course, as may be fixed by the Central Government/State Government/Union territory Administration or such authority as the respective government/administration may authorise. Where any dispute arises regarding any such stipend, including, quantum of stipend, it shall be considered and decided by the Central Government/respective State Government/Union territory Administration at its own level and its decision shall be final.

13. MIGRATION: Under no circumstances, the migration or the transfer of students undergoing post-graduate Degree/Diploma shall not be permitted by the university or the authority. No inter-change of the speciality in the same institution or in any other institution shall be permitted after the date of the commencement of session.

PART-III

14. INFRASTRUCTURE AND FUNCTIONAL REQUIREMENTS :

(1) **Space**: In addition to the undergraduate functional, facilities, the following physical facilities shall be made available to start a post-graduate training programme, namely:-

(a) a minimum of 125 sq ft. area for each dental chair in the clinic. The area of the clinic shall be in accordance with the number of dental chairs required to be placed in the department;

(b) each department shall be equipped with a seminar hall, library, sterilization room, (800 to 1000 sq.ft.)

(2) **Equipment**: Each department shall have adequate number of standard equipments available in the market as approved by the ISI.

The details of equipments specialities / unit wise is annexed as Schedule –VII to these regulations.

(3) **Library**: (a) There shall be a central library which shall provide the latest editions of books pertaining to the speciality and allied subjects. In additions to this, the departmental library shall be equipped with the latest books in the subjects concerned. In case, the central library is shared with the medical college, there shall be provision for additional space and separate budget for the dental college.

(b) In addition to books and journals in the library, internet, CDs, audio-visual facilities should be available.

(c) Minimum 15-20 titles of renowned authors, 4-6 international journals of the concerned speciality, alongwith 8-10 volumes of back issues of atleast 3 international journals of the concerned speciality should be available.

(d) All the journals of the speciality and allied subjects shall be available out of which 50% should be in print form.

Note: All the existing dental institutions shall comply with these requirements except the land requirement of five acres within a period of *three* years from the date of publication of these regulations in the Official Gazette.

Part - IV

STAFFING PATTERN FOR POST-GRADUATE COURSE

15. TEACHING STAFF:

In a unit, two post-graduate students shall be guided by a Professor and one student by a Reader or an Associate Professor. To strengthen and maintain the standards of post-graduate training, the following unit-wise staffing pattern has been made mandatory, for the starting of a post-graduate course, namely:-

Unit 1 :-

Departments/Specialty	Minimum faculty requirement of 1st Unit in an undergraduate institute having basic infrastructure of 50 admissions		
	Professor (HOD)	Readers/ Associate Professors	Lecturers/Assistant Professor
Prosthodontics and Crown & Bridge	1	3	4
Conservative Dentistry and Endodontics	1	3	4
Periodontology	1	2	2
Orthodontics & Dentofacial Orthopedics	1	2	2
Oral & Maxillofacial Surgery	1	2	2
Oral & Maxillofacial Pathology and Oral Microbiology	1	2	2
Oral Medicine & Radiology	1	2	2
Pediatric Dentistry	1	2	2

Public Health Dentistry	1	2	2

Departments/Specialty	Minimum faculty requirement of 1st Unit in an undergraduate institute having basic infrastructure of 100 admissions		
	Professor (HOD)	Readers/Associate Professor	Lecturer/Assistant Professors
Prosthodontics and Crown & Bridge	1	3	6
Conservative Dentistry and Endodontics	1	3	6
Periodontology	1	3	3
Orthodontics & Dentofacial Orthopedics	1	2	3
Oral & Maxillofacial Surgery	1	3	3
Oral & Maxillofacial Pathology and Oral Microbiology	1	2	3
Oral Medicine & Radiology	1	2	3
Pediatric Dentistry	1	2	3
Public Health Dentistry	1	2	3

Unit 2 :-

Each department shall have the following additional teaching faculty, over and above the requirement of Unit 1.

Professor	1
Reader/Associate Professor	1
Lecturer/Asst. Professor	2

Note:- The department, which does not have the above staffing pattern, shall not start post-graduate course in that speciality.

16. PART-TIME PROFESSOR._

Part-time professor who can put in at list four hours a day or eighty hours in a month are eligible to enroll only one post-graduate student under them and they shall be entitled to 50% of leave entitled for regular teaching faculty.

17. AGE, EDUCATIONAL QUALIFICATIONS AND TEACHING EXPERIENCE._

(a) HEAD OF THE DEPARTMENT:

A Bachelors Degree in Dental Surgery from an Indian University with Masters in Dental Surgery / Diplomate of National Board recognised by the Government of India on the recommendations of the Council, and with one year teaching

experience in the speciality as Professor, and shall have to acquire minimum points for publications as per the scheme given in the table.

(b) PROFESSOR:

A Bachelors Degree in Dental Surgery from an Indian University with Masters in Dental Surgery / Diplomate of National Board recognised by the Government of India on the recommendations of the Council, and with five years of teaching experience in the speciality as Reader/Associate Professor, and shall have to acquire minimum points for publications as per the scheme given in the table.

(c) READER/ASSOCIATE PROFESSOR:

A Bachelors Degree in Dental Surgery from an Indian University with Masters in Dental Surgery / Diplomate of National Board recognised by the Government of India on the recommendations of the Council, and with four years of teaching experience in the speciality after post-graduation, and shall have to acquire minimum points for publications as per the scheme given in the table.

(d) LECTURER/ASSISTANT PROFESSOR:

A Bachelors Degree in Dental Surgery from an Indian University with Masters in Dental Surgery / Diplomate of National Board recognised by the Government of India on the recommendations of the Council, in the speciality.

Note:

1. All the regular teaching faculty shall be full time.
2. Teaching experience gained in medical college, where there are no dental courses, shall not be accepted for teaching post-graduate students. Dental faculty with post-graduate qualification in dentistry, shifting from the dental department of a medical college shall have to complete minimum of three years of teaching experience in a dental college or institution before being accepted as post-graduate faculty.
3. In exceptional cases, the teaching experience, in Government dental colleges, may be considered for further promotion on the basis of total teaching experience.
4. The Reader/Associate Professor in a dental college shall attend teachers training program once in three years.
5. The Senior Residents with post-graduate qualification or Diplomate of National Board recognised by the Council, in the speciality having teaching experience in dental colleges may be considered equivalent to Lecturer/Assistant Professor.
6. Teaching experience in a private dental institution for less than one year shall not be considered relevant for post-graduate faculty.
7. The maximum age limit upto which a person can be appointed or granted extension or re-employed in service against the posts of dental teachers or Dean or Principal, as the case shall be, sixty five years.

Table - 1

	Category	Points
	Category I: (1) Journals Indexed to Pubmed – Medline Please see- www.ncbi.nlm.nih.gov/pubmed (2) Journals published by Indian/International Dental Speciality Associations approved by Dental Council of India.	15

	Category II: (1) Medical / Dental Journals published by Government Health Universities **awarding** dental degree or Govt. Universities **awarding** dental degree (2) Original Research/Study approved by I.C.M.R/Similar Govt. Bodies (3) Author of Text / Reference Book concerned to respective specialty (4) PhD. or any other similar additional qualification after MDS	10
	Category III: (1) Journals published by Deemed Universities / Dental Institutions / Indian Dental Association (2) Contribution of Chapters in the Text Book	5

Note:-

1. For any publication, except original research, first author (principal author) shall be given 100% points and remaining authors (co-authors) shall be given 50% points and upto a maximum of 5 co-authors will be considered.
2. For original research, all authors shall be given equal points and upto a maximum of 6 authors shall be considered.
3. Maximum of 3 publications shall be considered for allotting points in Category III.
4. Publication in tabloids / souvenirs / dental news magazines / abstracts of conference proceedings / letter of acceptance shall not be considered for allotment of points.

Total Score Required:

For Head of Department:	40 marks
Professor:	30 marks
Reader/Associate Professor:	20 marks

IMPORTANT:

1. A post-graduate teacher would be re-evaluated every three years and shall have at least an additional 15 points in their score.

2. A **Journal Review Expert Committee** may be formed which shall enlist all the available international and Indian dental journals in various categories. The list would be displayed on the Council's website. The Committee shall also be responsible for making annual review of the list of journals and shall continuously monitor the standard of publications in various journals and the categories of publications may be upgraded / downgraded, if the standard is not maintained by the journal. In case of any dispute, the recommendation of the Expert Committee shall be reviewed by the Executive Committee and decision of the Executive Committee would be final.

PART – V
EXAMINATIONS

18. EXAMINATIONS._

(a) ELIGIBILITY:

The following requirements shall be fulfilled by the candidate to become eligible for the final examination.

(i) Attendance: Every candidate shall secure (80% attendance during each academic year).

(ii) Progress and conduct: Every candidate shall participate in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year organised by the concerned department.

(iii) Work diary and log book: Every candidate shall maintain a work diary and log book as per Annexure-I appended to these regulations for recording his or her

participation in the training programmes conducted by the department. The work diary and log book shall be verified and certified by the Head of the Department of the institution. The certification of satisfactory progress is based on the work diary and log book.

(b) UNIVERSITY EXAMINATION._

The university examination shall consist of theory, practical and clinical examination and viva-voce and Pedagogy

(i) Theory:
Part-I: Shall consist of one paper
There shall be a theory examination in the Basic Sciences at the end of 1st year of course. The question papers shall be set and evaluated by the concerned Department/Specialty. The candidates shall have to secure a minimum of 50% in the Basic Sciences and shall have to pass the **Part-I** examination at least six months prior to the final (Part-II) examination.

Part-II: Shall consist of three papers, namely:–

(ii) Practical and Clinical Examination;
(iii) Viva-voce; and
(iv) Pedagogy.

A candidate who wishes to study in a second speciality, shall have to undergo the full course of three years duration in that speciality.

(c) DISSERTATION:

Every candidate appearing for the post-graduate degree examination shall at least six months prior to the examinations, submit with his form for examination, four typewritten copies of the dissertation undertaken by the candidate, prepared under the direction and guidance of his/her guide. The dissertation so submitted shall be referred to the examiners for their examination and acceptance of it shall be a condition precedent to allow the candidate to appear for the written part of the examination:

Provided that a candidate whose dissertation has been accepted by the examiner, but declared failed at the examination, shall be permitted to re-appear at the subsequent examination without a new dissertation:

Provided further that if the dissertation is rejected by the examiner, the examiner shall assign reasons therefor with suggestions for its improvement to the candidate and such candidate shall re-submit his/ her dissertation to the examiner who shall accept it before appearing in the examination.

(d) CLINICAL/PRACTICAL EXAMINATION:

Clinical/practical examination is designed to test the clinical skill, performance and competence of the candidate in skills such as communication, clinical examination, medical/dental procedures or prescription, exercise prescription, latest techniques, evaluation and interpretation of results so as to undertake independent work as a specialist. The affiliating university shall ensure that the candidate has been given ample opportunity to perform various clinical procedures.

The practical/clinical examination in all the specialities shall be conducted for six candidates in two days:

Provided that practical/clinical examination may be extended for one day, if it is not complete in two days.

(e) VIVA-VOCE EXAMINATION:

Viva voce examination aims at assessing the depth of knowledge, logical reasoning, confidence and communication skill of the students.

(f) SCHEME OF EXAMINATION:

Theory: Part-I: Basic Sciences Paper - **100 Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks** (100 Marks for each Paper)

Written examination shall consist of Basic Sciences (Part-I) of three hours duration shall be conducted at the end of First year of MDS course. Part-II Examination shall be conducted at the end of Third year of MDS course. Part-II Examination shall consist of Paper-I, Paper-II and Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

Part-I : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics,. Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I : Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics
Paper-II : Fixed Prosthodontics, occlusion, TMJ and esthetics.
Paper-III : Essays

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

(g) DISTRIBUTION OF MARKS:

Theory : (Total 400 Marks)

(1) Part I University Examination (100 Marks):-
There shall be 10 questions of 10 marks each (Total of 100 Marks)

(2) Part II (3 papers of 100 Marks):-

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination: 200 Marks

Viva-voce and Pedagogy : 100 Marks

19. EXAMINERS:

Part I: There shall be one internal and one external examiner for three students appointed by the affiliating university for evaluating the answer scripts of the same speciality. However, the number of examiner/s may be increased with the corresponding increase in number of students.

Part II: There shall be four examiners in each subject. Out of them, two (50%) shall be external examiners and two (50%) shall be internal examiners. Both external examiners shall be from a university other than the affiliating university and one examiner shall be from a university of different State.

20. QUALIFICATION AND EXPERIENCE FOR EXAMINERS:

The qualification and experience for appointment of an examiner shall be as under:-

(i) shall possess qualification and experience of a Professor in a post-graduate degree programme;
(ii) a person who is not a regular post-graduate teacher in the subject shall not be appointed as an examiner;
(iii) the internal examiner in a subject shall not accept external examinership in a college for the same academic year;
(iv) no person shall be appointed as an external examiner for the same institution for more than two consecutive years. However, if there is a break of one year, the person can be re-appointed.

21. EXAMINATION CENTRE:

(1) In the event of university exam being conducted in the same city or town having more than one post-graduate institution under the same university, one central examination centre shall be fixed by the university and the students from all the institutions of the city shall take the examination in that center: Provided that the clinical and viva-voice shall be conducted at their institute.
(2) Rotation of the institutions as center of examination shall be as per direction of the university.

22. VALUATION OF ANSWER BOOKS:

Part-I : Answer book/s shall be evaluated by the internal and external examiner/s

Part-II : Answer books shall be evaluated by four examiners, two internal and two external and the average marks shall be computed.

23. CRITERIA FOR PASS CERTIFICATE:

To pass the university examination, a candidate shall secure in both theory examination and in practical/clinical including viva voce independently with an aggregate of 50% of total marks allotted (50 out of 100 marks in Part I examination and 150 marks out of 300 in Part II examination in theory and 150 out of 300, clinical plus viva voce together). A candidate securing marks below 50% as mentioned above shall be declared to have failed in the examination.

A candidate who is declared successful in the examination shall be granted a Degree of Master of Dental Surgery in the respective speciality.

PART – VI
SYLLABUS

The syllabus for post-graduate course includes both Applied Basic Sciences and subjects of concerned specialty. The syllabus in Applied Basic Sciences shall vary according to the particular speciality, similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective speciality.

24. SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

(i) PROSTHODONTICS AND CROWN & BRIDGE

Part-I

Paper-I : **Applied Basic Sciences:** Applied anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition and Biochemistry, Pathology and Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics,. Applied Dental anatomy and histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I : Removable Prosthodontics and Implant supported prosthosis(Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper-II : Fixed Prosthodontics, occlusion, TMJ and esthetics.

Paper-III : Descriptive and analysing type question

(ii) PERIODONTOLOGY

Part- I

Paper-I : **Applied Basic Sciences:** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

Part-II

Paper I : Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Paper II : Periodontal diagnosis, therapy and Oral implantology

Paper III : Descriptive and analysing type question

(iii) ORAL & MAXILLOFACIAL SURGERY

Part-I

Paper-I : **Applied Basic Sciences:** Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

Part- II:

Paper-I : Minor Oral Surgery and Trauma

Paper-II : Maxillo-facial Surgery

Paper-III : Descriptive and analysing type question

(iv) CONSERVATIVE DENTISTRY AND ENDODONTICS

Part-I

Paper-I : **Applied Basic Sciences:** Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.

Part-II

Paper-I : Conservative Dentistry
Paper-II : Endodontics
Paper-III : Descriptive and analysing type question

(v) ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Part-I

Paper-I : **Applied Basic Sciences:** Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

Part-II

Paper-I : Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of maloclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontic
Paper II : Clinical Orthodontics
Paper III : Descriptive and analysing type question

(vi) ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY:

Part-I

Paper-I : **Applied Basic Sciences:** Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and Systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dental histology), Biostatistics and Research Methodology

Part-II:

Paper-I : Oral pathology, Oral Microbiology and Immunology and Forensic Odontology
Paper-II : Laboratory techniques and Diagnosis and Oral Oncology
Paper-III : Descriptive and analysing type question

(vii) PUBLIC HEALTH DENTISTRY

Part-I

Paper-I : **Applied Basic Sciences:** Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social Anthropology, Applied Pharmacology and Research Methodology and Biostatistics.

Part-II:

Paper-I : Public Health
Paper-II : Dental Public Health
Paper-III : Descriptive and analysing type question

(viii) PEDIATRIC DENTISTRY

Part-I

Paper I : **Applied Basic Sciences :** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics Growth and Development and Dental plaque, Genetics.

Part-II:

Paper-I	:	Clinical Pedodontics
Paper-II	:	Preventive and Community Dentistry as applied to pediatric dentistry
Paper-III	:	Descriptive and analysing type question

(ix) ORAL MEDICINE AND RADIOLOGY

Part-I

Paper I	:	**Applied Basic Sciences:** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

Part-II:

Paper-I	:	Oral and Maxillofacial Radiology
Paper-II	:	Oral Medicine, therapeutics and laboratory investigations
Paper-III	:	Descriptive and analysing type question

The following provision has been inserted in terms of (3rd Amendment) notification published on 26.08.2019 in the Gazette of India

"(x) The detailed syllabus for all the specialities is annexed as SCHEDULE-IX to these regulations."

CHAPTER - VII

GOALS AND OBJECTIVES OF THE CURRICULUM

(25) GOALS._

The goals of the post-graduate training in various specialities is to train the graduate in Dental Surgery who will,

(i) practice respective speciality efficiently and effectively, backed by scientific knowledge and skill;
(ii) exercise empathy and a caring attitude and maintain high ethical standards;
(iii) continue to evince keen interest in professional education in the speciality and allied specialities whether in teaching or practice;
(iv) willing to share the knowledge and skills with any learner, junior or a colleague;
(v) to develop the faculty for critical analysis and evaluation of various concepts and views and to adopt the most rational approach.

(26) OBJECTIVES._

The objective of the post-graduate training is to train a student so as to ensure higher competence in both general and special area of interest and prepare him or her for a career in teaching, research and speciality practice. A student must achieve a high degree of clinical proficiency in the subject and develop competence in research and its methodology in the concerned field.

The objectives to be achieved by the candidate on completion of the course may be classified as under:–

(a) Knowledge (Cognitive domain)
(b) Skills (Psycho motor domain)
(c) Human values, ethical practice and communication abilities

(a) KNOWLEDGE._

(i) demonstrate understanding of basic sciences relevant to speciality;
(ii) describe etiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children;
(iii) identify social, economic, environmental and emotional determinants in a given case and take them into account for planned treatment;
(iv) recognise conditions that may be outside the area of speciality or competence and to refer them to the concerned specialist;
(v) update knowledge by self study and by attending courses, conferences and seminars pertaining to speciality;
(vi) undertake audit, use information technology and carry out research in both basic and clinical with the aim of publishing or presenting the work at various scientific gathering;

(b) SKILLS:

(i) take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition;
(ii) acquire adequate skills and competence in performing various procedures as required in the speciality.

(c) HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES.

(i) adopt ethical principles in all aspects of practice;
(ii) foster professional honesty and integrity;
(iii) deliver patient care irrespective of social status, caste, creed, or religion of the patient;
(iv) develop communication skills, to explain various options available and obtain a true informed consent from the patient;
(v) provide leadership and get the best out of his team in a congenial working atmosphere;
(vi) apply high moral and ethical standards while carrying out human or animal research;
(vii) be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed;
(viii) respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

PART-VIII
SPECIALITIES

27. The following specialties for the post-graduate course to be followed by the university / institute are detailed asunder:-

(i) Prosthodontics and Crown & Bridge:

Prosthodontics and Crown & Bridge is a branch of dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by the replacement of mission or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

(ii) Periodontology:

Periodotology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

(iii) Oral & Maxillofacial Surgery:

Oral and Maxillofacial surgery deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human jaws and associated oral and facial structures.

(iv) Conservative Dentistry and Endodontics:

Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions, alongwith restoration of those teeth to normal form function and aesthetics .

(v) Orthodontics and Dentofacial Orthopedics:

Orthodontics and Dentofacial Orthopedics deals with prevention and correction of oral anomalies and malocclusion and the harmonising of the structures involved, so that the dental mechanisms function in a normal way.

(vi) Oral & Maxillofacial Pathology and Oral Microbiology

Oral & Maxillofacial Pathology and Oral Microbiology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

(vii) Public Health Dentistry

Public Health Dentistry is the science and art of preventing and controlling dental diseases and promoting dental health through organised community efforts.

(viii) Pediatric and Preventive Dentistry

Pediatric and Preventive Dentistry deals with prevention and treatment of oral and dental ailments that may occur during childhood.

(ix) Oral Medicine and Radiology

Oral Medicine is a speciality of dentistry concerned with the basic diagnostic procedures and techniques useful in recognising the diseases of the oral tissues of local and constitutional origin and their medical management.

Radiology is a science dealing with x-rays and their uses in diagnosis and treatment of diseases in relation to orofacial diseases.

28. CLINICAL MATERIAL ._

The minimum requirement of clinical material in each speciality of the post-graduate course is detailed in schedule-VIII of these regulations.

(Dr. Sabyasachi Saha)
Secretary

[F. No.]

SCHEDULE – I
(See clause (b) of sub-regulation (2) of regulation 11)

MODEL CHECKLIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS.

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope and objectives of the paper by the candidate.					
3.	Whether cross-references have been consulted.					
4.	Whether other relevant publications consulted.					
5.	Ability to respond to questions on the paper / subject.					
6.	Audio – Visual aids used.					
7.	Ability to defend the paper.					
8.	Clarity of presentation.					
9.	Any other observation.					
	Total Score					

SCHEDULE-II
(See clause (c) of sub-regulation (2) of regulation 11)

MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness & Preparation.					
2.	Clarity of presentation.					
3.	Understanding of subject.					
4.	Whether other relevant publications consulted.					
5.	Whether cross-references have been consulted.					
6.	Ability to answer the questions.					
7.	Time scheduling.					
8.	Appropriate use of audio – visual aids.					
9.	Overall performance.					
10.	Any other observation.					
	Total Score					

SCHEDULE-III
(See clause (e) of sub-regulation (2) of regulation 11)

(a) MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN Outpatient Department
(To be completed once a month by respective unit heads including posting in other department)

Name of the Trainee : Date :
Name of the Unit Head :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance.					
2.	Punctuality.					
3.	Interaction with colleagues and supportive staff.					
4.	Maintenance of case records.					
5.	Presentation of cases.					
6.	Investigations work up.					
7.	Chair-side manners.					
8.	Rapport with patients.					
9.	Over all quality of clinical work.					
	Total Score					

(b) EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history.					
2.	Whether all relevant points elicited.					
3.	Clarity of presentation.					
4.	Logical order.					
5.	Mentioned all positive and negative points					
6.	Accuracy of general physical examination.					
7.	Diagnosis: Whether it follows logically from history and findings.					
8.	Investigations required.					
	Complete list.					
	Relevant order.					
	Interpretation of investigations.					
9.	Ability to react to questioning Whether it follows logically from history and findings.					
10.	Ability to defend diagnosis.					
11.	Ability to justify differential diagnosis.					
12.	Others.					
	Grand Total					

Note: Please use a separate sheet for each faculty member.

SCHEDULE-IV
(See clause (h) of sub-regulation (2) of regulation 11)

MODEL CHECKLIST FOR EVALUATION OF TEACHING SKILL

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No	Items for observation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Communication of the purpose of the talk					
2.	Evokes audience interest in the subject.					
3.	The introduction.					
4.	The sequence of ideas.					
5.	The use of practical examples and / or illustrations.					
6.	Specking style (enjoyable, monotonous, etc. specify)					
7.	Attempts audience participation.					
8.	Summary of the main points at the end.					
9.	Asks questions.					
10.	Answers questions asked by the audience.					
11.	Rapport of speaker with his audience.					
12.	Effectiveness of the talk.					
13.	Uses audio-visual aids appropriately.					

SCHEDULE-V
(See clause (l) of sub-regulation (2) of regulation 11)

(a) MODEL CHECKLIST FOR DISSERTATION PRESENTATION

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Prints to be considered.	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Interest shown in selecting topic.					
2	Appropriate review.					
3	Discussion with guide and other faculty.					
4	Quality of protocol.					
5	Preparation of proforma					
	Total Score					

(b) CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE / CO-GUIDE

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Periodic consultation with guide / co-guide.					
2	Regular collection of case material					
3	Depth of analysis / discussion.					
4	Quality of final output.					
5	Others					
	Total Score					

SCHEDULE-VI
(See clause (l) of sub-regulation (2) of regulation 11)

OVERALL ASSESSMENT SHEET

Date :

Sl. No.	Faculty Member	Name of Trainee and Mean Score									
		A	B	C	D	E	F	G	H	I	J
1											
2											
3											

Signature of Head of the Department Signature of Principal

Note: The overall assessment sheet used along with the logbook shall form the basis for certifying satisfactory completion of course of study, in addition to the attendance required.

KEY:
Faculty member : Name of the faculty doing the assessment.

Mean score : Sum total of all the scores of checklists.
A, B,.... : Name of the trainee.

SCHEDULE-VII
(See sub-regulations (2) of regulation 14)

EQUIPMENTS

DEPARTMENT: PROSTHODONTICS AND CROWN & BRIDGE

S. No.	NAME	SPECIFICATION	Quantity		Availability
1.	Electrical Dental Chairs and Units	With shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor and airotor attachment with handpieces.	One chair and unit per PG student and two chairs with unit for the faculty.		
			1 Unit	**2 Units**	
2.	Articulators – semi adjustable/ adjustable with face bow		6	12	
3.	Micromotor – (Lab Type can also be attached (fixed) to wall		2	4	
4.	Ultrasonic scaler		2	2	
5.	Light cures		2	2	
6.	Hot air oven		1	1	
7.	Autoclave		2	2	
8.	Surveyor		2	2	
9.	Refrigerator		1	1	
10.	X-ray viewer		1	2	
11.	Pneumatic, Crown bridge remover		2	3	
12.	Needle destroyer		1	2	
13.	Intra oral camera		1	1	
14.	Digital SLR camera		1	1	
15.	Computer with internet connection with attached printer and scanner		1	1	
16.	LCD projector		1	1	
	Clinical Lab for Prosthetics				
1.	Plaster dispenser		2	2	
2.	Model trimmer with carborandum Disc		1	2	
3.	Model trimmer with diamond disc		1	2	
4.	High speed lathe		2	3	
5.	Vibrator		2	4	
6.	Acrylizer		1	2	
7.	Dewaxing unit		1	2	
8.	Hydraulic press		1	1	
9.	Mechanical press		1	1	
10.	Vacuum mixing machine		1	1	
11.	Micro motor lab type		2	3	
12.	Curing pressure pot		1	1	
13.	Pressure molding machine		1	1	

	Chrome – Cobalt Lab Equipment				
1.	Duplicator		1	1	
2.	Pindex system		1	1	
3.	Burn-out furnace		1	1	
4.	Welder		1	1	
5.	Sandblaster	Micro and macro	1	1	
6.	Electro – polisher		1	1	
7.	Model trimmer with carborandum disc		1	1	
8.	Model trimmer with diamond disc		1	1	
9.	Model trimmer with double disc (one Carborandum and one diamond disc)		1	1	
10.	Casting machine, motor cast with the safety door closure, gas blow torch with regulator		1	1	
11.	Dewaxing furnace		1	1	
	Induction casting machine with vacuum pump, capable of casting titanium chrome cobalt precision metal		1	1	
12.	Spot welder with soldering, attachment of cable		1	1	
13.	Steam cleaner		1	1	
14.	Vacuum mixing machine		1	1	
15.	Spindle grinder 24,000 ROM with vacuum suction		1	1	
16.	Wax heater		2	3	
17.	Wax carvers (Full PKT Set)		2	3	
18.	Milling machine		1	1	
19.	Stereo microscope		1	1	
20.	Magnifying work lamp		1	1	
21.	Heavy duty lathe with suction		1	1	
22.	Preheating furnace		1	1	
23.	Dry model trimmer		1	1	
24.	Die cutting machine		1	2	
25.	Ultrasonic cleaner		1	1	
26.	Composite curing unit		1	1	
	Ceramic Lab Equipment				
1.	Fully programmable porcelain furnace with vacuum pump		1	1	
2.	Ceramic kit (instruments)		3	3	
3.	Ceramic materials (kit)		1	1	
4.	Ceramic polishing kit		2	2	
	Implant Equipment				
1.	Electrical dental chair and unit		1	1	
2.	Physio dispenser		1	1	
3.	Implant kit	Minimum 2 systems	2	2	
4.	Implants		10	10	
5.	Prosthetic components		10	10	
6.	Unit mount light cure		1	2	
7.	X-ray viewer		1	2	
8.	Needle destroyer		1	2	
9.	Ultrasonic cleaner capacity 3.5 lts		1	1	
10.	Autoclave programmable for all recommended cycles		1	2	

11.	X-ray machine with RVG		1	1	
12.	Refrigerator		1	1	
13.	Surgical kit/prosthetic kit		2	2	
14.	Educating models		1	1	
15.	Implant removing instruments		1	1	

DEPARTMENT: PERIODONTOLOGY

S. No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor attachment with contra angle handpiece,airoter attachment, ultrasonic scaler (Piezo) with detachable autoclavable hand piece	One chair and unit per post-graduate student and Two chairs with unit for the faculty		
			1 Unit	**2 Units**	
2.	Auto clave (fully automatic) front loading		1	2	
3.	Steel bin		4	6	
4.	Airoter hand pieces		2	2	
5.	UV chamber		1	1	
6.	Formalin chamber		1	1	
7.	W.H.O probe		2	2	
8.	Nabers probe		2	2	
9.	Williams probe		2	2	
10.	UNC-15 probe		4	4	
11.	Gold Man fox probe		1	1	
12.	Pressure sensitive probe		1	1	
13.	Marquis color coded probe		1	1	
14.	Supra gingival scalers	set	2	2	
15.	Sub gingival scaler	set	2	2	
16.	Arkansas sharpening stone		1	1	
	Surgical Instruments				
1.	Routine surgical instrument kit (Benquis periosteal elevator, periotome)	set	2	3	
2.	Surgery trolleys		6	6	
3.	X ray viewer		1	2	
4.	Surgical cassette with sterilisation pouches		4	6	
5.	Electro surgery unit		1	1	
	Special Surgical Instruments				
1.	Kirkland's knife	set	1	1	
2.	Orban's knife	set	1	1	

3.	Paquette blade handle		1	1	
4.	Krane kaplan pocket marker	set	1	1	
5.	Mc Calls universal curettes	set	1	1	
6.	Gracey's curettes (No.1-18)	set	2	2	
7.	Mini five curettes	set	1	1	
8.	Cumine scalar		1	1	
9.	Mallet		1	1	
10.	Chisel		1	1	
11.	Oschenbein chisel	straight, curved	1	1	
12.	Schluger bone file		1	1	
13.	Bone fixation screw kit		1	1	
14.	Bone scrapper		1	1	
15.	Bone trephines for harvesting autografts	1 set	1	1	
16.	Bone regenerative materials	Bone graft and GTR membranes	5	5	
17.	Local drug delivery systems	At least two different agents	1 each	1	
18.	Root conditioning agent	At least two different agents	2	2	
19.	Micro needle holder		1	1	
20.	Micro scissors		1	1	
21.	Magnifying loop (2.5 – 3.5)		1	2	
22.	Operating microscope	optional	1	1	
23.	3rd generation digital probe	optional	1	1	
24.	Bone expander and bone crester	optional	1	1	
25.	Distraction osteogenesis kit	optional	1	1	
26.	Bone mill	optional	1	1	
27.	Bone graft / membrane placement spoon		1	1	
28.	Bone condenser		1	1	
29.	Peizo-surgery unit	optional	1	1	
30.	Centrifuge for PRP/PRF preparation	optional	1	1	
31.	Soft tissue laser (8 watt)		1	1	
32.	Osteotome	set optional	1	1	
	MISCELLANEOUS INSTRUMENTS				
1.	Composite gun with material kit		1	1	
2.	Splinting kit with material		2	3	
3.	Composite finishing kit		1	1	
4.	Glass Ionomer cement		1	1	
5.	Digital camera		1	1	
6.	Intra Oral camera		1	1	
7.	Ultrasonic cleaner		1	1	
8.	Emergency kit		1	1	
9.	Refrigerator		1	1	

10.	X-ray viewer		2	2	
11.	LCD projector		1	1	
12.	Computer with internet connection with attached printer and scanner		1	1	
13.	Implant Equipment				
14.	Electrical dental chair and unit		1	1	
	Physio dispenser		1	1	
15.	Implant kit	At least two different systems	2	2	
16.	Implants		10	10	
17.	Implant maintenance kit (plastic instruments)		1 set	1 set	
18.	Implant guide		1	1	
19.	X-ray viewer		1	2	
20.	Needle destroyer		1	2	
21.	Ultrasonic cleaner capacity 3.5 lts		1	1	
22.	Autoclave programmable for all recommended cycles		1	1	
23.	RVG with x-ray machine		1	1	
24.	Refrigerator		1	1	
25.	Surgical kit		2	2	
26.	Sinus lift kit		1	1	
27.	Educating models		1	1	
28.	Implant removing kit		1	1	

DEPARTMENT: ORAL & MAXILLOFACIAL SURGERY

S.No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and high otorized suction, with micromotor and micro motor attachment	One chair and unit per post-graduate student and Two chairs with unit for the faculty		
			1 Unit	**2 Units**	
2.	Autoclave	Front loading	2	3	
3.	Fumigators		1	1	
4.	Oscillating saw	With all hand pieces	1	1	
5.	**Surgical instruments**				
	General surgery kit including tracheotomy kit		2	2	
	Minor oral surgery kit		5	10	
	Osteotomy kit		1	1	
	Cleft surgery kit		1	1	
	Bone grafting kit		1	1	
	Emergency kit		1	1	
	Trauma set including bone plating kit		2	2	
	Implantology kit with implants	Minimum 2 systems	1 2 10	1 2 10	

6.	Distraction osteogenesis kit		1	1	
7.	Peizo surgical unit		1	1	
8.	Magnifying loops		1	1	
9.	Operating microscope and Microsurgery kit	desirable	1	1	
10.	Dermatomes		1	1	
11.	Needle destroyer		2	3	
12.	Ultrasonic Cleaner capacity 3.5 lts		1	1	
13.	Formalin chamber		1	1	
14.	Pulse oxymeter		1	1	
15.	Ventilator		1	1	
16.	Major operation theatre with all facilities		1	1	
17.	Recovery and Intensive Care Unit with all necessary life support equipments		2 beds	2 beds	
18.	Fibrooptic light		1	1	
19.	Inpatient beds		20	20	
20.	Fiber optic laryngoscope		1	1	
21.	Computer with internet connection with attached printer and scanner		1	1	
22.	LCD projector		1	1	
23.	Refrigerator		1	1	

DEPARTMENT : CONSERVATIVE DENTISTRY AND ENDODONTICS

S.No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor, airotor attachment with hand pieces	One chair & unit per post-graduate student and two chairs with unit for the faculty		
			1 Unit	**2 Units**	
2.	ENDOSONIC HANDPIECES – Micro endosonic Tips, retro treatment		2	3	
3.	Mechanised rotary instruments including hand pieces (speed and torque control) and hand instruments various systems		3	6	
4.	Rubber dam kit		1 per chair	1 per chair	
5.	Autoclaves for bulk instrument sterilization vacuum (Front loading)		2	3	
6.	Autoclaves for hand piece sterilization		1	1	
7.	Apex locators one for every two chairs		2	4	

8.	Pulp tester		2	4	
9.	Equipments for injectable thermoplasticized gutta percha		1	2	
10.	Operating microscopes 3 step or 5 step magnification		1	1	
11.	Surgical endo kits (Microsurgery)		2	2	
12.	Set of hand instruments (specifications required)		1	2	
13.	Sterilizer trays for autoclave		4	4	
14.	Ultrasonic cleaner capacity 3.5 lts		1	1	
15.	Variable Intensity polymerization equipments - VLC units	Desirable	1	1	
16.	Conventional VLC units one for every two chairs		2	4	
17.	Needle destroyer		2	2	
18.	Magnifying loupes one for students and one for faculty		1	2	
19.	LCD projector		1	1	
20.	Composite kits with different shades and polishing kits		2	4	
21.	Ceramic finishing kits, metal finishing kits	In ceramic labs	2	3	
22.	Amalgam finishing kits		2	3	
23.	RVG with x-ray machine developing kit		1	1	
24.	Chair side micro abrasion		1	1	
25.	Bleaching unit		1	1	
26.	Instrument retrieval kits		1	1	
27.	Computer with internet connection with attached printer and scanner		1	1	
28.	Refrigerator		1	1	
29.	Equipments for casting procedures				
30.	Equipments for ceramics including induction casting machines/ burnout preheat furnaces/ wax elimination furnaces		1	1	
31.	Lab micro motor/ metal grinders / sand blasters/ polishing lathes/ duplicator equipment/ vacuum investment equipments		1	1	
32.	Laser (preferably hard tissue)		1	1	
33.	Face bow with semi adjustable articulator		1	2	

DEPARTMENT : ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

S. No.	NAME	SPECIFICATION	Quantity	Availability

1.	Dental Chairs and Unit	Electrically operated with shadow less lamp, spittoon, 3 way syringe, instrument tray and motorized suction	One chair & unit per PG student and Two chairs with unit for the faculty		
2.			**1 Unit**	**2 Units**	
3.	Vacuum /pressure moulding unit		1	1	
4.	Hydrogen soldering unit		1	1	
5.	Lab micromotor		3	5	
6.	Spot welders		3	5	
7.	Model trimmer (Double disc)		2	3	
8.	Light curing unit		2	2	
9.	High intensity light curing unit		1	2	
10.	Polishing lathes		2	3	
11.	Tracing tables		3	5	
12.	SLR digital camera		1	1	
13.	Scanner with transparency adapter		1	1	
14.	X-ray viewer		3	4	
15.	LCD projector		1	1	
16.	Autoclaves for bulk instrument Sterilization vacuum (Front loading)		1	1	
17.	Needle destroyer		1	1	
18.	Dry heat sterilizer		1	1	
19.	Ultrasonic scaler		1	1	
20.	Sets of Orthodontic pliers		3	3	
21.	Orthodontic impression trays		3	5	
22.	Ultrasonic cleaner capacity 3.5 lts		1	1	
23.	Electropolisher		1	1	
24.	Typodonts with full teeth set		3	3	
25.	Anatomical articulator with face bow attachments		1	1	
26.	Free plane articulators		1	1	
27.	Hinge articulators		4	4	
28.	Computer software for cephalometrics		1	1	
29.	Computer with internet connection with attached printer and scanner		1	1	
30.	Refrigerator		1	1	

DEPARTMENT: ORAL & MAXIILOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

S. No.	NAME	SPECIFICATION	Quantity		Availability
1.			**1 Unit**	**2 Units**	

2.	Dental Chairs and Units	Electrically operated with shadow less lamp, spittoon, 3 way syringe, instrument tray and suction	3	6	
2.	Adequate laboratory glassware's as required for processing of biopsy specimens and staining.	Reasonable quantity should be made available			
3.	Adequate tissue capsules / tissue embedding cassettes	Reasonable quantity should be made available			
4.	Paraffin wax bath	thermostatically controlled	1	1	
5.	Leuckhart pieces		10	10	
6.	Block holders		25	25	
7.	Microtome	Manual	1	1	
8.	Microtome	semi – automated	1	1	
9.	Tissue floatation water bath	thermostatically controlled	1	1	
10.	Slide warming table		1	1	
11.	Steel slide racks for staining		5	5	
12.	Diamond glass marker		2	2	
13.	Research microscope with phase contrast, dark field, polarization, image analyzer , photomicrography attachments		1	1	
14.	Multi head microscope	Penta headed	1	1	
15.	Binocular compound microscope		2 for faculty and one per student	4 for faculty and one per student	
16.	Stereo microscope		1	1	
17.	Aluminum slide trays		5	5	
18.	Wooden / plastic slide boxes		5	5	
19.	Wax block storing cabinet		5,000 capacity	10,000 capacity	
20.	Slide storing cabinet		5,000 capacity	10,000 capacity	
21.	Refrigerator		1	1	
22.	Pipettes		5	5	
23.	Surgical kit for biopsy		3	6	
24.	Immuno histo chemistry lab		1	1	
25.	Computer with Internet Connection with attached printer and scanner		1	1	
26.	LCD projector		1	1	
27.	**Desirable Equipment**				
28.	Cryostat		1	1	
29.	Fluorescent microscope		1	1	

30.	Hard tissue microtome		1	1	
31.	Tissue storing cabinet (frozen)		1	1	
32.	Microwave		1	1	

DEPARTMENT : PUBLIC HEALTH DENTISTRY

S. No.	NAME	SPECIFICATION	Quantity	Availability	
	Instruments in the department for comprehensive Oral health care programme				
1.	Dental chairs	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor attachment with contra angle handpiece,airoter attachment, ultrasonic scaler (Piezo) with detachable autoclavable hand piece with min 3 tips.	One chair and unit per post-graduate student and one chair with unit for the faculty		
2.			**1 Unit**	**2 Units**	
3.	Extraction forceps		4 sets	6 sets	
4.	Filling instruments		4 sets	6 sets	
5.	Scaling instruments	Supra gingival scaling	4 sets	6 sets	
6.	Amalgamator		1	1	
7.	Pulp tester		1	1	
8.	Autoclave		1	1	
9.	X-ray viewer		1	1	
10.	Instrument cabinet		1	1	
11.	LCD or DLP multimedia projector		1	1	
12.	Computer with internet connection with attached printer and scanner		1	1	
13.	**For peripheral dental care or field programme**				
14.	Staff bus		1	1	
15.	Mobile dental clinic fitted with at least 2 dental chairs with complete dental unit with fire extinguisher		1	1	
16.	Ultrasonic scaler,		1	2	
17.	Ultrasonic cleaner capacity 3.5 lts		1	1	
18.	Compressor	One with chair			
19.	Generator		1	1	
20.	Public address system,		1	1	

	audio-visual aids				
21.	Television		1	1	
22.	Digital Versatile Disc Player		1	1	
23.	Instrument cabinet, emergency medicine kits, Blood pressure apparatus		1	1	
24.	Portable oxygen cylinder		1	1	
25.	Portable chair		1	1	
26.	Refrigerator		1	1	

DEPARTMENT : PAEDODONTICS AND PREVENTIVE DENTISTRY

S. No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, and motorised suction, micromotor attachment with contra angle miniature handpiece,airotor attachment with miniature handpiece, dental operater stool (40% dental chairs shall be pedo chairs)	One chair and unit per post-graduate student and Two chairs with unit for the faculty		
2.			**1 Unit**	**2 Units**	
3.	Pedo extraction forceps sets		3	4	
4.	Autoclaves for bulk instrument sterilization vacuum (Front loading)		1	2	
5.	RVG with intra oral x-ray unit		1	1	
6.	Automatic developer		1	1	
7.	Pulp tester		2	3	
8.	Apex locator		1	1	
9.	Rubber dam kit	One set per student	1	1	
10.	Injectable GP condenser		1	1	
11.	Endodontic pressure syringe		1	1	
12.	Glass bead steriliser		2	4	
13.	Spot welder		2	3	
14.	Ultrasonic scalers		2	4	
15.	Needle destroyer		1	1	
16.	Formalin chamber		1	1	
17.	Ultrasonic cleaner capacity 3.5 lts		1	1	
18.	X-ray viewer		2	3	
19.	Amalgamator		1	2	
20.	Plaster dispenser		2	2	
21.	Dental lathe		1	2	
22.	Vibrator		2	3	

23.	Typodonts	One set per student	1	1	
24.	Soldering unit		1	1	
25.	Band pinching beak pliers		2 Sets	2 Sets	
26.	Proximal contouring pliers		2	3	
27.	Crown crimping pliers		2	3	
28.	Double beak pliers anterior and posterior		2	3	
29.	Lab micro motor		2	3	
30.	Acryliser		1	2	
31.	Magnifying loupes		1	1	
32.	Conscious sedation unit	Desirable	1	1	
33.	Pulse oxymeter		1	1	
34.	Phantom head table with attached Light, Airotor and micro motor	One set per each P.G. Student	1	1	
35.	Computer with internet connection with attached printer and scanner		1	1	
36.	LCD projector		1	1	
37.	Refrigerator		1	1	

DEPARTMENT: ORAL MEDICINE AND RADIOLOGY

S. No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and suction	One chair and unit per post-graduate student and one chair with unit for the faculty		
2.			**1 Unit**	**2 Units**	
3.	RVG with intra oral radiography machine (FDA Approved)	55-70 kVp with digital compatibility	1	1	
4.	Extra oral radiography machine	100 kvp	1	1	
5.	Panoramic radiography (OPG) machine with cephalometric and TMJ attachment with printer	Digital compatibility	1	1	
	Intra-oral camera		1	2	
	Pulp tester		2	4	
	Autoclave		1	1	
	Punch biopsy tool		2	3	
	Biopsy equipment		1	2	
	Surgical trolley		2	2	
	Emergency medicines kit		1	1	
	Extra oral cassettes with intensifying screens (Conventional and rare earth)		4	6	
	Lead screens		2	2	
	Lead aprons		2	2	
	Lead gloves		2	2	
	Radiographic filters (Conventional and rare		1	1	

	earth)				
	Dark room with safe light facility		1	1	
	Automatic radiographic film processors		2	2	
	Radiographic film storage lead containers		1	1	
	Thyroid collars		1	1	
	Digital sphygmomanometer		1	1	
	Digital blood glucose tester		1	1	
	Digital camera		1	1	
	X-ray viewer boxes		2	3	
	Lacrimal probes		2 sets	2 Sets	
	Sialography cannula		2 sets	2 Sets	
	Illuminated mouth mirror and probe		2	2	
	Computer with internet connection with attached printer and scanner		1	1	
	LCD projector		1	1	
	Refrigerator		1	1	

SCHEDULE-VIII
(See regulation 28)

CLINICAL MATERIAL

FOR COLLEGES WITH 50 UG ADMISSIONS
Minimum Requirement (both UG & PG together)

Conservative Dentistry and Endodontics

Unit	Starting MDS	1st Renewal	2nd & 3rd Renewal	Recognition
1st Unit	35	40	50	50
2nd Unit	60	70	80	80

Oral Medicine & Radiology

Unit	Starting MDS	1st Renewal	2nd & 3rd Renewal	Recognition
1st Unit	75	80	90	100
2nd Unit	110	120	130	130

Oral & Maxillofacial Surgery

Unit	Starting MDS	1st Renewal	2nd & 3rd Renewal	Recognition
1st Unit	30 (1+4)	35 (1+8)	40 (2+10)	40 (2+10)
2nd Unit	50 (2+12)	60 (2+14)	70 (2+16)	70 (2+16)

The average of Major Surgeries + Minor Surgeries per week are mentioned above in the brackets

Oral & Maxillofacial Pathology and Oral Microbiology

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	1+2+3	1+3+3	1+3+5	1+3+5
2nd Unit	2+4+6	2+5+8	2+6+10	2+6+10

* (Biopsy + Cytology + Hematology per week)

Orthodontics & Dentofacial Orthopedics

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	15	20	25	25

2nd Unit	30	35	40	40

Pediatric Dentistry

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	20	25	30	30
2nd Unit	35	40	45	45

Periodontology

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	30	35	40	40
2nd Unit	50	60	70	70

Prosthodontics and Crown & Bridge

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	20	25	30	30
2nd Unit	35	40	50	50

Public Health Dentistry (including Patients in Satellite Clinics)

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	30	35	40	40
2nd Unit	50	55	60	60

FOR COLLEGES WITH 100 UG ADMISSIONS:
Minimum Requirement (both UG & PG together)

Conservative Dentistry and Endodontics

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	50	60	70	70
2nd Unit	80	90	100	100

Oral Medicine & Radiology

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition

1st Unit	100	120	140	150
2nd Unit	160	170	180	180

Oral & Maxillofacial Surgery

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	40 (1+4)	50 (1+8)	60 (2+10)	60 (2+10)
2nd Unit	70 (2+12)	80 (2+14)	100 (2+16)	100 (2+16)

The average of Major Surgeries + Minor Surgeries per week are mentioned above in the brackets()

Oral & Maxillofacial Pathology and Oral Microbiology

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	1+3+5	1+6+5	2+6+10	2+6+10
2nd Unit	3+6+12	3+7+12	3+7+14	3+7+14

* (Biopsy + Cytology + Hematology per week)

Orthodontics & Dentofacial Orthopedics

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	20	25	30	30
2nd Unit	40	45	50	50

Pediatric Dentistry

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	30	35	40	40
2nd Unit	50	55	60	60

Periodontology

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition

1st Unit	40	50	60	60
2nd Unit	80	90	100	100

Prosthodontics and Crown & Bridge

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	30	35	40	40
2nd Unit	50	55	60	60

Public Health Dentistry (including Patients in Satellite Clinics)

Unit	Starting MDS	2nd Renewal	3rd & 4th Renewal	Recognition
1st Unit	40	45	50	50
2nd Unit	60	65	70	70

LOG BOOK

TABLE 1

ACADEMIC ACTIVITIES ATTENDED

Name : Admission Year:

College :

Date	Type of activity (Specify Seminar, Journal club, presentation, under-graduate teaching)	Particulars

TABLE 2

ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name : Admission Year:

College :

Date	Topic	Type of activity (Specify Seminar, Journal club, presentation, under-graduate teaching)

TABLE 3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name: Admission Year:

College:

Date	Name	OP No	Procedure	Category O, A, PA, PI

Key:
O-Washed up and observed-Initial six months of admission
A-Assisted senior surgeon-I year MDS
PA- Performed procedure under the direct supervision of a senior surgeon-II year MDs
PI-Performed independently –III year MDS

SCHEDULE – IX

(See regulation 24)

29. SYALLBUS FOR M.D.S. IN VARIOUS SPECIALTIES

The syllabus for MDS course includes both Applied Basic Sciences and subjects of concerned specialty. The syllabus in Applied Basic Sciences shall vary according to the particular specialty; similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective specialty.

1. PROSTHODONTICS AND CROWN & BRIDGE

AIM:

To train the dental graduates so as to ensure higher level of competence in both general and specialty areas of Prosthodontics and prepare candidates with teaching, research and clinical abilities including prevention and after care in Prosthodontics – removable dental prosthodontics, fixed dental prosthodontics (Crown &Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry.

GENERAL OBJECTIVES OF THE COURSE:

Training program for the dental graduates in Prosthetic dentistry– removable dental prosthodontics, fixed dental prosthodontics (Crown & Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry and Crown & Bridge including Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to perform research with a good understanding of social, cultural, educational and environmental background of the society.

- To have adequate acquired knowledge and understanding of applied basic and systemic medical sciences, both in general and in particularly of head and neck region.
- The postgraduates should be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the general BDS graduates and MDS graduates of other specialties,
- To demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referrals to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medical sciences.

- On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology Microbiology & virology; health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunology, Congenital defects & syndromes and Anthropology, Bioengineering, Bio-medical & Biological Principles
- The student shall acquire knowledge of various Dental Materials used in the specialty and be able to provide appropriate indication, understand the manipulation characteristics, compare with other materials available, be adept with recent advancements of the same.
- Students shall acquire knowledge and practice of history taking, Diagnosis, treatment planning, prognosis, record maintenance of oral, craniofacial and systemic region.
- Ability for comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical re-evaluation and prosthodontic treatment planning, impressions, jaw relations, utility of face bows, articulators, selection and positioning of teeth, teeth

arrangement for retention, stability, esthetics, phonation, psychological comfort, fit and insertion.

- Instructions for patients in after care and preventive Prosthodontics and management of failed restorations shall be possessed by the students.
- Understanding of all the applied aspects of achieving physical, psychological well-being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient.
- Ability to diagnose and plan treatment for patients requiring Prosthodontic therapy
- Ability to read and interpret radiographs, and other investigations for the purpose of diagnosis and treatment planning.
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of Prosthodontics science of Oral and Maxillofacial Prosthodontics and Implantology
- Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetics, and biomaterials, craniofacial disorders, problems of psychogenic origin.
- Should have knowledge of age changes, geriatric psychology, nutritional considerations and prosthodontic therapy in the aged population.
- Should have ability to diagnose failed restoration and provide prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws, and Jurisprudence and Forensic Odontology in Prosthodontics.
- Should know general health conditions and emergency as related to prosthodontics treatment like allergy of various materials and first line management of aspiration of prosthesis
- Should identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
- Should identify cases, which are outside the area of his specialty / competence, refer them to appropriate specialistsand perform interdisciplinary case management.
- To advice regarding case management involving surgical and interim treatment
- Should be competent in specialization of team management in craniofacial prosthesis design.
- To have adequate acquired knowledge, and understanding of applied basic, and systemic medical science knowledge in general and in particular to head and neck regions.
- Should attend continuing education programmes, seminars and conferences related to Prosthodontics, thus updating himself/herself.
- To teach and guide his/her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both in basic and clinical areas, with the aim of publishing his/ her work and presenting his/her work at various scientific forums.
- Should have an essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risk of transmission of potential communicable and transmissible infections like Hepatitis and HIV.
- Should have an ability to plan and establish Prosthodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge (of the applications in pharmacology, effects of drugs on oral tissues and systems of body and in medically compromised patients.

SKILLS:

- The candidate should be able to examine the patients requiring Prosthodontic therapy, investigate the patient systemically, analyze the investigation results, radiographs, diagnose the ailment, plan the treatment, communicate it with the patient and execute it.

- To understand the prevalence and prevention of diseases of craniomandibular system related to prosthetic dentistry.
- The candidate should be able to restore lost functions of stomatognathic system like mastication, speech, appearance and psychological comforts by understanding biological, biomedical, bioengineering principles and systemic conditions of the patients to provide quality health care in the craniofacial regions.
- The candidate should be able to demonstrate good interpersonal, communication skills ***and*** team approach in interdisciplinary care by interacting with other specialties including medical specialty for planned team management of patients for craniofacial ***&*** oral acquired and congenital defects, temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origins.
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area with a patient centered approach.
- Should be able to interpret various radiographs like IOPA, OPG, CBCT and CT. Should and be able to plan and modify treatment plan based on radiographic findings
- Should be able to critically appraise articles published and understand various components of different types of articles and be able to gather the weight of evidence from the same
- To identify target diseases and create awareness amongst the population regarding Prosthodontic therapy.
- To perform Clinical and Laboratory procedures with a clear understanding of biomaterials, tissue conditions related to prosthesis and have required dexterity & skill for performing clinical and laboratory all procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics Prosthodontics.
- To carry out necessary adjunctive procedures to prepare the patient before prosthesis like tissue preparation and preprosthetic surgery and to prepare the patient before prosthesis / prosthetic procedures
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.

ATTITUDES:

- To adopt ethical principles in Prosthodontic practice, Professional honesty, credibility and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
- Should be willing to share the knowledge and clinical experience with professional colleagues.
- Should develop an attitude towards quality, excellence, ***non-compromising*** in treatment.
- Should be able to self-evaluate, reflect and improve on their own.
- Should pursue research in a goal to contribute significant, relevant and useful information, concept or methodology to the scientific fraternity.
- Should be able to demonstrate ***evidence-based*** practice while handling cases
- Should be willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which are in patient's best interest.
- Should respect patient's rights and privileges, including patient's right to information and right to seek second opinion.

COMMUNICATIVE ABILITIES:

- To develop communication skills, in particular ***and*** to explain treatment options available in the management.
- To provide leadership and get the best out of his / her group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient and explain the principles of prosthodontics to the patient. He/She should be able to guide and counsel the patient with regard to various treatment modalities available.

- To develop the ability to communicate with professional colleagues through various media like Internet, e-mails, videoconferences etc. to render the best possible treatment. Should demonstrate good explanatory and demonstrating ability as a teacher in order to facilitate learning among students

COURSE CONTENTS:

The course content has been identified and categorized as essential knowledge given below.

ESSENTIAL KNOWLEDGE:

The topics to be considered are Applied Basic Sciences, Oral and Maxillofacial Prosthodontics and Implantology

APPLIED BASIC SCIENCES:

Should develop thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology, Pharmacology, Health and systematic diseases principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering and Bio-medical and Research Methodology as related to Masters degree Prosthodontics and Crown & Bridge including Implantology

It is desirable to have adequate knowledge in Bio-statistics, Research Methodology and use of computers to develop necessary teaching skills in the specialty of Prosthodontics including crown and bridge.

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy –Gross Anatomy, anatomy of Head and Neck in detail:Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses in relation to the V^{th} cranial nerve. General considerations of the structure and function of the brain, brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx Trachea, Oesophagus, Functional Anatomy of masticatory muscles, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome.

Embryology –Development of the face, tongue, jaws, TMJ, Paranasal sinuses,pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissues including detailed aspects of tooth formation.

Growth & Development –Facial form and Facial growth and development overview ofDentofacial growth process and physiology from foetal period to maturity and old age,. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal development, relationship between development of the dentition and facial growth.

Dental Anatomy –Anatomy of primary and secondary dentition, concept of occlusion,mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral and Para oral tissues, normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration & tooth-numbering systems.

Histology –histology of enamel, dentin, Cementum, periodontal ligament and alveolarbone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.
Histology of general and specific connective tissue including bone, , Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatics, nerves, muscles, tongue and tooth

Cell biology –Brief study of the structure and function of the mammalian cell Components of the cell and functions of various types of cells and their consequences with tissue injury

APPLIED PHYSIOLOGY AND NUTRITION :

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance, blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation. Shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva

Endocrines – General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system, neuromuscular co-ordination of the stomatognathic system.

Applied Nutrition – General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization & diet for elderly patients.

APPLIED BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reductionCarbohydrates, proteins, liquids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood, Metabolism of inorganic elements, Detoxification in the body & anti metabolites.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisones, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C, K etc. Chemotherapy and Radiotherapy. Drug regime for antibiotic prophylaxis and infectious endocarditis and drug therapy following dental surgical treatments like placement of implants, pre and peri prosthetic surgery

APPLIED PATHOLOGY:

Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischaemia, hyperaemia, chronic venous congestion, oedema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reactions, Neoplasms; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

APPLIED MICROBIOLOGY:

Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, , Clostridia group of organisms, Spirochaetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management

APPLIED ORAL PATHOLOGY:

Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of the oral cavity. Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

LABORATORY DETERMINATIONS:

Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, PT, PTT and INR Smears and cultures – urine analysis and culture. Interpretation of RBS, Glycosylated Hb, GTT

BIOSTATISTICS:

Characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) & Analysis of data, parametric and non parametric tests

Introduction to Biostatistics - Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.
Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson's distribution, Tests of significance.

RESEARCH METHODOLOGY:

Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation,. Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis tests and measurements, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical in(ter)ferences, balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problems with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement :
Protocol writing for experimental, observational studies, survey including hypothesis, PICO statement, aim objectives, sample size justification, use of control/placebo, standardization techniques, bias and its elimination, blinding, evaluation, inclusion and exclusion criteria.

APPLIED RADIOLOGY:

Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, Applied principles of radio therapy and after care.

ROENTGENOGRAPHIC TECHNIQUES:

Intra oral, extra oral roentgenography, Methods of localization digital radiology and ultra sounds. Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.
Use of CT and CBCT in prosthodontics

APPLIED MEDICINE:

Systemic diseases and (its) their influence on general health and oral and dental health. Medical emergencies like syncope, hyperventilation, angina, seizure, asthma and allergy/anaphylaxis in the dental offices – Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, prophylaxis and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens.

APPLIED SURGERY & ANESTHESIA:

General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance.
Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

APPLIED PLASTIC SURGERY:

Applied understanding and assistance in programs of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIALS:

- Students should have understanding of all materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, associated materials, technical considerations, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall acquire knowledge of testing biological, mechanical and other physical properties of all materials used for the clinical and laboratory procedures in prosthodontic therapy.
    - Students shall acquire full knowledge and practice of Equipments, instruments, materials, and laboratory procedures at a higher level of competence with accepted methods.

All clinical practices shall involve personal and social obligation of cross infection control, sterilization and waste management.

ORAL AND MAXILLOFACIAL PROSTHODONTICS AND IMPLANTOLOGY:

I. NON-SURGICAL AND SURGICAL METHODS OF PROSTHODONTICS AND IMPLANTOLOGY

a. Prosthodontic treatment for completely edentulous patients – Complete dentures, immediate complete dentures, single complete dentures, tooth supported complete dentures & Implant supported Prosthesis for completely edentulous patients for typical and atypical cases
b. Prosthodontic treatment for partially edentulous patients: - Clasp-retained acrylic and cast partial dentures, transitional dentures, immediate dentures,

intra coronal and extra coronal precision attachments retained partial dentures & maxillofacial prosthesis for typical and atypical cases

Prosthodontic treatment for edentulous patients: - Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis – Definitions, terminologies, G.P.T., Boucher's clinical dental terminology

Scope of Prosthodontics – The Cranio Mandibular system and its functions, the reasons for loss of teeth, consequences of loss of teeth and treatment modality with various restorations and replacements

a) **Edentulous Predicament**, Biomechanics of the edentulous state, Supportmechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.

b) **Effects of aging of edentulous patients** –aging population, distribution andedentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age

c) **Sequelae caused by wearing complete denture** –the denture in the oralenvironment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge (reduction) resorption, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.

d) **Temporomandibular disorders in edentulous patients** –Epidemiology,etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities

e) **Nutrition Care for the denture wearing patient** –Impact of dental status onfood intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

f) **Preparing patient for complete denture patients** –Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning – contributing history – patient's history, social information, medical status –

systemic status with special reference to debilitating diseases, diseases of the joints, cardiovascular disorders, diseases of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes – physiologic, pathological, pathological and intra oral changes. Intra oral health – mucus membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement of sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.

Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone

Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

g) **Pre prosthetic surgery** –Improving the patients denture bearing areas andridge relations.

h) **Non surgical methods** –rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature,

i) **Surgical methods** –Correction of conditions, that preclude optimal prosthetic function – hyperplastic ridge – epulis fissuratum and papillomatosis, frenular attachments

and pendulous maxillary tuberosities, ridge augmentation, maxillary and mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.

j) **Immediate Denture** –Advantages, Disadvantages, Contraindications,Diagnosis, treatment planning and Prognosis, Explanation to the patient, Oral examinations, Examination of existing prosthesis, Tooth modification, Prognosis, Referrals/adjunctive care, oral prophylaxis and other treatment needs.

First visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and master casts, two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting of the posterior denture teeth / verifying jaw relations and the patient try in.

Laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture.

k) **Over dentures** (tooth supported complete dentures)–indications andtreatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

l) **Single Dentures:** Single Mandibular denture to oppose natural maxillaryteeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and preventing mental trauma.

m) **Art of communication in the management of the edentulous predicament** – Communication–scope, a model of communication, why communication is important? What are the elements of effective communication? special significance of doctor / patient communication, doctor behavior, The iatro sedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilizing their resources to operate in a most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

n) **Materials prescribed in the management of edentulous patients -** Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture bases – base metal alloys.

o) **Articulators** – **Evolution of concepts,** Classification, selection, limitations, precision, accuracy andsensitivity, and Functions of the articulator and their uses. Recent advancements including virtual articulator

p) **Fabrication of complete dentures** –complete denture impressions–muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives of preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impressions.

Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating lines. Preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-anatomy of supporting structure, crest of the residual ridge, buccal shelf, shape of

supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

q) **Mandibular movements, Maxillo mandibular relations and concepts of occlusion –** Gnathology, identification of shape and location of arch form–Mandibular and maxillary occlusion rims, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal & centric relation records. Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position.

Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

r) **Selecting and arranging artificial teeth and occlusion for the edentulous patient –** anterior tooth selection, posterior tooth selection, and principles in

arrangement of teeth, and factors governing the position of teeth – horizontal & vertical relations. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.

s) **The Try in** –verifying vertical dimension, centric relation, establishment ofposterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

t) **Speech considerations with complete dentures & speech production** –structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodental(s) sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

u) **Waxing contouring and processing the dentures their fit and insertion and after care** –laboratory procedure–wax contouring, flasking andprocessing, laboratory remount procedures, ***selective grinding***, finishing and polishing.

Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors.

Special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, oral hygiene with dentures, preservation of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and (preventive) Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

v) **Implant supported Prosthesis for partially edentulous patients** –Scienceof Osseo integration, clinical protocol ***(diagnostic,surgical and prosthetic***) for treatment with implant supported over dentures, managing problems and complications. Implant Prosthodontics for edentulous patients: current and future directions.

Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications

- Introduction and Historical Review
- Biological, clinical and surgical aspects of oral implants
- Diagnosis and treatment planning

- Radiological interpretation for selection of fixtures
- Splints for guidance fort surgical placement of fixtures
- ***Surgical and*** Intra oral plastic surgery, if any
- Guided bone and Tissue regeneration consideration for implants fixture.
- Implant supported prosthesis for complete edentulism and partial edentulism
- Occlusion for implant supported prosthesis.
- Peri-implant tissue and Management of peri-implantitis
- Maintenance and after care
- Management of failed restoration.
- Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics –

a. **Scope, definition** and terminology, Classification of partially edentulous arches - requirements of an acceptable method of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification

b. **Components of RPD** –

i) major connector–mandibular and maxillary

ii) minor connectors, design, functions & form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

iii) Rest and rest seats – form of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

iv) Direct retainers- Internal attachments & extracoronal direct retainers. Relative uniformity of retention, flexibility of clasp arms, stabilizing reciprocal clasp, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

v) Indirect Retainers – denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – indirect retention.

(vi) Teeth and denture bases – types, materials, advantages and dis-advantages, indications and contraindications and clinical use.

Principles of removable partial Denture design – Bio mechanical considerations, and the factors influencing after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures. Essentials of partial denture design, components of partial denture design, tooth support, tissue support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partially to gain support.

c. **Education of patient**

d. **Diagnosis and treatment planning**

e. **Design, treatment sequencing and mouth preparation**

f. **Surveying** –Description of dental surveyor, purposes of surveying, Aims andobjectives in surveying of diagnostic cast and master cast, Final path of insertion, factors that determine path of insertion and removal, Recording relation of cast to surveyor, measuring amount of retentive area Blocking of

master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.

g. **Diagnosis and treatment planning** –Infection control and cross infectionbarriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials

h. **Preparation of Mouth for removable partial dentures** –Oral surgicalpreparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.

i. **Preparation of Abutment teeth** –Classification of abutment teeth, sequenceof abutment preparations on sound enamel or existing restorations, conservative restorations using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.

j. **Impression Materials and Procedures for Removable Partial Dentures** –Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.

k. **Support for the Distal Extension Denture Base** –Distal extensionremovable partial denture, Factors influencing the support of distal extension base, Methods of obtaining functional support for the distal extension base.

l. **Laboratory Procedures** –Duplicating a stone cast, Waxing the partialdenture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, arrangement of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

m. **Initial placement, adjustment and servicing of the removable partial denture** –adjustments to bearing surfaces of denture framework, adjustmentof occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services

n. **Relining and Rebasing the removable partial denture** –Relining toothsupported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.

o. **Repairs and additions to removable partial dentures** –Broken clasp arms,fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs & repair by soldering.

p. **Removable partial denture considerations in maxillofacial prosthetics** – Maxillofacial prosthetics, intra oral prosthesis, design considerations,
maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation records.

q. **Management of failed restorations and work authorization details.**

II. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions between clinician and patient. **Cancer Chemotherapy:** Oral Manifestations, Complications, and management, **Radiation therapy of head and neck tumors:** Oral effects, Dental manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration).
Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Oesophageal prosthesis, radiation carriers, Burn stents, Nasal stents, Vaginal and anal stents, Auditory inserts, Trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis, conformers, and orbital prosthesis for ocular and orbital defects. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, cranial prosthesis Implant rehabilitation of the mandible compromise by radiotherapy, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

III. OCCLUSION

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health. Anatomical, physiological, neuro – muscular, psychological considerations of teeth; muscles of mastication; temporomandibular joint; intra oral and extra oral and facial musculatures and the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints. Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-Mann-Schuyler philosophy of complete occlusal rehabilitation, long
centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration.
Bruxism, Procedural steps in restoring occlusion, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splaed anterior teeth, cross bite problems, Crowded, irregular, or interlocking anterior bite. Using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

IV. FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.

- **Diagnosis and treatment planning** –patients history and interview, patientsdesires and expectations and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments for cantilever, pier

abutments, splinting, available tooth structures and crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.

- **Management of Carious teeth** –caries in aged population, caries control,removal caries, protection of pulp, reconstruction measure for compromised teeth – retentive pins, horizontal slots, retentive grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
- **Periodontal considerations** –attachment units, ligaments, prevention ofgingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets in attached gingiva, interdental papilla, gingival embrasures, gingival/periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, periodontal splinting – Fixed prosthodontics with periodontially compromised dentitions, placement of margin restorations.
- **Biomechanical principles of tooth preparation** –individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incer**a**m etc. porcelain jacket crowns; partial 3/4, 7/8, telescopic, pin– ledge, laminates, inlays, onlays. Preparations for restoration of teeth– amalgam, glass Ionomer and composite resins. Resin bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and prefabricated.

- **Isolation and fluid control –** Rubber dam application(s), tissue dilation–softtissue management for cast restoration, impression materials and techniques, provisional restorations, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restorations.
- **Resins, Gold and gold alloys, glass Ionomer, restorations.**
- **Restoration of endodontically treated teeth, Stomatognathic Dysfunction and management**
- **Management of failed restorations**
  Osseo integrated supported fixed Prosthodontics –Osseo integratedsupported and tooth supported fixed Prosthodontics
- **CAD – CAM Prosthodontics**

V. TMJ – Temporomandibular joint dysfunction – Scope, definitions, and terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders, Anatomy related, trauma, disc displacement, Osteoarthrosis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrosis disease, Ostonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain – psychologic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy – occlusal repositioning appliances, orthodontic treatment,

Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment. Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

VI. ESTHETICS

SCOPE, DEFINITIONS :

Morpho psychology and esthetics, structural esthetic rules –facialcomponents, dental components, gingival components and physical components. Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures & contact point.

Prosthodontic treatment should be practiced by developing skills, by treating various and more number of patients to establish skill to diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics. All treatments should be carried out in more numbers for developing clinical skills.

- Infection control, cross infection barrier – clinical & lab ; hospital & lab waste management

Teaching / Learning Activities:

The post graduate is expected to complete the following at the end of :

I YEAR M.D.S.

- Theoretical exposure of all applied sciences
- ***Pre-clinical*** exercises involved in prosthodontic therapy for assessment
- Commencement of library assignment within six months
- To carry out short epidemiological study relevant to prosthodontics.
- Acquaintance with books, journals and referrals.
- To differentiate various types of articles published in and critically appraise based on standard reference guidelines.
- To develop the ability to gather evidence from published articles.
- To acquire knowledge of published books, journals and websites for the purpose of gaining knowledge and reference – in the field of ***Oral and Maxillofacial Prosthodontics and Implantology***
- Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- To acquire knowledge of Dental Material Science – Biological and biomechanical & bio-esthetics, knowledge of using material in laboratory and clinics including testing methods for dental materials.
- Submit a protocol for their dissertation before Institutional Review Board and Institutional Ethics Committee.
- Participation and presentation in seminars, didactic lectures.

II YEAR M.D.S.

- Acquiring confidence in obtaining various phases and techniques in removable and fixed prosthodontics therapy
- Acquiring confidence by clinical practice with sufficient number of patientsrequiring tooth and tooth surface restorations
- Fabrication of adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.
- Understanding the use of dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- Adequate number of R.P.D's covering all partially edentulous situations.
- Adequate number of Crowns, Inlays, laminates, ***FDP (fixed dental prosthesis)*** covering all clinical situations.
- Selection of cases and following principles in treatment of partially or complete edentulous patients by implant supported prosthesis.
- Treating single edentulous arch situations by implant supported prosthesis.
- Diagnosis and treatment planning for implant prosthesis.
- Ist stage and IInd stage implant surgery
- Understanding the maxillofacial ***Prosthodontics, treating craniofacial and management of orofacial defects***
- Prosthetic management of TMJ syndrome
- Occlusal rehabilitation
- Management of failed restorations.
- Prosthodontic management of patient with psychogenic disorder.
- Practice of child and geriatric prosthodontics.
- Participation and presentation in seminars, didactic and non didactic Teaching and Training students.

III YEAR M.D.S

- Clinical and laboratory practice continued from IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics – Rehabilitation of Partial Edentulism, Complete edentulism and craniofacial rehabilitation.
- Failures in all aspects of Prosthodontics and their management and after care.
- Team management for esthetics, TMJ syndrome and Maxillofacial & Craniofacial Prosthodontics
- Management of Prosthodontic emergencies, resuscitation.
- Candidate should complete the course by attending a large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation required in different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D's, F.D.P's,

  Immediate dentures, over dentures, implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- Prosthetic management of TMJ syndrome
- Management of failed restorations
- Should complete and submit Main Dissertation assignment 6 months prior to examination.

- Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- Participation and presentation in seminars, didactic lectures

PROSTHODONTIC TREATMENT MODALITIES

1) Diagnosis and treatment planning prosthodontics

2) Tooth and tooth surface restorations
- Fillings
- Veneers – composites and ceramics
- Inlays- composite, ceramic and alloys
- Onlay – composite, ceramic and alloys
- Partial crowns – ¾ th, 4/5th, 7/8th, Mesial ½ crowns
- Pin-ledge
- Radicular crowns
- Full crowns

3) Tooth replacements

	Partial	**Complete**
• Tooth supported	Fixed partial denture	Overdenture
• Tissue supported	Interim partial denture	Complete denture
	Intermediate partial denture	Immediate denture
		Immediate complete denture
• Tooth and tissue Supported	Cast partial denture Precision attachment	Overdenture
• Implant supported	Cement retained Screw retained Clip attachment	Bar attachment Ball attachment
• Tooth and implant Supported	Screw retained Cement retained	Screw retained Cement retained
• **Root supported**	Dowel and core Pin retained	Over denture

- Precision attachments
  - Intra coronal attachments
  - Extra coronal attachments
  - Bar – slide attachments
  - Joints and hinge joint attachments

4) Tooth and tissue defects (Maxillo- facial and Cranio-facial prosthesis)

A. **Congenital Defects**

a. Cleft lip and palate
b. Pierre Robin Syndrome
c. Ectodermal dysplasia
d. Hemifacial microstomia
e. Anodontia
f. Oligodontia
g. Malformed teeth

} cast partial dentures, implant supported prosthesis, complete dentures, fixed partial dentures

B. **Acquired defects**

a. Head and neck cancer patients – prosthodontic splints and stents
b. Restoration of facial defects
   – Auricular prosthesis
   – Nasal prosthesis
   – Orbital prosthesis
   – Craniofacial implants
c. Midfacial defects
d. Restoration of maxillofacial trauma
   e. Hemimandibulectomy
   f. Maxillectomy

   } cast partial denture, implant supported Dentures

   g. Lip and cheek support prosthesis — complete dentures
   h. Ocular prosthesis
   i. Speech and Velopharyngeal prosthesis
   j. Laryngectomy aids
   k. Esophageal prosthesis
   l. Nasal stents
   m. Tongue prosthesis
   n. Burn stents
   o. Auditory inserts
   p. Trismus appliances

5) T.M.J and Occlusal disturbances

a. Occlusal equilibration
b. Splints - Diagnostic
   - Repositioners / Deprogrammers
c. Anterior bite planes
d. Posterior bite planes
e. Bite raising appliances
f. Occlusal rehabilitation

6) Esthetic/Smile designing

a. Laminates / Veneers
b. Tooth contouring (peg laterals, malformed teeth)
c. Tooth replacements
d. Team management

7) Psychological therapy

a. Questionnaires
b. Charts, papers, photographs
c. Models
d. Case reports
e. Patient counseling
f. Behavioral modifications
g. Referrals

8) Geriatric Prosthodontics

a. Prosthodontics for the elderly
b. Behavioral and psychological counseling
c. Removable Prosthodontics
d. Fixed Prosthodontics
e. Implant supported Prosthodontics
f. Maxillofacial Prosthodontics
g. Psychological and physiological considerations

9) Preventive measures

a. Diet and nutrition modulation and counseling
b. Referrals

The bench work should be completed before the start of clinical work during the first year of the MDS Course

I. Complete dentures

1. Arrangements on adjustable articulator for
   - Class I
   - Class II
   - Class III
2. Various face bow transfers to adjustable articulators
3. Processing of characterized anatomical dentures

II. Removable partial denture*s*

1. Design for Kennedy's Classification
   (Survey, block out and design)
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
2. Designing of various components of RPD
3. Wax pattern on refractory cast
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
4. Casting and finishing of metal frameworks
5. Acrylisation on metal frameworks for
   Class I
   Class III with modification

III. Fixed Partial Denture

1. Preparations on ivory teeth / natural teeth
   - FVC for metal
   - FVC for ceramic
   - Porcelain jacket crown
   - Acrylic jacket crown
   - PFM crown
   - $3/4^{th}$ (canine, premolar and central)

- 7/8th posterior
- Proximal half crown

- Inlay – Class I, II, V
- Onlay – Pin ledged, pinhole
- Laminates

2. Preparation of different die systems

3. Fabrication of wax patterns by drop wax build up technique
   - Wax in increments to produce wax coping over dies of tooth preparations on substructures
   - Wax additive technique
   - 3-unit wax pattern (maxillary and Mandibular)
   - Full mouth

4. Pontic designs in wax pattern
   - Ridge lap
   - Sanitary
   - Modified ridge lap
   - Modified sanitary
   - Spheroidal or conical

5. Fabrication of metal frameworks
   - Full metal bridge for posterior (3 units)
   - Coping for anterior (3 unit)
   - Full metal with acrylic facing
   - Full metal with ceramic facing
   - Adhesive bridge for anteriors
   - Coping for metal margin ceramic crown
   - Pin ledge crown

6. Fabrication of crowns
   - All ceramic crowns with characterisation
   - Metal ceramic crowns with characterisation
   - Full metal crown
   - Precious metal crown
   - Post and core

7. Laminates
   - Composites with characterisation
   - Ceramic with characterisation
   - Acrylic

8. Preparation for composites
   - Laminates
   - Crown
   - Inlay
   - Onlay
   - Class I
   - Class II
   - Class III
   - Class IV
   - Fractured anterior tooth

IV. Maxillofacial prosthesis

- Eye

- Ear
- Nose
- Face
- Body defects
  - Cranial
  - Maxillectomy
  - Hemimandibulectomy
  - Finger prosthesis
  - Guiding flange
  - Obturator

V. Implant supported prosthesis

1. Step by step procedures –***Surgical and*** laboratory phase

VI. Other exercises

1. TMJ splints – stabilization appliances, maxillary and Mandibular repositioning appliances
2. Anterior disocclusion appliances
3. Chrome cobalt and acrylic resin stabilization appliances
4. Modification in accommodation of irregularities in dentures
5. Occlusal splints
6. Periodontal splints
7. Precision attachments – custom made
8. Over denture coping
9. Full mouth rehabilitation (by drop wax technique, ceramic build up)
10. TMJ appliances – stabilization appliances

ESSENTIAL SKILLS:

*Key
O – Washes up and observes
A – Assists a senior
PA – Performs procedure under the direct supervision of a senior specialist
PI – Performs independently

The following list of procedures are expected of the post graduate to complete in the post graduate programme under faculty guidance [PA] or independently [PI] . Each of the following procedures should be evaluated for the competencies like critical thinking, patient centered approach, use of evidence based approach, professionalism, systems based practice approach and communication skills of the student. The mentioned numbers denote minimal requirement. However, the head of the department has the discretion to fix the quota and assess them systematically. There may be procedures which the student has observed [O] or assisted [A]. The student can however make his entry into his log book or portfolio wherein he/she can make his comments with remarks of the facilitator in the form of a feedback which would reinforce his learning.

PROCEDURE	CATEGORY			
	O	A	PA	PI
Tooth and tooth surface restoration a) Composites – fillings, laminates, inlay, onlay b) Ceramics – laminates, inlays, onlays c) Glass Ionomer				 5 5 5
CROWNS				

FVC for metal				10
FVC for ceramic				10
Precious metal crown or Galvanoformed crown	1	-	1	5
Intraradicular crowns (central, lateral, canine, premolar, and molar)		-	-	5
Crown as implant supported prosthesis	As many	5	5	5
FIXED PARTIAL DENTURES				
Porcelain fused to metal (anterior and posterior)				10
Multiple abutments – maxillary and Mandibular full arch				5

Incorporation of custom made and prefabricated precision attachments			2	
Adhesive bridge for anterior/posterior		-		5
CAD – CAM Anterior/Posterior FPD	-	-		5
Interim provisional restorations (crowns and FPDs)				for all crowns and bridges
Immediate fixed partial dentures (interim) with ovate pontic		-	-	5
Fixed prosthesis as a retention and rehabilitation means for acquired and congenital defects – maxillofacial Prosthetics				5
Implant supported prosthesis		-		1
Implant – tooth supported prosthesis		-		1
REMOVABLE PARTIAL DENTURE				
Provisional partial denture prosthesis				10
Cast removable partial denture (for Kennedy's Applegate classification with modifications)				3
Removable bridge with precision attachments and Telescopic crowns for anterior and posterior edentulous Spaces				1
Immediate RPD				5
Partial denture for medically compromised and Handicapped patients				2
COMPLETE DENTURES				
Anatomic characterized prosthesis (by using semi adjustable articulator)	-	-		25
Single dentures	-	-		5
Overlay dentures	-	-		5
Interim complete dentures as a treatment prosthesis for abused denture supporting tissues	-	-		5
Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)	-	-		5

Complete dentures for patients with TMJsyndromes	-	-		2
Complete dentures for medically compromised and handicapped patients	-	-		2
GERIATRIC PATIENTS				
Handling geriatric patients requiring nutritional counseling, psychological management and management of co-morbitity including xerostomia and systemic problems. Palliative care to elderly.				
IMPLANT SUPPORTED COMPLETE PROSTHESIS				
Implant supported complete prosthesis (maxillary and Mandibular)	-	-		1
MAXILLOFACIAL PROSTHESIS				

e.g. Guiding flange/ obturators/ Speech and palatal lift prosthesis/ Eye/ Ear/ Nose/ Face/Finger/Hand/Foot	5 different types as PI

TMJ SYNDROME MANAGEMENT				
Splints – periodontal, teeth, jaws	-	-	1	1
TMJ supportive and treatment prosthesis	-	-	1	1
Stabilization appliances for maxilla and mandible with freedom to move from IP to CRCP	-	-	-	1
In IP without the freedom to move to CRCP	-	-	-	1
Repositioning appliances, anterior diso cclu sion appliances	-	-	-	1
Chrome cobalt and acrylic resin stabilization appliances for modification to accommodate for the irregularities in the dentition	-	-	-	1
Occlusal adjustment and occlusal equilibrium appliances	-	-	1	4
FULL MOUTH REHABILITATION				
Full mouth rehabilitation – restoration of esthetics and function of stomatognathic system	-	-	1	2
INTER-DISCIPLINARY TREATMENT MODALITIES				
Inter-disciplinary management – restoration of Oro craniofacial defects for esthetics, phonation, mastication and psychological comforts	-	-	1	2
MANAGEMENT OF FAILED RESTORATION				
Tooth and tooth surface restorations	-	-	-	5

Removable prosthesis	-	-	-	5
Crowns and fixed prosthesis	-	-	-	5
Maxillofacial prosthesis	-	-	-	2
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	2
Restoration failures of psychogenic origin	-	-	-	2
Restoration failures to age changes	-	-	-	2

SCHEME OF EXAMINATION:

A. Theory: Part-I : Basic Sciences Paper - **100 Marks**
Part-II : Paper-I, Paper-II & Paper-III - **300 Marks**
(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of ***MDS course. Part 1 examination consists of two essays of 25 marks each and 10 short answers of 5 marks each. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I , Paper-II and Paper III shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Distribution of topics for each paper will be as follows:***

Part-I : ***Applied Basic Sciences: Applied Anatomy***
Nutrition & Biochemistry, Pathology & Microbiology, virology, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I : Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics
Paper-II : Fixed Prosthodontics, Occlusion, TMJ and esthetics.
Paper-III : Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

A. Practical / Clinical Examination : 200 Marks

1. **Presentation of treated patients and records during their 3 years Training period** 35 Marks

a. C.D. 1 mark
b. R. P.D. 2 marks
c. F.P.D. including single tooth and surface restoration 2 marks
d. I.S.P. 5 marks
e. Occlusal rehabilitation 5 marks
f. T.M.J. 5 marks
g. Maxillofacial Prosthesis 5 marks
h. Pre Clinic Exercises 10 marks

2. Presentation of Clinical Exam CD patient's prosthesis including insertion 75 Marks

1.	Discussion on treatment plan and patient review	10 marks
2.	Tentative jaw relation records	5 marks
3.	Face Bow – transfer	5 marks
4.	Transferring it on articulators	5 marks
5.	Extra oral tracing and securing centric and	15 marks
	protrusive/lateral, record	
6.	Transferring records on articulator and programming.	5 marks
7.	Selection of teeth	5 marks
8.	Arrangement of teeth	10 marks
9.	Waxed up denture trial	10 marks
10.	Check of Fit, insertion and instruction of previously	5 marks
	processed characterised, anatomic complete denture	
	Prosthesis	

ALL STEPS WILL INCLUDE CHAIRSIDE, LAB AND VIVA VOCE

3. Fixed Partial Denture **35 Marks**

a. Case discussion including treatment planning and selection of patient for F.P.D. — 5 Marks
b. Abutment preparation isolation and fluid control — 15 marks
c. Gingival retraction and impressions (conventional/ CAD CAM impressions — 10 marks
d. Cementation of provisional restoration — 5 marks

4. Removable Partial Denture **25 Marks**

a. Surveying and designing of partial dentate cast. — *5 marks*
b. Discussion on components and material selection including occulsal schemes. — *10 marks*

5. Implant supported prosthesis (2nd stage- protocol) ***30 marks***

a. Case discussion including treatment planning and selection of patient for ISP — *10 marks*
b. II stage preparation, Abutment selection, placement, evaluation — *10 marks*
c. Implant impression and making of cast — *10 marks*

B. Viva Voce : **100 Marks**

I. Viva-Voce examination: *80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expressions, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

II. Pedagogy *20 marks*

2. PERIODONTOLOGY:

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course

A) KNOWLEDGE:

Discuss historical perspective to advancement in the subject proper and related topics.

- Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental/Emotional determinates in a given case
- Recognize conditions that may be outside the area of his/her Speciality/ competence and refer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update the student by attending courses, conferences and seminars relevant to periodontics or by self-learning process.
- Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his/her work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology
- Principals of Surgery and Medical Emergencies.
- To sensitize students about inter disciplinary approach towards the soft tissues of the oral cavity with the help of specialist from other departments.

B) SKILLS:

- Take a proper clinical history, thorough examination of intra oral, extra oral, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment
- Perform both non-surgical and surgical procedures independently
- Provide Basic Life Support Service (BLS) recognizes the need for advance life support and does the immediate need for that.
- Human values, ethical practice to communication abilities

- Adopt ethical principles in all aspects of treatment modalities; Professional honesty & integrity are to be fostered. Develop Communication skills to make awareness regarding periodontal disease Apply high moral and ethical standards while carrying out human or animal research, Be humble, accept the limitations in his/her knowledge and skill, and ask for help from colleagues when needed, Respect patients rights and privileges, including patients right to information and right to seek a second opinion.
- To learn the principal of lip repositioning and perio esthetics surgeries.

COURSE CONTENTS:

PART-I:

APPLIED BASIC SCIENCES

APPLIED ANATOMY:

1. Development of the Periodontium
2. Micro and Macro structural anatomy and biology of the periodontal tissues
3. Age changes in the periodontal tissues
4. Anatomy of the Periodontium
   - Macroscopic and microscopic anatomy
   - Blood supply of the Periodontium
   - Lymphatic system of the Periodontium
   - Nerves of the Periodontium
5. Temporomandibular joint, Maxillae and Mandible
6. Tongue, oropharynx
7. Muscles of mastication / Face
8. Blood Supply and Nerve Supply of Head & Neck and Lymphatics.
9. Spaces of Head & Neck

PHYSIOLOGY:

1. Blood
2. Respiratory system – knowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)
3. Cardiovascular system
   a. Blood pressure
   b. Normal ECG
   c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system
   a. Salivary secretion – composition, function & regulation
   b. Reproductive physiology
   c. Hormones – Actions and regulations, role in periodontal disease
   d. Family planning methods
6. Nervous system
   a. Pain pathways
   b. Taste – Taste buds, primary taste sensation & pathways for sensation

7. Hemostasis

BIOCHEMISTRY:

1. Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorus

PATHOLOGY:

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth and differentiation, regulation
8. Lab investigations
9. Blood

MICROBIOLOGY:

1. General bacteriology
   a. Identification of bacteria
   b. Culture media and methods
   c. Sterilization and disinfection
2. Immunology and Infection
3. Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetum comitans
4. Virology
   a. General properties of viruses
   b. Herpes, Hepatitis, virus, HIV virus
5. Mycology
   a. Candidiasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

PHARMACOLOGY:

1. General pharmacology
   a. Definitions – Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
   b. Adverse drug reactions and drug interactions
2. Detailed pharmacology of
   a. Analgesics – opiod and nonopiod
   b. Local anesthetics
   c. Haematinics and coagulants, Anticoagulants
   d. Vit D and Calcium preparations
   e. Antidiabetics drugs
   f. Steroids
   g. Antibiotics
   h. Antihypertensive
   i. Immunosuppressive drugs and their effects on oral tissues
   j. Antiepileptic drugs
3. Brief pharmacology, dental use and adverse effects of
   a. General anesthetics
   b. Antipsychotics
   c. Antidepressants
   d. Anxiolytic drugs
   e. Sedatives
   f. Antiepileptics
   g. Antihypertensives
   h. Antianginal drugs
   i. Diuretics

   j. Hormones
   k. Pre-anesthetic medications
4. Drugs used in Bronchial asthma, cough
5. Drug therapy of
   a. Emergencies
   b. Seizures
   c. Anaphylaxis
   d. Bleeding
   e. Shock
   f. Diabetic ketoacidosis
   g. Acute addisonian crisis
6. Dental Pharmacology
   a. Antiseptics
   b. Astringents
   c. Sialogogues
   d. Disclosing agents
   e. Antiplaque agents
7. Fluoride pharmacology

BIOSTATISTICS:

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability
5. Tests of significance (chi square test, t-test and z-test)
   Null hypothesis

PART II

PAPER 1

ETIOPATHOGENESIS:

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingival
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

PAPER-II

CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY

Please note:
Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

(i) GINGIVAL DISEASES

1. Gingival inflammation
2. Clinical features of gingivitis
3. Gingival enlargement
4. Acute gingival infections
5. Desquamative gingivitis and oral mucous membrane diseases
6. Gingival diseases in the childhood

(ii) PERIODONTAL DISEASES

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces
4. Masticatory system disorders
5. Chronic periodontitis
6. Aggressive periodontitis
7. Necrotising ulcerative periodontitis
8. Interdisciplinary approaches
   - Orthodontic
   - Endodontic

(iii) TREATMENT OF PERIODONTAL DISEASES

A. History, examination, diagnosis, prognosis and treatment planning
   1. Clinical diagnosis
   2. Radiographic and other aids in the diagnosis of periodontal diseases
   3. Advanced diagnostic techniques
   4. Risk assessment
   5. Determination of prognosis
   6. Treatment plan
   7. Rationale for periodontal treatment
   8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice
   9. Halitosis and its treatment
   10. Bruxism and its treatment

B. Periodontal instrumentation
   1. Periodontal Instruments
   2. Principles of periodontal instrumentation

C. Periodontal therapy
   1. Preparation of tooth surface
   2. Plaque control
   3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth
   4. Periodontal management of HIV infected patients
   5. Occlusal evaluation and therapy in the management of periodontal diseases
   6. Role of orthodontics as an adjunct to periodontal therapy
   7. Special emphasis on precautions and treatment for medically compromised patients
   8. Periodontal splints

9. Management of dentinal hypersensitivity

D. Periodontal surgical phase – special emphasis on drug prescription
   1. General principles of periodontal surgery
   2. Surgical anatomy of periodontium and related structures
   3. Gingival curettage
   4. Gingivectomy technique
   5. Treatment of gingival enlargements
   6. Periodontal flap
   7. Osseous surgery (resective and regenerative)
   8. Furcation; Problem and its management
   9. The periodontic – endodontic continuum
   10. Periodontic plastic and esthetic surgery
   11. Recent advances in surgical techniques

E. Future directions and controversial questions in periodontal therapy
   1. Future directions for infection control
   2. Research directions in regenerative therapy
   3. Future directions in anti-inflammatory therapy
   4. Future directions in measurement of periodontal diseases

F. Periodontal maintenance phase
   1. Supportive periodontal treatment
   2. Results of periodontal treatment

(iv) ORAL IMPLANTOLOGY

1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Special emphasis on plaque control measures in implant patients
8. Maintenance phase

(v) MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE

Periodontology treatment should be practiced by various treatment plans and more number of patients to establish skill for diagnosis and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics and all treatment should be carried out in more number for developing clinical skill.

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

S.NO	Year Wise	ACTIVITIES WORKS TO BE DONE
1.	**Module 1 (First Year)**	Orientation to the PG program **Pre-clinical work (4 months)** **a. Dental** 1. Practice of incisions and suturing techniques on the typodont models. 2. Fabrication of bite guards and splints. 3. Occlusal adjustment on the casts mounted on the

		articulator 4. X-ray techniques and interpretation. 5. Local anaesthetic techniques. 6. Identification of Common Periodontal Instruments. 7. To learn science of Periodontal Instruments maintance (Sharpening , Sterlization and Storate) 8. Concept of Biological width a. Typhodont Exercise (i) Class II Filling with Band and Wedge Application (ii) Crown cuttings **b. Medical** 1. Basic diagnostic microbiology and immunology, collection and handling of sample and culture techniques. 2. Introduction to genetics, bioinformatics. 3. Basic understanding of cell biology and immunological diseases. **Clinical work** 1. Applied periodontal indices 10 cases 2. Scaling and root planning:- with Proper written history a. Manual 20 Cases b. Ultrasonic 20 Cases 3. Observation / assessment of all periodontal procedures including implants
2.	**Module 2** (**First Year**)	1. Interpretation of various bio-chemical investigations. 2. Practical training and handling medical emergencies and basic life support devices. 3. Basic biostatistics – Surveying and data analysis. **Clinical** 1. Case history and treatment planning 10 cases 2. Root planning 50 cases 3. Observation / assessment of all periodontal procedures including implant. 4. Selection of topic for Library dissertation and submission of Dissertation Synopsis.
3.	**Module 3** (**First Year**)	Minor surgical cases 20 cases (i) Gingival Depigmentation 3 Cases (ii) Gingival Curettage no limits (iii) ENAP 1 Case (iv) Gingivectomy/ Gingivoplasty 5 cases (v) Operculectomy 3 cases Poster Presentation at the Speciality conference
4.	**Module 4** (**Second Year**)	**Clinical work** 1. Case history and treatment planning 10 cases 2. Occlusal adjustments 10 cases 3. Perio splints 10 cases 4. Local drug delivery techniques 5 cases 5. Screening cases for dissertation
5.	**Module 5** (**Second Year**)	1. Periodontal surgical procedures. a. Basic flap procedures 20 cases 2. Periodontal plastic and esthetic 10 cases a. Increasing width of attached gingival 5 cases

		b. Root coverage procedures / Papilla Preservation and Reconstruction 5 cases c. Crown lengthening procedures 5 cases d. Frenectomy 5 cases e. Vestibuloplasty 5 cases 3. Furcation treatment (Hemisection, Rootsection, Tunelling) 5 cases 4. Surgical closure of diastema. 2 cases
6.	**Module 6** (**Third Year**)	1. Ridge augmentation procedures 5 cases 2. Implants Placements and monitoring 5 cases 3. Sinus lift procedures 2 cases 4. Case selection, preparation and investigation of implants. 5. Interdisciplinary Periodontics 2 each (i) Ortho – Perio (ii) Endo – Perio (iii) Restorative Perio (iv) Preprosthetic (v) Crown Prep 6. Osseous Surgery 2 each (i) Resective (ii) Regenerative 7. Scientific paper/ poster presentation at the conference.
7.	**Module 7** (**Third Year**)	**Clinical work** 1. Flap surgeries & regenerative techniques 25 cases (using various grafts & barrier membranes) 2. Assistance / observation of advanced surgical procedure 5 each 3. Micro Surgery 5 each 4. Record maintenance & follow-up of all treated cases including implants. 5. Submission of dissertation – 6 months before completion of III year. 6. Scientific paper presentation at conferences.
8.	**Module 8** (**Third Year**)	1. Refining of surgical skills. 2. Publication of an article in a scientific journal. 3. Preparation for final exams.
9.	**Module 9** (**Third Year**)	1. Preparation for final exams. 2. University exam

Note: Maintenance of Work Diary / Check list / Log books as prescribed.

ASSESSMENT EXAMINATION:
In addition to regular evaluation, log book etc., Assessment examination should be conducted after every 3 modules & progress of the student monitored.

MONITORING LEARNING PROGRESS:
It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.

SCHEME OF EXAMINATION:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**

Part-II: Paper-I, Paper-II & Paper-III - **300 Marks** (100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

Part- I : Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

Part-II

Paper I: Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Paper II: Periodontal diagnosis, therapy & Oral Implantology

Paper III: Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical / Clinical Examination : 200 Marks

The clinical examination shall be of two days duration

1st day

Case discussion

- Long case - One
- Short case - One

Periodontal surgery – Periodontal Surgery on a previously prepared case after getting approval from the examiners

2nd day

Post-surgical review and discussion of the case treated on the 1st day

Presentation of dissertation & discussion

All the examiners shall participate in all the aspects of clinical examinations / Viva Voce

Distribution of Marks for Clinical examination (recommended)

a) Long Case discussion	75		
b) 1 short case	25		
c) Periodontal surgery	1.	Anesthesia	10
	2.	Incision	20
	3.	Post Surgery Evaluation	25
	4.	Sutures	10

	5.	Pack (if any)	10
Post – operative review		25	
Total		**200**	

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20 marks

A topic will be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

3. ORAL AND MAXILLOFACIAL SURGERY

OBJECTIVES:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following five objectives-

- Knowledge
- Skills
- Attitude
- Communicative skills and ability
- Research

Knowledge:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature
- To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice of oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

Skills:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically the problems of the oral and Maxillofacial and the related area.
- Capable of providing care for maxillofacial surgery patients.

Attitude:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

Communication Skills:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.

COURSE CONTENT:

The speciality of Oral & Maxillofacial Surgery deals with the diagnosis and management of the diseases of stomatognathic system, jaw bones, cranio-maxillofacial region, salivary glands and temporomandibular joints etc. Within this framework it also supports many vital organs like eye, oropharynx, nasopharynx and major blood vessels and nerves. The traumatic injuries of maxillofacial skeleton are independently managed by Oral & Maxillofacial Surgeons. Whenever there are orbital injuries the ophthalmologists are trained only to tackle injuries of the eye ball (globe) but if there are associated injuries of the orbital skeleton, the Maxillofacial Surgeon is involved in its re-construction. Similarly, nasal bone fracture may be managed by ENT surgeons. Most of the time nasal bone fractures are associated with fractures of the maxilla, mandible and zygomatic bones which are being managed by Oral & Maxillofacial Surgeons. The maxillofacial facial injuries at times are associated with head injuries also. The Oral & maxillofacial Surgeon is involved in the management of cleft lip & cleft palate, orthognathic surgery, micro vascular surgery, reconstructive and oncological surgical procedures of maxillofacial region. The speciality of Oral & Maxillofacial Surgery is a multi disciplinary speciality and needs close working in co-ordination with Neurosurgeons, Oncosurgeons, Opthalmologists, ENT Surgeons and Plastic Surgeons. The Oral & Maxillofacial Surgeons, Ophthalmologist, ENT Surgeons, Plastic Surgeons, Neuro-Surgeons and Oncologists complement each other by performing Surgical Procedures with their respective expertise and knowledge thereby benefiting the patients and students of the respective specialities.

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

A) Applied Basic sciences
B) Oral and Maxillofacial surgery
C) Allied specialties

A) Applied Basic Sciences:

Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology, Pharmacology and Knowledge in Basic Statistics.

Applied Anatomy:

1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck; chest , lower and upper extremities (in consideration to grafts/flaps)
5. Arterial supply, venous drainage and lymphatics of head and neck

6. Congenital abnormalities of the head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and its applied aspects
9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

Physiology:

1. **Nervous system**
   - Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature
2. **Blood**
   - Composition
   - Haemostasis, various blood dyscrasias and management of patients with the same
   - Hemorrhage and its control
   - Capillary and lymphatic circulation.
   - Blood grouping, transfusing procedures.
3. **Digestive system**
   - Saliva - composition and functions of saliva
   - Mastication, deglutition, digestion, assimilation
   - Urine formation, normal and abnormal constituents
4. **Respiration**
   - Control of ventilation, anoxia, asphyxia, artificial respiration
   - Hypoxia – types and management
5. **CardioVascular System**
   - Cardiac cycle,
   - Shock
   - Heart sounds,
   - Blood pressure,
   - Hypertension:
6. **Endocrinology**
   - General endocrinal activity and disorder relating to thyroid gland,
   - Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
   - Metabolism of calcium

7. **Nutrition**
   - General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
   - Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

Biochemistry:

- General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
- General composition of the body
- Intermediary metabolism
- Carbohydrates, proteins, lipids, and their metabolism
- Nucleoproteins, nucleic acid and nucleotides and their metabolism
- Enzymes, vitamins and minerals
- Hormones
- Body and other fluids.
- Metabolism of inorganic elements.
- Detoxification in the body.
- Antimetabolites.

Pathology:

1. **Inflammation –**
   - Repair and regeneration, necrosis and gangrene
   - Role of component system in acute inflammation,
   - Role of arachidonic acid and its metabolites in acute inflammation,
   - Growth factors in acute inflammation
   - Role of molecular events in cell growth and intercellular signaling cell surface receptors
   - Role of NSAIDs in inflammation,
   - Cellular changes in radiation injury and its manifestation:
2. **Haemostasis**
   - Role of endothelium in thrombogenesis,
   - Arterial and venous thrombi,
   - Disseminated Intravascular coagulation
3. **Shock:**
   - Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
   - Circulatory disturbances, ischemia, hyperemia, venous congestion, edema, infarction
4. **Chromosomal abnormalities:**
   - Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X- Syndrome
5. **Hypersensitivity:**
   - Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
   - Infection and infective granulomas.
6. **Neoplasia:**
   - Classification of tumors.
   - Carcinogenesis and carcinogens- chemical, viral and microbial
   - Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
   - Characteristics of benign and malignant tumors
7. **Others:**
   - Sex linked agammaglobulinemia.
   - AIDS
   - Management of immuno deficiency patients requiring surgical procedures
   - De George Syndrome

- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

Oral Pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth.
- Bacterial, viral and mycotic infections of oral cavity
- Dental caries,, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances
- Diseases of jawbones and TMJ
- Diseases of blood and blood forming organs in relation to oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

Microbiology:

- Immunity
- Knowledge of organisms commonly associated with diseases of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organisms, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures,
- Urine analysis and cultures.

Applied Pharmacology and Therapeutics:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C, D, E, K

B) Oral and Maxillofacial Surgery:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent/medico-legal issues.
- Concept of essential drugs and rational use of drugs.

- Communication skills with patients- understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery- understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery- developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Post operative care- concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management- Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction/management – Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain; Facial palsy and nerve injuries.
- Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- General patient management – competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre-prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.

- Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries
- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- Assessment of trauma-multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery- detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial skin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of craniofacial anomalies.
- Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology – principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology/ radio diagnosis
- Other diagnostic methods and imaging techniques

C) Allied Specialties:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal diseases, Blood dyscrasias
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT/Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.

- Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesiology: Evaluation of patients for GA technique, general anesthetic drugs use and complications, management of emergencies, various IV sedation techniques.
- Plastic Surgery- Basic Principles

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

I Year

Study ofapplied basic sciences including practicals (wherever necessary), basic computer sciences, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T, ward rounds, Medical Record keeping, Pre-clinical exercises, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Rotation and postings in other departments:

General medicine	- 1 month
General surgery	- 1 month
Ophthalmology	- 15 days
Neuro Surgery	- 15 days
ENT	- 15 days
Orthopedic	- 15 days
Plastic Surgery	- 15 days
Casualty	- 15 days
Anesthesia (ICU)	- 15 days
Radiology (CT, MRI, USG)	- 15 days

II Year

- Minor oral surgery and higher surgical training
- Submission of library assignment
- Oncologyposting – 1 month

III Year

- Maxillofacial surgery
- Submission of dissertation to the university, six months before the final examination.

It is desirable to enter general surgical skills and operative procedures that are observed, assisted or performed in the log book in the format as given below:-

Sl.No	Procedure	Category	Number
1	Injection I.M. and I.V.	PI	50, 20
2	Minor suturing and removal of sutures	PI	N,A
3	Incision & drainage of an abscess	PI	10
4	Surgical extraction	PI	15
5	Impacted teeth	PI, A	30,20

6	Pre prosthetic surgery- corrective procedures ridge extension ridge reconstruction	 PI A A	 10 3 3
7	OAF closure	PI, A	3,2
8	Cyst enuleation	PI,A	5,5
9	Mandibular fractures	PI,A	10,10
10	Peri-apical surgery	PI,A	5
11	Infection management	PI,A	3,3
12	Biopsy procedures	PI, A	10, 3
13	Removal of salivary calculi	A	3
14	Benign tumors	A	3,3
15	mid face fractures	PI,A	3,5
16	Implants	PI,A	5,5
17	Tracheotomy	A	2
18	Skin grafts	PI,A	2,2
19	Orthognathic surgery	A,O	3,5
20	Harvesting bone & cartilage grafts Iliac crest Rib Calvarial Fibula	A,O A,O A,O A,O	3,5 3,3 2,2 2,2
21	T.M. Joint surgery	A	3
22	Jaw resections	A,O	3,5
23	Onco surgery	A,O	3,3
24	Micro vascular anastomosis	A,O	2,2
25	Cleft lip & palate	A,O	3,5
26	Distraction osteogenesis	A,O	2,3
27	Rhinoplasty	A,O	2,3
28	Access osteotomies and base of skull surgeries	A,O	1,3
29	Emergency Management for OMFS Patients in Casualty / Accident & Emergency	PI,O	5,5

PI:- Performed Independently
A:- Assisted
O:- Observed

Monitoring Learning Progress:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

Paper wise distribution of syllabus:

PART- I :

Applied Basic Sciences

PART-II:

Paper– I:Minor Oral Surgery and Maxillofacial Trauma

Minor Oral Surgery:

- **Principles of Surgery**: Developing A Surgical Diagnosis, Basic Necessities For Surgery, Aseptic Technique, Incisions, Flap Design Tissue Handling, Haemostasis, Dead Space Management, Decontamination And Debridement, Suturing, Oedema Control, Patient General Health And Nutrition.
- **Medical Emergencies**: Prevention and management of altered cons-ciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.
- **Examination and Diagnosis**: Clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
- **Haemorrhage and Shock**: Applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
- **Exodontia**: Principles of extraction, indications and contraindications, types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
- **Impaction:** Surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
- **Surgical aids to eruption of teeth**: Surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
- **Transplantation of teetH**
- **Surgical Endodontics:** Indications and contraindications, diagnosis, procedures of periradicular surgery
- **Preprosthetic Surgery:** Requirements, types (alvoloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
- **Procedures to Improve Alveolar Soft Tissues**: Hypermobile tissues- operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy
- **Infectionsof Head and Neck:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
- **Chronic infections of the jaws:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
- **Maxillary Sinus:** Maxillary sinusitis – types, pathology, treatment, closure of Oro – antral fistula, Caldwell- luc operation
- **Cysts of the Orofacial Region:** Classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
- **Neurological disorders of the Maxillofacial Region:** Diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
- **Implantology**: Definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
- **Anesthesia**
  Local Anesthesia**:**
  Classification of local anesthetic drugs, mode of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management.

General Anesthesia:
Classification, stages of GA, mechanism of action, indications, and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA

Maxillofacial Trauma:

- Surgical Anatomy of Head and Neck.
- Etiology of Injury.
- Basic Principles of Treatment
- Primary Care: resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
- Diagnosis: clinical, radiological
- Soft Tissue Injury of Face and Scalp: classification and management of soft tissue wounds, injuries to structure requiring special treatment.
- Dento Alveolar Fractures: examination and diagnosis, classification, treatment, prevention.
- Mandibular Fractures: classification, examination and diagnosis, general principles of treatment, complications and their management
- Fracture of Zygomatic Complex: classification, examination and diagnosis, general principles of treatment, complications and their management.
- Orbital Fractures: blow out fractures
- Nasal Fractures
- Fractures of Middle Third of the Facial Skeleton: emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
- Opthalmic Injuries: minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
- Traumatic Injuries To Frontal Sinus: diagnosis, classification, treatment
- Maxillofacial Injuries in Geriatric and Pediatric Patients.
- Gun Shot Wounds and War Injuries
- Osseointegration in Maxillofacial Reconstruction
- Metabolic Response to Trauma: neuro endocrine responses, inflammatory mediators, clinical implications
- Healing of Traumatic Injuries: soft tissues, bone, cartilage, response of peripheral nerve to injury
- Nutritional consideration following Trauma.
- Tracheostomy: indications and contraindications, procedure, complications and their management.

Paper – II :Maxillofacial Surgery

a) Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

b) Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

c) Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

d) Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

e) Cysts and tumors of oro facial region

- Odontogenic and non-Odontogenic tumors and their management
- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

f) Laser surgery

- The application of laser technology in surgical treatment of lesions

g) Cryosurgery

- Principles, applications of cryosurgery in surgical management

h) Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

i) Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc

j) Craniofacial surgery

- Basic knowledge of developmental anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies

Paper – III : Essays (descriptive and analyzing type questions)

Scheme of Examination:

A. Theory:	Part-I:	Basic Sciences Paper	-	**100 Marks**
	Part-II:	Paper-I, Paper-II & Paper-III	-	**300 Marks**
				(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

PART- II

Paper – I : Minor Oral Surgery and Maxillofacial Trauma
Paper – II : Maxillofacial Surgery
Paper – III : Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical / Clinical Examination - 200 Marks

1. Minor Oral Surgery - 100 Marks

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third

molar, cyst enucleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2.Case presentation and discussion: 100 Marks

(a) One long case	-	60 Marks
(b) Two short cases	-	40 Marks (20 marks each)

C. Viva Voce - 100 Marks

i. Viva-Voce examination: *80 Marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy: *20 Marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

4. CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These are to be achieved by the time the candidate completes the course. These objectives may be considered under the following subtitles.

Knowledge:

At the end of 36 months of training, the candidates should be able to:

- Describe etiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathosis including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry-Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.
  Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform.

Skills:

- Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work, surgical and non-surgical Endodontics as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.
- Should have proper knowledge of sterilization procedures

Human Values, Ethical Practice and Communication Abilities

- Adopt ethical principles in all aspects of restorative and contemporary Endodontics including non-surgical and surgical Endodontics.
- Professional honesty and integrity should be the top priority.
- Dental care has to be provided regardless of social status, caste, creed or religion of the patient.
- Develop communication skills in particular to explain various options available for management and to obtain a true informed consent from the patient.
- Apply high moral and ethical standards while carrying on human or animal research.

- He/She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation.
- Respect patient's rights and privileges including patients right to information.

COURSE CONTENTS:

PART-I:

Applied Basic Sciences:

Applied Anatomy of Head and Neck:

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.
- Internal anatomy of permanent teeth and its significance.
- Applied histology – histology of skin, oral mucosa, connective tissue, bone, cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

Anatomy and Development of Teeth:

- Enamel – development and composition, physical characteristics, chemical properties, structure.
- Age changes – clinical structure.
- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes and clinical considerations.
- Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Dentin and pulp complex.
- Cementum – composition, cementogenesis, structure, function, clinical considerations.
- Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
- Periodontal ligament – development, structure, function and clinical considerations.
- Salivary glands – structure, function, clinical considerations.

Applied Physiology:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration-control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- Physiology of saliva – composition, function, clinical significance.
- Clinical significance of vitamins, diet and nutrition – balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.
- Biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and

their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

Pathology:

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread of tumors.
- Blood dyscrasias.
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

Microbiology:

- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

Pharmacology:

- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosupressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

Biostatistics:

- Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedmann two way analysis, ANOVA, Regression analysis), Correlation and regression,Use of computers.

Research Methodology:

- Essential features of a protocol for research in humans
- Experimental and non-experimental study designs

- Ethical considerations of research

Applied Dental Materials:

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments, tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs – design and mechanics of cutting – other modalities of tooth preparation. Methods of testing biocompatibility of materials used.

PART-II:

Paper-I: Conservative Dentistry

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Biologic response of pulp to various restorative materials and operative procedures.
9. Direct and indirect composite restorations.
10. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and gingival tissue management.
11. Impression procedures used for indirect restorations.
12. Cast metal restorations, indications, contraindications, tooth preparation for class II inlay, onlay, full crown restorations.
    Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and casting.
13. Direct gold restorations.
14. Recent advances in restorative materials.
15. Esthetics including smile design
16. Management of non-carious lesions.
17. Management of discolored tooth
18. Minimal intervention dentistry.
19. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
20. Hypersensitivity-theories, causes and management.
21. Lasers in Conservative Dentistry.
22. CAD-CAM in restorative dentistry.
23. Digital imaging and its applications in restorative dentistry.
24. Clinical Photography.

Paper-II: Endodontics

1. Rationale of endodontics.

2. Pulp and periapical pathology.
3. Pathobiology of periapex.
4. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
5. Case selection and treatment planning.
6. Endodontic microbiology.
7. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
8. Endodontic emergencies and management.
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.
11. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments.
13. Obturation materials, techniques and recent advances.
14. Traumatic injuries and management – endodontic treatment for young permanent teeth.
15. Endodontic surgeries, recent developments in technique and devices and wound healing.
16. Endoperio interrelationship and management.
17. Lasers in Endodontics.
18. Multidisciplinary approach to endodontic situations.
19. Radiology and CBCT in endodontic practice.
20. Procedural errors in endodontics and their management.
21. Endodontic failures and retreatment.
22. Resorptions and its management.
23. Microscopes and Microsurgery in endodontics.
24. Single visit endodontics, current concepts and controversies.
25. Regenerative Endodontics

Paper-III: Essays (descriptive and analyzing type questions)

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

First Year

- **Pre Clinical Work – Conservative and Endodontics**
- **Preclinical work on typhodont teeth**

1. Class II amalgam cavities
   a. Conservative preparation - 03
   b. Conventional preparation - 03

2. Inlay cavity preparation including wax pattern and casting on premolars and molars – MO, DO, MOD - 02
3. Onlay preparation on molars including wax pattern and casting - 02

4. Full Crown

a. Anterior - 02
b. Posterior - 02
(1 each to be processed)

- **Pre Clinical work on natural teeth**

1. Wax Carving of all permanent teeth
2. Inlay on molars and premolars MO, DO, and MOD including wax pattern and casting - 05

3. Amalgam cavity preparation
   a. Conventional - 02
   b. Conservative - 02
4. Complex amalgam on molar teeth - 02
5. Onlay on molars including wax pattern and casting - 02
   (1 to be processed)
6. Full crown premolars and molars (metal, PFM & Ceramic) - 04
7. Full crown anterior (PFM, composite& Ceramic) - 03
8. Veneers anterior teeth - 02
9. Composite
   a. Composite Filling (Class I,II,III & V) -05 (each)
   b. Inlay (Class I & II) -02
   c. Veneer -02
   d. Diastema Closure -02
   e. Angle Buildups -02

Endodontics:

1. Sectioning of all maxillary and mandibular teeth (vertical & horizontal).
2. Access cavity opening in relation to maxillary and mandibular permanent teeth.
3. Access cavity preparation, BMP and Obturation
   a) Anterior (3 maxillary and 3 mandibular) - 06
      - Conventional prep - 02
      - Step back - 02
      - Crown down - 02
      - Obturation - 03
      (2 lateral compaction and 1 thermoplasticized)
   b) Premolar - 04
      (2 upper and 2 lower) obturation 1 each
   c) Molar - 06
      (3 upper – 2 first molars and 1 second molar
      3 lower – 2 first molars and 1 second molar) obturation 1 each
4. Post and core preparation and fabrication in relation to anterior and posterior teeth
   a. Anterior 10 (Cast Post 5 and prefabricated post 5)

   b. Posterior 05 (Cast Post 2 and prefabricated post 5)

5. Removable dies - 04

Note : Technique work to be completed in the first four months

Clinical Work:

A	Composite restorations	30
B	GIC Restorations	30

C	Complex amalgam restorations	05
D	Composite inlay + veneers (direct and indirect)	10
E	Ceramic jacket crowns	05
F	Post and core for anterior teeth	10
G	Bleaching vital	05
	Non vital	05
H	RCT Anterior	20
I	Endo surgery – observation and assisting	05

Presentation of:

- Seminars – 5 seminars by each student – should include topics in dental materials, conservative dentistry and endodontics
- Journal clubs – 5 by each student
- Submission of synopsis at the end of 6 months
- Library assignment work
- Internal assessment – theory and clinicals.

Second Year
Case discussion- 5

1	Ceramic jacket crowns	10
2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	15
5	Full crown for posterior teeth	15
6	Cast gold inlay	05
7	Other special types of work such as splinting - Reattachment of fractured teeth etc.	10
8	Anterior RCT	30
9	Posterior RCT	40
10	Endo surgery performed independently	05
11	Management of endo – Perio problems	05
12	Angle build up composite	05
13	Diastema closure	05
14	Composite Veneers	05

- Under graduate teaching program as allotted by the HOD
- Seminars – 5 by each student
- Journal club – 5 by each student
- Dissertation work
- Prepare scientific paper / poster and present in conference and clinical meeting
- Library assignment to be submitted 18 months after starting of the course
- Internal assessment – theory and clinical

Third Year

Dissertation work to be submitted 6 months before final examination.

Clinical work

- Cast gold inlay- Onlay, cuspal restoration 10
- Post and core 20
- Molar endodontics 50
- Endo surgery 05
- Diastema Closure 05

- Angle Build up 05
- All other types of surgeries including crown lengthening, perioesthetics, hemi sectioning, splinting, replantation.

Presentation of:

- Seminars – 5 by each student
- Journal club – 5 by each student
- Under graduate teaching program as allotted by the HOD
- Internal assessment – theory and clinical

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

Scheme of Examination:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**
(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.

PART-II

Paper-I : Conservative Dentistry
Paper-II : Endodontics
Paper-III : Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical / Clinical Examination : 200 Marks

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3rd day.

Day 1

Clinical Exercise I – Random case discussion – (2) - 10+10 Marks

(Diagnosis, Treatment, Planning & Discussion)

Cast core preparation

(i) Tooth Preparation	-	20 marks
(ii) Direct Wax Pattern	-	10 marks
(iii) Casting	-	10 marks
(iv) Cementation	-	05 marks
(v) Retraction & Elastomeric Impression	-	05 marks

Clinical Exercise II - 30 Marks
(Inlay Exercise)

(i) Tooth preparation for Class II Inlay (Gold or Esthetic)	-	20 marks
(ii) Fabrication of Indirect Pattern	-	10 marks

Day 2

Clinical Exercise III - 100 Marks
(Molar Endodontics)

(i) Local Anaesthesia and Rubber Dam application	-	20 marks
(ii) Access Cavity	-	20 marks
(iii) Working length determination	-	20 marks
(iv) Canal Preparation	-	20 marks
(v) Master cone selection	-	20 marks

C. Viva Voce : 100 Marks

i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

5. ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

OBJECTIVES:

The training programme in Orthodontics is to structure and achieve the following four objectives

Knowledge:

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics – preventive, interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro – facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

Skills:

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dento-facial deformities.
2. To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

Attitude:

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues
5. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients' rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

Communication Skills:

1. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dento-facial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.
2. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialties through various media like correspondence, Internet, e-video, conference, etc. to render the best possible treatment.

COURSE CONTENT:

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialties in its scope.

Spread of the Curriculum:

PART-I:

A. Applied Basic Sciences:

Applied Anatomy:

a. Prenatal growth of head:
   Stages of embryonic development, origin of head, origin of face, origin of teeth.
b. Postnatal growth of head:
   Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, growth of the face.
c. Bone growth:
   Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone
d. Assessment of growth and development:
   Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.
e. Muscles of mastication:
   Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion
f. Development of dentition and occlusion:
   Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.
g. Assessment of skeletal age.

Physiology:

a. Endocrinology and its disorders:
   Growth hormone, thyroid hormone, parathyroid hormone, ACTH.
b. Calcium and its metabolism:
c. Nutrition-metabolism and their disorders:
   Proteins, carbohydrates, fats, vitamins and minerals
d. Muscle physiology:
e. Craniofacial Biology:
   Adhesion molecules and mechanism of adhesion
f. Bleeding disorders in orthodontics: Hemophilia

Dental Materials:

a. Gypsum products:
   Dental plaster, dental stone and their properties, setting reaction etc.
b. Impression materials:
   Impression materials in general and particularly of alginate impression material.
c. Acrylics:
   Chemistry, composition physical properties

d. Composites:
   Composition types, properties, setting reaction
e. Banding and bonding cements:
f. Wrought metal alloys:
   Deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
g. Orthodontic arch wires
h. Elastics:
   Latex and non-latex elastics.
i. Applied physics, Bioengineering and metallurgy:
j. Specification and tests methods used for materials used in Orthodontics:
k. Survey of all contemporary literature and recent advances in above mentioned materials:

Genetics:

a. Cell structure, DNA, RNA, protein synthesis, cell division
b. Chromosomal abnormalities
c. Principles of orofacial genetics
d. Genetics in malocclusion
e. Molecular basis of genetics
f. Studies related to malocclusion
g. Recent advances in genetics related to malocclusion
h. Genetic counseling
i. Bioethics and relationship to Orthodontic management of patients.

Physical Anthropology:

a. Evolutionary development of dentition
b. Evolutionary development of jaws.

Pathology:

a. Inflammation
b. Necrosis

Biostatistics:

a. Statistical principles
   - Data Collection
   - Method of presentation
   - Method of Summarizing
   - Methods of analysis – different tests/errors
b. Sampling and Sampling technique
c. Experimental models, design and interpretation
d. Development of skills for preparing clear concise and cognent scientific abstracts and publication

Applied Research Methodology In Orthodontics:

a. Experimental design
b. Animal experimental protocol
c. Principles in the development, execution and interpretation of methodologies in Orthodontics
d. Critical Scientific appraisal of literature.

Applied Pharmacology

Definitions & terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics. Vitamins: A, D, B – complex group, C & K etc.

PART-II:

Paper-I:Basic Orthodontics

OrthodonticHistory:

a. Historical perspective,
b. Evolution of orthodontic appliances,
c. Pencil sketch history of Orthodontic peers
d. History of Orthodontics in India

Concepts of Occlusion and Esthetics:

a. Structure and function of all anatomic components of occlusion,
b. Mechanics of articulation,
c. Recording of masticatory function,
d. Diagnosis of Occlusal dysfunction,
e. Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

Etiology and Classification of Malocclusion:

a. A comprehensive review of the local and systemic factors in the causation of malocclusion
b. Various classifications of malocclusion

Dentofacial Anomalies:

a. Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

Diagnostic Procedures and Treatment Planning in Orthodontics:

a. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
b. Problem cases – analysis of cases and its management
c. Adult cases, handicapped and mentally retarded cases and their special problems
d. Critique of treated cases.

Cephalometrics

a. Instrumentation
b. Image processing
c. Tracing and analysis of errors and applications
d. Radiation hazards
e. Advanced Cephalometrics techniques including digital cephalometrics
f. Comprehensive review of literature
g. Video imaging principles and application.

Practice Management in Orthodontics:

a. Economics and dynamics of solo and group practices
b. Personal management
c. Materials management
d. Public relations

e. Professional relationship
f. Dental ethics and jurisprudence
g. Office sterilization procedures
h. Community based Orthodontics.

Paper-II:Clinical Orthodontics

Myofunctional Orthodontics:

a. Basic principles
b. Contemporary appliances –design, manipulation and management
c. Case selection and evaluation of the treatment results
d. Review of the current literature.

Dentofacial Orthopedics:

a. Principles
b. Biomechanics
c. Appliance design and manipulation
d. Review of contemporary literature

Cleft lip and palate rehabilitation:

a. Diagnosis and treatment planning
b. Mechanotherapy
c. Special growth problems of cleft cases
d. Speech physiology, pathology and elements of therapy as applied to orthodontics
e. Team rehabilitative procedures.

Biology of tooth movement:

a. Principles of tooth movement-review
b. Review of contemporary literature
c. Applied histophysiology of bone, periodontal ligament
d. Molecular and ultra cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:

a. Orthodontist's role in conjoint diagnosis and treatment planning
b. Pre and post-surgical Orthodontics
c. Participation in actual clinical cases, progress evaluation and post retention study
d. Review of current literature

Ortho / Perio / Prostho/Endo inter relationship:

a. Principles of interdisciplinary patient treatment
b. Common problems and their management

Basic principles of mechanotherapy includes removable appliances and fixed appliances:

a. Design
b. Construction
c. Fabrication
d. Management
e. Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics:

a. Caries and periodontal disease prevention
b. Oral hygiene measures

c. Clinical procedures

Interceptive Orthodontics:

a. Principles
b. Growth guidance
c. Diagnosis and treatment planning
d. Therapy emphasis on:
   - Dento-facial problems
   - Tooth material discrepancies
   - Minor surgery for Orthodontics

Evidence Based Orthodontics:

Different types of fixed Mechanotherapy:

Orthodontic Management of TMJ problems, sleep-apnoea etc.:

Retention and relapse:

a. Mechanotherapy – special reference to stability of results with various procedures
b. Post retention analysis
c. Review of contemporary literature

Recent Advances :

a. Use of implants
b. Lasers
c. Application of F.E.M.
d. Distraction Osteogenesis
e. Invisible Orthodontics
f. 3D imaging Digital Orthodontics, Virtual Treatment Planning
g. CAD-CAM bracket Customization
h. Robotic Wire Bending
i. Accelerated Orthodontics
   - Surgical
   - Device assisted or mechanical stimulation
   - Biochemical Mediators
j. Lingual Orthodontics

Paper-III: Essays (descriptive and analyzing type questions)

PRE – CLINICAL EXERCISES
(Should be completed within 3 months)

A general outline of the type of exercises is given here:

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable, habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished.
7. Cephalometric tracing and various Analyses, also superimposition methods –
8. Fixed appliance typodont exercises.

a) Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure to other techniques.
b) Typodont exercise
   - Band making
   - Bracket positioning and placement
   - Different stages in treatment appropriate to technique taught

9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems.
12. Handling of equipment like vacuum forming appliances and hydro solder etc.

Basic Pre-Clinical Exercise Work for the MDS Students:

1. Clasps:

Sl.No	Exercise	No.
1	¾ Clasps	1
2.	Triangular Clasps	1
3.	Adam's clasp	2
4.	Modification of Adam's – With Helix	2
5.	Southend Clasp	1

2. Labial Bows:

Sl.No.	Exercise	No.
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3.	Split high labial bow	1

3. Springs:

Sl.No.	Exercise	No.
1	Double cantilever spring	1
2	Coffin spring	1
3	T spring	1

4. Appliances:

Sl.No.	Exercise	No.
1.	Hawley's retention appliance with anterior bite plane	1
2.	Upper Hawley's appliance with posterior bite plane	1
3.	Upper expansion appliance with expansion screw	1
4.	Habit breaking appliance with tongue crib	1
5.	Oral screen and double oral screen	1
6.	Lip bumper	1
7.	Splint for Bruxism	1
8.	Catalans appliance	1
9.	Activator	1
10.	Bionator	1
11.	Frankel-FR 1& 2 appliance	2
12.	Twin block	1
13.	Lingual arch	1
14.	TPA	1

15.	Quad helix	1
16.	Utility arches	1
17.	Pendulum appliance	1
18.	Canine Retractor**(Marcotte & PG Spring)**	1

5. Soldering exercises:

Sl.No.	Exercise	No.
1	Star/Comb/Christmas tree	1

6. Study model preparation:

7. Model analysis – Mixed and permanent Dentition:

8. Cephalometrics:

Sl.No.	Exercise
1	Lateral cephalogram to be traced in different colors and super imposed to see the accuracy of tracing
2	Vertical and Anterio-Posterior Cephalometric analysis
3	Soft tissue analysis – Holdaway and Burstone
4	Various superimposition methods

9. Basics of Clinical Photography including Digital Photography:

10. Typodont exercises: Begg or P.E.A. method/Basic Edgewise:

Sl.No	Exercise
1	Teeth setting in Class-II division I malocclusion with maxillary anterior Proclination and mandibular anterior crowding
2	Band pinching, welding brackets and buccal tubes to the bands
3	Different Stages dependent on the applied technique

CLINICAL WORK:

Once the basic pre-clinical work is completed in three months, the students can take up clinical cases and the clinical training.

Each postgraduate student should start with a minimum of 50 fixed orthodontics cases and 20 removable including myofunctional cases of his/her own. Additionally he/she should handle a minimum of 25 transferred cases.

The type of cases can be as follows:

- Removable active appliances
- Class-I malocclusion with Crowding
- Class-I malocclusion with bi-maxillary protrusion
- Class-II division – 1
- Class-II division – 2
- Class-III (Orthopedic, Surgical, Orthodontic cases)
- Inter disciplinary cases
- Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- Fixed functional appliances – Herbst appliance, jasper jumper etc
- Dento-facial orthopedic appliances like head gears, rapid maxillary expansion, NiTi expander etc.,
- Appliance for arch development such as molar distalization

- Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise, lingual)
- Retention procedures of above treated cases.

Scheme of examination:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**
(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I: Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

PART-II

Paper I: Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of maloclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper II : Clinical Orthodontics

Paper III : Essays (descriptive and analyzing type questions)

* *The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical / Clinical Examination : 200 Marks

Exercise No: 1 **50 Marks**
Functional Case :
Selection of case for functional appliance and recording of construction bite.
Fabrication and delivery of the appliance the next day.

Exercise No: 2 : **50 Marks**
1. III stage with auxiliary springs/Wire bending of any stage of fixed orthodontics
(OR)
2. Bonding of SWA brackets and construction of suitable arch wire.

Exercise No. 3 **75 Marks**
Display of records of the treated cases
(Minimum of 5 cases)

Exercise No: 4 **25 Marks**
Long case discussions

Time allotted for each exercise:

No	Exercise	Marks allotted	Approximate Time
1	Functional appliance	50	1 hour (each day)
2	III stage mechanics / Bonding and arch wire fabrication	50	1 hr 30 min
3	Display of case records (a minimum of 5 cases to be presented along with all the patients and records)	75	1 hour
4	Long cases	25	2 hours

Note: The complete records of all the cases should be displayed (including transferred cases)

C. Viva Voce : 100 Marks

i. Viva-Voce examination: *80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: *20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

6. ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

Objectives:

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and totake part in group discussions.

Teaching / Learning Activities:

Broad Outline of Theoretical, Clinical and Practical Courses

I MDS:

1. ***Biostatistics and Research Methodology*:**

   - Basic principles of biostatistics and study as applied to dentistry and research
   - Collection/ organization of data/ measurement scales / presentation of data and analysis
   - Measures of central tendency
   - Measures of variability
   - Sampling and planning of health survey
   - Probability, normal distribution & indicative statistics
   - Estimating population values
   - Tests of significance(parametric/non-parametric qualitative methods)
   - Analysis of variance
   - Association, correlation and regression

   Approach:

   - Didactic Lectures

2. **Applied Gross Anatomy of head and neck, histology and genetics :**

   - Temporo-mandibular joint
   - Trigeminal nerve and facial nerve
   - Muscles of mastication
   - Tongue
   - Salivary glands
   - Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues
   - Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
   - Development of teeth & dental tissues and developmental defects of oral and maxilla-facial region & abnormalities of teeth
   - Maxillary sinus
   - Jaw muscles and facial muscles

- Introduction to genetics
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

3. Physiology (General & Oral) **:**

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)
- Calcium metabolism
- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

Approach:

- Didactic Lectures

4. Cell Biology **:**

- Cell structure and function (ultra structural & molecular aspects)
- Intercellular junctions
- Cell cycle and division
- Cell cycle regulators
- Cell–cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

Approach:

- Seminars & Didactic Lectures

5. General Histology **:**

- Light & electron microscopy considerations of epithelial tissues and glands,bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy & Histology for slide discussion
- Record book to be maintained

6. Biochemistry :

- Chemistry of carbohydrates, lipids and proteins

- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

Approach:

- Didactic Lectures
- Postings in the Department of Biochemistry to familiarize with various techniques
- Record book to be maintained

7. General Pathology :

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

Approach:

- Didactic Lectures & Seminars

***8. General Microbiology** :*

- Definitions of various types of infections
- Routes of infection and spread
- Sterilization ,disinfection and antiseptics
- Bacterial genetics
- Physiology, growth of microorganisms

Approach:

- Didactic Lectures & Seminars

9. Basic Immunology :

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

Approach:

- Didactic Lectures & Seminars

10. Systemic Microbiology / Applied Microbiology :

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids & fusobacteria
- Actinomycetales
- Spirochetes
- General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus
- Hepatitis virus
- HIV
- General properties of fungi
- Superficial, subcutaneous, deep opportunistic infections
- General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

11. Oral biology (Oral and Dental Histology) :

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

Approach:

- Didactic Lectures & Seminars
- Slide discussion on histological appearance of normal oral tissues
- Record book to be maintained

12. Basic Histo-Techniques and Microscopy :

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy
- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

Approach:

- Didactic Lectures & Seminars
- Postings in Clinical Pathology and Microbiology for relevant training
- Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- Tooth Carving (Permanent Dentition)
- Record book to be maintained

II MDS:

1. Oral and Dental Pathology:

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders
- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs
- Diseases of nerves and muscles
- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Dermatology of a Medical College
- Postings in a Cancer Centre

2. Basic histo-techniques and microscopy:

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Visit to the centre of animal experimentation to be familiarize with laboratory techniques, upkeep and care of animals
- Record book to be maintained

3. Recent Molecular Techniques:

- Basic principles, techniques and applications of –
  - PCR
  - BLOTS
  - Hybridization
  - Recombinant DNA technology
  - Micro array
  - DNA sequencing
  - Cell culture and cloning

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Record book to be maintained

4. Recording of Case History and Clinico-Pathological Discussions:

Approach:

- Postings in the Department of Oral Medicine, Diagnosis & Radiology
- Record of minimum 10 case histories to be maintained

5. Histopathology – Slide discussion:

- Record book to be maintained

III MDS:

- Forensic odontology
- Giant cell lesions
- Clear cell lesions
- Round cell lesions
- Spindle cell lesions
- Pigmented lesions
- Fibro-osseous lesions
- Mechanism of formation and expansion of cysts of orofacial region
- Mechanism of growth and metastasis of tumors
- Lab diagnosis of bacterial infections
- Lab diagnosis of viral infections
- Lab diagnosis of fungal infections
- Hamartomas
- Phakomatoses
- Vascular tumors of oro-facial region
- Genodermatoses
- Tumor markers
- Histogenesis of salivary gland tumors
- Tumor angiogenesis
- Concept of premalignancy
- Blue cell lesions
- Molecular basics of oral squamous cell carcinoma
- Matrix remodelling in pathological condition
- Etiopathogenesis of developmental defects of teeth
- Viral oncogenesis
- Lesions associated with impacted and missing teeth
- Syndromes affecting oro-facial region
- Hereditary oral defects

- Techniques to assess the prognosis of neoplastic lesions
- Vesiculo-bullous lesions
- Lymphoreticular malignancy
- Haemopoietic malignancy
- Micronutrients
- Oral aspects of metabolic disorders
- Hormones and oro-maxillofacial lesions
- Matrix metalloproteinases
- Current concepts in HIV related oral diseases
- Current concepts in OSMF
- Epithelial –connective tissue interaction
- Stem cell research

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Forensic Medicine / Sciences
- Record book to be maintained

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section IV.

Scheme of Examination:

A. Theory:	Part-I:	Basic Sciences Paper	-	**100 Marks**
	Part-II:	Paper-I, Paper-II & Paper-III	-	**300 Marks**
				(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration.Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. Three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences: Applied Anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General Pharmacology specially related to drug induced oral mucosal lesions, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (Oral and Dental Histology), Biostatistics and Research Methodology

PART-II

Paper-I : Oral pathology, Oral Microbiology & Immunology and Forensic Odontology
Paper-II : Laboratory techniques & Diagnosis and Oral Oncology
Paper-III : Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical/Clinical Examination – 200 Marks

1. **Case Presentation**
   a) Long case – 20 marks
   b) Short case – 10 marks
2. **Clinical Hematology** (any two investigations) – 20 Marks
   Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR
3. **Smear Presentation** – 20 marks
   Cytology or microbial smear and staining
4. **Paraffin sectioning and H & E Staining** – 30 Marks
5. **Histopathology slide discussion** – 100 Marks

C. Viva Voce – 100 Marks

i. **Viva-Voce examination** – 80 marks
   All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

ii. **Pedagogy Exercise** – 20 marks
   A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

7. PUBLIC HEALTH DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to:

Knowledge:

- Applied basic sciences knowledge regarding etiology, diagnosis and management of the prevention, promotion and treatment of all the oral conditions at the individual and community level.
- Identify social, economic, environmental and emotional determinants in a given individual patient or a community for the purpose of planning and execution of Community Oral Health Program.
- Ability to conduct Oral Health Surveys in order to identify all the oral health problems affecting the community and find solutions using multi – disciplinary approach.
- Ability to act as a consultant in community Oral Health, teach, guide and take part in research (both basic and clinical), present and publish the outcome at various scientific conferences and journals, both national and international level.

Skills:

The candidate should be able to

1. Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis.
2. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
3. Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
4. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
5. Develop appropriate person power at various levels and their effective utilization.
6. Conduct survey and use appropriate methods to impart Oral Health Education.
7. Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
8. Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

Values:

1. Adopt ethical principles in all aspects of Community Oral Health Activities.
2. To apply ethical and moral standards while carrying out epidemiological researches.
3. Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
4. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach.
5. Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

COURSE CONTENTS:

A) Applied Basic Sciences:

Applied Anatomy and Histology:

a)Applied Anatomy in relation to:

- Development of face
- Bronchial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Hard and soft palate
- Infratemporal fossa
- Paranasal air sinuses
- Pharynx and larynx
- Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals

b)Oral Histology:

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- Oral mucous membrane
- Pulp-periodontal complex

Applied Physiology and Biochemistry:

- Cell
- Mastication and deglutition
- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Saliva and Oral health
- Fluid and electrolyte balance
- Pain pathway and mechanism-types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure,
- Dynamics of blood flow
- Cardiovascular homeostasis-heart sounds
- Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

Applied Pathology:

- Pathogenic mechanism of molecular level
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies
- HIV
- Propagation of dental infection

Microbiology:

- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Infection control in dental office / camps
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology – basic concepts of immune system in human body
  - Cellular and humoral immunity
  - Antigen and antibody system
  - Hypersensitivity
  - Autoimmune diseases

Oral Pathology:

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

Physical and Social Anthropology:

Anthropology is a part of Social Sciences, which also constitutes behavioral sciences i.e., Psychology and Sociology. Behavioral Sciences has been mentioned in Public Health.

- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods

Applied Pharmacology:

- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodyanamics, pharmcokinetics.
- Chemotherapy of bacterial infections and viral infections – sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system-adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs

- Effect of drugs on oral health

Research Methodology and Biostatistics:

Health Informatics– basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge. Operative skills in analyzing the data.

Research Methodology – definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.

Biostatistics – introduction, applications, uses and limitations of bio – statistics in Public Health dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques – types, errors, bias, trial and calibration

B) Public Health

Public Health:

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health

Health:

- Definition, concepts and philosophy of health
- Health indicators
- Health determinants
- Community and its characteristics and relation to health

Disease:

- Definition, concepts
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization

General Epidemiology:

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic.
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used

Environmental Health:

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water, soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation

- Occupational hazards
- Waster disposal- various methods and sanitation

Public Health Education:
- Definition, aims, principles of health education
- Health education, methods, models, contents, planning health education programs

Public Health Practice and Administration System in India.

Ethics and Jurisprudence:
- Basic principles of law
- Contract laws- dentist – patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist
- Consumer protection act

Nutrition in Public Health:
- Study of science of nutrition and its application to human problem
- Nutritional surveys and their evaluations
- Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers
- Dietary constituents and cariogenecity
- Guidelines for nutrition

Behavioral Sciences:
- Definition and introduction
- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

Hospital Administration:
- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

Health Care Delivery System:
- International oral health care delivery systems – Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programmes
- Health Planning and Evaluation
- Primary health care – concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

Oral Biology and Genetics:
- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA
- Genetic counseling, gene typing
- Genetic approaches in the study of oral disorders

- Genetic Engineering - Answer to current health problems

Demography & Family Planning:
Demographic trends, family planning methods, milestones in population control in India.

Health Economics:
Health benefit analysis and Cost effective analysis

C) Dental Public Health:

Dental Public Health:
- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

Epidemiology of Oral Diseases and Conditions:
- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

Oral Survey Procedures:
- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation

Delivery of Dental Care:
- Dental person power – dental auxiliaries
- Dentist – population ratios,
- Public dental care programs
- School dental health programs- Incremental and comprehensive care
- Private practice and group practice
- Oral health policy – National and international policy

Payment for Dental Care:
- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

Evaluation of Quality of Dental Care:
- Problems in public and private oral health care system program
- Evaluation of quality of services, governmental control

Preventive Dentistry:
- Levels of prevention
- Preventive oral health programs screening, health education and motivation
- Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
- Role of dentist in prevention of oral diseases at individual and community level.
- Fluoride

  - History
  - Mechanism of action
  - Metabolism
  - Fluoride toxicity
  - Fluorosis
  - Systemic and topical preparations
  - Advantages and disadvantages of each
  - Update regarding Fluorosis
  - Epidemiological studies
  - Methods of fluoride supplements
  - Defluoridation techniques
  - Antifluoridation lobby
- Plaque control measures-
  - Health Education
  - Personal oral hygiene
  - Tooth brushing technique
  - Dentifrices, mouth rinses
- Pit and fissure sealant, ART, Preventive resin restoration
- Preventive oral health care for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counseling

Practice Management:
- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends
- Infection control in dental practice

Tobacco Counseling:
- Health Consequences
- Tobacco dependence
- Benefits of intervention
- Tobacco cessation
- Role of dentist

Health Man Power Planning:

Structured Training Schedule:

FIRST YEAR

Seminars:
- 5 seminars in basic sciences subject,
- To conduct 10 journal clubs
- Library assignment on assigned topics – 2
- Submission of synopsis for dissertation-within 6 months
- Periodic review of dissertation at two monthly intervals

Clinical Training:
1. Clinical assessment of patient

2. Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion – 5 cases each
   - Oral Hygiene Index – Greene and Vermillion
   - Oral Hygiene Index – Simplified
   - DMF – DMF (T), DMF (S)
   - def t/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe, gingival index – Loe and Silness
   - Russels periodontal disease index
   - WHO Oral Health Assessment Form – 1997
   - Carrying out treatment (under comprehensive oral health care) of 10 patients
   - maintaining complete records.

Field Programme:

- Carrying out preventive programs and health education for school children of the adopted school.
- School based preventive programs-
- Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
- Pit and Fissure Sealant – chemically cured (GIC), light cured
- Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
- Organizing and carrying out dental camps in both urban and rural areas.

3. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
4. In additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

SECOND YEAR

Seminars:

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics – 2
- Periodic review of dissertation at monthly reviews

Clinical Training-Continuation of the Clinical Training:

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion – 5 each
   - Oral Hygiene Index – Greene and Vermillion
   - Oral Hygiene Index – Simplified
   - DMF – DMF (T), DMF (S)
   - def t/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe, gingival index – Loe and Silness
   - Russels periodontal disease index

- WHO Oral Health Assessment Form – 1987
- Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records

Field Program – Continuation of Field Program:

- Carrying out school dental health education
- School based preventive programs-
  - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
  - Pit and Fissure Sealant – chemically cured (GIC), light cured
  - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
  - Organizing and carrying out dental camps in both urban and rural areas.
- Assessing oral health status of various target groups like School children, Expectant mothers Handicapped, Underprivileged, and geriatric populations. Planning dental manpower and financing dental health care for the above group.
- Application of the following preventive measures in clinic-10 Cases each.
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
  - Pit and Fissure Sealant
- Planning total health care for school children in an adopted school:
  - Periodic surveying of school children
  - Incremental dental care
  - Comprehensive dental care
- Organizing and conducting community oral health surveys for all oral conditions-3 surveys
- In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs
- To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

THIRD YEAR:

Seminars:

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles – 10 articles
- Completion and submission of dissertation

Clinical Training:

- Clinical assessment of patient
- Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion – 5 each
  - Oral Hygiene Index – Greene and Vermillion
  - Oral Hygiene Index – Simplified
  - DMF – DMF (T), DMF (S)
  - def t/s
  - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
  - Community Periodontal Index (CPI)
  - Plaque Index-Silness and Loe, gingival index – Loe and Silness
  - Russels periodontal disease index

  - WHO Oral Health Assessment Form – 1987
  - Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records
- Carrying out school dental health education
- School based preventive programs-
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
  - Pit and Fissure Sealant
  - Minimal Invasive Techniques – Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
- To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic
- Exercise on solving community health problems – 10 problems
- Application of the following preventive measures in clinic – 10 cases each.
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
  - Pit and Fissure sealants
- Dental – health education training of school teachers, social workers, health workers,
- Posting at dental satellite centers/ nodal centers
- In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs.

Monitoring Learning Process:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

Scheme of Examination

A. Theory:	Part-I: Basic Sciences Paper	-	**100 Marks**
	Part-II: Paper-I, Paper-II & Paper-III	-	**300 Marks**
			(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences:Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social Anthropology, Applied Pharmacology and Research Methodology and Biostatistics.

PART-II :

Paper-I : Public Health
Paper-II : Dental Public Health

Paper-III : Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks

1. Clinical examination of at least 2 patients representing the community – includes history, main complaints, examination and recording of the findings, using indices for the assessment of oral health and presentation of the observation including diagnosis, comprehensive treatment planning. (50 Marks – 1 ½ Hrs)

2. Performing (50 Marks– 1 ½ Hrs)
   a. One of the treatment procedures as per treatment plan. (Restorative, surgical, rehabilitation)
   b. Preventive oral health care procedure.
   c. One of the procedures specified in the curriculum

3. Critical evaluation of a given research article published in an international journal
   - Marks – 1 Hour)

4. Problem solving – a hypothetical oral health situation existing in a community is given with sufficient data. The student as a specialist in community dentistry is expected to suggest practical solutions to the existing oral health situation of the given community. (50 Marks – 1 ½ Hours)

C. Viva Voce : 100 Marks

i. Viva-Voce examination *: 80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise *: 20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

8. PEDIATRIC AND PREVENTIVE DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

Skills:

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them. and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.
5. To acquire skills in managing efficiently life threatening conditions with emphasis on basic life support measures.

Attitudes:

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

COURSE CONTENTS:

A) Applied Basic Sciences:

Applied Anatomy of Head and Neck:

- Anatomy of the scalp, temple and face
- Anatomy of the triangles of neck and deep structures of the neck
- Cranial and facial bones and its surrounding soft tissues with its applied aspects
- Muscles of head and neck
- Arterial supply, venous drainage and lymphatics of head and neck
- Congenital abnormalities of the head and neck
- Anatomy of the cranial nerves

- Anatomy of the tongue and its applied aspects
- Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
- Autonomous nervous system of head and neck
- Functional anatomy of mastication, deglutition, speech, respiration and circulation
- TMJ: anatomy and function

Applied Physiology:

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, Normal ECG,capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws.Role of Vit.A, C and B complex in oral mucosal and periodontal health.Physiology and function of the masticatory system. Speech mechanism, swallowing and deglutition mechanism, salivary glands and Saliva

Applied Pathology:

Inflammation and chemical mediators, Thrombosis, Embolism, Necrosis, Repair, Degeneration , Shock, Hemorrhage , Blood dyscrasias, Pathogenesis of Dental Caries, Periodontal diseases, tumors, oral mucosal lesions etc. in children

Applied Microbiology:

Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases and Immunology of Dental caries.

Applied Nutrition & Dietics:

- General principles, balanced diet, effect of dietary deficiencies and starvation, protein energy, malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis
- Diet, digestion, absorption, transportation and utilization

Genetics:

- Introduction to genetics
- Cell structure, DNA, RNA, protein synthesis, cell division
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

Growth & Development:

Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures.Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.

B) Pediatric Dentistry:

- Child Psychology:

  Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear, anxiety, apprehension & its management.

- Behavior Management: Non- pharmacological & Pharmacological methods.

- Child Abuse & Dental Neglect:

- Conscious Sedation:

- Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children

Preventive Pedodontics:

Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling

Dental Plaque:

Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.

Gingival & Periodontal diseases in Children:

- Normal Gingiva & Periodontium in children.
- Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management

Pediatric Operative Dentistry:

- Principle of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials.
- Modifications required for cavity preparation in primary and young permanent teeth.
- Various Isolation Techniques
- Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
- Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre post systems.

Pediatric Endodontics:

- Primary Dentition: - Diagnosis of pulpal diseases and their management – Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
- Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
- Recent advances in Pediatric diagnosis and Endodontics.
  Prosthetic consideration in Pediatric Dentistry.

Traumatic Injuries in Children:

- Classifications & Importance.
- Sequelae & reaction of teeth to trauma.
- Management of Traumatized teeth with latest concepts.
- Management of jaw fractures in children.

Interceptive Orthodontics:

- Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.

- A comprehensive review of the local and systemic factors in the causation of malocclusion.
- Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
- Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
- Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
- Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
- Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interceptive orthodontics.

Oral Habits in Children:

- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

Dental care of Children with special needs:

Definition, Etiology, Classification, Behavioral, Clinical features & Management of children with:

- Physically handicapped conditions
- Mentally compromising conditions
- Medically compromising conditions
- Genetic disorders

Oral manifestations of Systemic Conditions in Children & their Management
Management of Minor Oral Surgical Procedures in Children
Dental Radiology as related to Pediatric Dentistry

Cariology:

- Historical background
- Definition, Aeitology & Pathogenesis
- Caries pattern in primary, young permanent and permanent teeth in children.
- Rampant caries, early childhood caries and extensive caries. Definition, aeitology, Pathogenesis, Clinical features, Complications & Management.
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counseling.
- Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.

Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management.

Dental Emergencies in Children and their Management.

Dental Materials used in Pediatric Dentistry.

C) Preventive Dentistry:

- Definition
- Principles & Scope
- Types of prevention
- Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

Dental Health Education & School Dental Health Programmes:

Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry

Fluorides:

- Historical background
- Systemic & Topical fluorides
- Mechanism of action
- Toxicity & Management.
- Defluoridation techniques.

Medico legal aspects in Pediatric Dentistry with emphasis on informed concert.

Counseling in Pediatric Dentistry

Case History Recording: Outline of principles of examination, diagnosis & treatment planning.

Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.

Comprehensive Infant Oral Health Care.

Principles of Bio-Statistics& Research Methodology & Understanding of Computers and Photography

Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.

Setting up of Pediatric Dentistry Clinic.

Emerging concepts in Pediatric Dentistry of scope of lasers / minimum invasive procedures in Pediatric Dentistry.

Preclinical Work

(Duration – first 6 Months of First Year MDS)

(One on Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises(Clasps, Bows, Retractors and Springs, etc., on patient models)
3. Basics for Spot welding exercises
4. Fabrication of
   a. Maxillary bite plate / Hawley's'
   b. Maxillary expansion screw appliance
   c. Canine retractor appliance

d. All habit breaking appliances
   - Removable type
   - Fixed type
   - Partially fixed and removable

e. Myofunctional appliances – Twin block, Activator, Lip bumper, Oral Screen
f. Making of inclined plane appliance
g. Feeding appliances

5. Basic soldering exercises – making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.
6. Fabrication of space maintainers
   a. Removable type-
      - Unilateral Non – Functional space maintainer
      - Bilateral Non-Functional space maintainer
   b. Space Regainers –
      - Gerber or Opencoil space regainer
   c. Fixed Space maintainers
      - Band & loop space maintainer
      - Transpalatal arch space maintainer
      - Nance Palatal holding arch
      - Distal shoe appliance
7. Basics for spot welding exercise
8. Collection of extracted deciduous and permanent teeth
   a. Sectioning of the teeth at various levels and planes
   b. Drawing of section and shapes of pulp
   c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
   d. Performing pulpotomy, root canal treatment and Apexification procedure
      i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
      ii) Preparation of teeth for various types of crowns
      iii) Laminates/veneers
      iv) Bonding & banding exercise
9. Performing of behavioral rating and IQ tests for children.
10. Computation of: -
    a. Caries index and performing various caries activity tests.
    b. Oral Hygiene Index
    c. c. Fluorosis Index
11. Surgical Exercises :
    a. Fabrication of splints
    b. Type of Wiring
    c. Suturing
12. a. Taking of periapical, occlusal, bitewing radiographs of children
    b. Developing and processing of films, thus obtained
    c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs.
    d. Mixed dentition cast analysis
13. Library assignment
14. Synopsis

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations:

S.	Clinical Work	Total	7 To 12	13 To 24	25 To 36

			Months	Months	Months
1.	Behavior Management of different age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases &Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35-50 children& Dental Health Education & Motivation.	7	1	4	2
5.	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations	100	20	50	30
	(b). Management of traumatized anterior teeth	15	04	06	05
	(c) Aesthetic Restorations	25	05	10	10
	(d). Pediatric Endodontic Procedures Deciduous teeth Pulpotomy / Pulpectomy Permanent Molars Permanent Incisor Apexification & Apexogenesis	 150 20 15 20	 30 3 2 02	 50 7 3 08	 70 10 10 10
6.	Stainless Steel Crowns	50	10	20	20
7.	Other Crowns	05	01	02	02
8.	Fixed : Space Maintainers Habit breaking appliances	30	08	12	10
9.	Removable : Space Maintainers Habit breaking appliances	20	05	07	08
10.	Functional Appliances	05	01	02	02
11.	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments (i) School Dental Health Programmes	03	01	01	01
	(ii) Camps etc.,	02	01	01	-
13	Library usage				
14	Laboratory usage				
15	Continuing Dental Health Programmes				

(The figures given against Sl. No. 4 to 12 are the minimum number of recommended procedures to be performed)

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be

structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

Scheme of Examination:

A. Theory:	Part-I: Basic Sciences Paper	-	**100 Marks**
	Part-II:Paper-I, Paper-II & Paper-III	-	**300 Marks**
			(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

Part-I: Applied Basic Sciences – Applied Basic Sciences:Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics Growth & Development and Dental plaque, Genetics.

Part-II:

Paper-I :**Clinical Paedodontics**

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children
6. Interceptive Orthodontics
7. Oral Habits in children
8. Dental Care of Children with special needs
9. Oral Manifestations of Systemic Conditions in Children & their Management
10. Management of Minor Oral Surgical Procedures in Children
11. Dental Radiology as Related to Pediatric Dentistry
12. Pediatric Oral Medicine & Clinical Pathology
13. Congenital Abnormalities in Children
14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

Paper-II: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides
9. Epidemiology
10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

Paper-III: Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks

The Clinical / Practical and Viva-Voce Examinations are conducted for a minimum of two days.

First Day:

1. Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.

Case Discussion	: 20 marks
Rubber Dam application	: 10 marks
Working length X-ray	: 20 marks
Obturation	: 20 marks
Total	70 marks

2. Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.

Case discussion	: 10 marks
Crown Preparation	: 20 marks
Crown selection and Cementation	: 20 marks
Total	50 marks

3. Case Discussion, band adaptation for fixed type of space maintainer and impression making.

Case discussion	: 20 marks
Band adaptation	: 20 marks
Impression	: 20 marks
Total	60 marks

Second Day:

1. **Evaluation of Fixed Space Maintainer and Cementation** : 20 marks

C. Viva Voce : 100 Marks

i. Viva-Voce examination *: 80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise *: 20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

9. ORAL MEDICINE AND RADIOLOGY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to acquire adequate knowledge of the discipline.

Knowledge:

Theoretical, Clinical and practical knowledge of all oral mucosal lesions, skeletal involvement of maxillofacial region, diagnostic procedures pertaining to them and latest information of imaging modules.

Skills:

Three important skills need to be imparted in maxillofacial diseases

1. Diagnostic skill in recognition of oral diseases with radiographic diagnosis and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives

Attitudes:

The positive mental attitude and the persistence of continued learning need to be inculcated

COURSE CONTENTS:

A) Applied Basic Sciences:

Applied Anatomy:

1. Gross anatomy of the face:
   a. Muscles of Facial Expression and Muscles of Mastication
   b. Facial nerve
   c. Facial artery
   d. Facial vein
   e. Parotid gland and its relations
   f. Sub mandibular salivary gland and its relations
2. Neck region:
   a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
   b. Facial spaces
   c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
   d. Jugular system
      Internal jugular
      External jugular
   e. Lymphatic drainage
   f. Cervical plane
   g. Muscles derived from Pharyngeal arches
   h. Infratemporal fossa in detail and temporomandibular joint
   i. Endocrine glands
      - Pituitary
      - Thyroid
      - Parathyroid
   j. Exocrine glands
      - Parotid
      - Thyroid

- Parathyroid

k. Sympathetic chain
l. Cranial nerves- V, VII, IX, XI, & XII

3. Oral Cavity:
   a. Vestibule and oral cavity proper
   b. Tongue and teeth
   c. Palate – soft and hard
4. Nasal Cavity
   a. Nasal septum
   b. Lateral wall of nasal cavity
   c. Paranasal air sinuses
5. Pharynx:
6. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem
   Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII
7. Osteology:
   a) Comparative study of fetal and adult skull
   b) Mandible: Development, ossification, age changes and evaluation of mandible in detail

Embryology:

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology:
   a. Cell
   b. Body Fluid Compartments
   c. Classification
   d. Composition
   e. Cellular transport
   f. RMP and action potential

2. Muscle Nerve Physiology:
   a. Structure of a neuron and properties of nerve fibers
   b. Structure of muscle fibers and properties of muscle fibers
   c. Neuromuscular transmission
   d. Mechanism of muscle contraction

3. Blood:

a. RBC and Hb
b. WBC – Structure and functions
c. Platelets – functions and applied aspects
d. Plasma proteins
e. Blood Coagulation with applied aspects
f. Blood groups
g. Lymph and applied aspects

4. Respiratory System:
   a. Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
   b. Lung volumes and capacities and applied aspects
   c. Oxygen and carbon dioxide transport
   d. Neural regulation of respiration
   e. Chemical regulation of respiration
   f. Hypoxia, effects of increased barometric pressure and decreased barometric pressure

5. Cardio-Vascular System:
   a. Cardiac Cycle
   b. Regulation of heart rate/ Stroke volume / cardiac output / blood flow
   c. Regulation of blood pressure
   d. Shock, hypertension, cardiac failure

6. Excretory System:
   a. Renal function tests

7. Gastro – intestinal tract:
   a. Composition, functions and regulation of:
      - Saliva
      - Gastric juice
      - Pancreatic juice
      - Bile and intestinal juice
      - Mastication and deglutition

8. Endocrine System:
   a. Hormones – classification and mechanism of action
   b. Hypothalamic and pituitary hormones
   c. Thyroid hormones
   d. Parathyroid hormones and calcium homeostasis
   e. Pancreatic hormones
   f. Adrenal hormones

9. Central Nervous System:
   a. Ascending tract with special references to pain pathway

10. Special Senses:
    a. Gustation and Olfaction

Biochemistry:

1. Carbohydrates – Disaccharides specifically maltose, lactose, sucrose
   a. Digestion of starch/absorption of glucose
   b. Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
   c. Blood sugar regulation
   d. Glycogen storage regulation

e. Glycogen storage diseases
f. Galactosemia and fructosemia

2. Lipids
   a. Fatty acids- Essential/non essential
   b. Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
   c. Outline of cholesterol metabolism- synthesis and products formed from cholesterol

3. Protein
   a. Amino acids- essential/non essential, complete/ incomplete proteins
   b. Transamination/ Deamination (Definition with examples)
   c. Urea cycle
   d. Tyrosine-Hormones synthesized from tyrosine
   e. In born errors of amino acid metabolism
   f. Methionine and transmethylation

4. Nucleic Acids
   a. Purines/Pyrimidines
   b. Purine analogs in medicine
   c. DNA/RNA – Outline of structure
   d. Transcription/translation
   e. Steps of protein synthesis
   f. Inhibitors of protein synthesis
   g. Regulation of gene function

5. Minerals
   a. Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
   b. Iron metabolism
   c. Iodine metabolism
   d. Trace elements in nutrition

6. Energy Metabolism
   a. Basal metabolic rate
   b. Specific dynamic action (SDA) of foods

7. Vitamins
   a. Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:
   a. Repair and regeneration, necrosis and gangrene
   b. Role of complement system in acute inflammation
   c. Role of arachidonic acid and its metabolites in acute inflammation
   d. Growth factors in acute inflammation
   e. Role of molecular events in cell growth and intercellular signaling cell surface receptors
   f. Role of NSAIDS in inflammation
   g. Cellular changes in radiation injury and its manifestations

2. Homeostasis:

   a. Role of Endothelium in thrombo genesis
   b. Arterial and venous thrombi
   c. Disseminated Intravascular Coagulation

d. Shock:Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

3. Chromosomal Abnormalities:

   a. Marfan's syndrome
   b. Ehler's Danlos Syndrome
   c. Fragile X Syndrome

4. Hypersensitivity:

   a. Anaphylaxis
   b. Type II Hypersensitivity
   c. Type III Hypersensitivity
   d. Cell mediated Reaction and its clinical importance
   e. Systemic Lupus Erythmatosus
   f. Infection and infective granulomas

5. Neoplasia:

   a. Classification of Tumors
   b. Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
   c. Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
   d. Spread of tumors
   e. Characteristics of benign and malignant tumors

6. Others:

   a. Sex linked agamaglobulinemia
   b. AIDS
   c. Management of Immune deficiency patients requiring surgical procedures
   d. De George's Syndrome
   e. Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Pharmacology:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics and tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti – pyretics
9. Anti – tubercular and anti – syphilitic drugs
10. Antiseptics, sialogogues, and anti – sialogogues
11. Haematinics
12. Anti – diabetics
13. Vitamins – A, B Complex, C, D, E & K
14. Steroids

B) Oral and Maxillofacial Radiology:

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x – ray tube, production of x – ray, property of x – rays

2. Biological effects of radiation
3. Films and recording media
4. Processing of image in radiology
5. Design of x –ray department, dark room and use of automatic processing units
6. Localization by radiographic techniques
7. Faults of dental radiographs and concept of ideal radiograph
8. Quality assurance and audit in dental radiology
9. Extra – oral-imaging techniques
10. OPG and other radiologic techniques
11. Advanced imaging techniques like **CBCT,**CT Scan, MRI, Ultrasound
12. Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI
13. Radio nucleotide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its various types of advantages

C) Oral Medicine, therapeutics and laboratory investigations:

Study includes seminars / lectures / discussion

1. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques
2. Laboratory investigations including special investigations of oral and oro – facial diseases
3. Teeth in local and systemic diseases, congenital, and hereditary disorders
4. Oral manifestations of systemic diseases
5. Oro – facial pain
6. Psychosomatic aspects of oral diseases
7. Management of medically compromised patients including medical emergencies in the dental chair
8. Congenital and Hereditary disorders involving tissues of oro facial region
9. Systemic diseases due to oral foci of infection
10. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
11. Neuromuscular diseases affecting oro –facial region
12. Salivary gland disorders
13. Tongue in oral and systemic diseases
14. TMJ dysfunction and diseases
15. Concept of immunity as related to oro – facial lesions, including AIDS
16. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions
17. Oral changes in Osteo – dystrophies and chondro – dystrophies
18. Pre malignant and malignant lesions of oro facial region
19. Allergy and other miscellaneous conditions
20. Therapeutics in oral medicine –clinical pharmacology
21. Forensic odontology
22. Computers in oral diagnosis and imaging
23. Evidence based oral care in treatment planning
24. Molecular Biology

Essential Knowledge:

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology techniques and Interpretation, Diagnosis of Oro – facial disorders

Procedural and Operative Skills:

1st Year:

1. Examination of Patient	- Case history recordings	–	100
	- FNAC	–	50
	- Biopsy	–	50
	- Observe, Assist, & Perform under supervision		
2. Intra – oral radiographs:			
	- Perform and interpretation	–	500
3. Full mouth intra oral radiograph tracings		–	3
4. Age estimation using radiographs		–	10

2nd Year:

1. Dental treatment to medically compromised patients		–	2
- Observe, assist, and perform under supervision			
2. Extra oral radiographs, digital radiography		–	20
- Observe, assist and perform under supervision, Interpretation			
3. Extra Oral radiographs tracings		–	3
4. CBCT Interpretations	–	5	

Operative skills:

1. Giving intra muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients
3. Performing basic CPR and certification by Red Cross or similar authorized organization

3rd Year

All the above

- Performed independently – Case history: Routine cases		–	100
- Interesting Cases		–	25
- OPG		–	50
- Periapical view		–	100
- Bitewing view		–	50
- Occlusal view		–	50
- Extra – oral radiographs of different views		–	**25**
- CBCT Interpretations	–	10	
- Treatment of mucosal lesions with LASER	–	3	

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

Schemes of Examination:

A. Theory:	Part-I: Basic Sciences Paper	-	**100 Marks**
	Part-II: Paper-I, Paper-II & Paper-III	-	**300 Marks**
			(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : **Applied Basic Sciences:**Applied Basic Sciences:Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

PART-II :

Paper-I : Oral and Maxillofacial Radiology
Paper-II : Oral Medicine, therapeutics and laboratory investigations
Paper-III : Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination **: 200 Marks**

1st Day

Clinical Case Presentation	
2 Spotters	2 x 10 = 20 Marks
2 Short Cases	2 x 15 = 30 Marks
1 Long Case	1 x 50 = 50 Marks
	Total = 100 Marks

Radiology Exercise

I. A) One Intra Oral Radiograph : 10 Marks
B) One Occlusal Radiograph :30 Marks

II. A) Two Extra Oral Radiograph :2 x 30 = 60 Marks
Including technique and interpretation

2nd Day

C. Viva Voce **: 100 Marks**

i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

MAHARASTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS - FIRST B.D.S

Candidate will be examined in the following subjects:

1. **General human anatomy and embryology and histology**
2. **General human physiology and biochemistry**
3. **Dental materials**

Subject 1 : GENERAL HUMAN ANATOMY AND EMBRYOLOGY AND HISTOLOGY

Duration of the Syllabus :

1)	Lectures - (Minimum)	-	70 hours
2)	Demonstration & Dissection	-	130 hours
	Total		200 hours spread over a period of one academic year

Part A :-

1. Introduction.
2. Anatomical positions, terminology , planes of reference.
3. Basic Concepts of skin & its appendages, bones, muscles, joints, blood vessels, lymphatics & nerves.
4. Details of Anatomy & Osteology of Head & Neck.

   a) Osteology of skull , mandible and cervical vertebrae, Disarticulated maxilla, fetal skull

   b) Temporo-mandibular joint in detail.

   c) Muscles of facial expression, mastication, tongue, palate, pharynx, larynx and scalp.

   d) The Circulatory and Lymphatic systems of Head, Neck & Face.

   e) Study of the cranial nerves & spinal cord. In detail the extracranial courses of V, VII , IX , XI

(Cranial Part) and XII cranial nerves; upper cervical spinal nerves. T.S. of Spinal Cord showing ascending and descending tracts.

f) Salivary Glands.

g) Oral cavity.

h) Nasal cavity & paranasal air sinuses.

i) Pharynx , Larynx , Orbit

j) Thyroid Gland, Pitutary Gland

k) Deep fascia and triangles of neck.

l) Middle ear, tympanic membrane

m) The Brain, Brainstem – major tracts and nuclei. Cerebrum – sulci , gyri, functional areas.

n) Radiological Anatomy of Head and Neck.

5. A) Gross Anatomy of Thorax, Abdomen & Superior Extremity :

i) Typical Intercostal Space.

ii) Mechanism of respiration.

iii) Surface features of the heart & coronory vessels.

iv) The lungs - Surface features & broncho-pulmonary segment.

v) Lecture/Demonstration - Stomach, Duodenum, small intestine, Liver, Pancreas Spleen, Kidney, Ureter , Uterine tube, Ovary , testies, spermatic cord, vasectomy / tubectomy.

B) Gross anatomy of Bones, Muscles, Blood Supply, Lymphatic drainage & Nerve supply of superior extremity.

6. Embryology :

i) General Embryology

ii) Development of Head, Neck, Face & associated anamolies ,

Development of tooth

iii) Genetics - Chromosomes, Karyotyping, numerical structural abnormalities, sex-linked disorders

Part B :

Histology - A course of 30 lectures , demonstrations and practicals covering the following :

1. Epithelium including glands.
2. Connective tissue, Bone and Cartilage
3. Muscle
4. Nervous Tissue
5. Blood Vessels
6. Skin
7. Lymphoid Tissue - Lymph nodes, Spleen, Thymus, Tonsil
8. Oral Tissue - Lip, Tooth including developing tooth, Tongue, Salivary glands.
9. Gastro-intestinal Tract, Esophagus, Stomach, Duodenum, Jejunum, colon, Appendix, Liver, Pancreas.
10. Trachea, Lung
11. Kidney, Ureter, Urinary Bladder.
12. Reproductive System - Testies, Vas deferens, Ovary, Uterine tube, Uterus.
13. Endocrine Glands - Pitutary, Thyroid, Parathyroid, Supra-renal

Part C :

Dissection :

a) In detail of Head , Neck and Face - excluding eye , ear & brain.

b) Superior extremity

c) Demonstration of wet and dry specimens including brain.

Subject II : GENERAL HUMAN PHYSIOLOGY AND BIOCHEMISTRY

Minimum Lectures - 50 hours for Physiology
25 hours for Biochemistry

Practicals - 40 hours for Physiology
30 hours for Biochemistry

Total - 145 hours spread over for a period of one academic year.

1) Introduction to General Physiology :

The cell : Components of Cells and their functions, fundamentals of muscle, nerve physiology, action potential, physiology of muscle contraction, nerve impulse conduction.

2) Blood and Lymph

Composition and Function of Blood

Plasma Protein

R.B.C. - Morphology , formation and functions

W.B.C. - Types , Formation and Function

Blood Coagulation , Blood Groups , Blood Volume and methods of measurement and variations.

Platelets , Anaemia , E.S.R.

Lymph - Formation , Composition , Function.

Oedema.

Immunity - Basic Concepts

Haemoglobin : Basic Chemistry and fate of Haemoglobin.

3) Cardio Vascular System :

General organization of Cardio Vascular system and Haemodynamics

Conduction of Cardiac impulse

Cardiac Cycle

Heart sounds , Pulse

Normal Electro-cardiogram

Regulation - Nervous , Chemical & Hormonal Blood Pressure Regulation

Patho-physiology of shocks , Coronary circulation

Cardiac output

Structure and Physiology of Cardiac Muscle.

4) Respiratory System

General Organization of Respiratory System, Mechanics of Respiration.

Ventilation , Diffusion , Carriage of Respiratory gases

Nervous and Chemical Regulations

Asphyxia , Hypoxia , Cyanosis , Anoxia - Types and Physiological changes.

Artificial Respiration.

5) Digestive Systems

Movements of Digestive Tract including mastication and Deglutition.

Mechanism and control of digestive secretion , digestion and absorption.

Liver and Gall-bladder functions

Bile

Salivary glands and Salivary Secretion in detail.

6) Excretion

Structure and Functions of Kidney.

Formation of Urine - Filtration , Re-absorption and excretion.

Volume , Normal and abnormal constituents.

Physiology of micturation .

7) Skin

Structure and Functions

8) Temperature Regulation

Regulation of Normal body temperature

9) Endocrines

General Organization and regulation of secretions and function of -----

a) Anterior and Posterior pituitary

b) Thyroid

c) Adrenal cortex and medulla

d) Parathyroid , Calcium and Phosphate homeostasis

e) Insulin and Glucagon- Islets of Langerhans

10) Reproductive Systems

a) Male reproductive system - Spermatogenesis , Testosterone

b) Female Reproductive System - Menstruation ,

Preganancy (Hormonal Changes and Preganey Tests)

Family Planning, Physiological basis of Family Planning methods ovary - hormones action

11) Physiological Aspects about Nervous system

General Organization of Nervous system

General Concepts of :-

Receptors , sensation and Synapse

Reflexes and their clinical use : ascending and descending tracts.

Functions of spinal chord , Cerebellum , Basal Ganglia

Hypothalamus : Cerebral Cortrx , Thalamus , Cerebro-spinal Fluid

General concepts of higher functions

Autonomic Nervous System

12) Special Senses

Fundamental knowledge of vision , hearing , taste & smell (Morphology, Pathway, Refractory, errors, Retina, Functions of middle ear and internal ear)

PRACTICALS

Practicals course of 40 hours in Physiology extending over two academic terms and consisting of practical work done by students and of demonstrations as follows:

A) PRACTICALS :

1) Enumeration of Red Blood Cells.
2) Enumeration of White Blood Cells & Differential Count
3) Determination of haemoglobin
4) Determination of Blood groups
5) Determination of bleeding time and clotting time.

B) DEMONSTRATIONS

1) Determination of packed call volume and E.S.R.
2) Demonstration of deep and superficial reflexes
3) E.C.G
4) Lung volumes
5) Artificial respiration.

C) CLINICAL PHYSIOLOGY PRACTICAL

1) Clinical examination of Arterial Pulse.
2) Clinical examination of B.P.
3) Clinical Examination of C.V.S.
4) Clinical Examination of Respiratory System.

BIOCHEMISTRY

A course of 25 hours lectures in Bio-Chemistry comprising the following :

1) Elementary Chemistry of Carbohydrates, lipids and proteins.
2) Enzymes and biological oxidations, elementary considerations.
3) Simple foods and their nutritional value.
4) Vitamins - fat and water soluble vitamins.
5) Digestions - Salivary, gastric and intestinal.
6) Tissue Chemistry - Blood and bone.

7) Nutrition. :

General Metabolism, metabolism of proteins, fat and carbohydrates, vitamins sources, requirement and actions, Basic Principles of diatetics, Enzymes, PH regulation, Calcium , Fluride metabolism and mineralisation.

8) Urine :- Physical characteristics

9) Hormones - Biochemistry of Hormones.

A practical and demonstration course of (35) hours on the following

1) Test for mono, di and polysaccharides and preparation of Osazones.

2) Simple tests for fats and proteins.

1 Protein and Carbohydrate reactions.

2 Chemistry of bread, wheat flour and milk.

3 Chemistry of bile.

4 Spectra of Oxy Hb and carboxy Hb reduced Hb (Demonstration)

5 Urine Report.

6 Salivary digestion of starch.

7 Test for Vitamin A, Vitamin C, Hydrochloric acid, lactic acid.

Subject III : DENTAL MATERIAL

Lectures (Minimum)	40 Hours
Practical & Demonstrations	60 hours

Total

100 Hours.

1) Introduction, Aims and Scope of Dental Materials.

2) Structure & Behaviour of matters.

3) Important Physical properties applicable to Dental Material including their biological considerations.

4) Considerations of following metals & alloy used in Dentistry and the effect of their exposure in mouth

   a) Dental Amalgam
   b) Gold and Gold Foil
   c) Stainless Steel
   d) Chrome - Cobalt alloys
   e) Nickel - Chrome alloys
   f) Casting gold alloys and other alloys used in Dentistry

5) Gypsum Products :- Manufacturing, Chemical, Physical & Mechanical properties, uses & manipulation.

6) Impression Materials -- General requirements, Classification, composition, manipulation, properties and clinical application.

7) Synthetic resins used in Dentistry.

   a) Denture base materials
   b) Repair & reline material
   c) Soft liners & tissue conditioners
   d) Filled and unfilled Resins as Restorative materials.

8) Dental Waxes - Classification, varieties, Composition, Properties, manipulation & uses.

9) Dental Casting investments - Types, Composition, manipulation & properties.

10) Dental Casting procedures (in brief) - Preparation of die/model - Wax pattern, Sprueing, investing - Burnout procedures -Compensation of casting

shrinkage, furnaces and muffles and various casting machines. Defects in casting - finishing & polishing of castings.

11) Welding & Soldering - materials & procedure.

12) Abrasive & polishing agents used in dentistry. Mechanism of tooth cutting, burs & points.

13) Dental Cements - Classification, Composition, manipulation properties and uses. Cavity liners and varnishes, Resin cements.

14) Dental Porcelain - General consideration, classification, condensation, firing

procedure and glazing. Porcelain fused to metals (Metal Ceramics)

Aluminous porcelain & brief introduction about latest advances in porcelain.

15) Root canal filling materials.

16) Die and Models materials.

Electroforming & Electroplating (in brief)

17) Brief introduction to orthodontic materials.

18) Introduction to the materials used for Dental implant.

19) Brief introduction about the materials used for maxillofacial prostheses.

PRACTICALS

a) Demonstration of above materials, their identification.

b) Practicals to be conducted for manipulation & study of properties of impression materials. Denture base material & Dental Waxes, Gypsum products. Dental cements & Dental amalgam to inculcate the manipulating skill in students regarding efficient handling of these materials.

EXAMINATION (THEORY PAPER PATTERN)

i) Each paper shall be of three hours duration and each practical / clinical examination shall not exceed 5 hours duration.

ii) Not more than 30 candidates in clinical / practicals should be examined in one day.

iii) Written (Theory) paper shall have three parts :

A) Multiple Choice Questions (MCQ) for 20 marks - 20 marks questions shall be answered by students in a separate Answer sheet, within first 20 minutes. This answer sheets to be collected by invigilators immediately after 20 minutes completion.

B) 1) Short Answer Questions (SAQ) for 20 marks.

2) Long Answers questions (Essay type) for 20 marks to be answered only after collecting MCQ answer sheet in remining time of 2 hrs 40 min. Short answer question and Essay type questions will be included in Section I & Section II

SPECIFIC DIVISION OF WRITTEN PAPERS

Subject : 1 : General Human Anatomy , Histology , Embryology etc.

Max. Marks - 60

Section A) **:** MCQ 20 marks

i)Anatomy Syllabus	12 Marks
ii)Histology Syllabus	04 Marks
iii)Embryology Syllabus	04 Marks

Section B) **:** 20 Marks

i) SAQ (5 question x 2 marks) 10 Marks

ii) Essay Type Questions 10 Marks

Section C) **:** Division and Marks as Section B 20 Marks

Section B should include the syllabus of

Part A - Topics related to Head, Neck, Face, Gen. Anatomy, Brain

Section C should include the syllabus of

Part A & part B : Topics- Superior Extremity, Embryology, Genetics, Histology,

Thorax and abdomen.

Subject : 2 : General Human Physiology and Biochemistry

Max. Marks - 60

SECTIONA) : MCQ - 20 marks

i) Physiology Syllabus 12 Marks

ii) Biochemistry Syllabus 08 Marks

SECTION B) : Section : I (Physiology) - 24 marks

i) SAQ (6 questions x 2 marks) 12 Marks

ii) Essay type (One full or three short notes) 12 Marks

SECTION C) : (Biochemistry) : 16 Marks

i) SAQ (4 x 2 marks each) 08 Marks

ii) Essay type (One full or two short notes) 08 Marks

Subject 3 : Dental Materials Max. Marks - 60

SECTION A) MCQ :10 Questions on Prosthetic material 20 Marks

10 Questions on Conservative & Orthodontia material.

SECTION B) 20 Marks

(Should include all materials from syllabus which are used for Prosthodontics treatments)

i) SAQ (5 x 2 Marks each) 10 Marks

ii) Essay type 10 Marks

(One full question or 2 short notes)

SECTION C - 20 Marks

(Should include all materials from syllabus which are used for conservative Dentistry and Orthodontic Treatments)

i) SAQ (5 x 2 Marks each) 10 Marks

ii) Essay type (One full question & two short Notes) 10 Marks

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APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for First B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks allotted**	Minimum marks required for awarding distinction
1	General Human Anatomy including Embryology and History	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General Human Physiology and Biochemistry	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Dental Materials	i) Theory (Written) ii) Oral	60 20	- -		

		iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	80 20 100	40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
		Grand Total			600	450

APPENDIX - C

SCHEDULE FOR INTERNAL ASSESSMENT MARKS

To assess the overall progress of the students by evaluating the professional skills he/she has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20 marks each.

2.A) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each

test will have marks as under

		Theory	Practical / Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the

term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination to be conducted as per university Pattern)

2.B) For Final B.D.S. Subjects :- Four College test to be conducted theory as per above pattern in final year only. However, for Clinical Practical test -- 2 test to be conducted in third year teaching during clinical posting and 2 test to be conducted in IV year clinical posting.

3) The pattern of Internal Assessment Examination should be as under :

a) Theory . . . 50 Marks

b) Practical . . . 50 Marks

c) Exception : For community Dentistry the written Examination will be of 40 Marks & Oral will be of 10 Marks.

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in Proforma even in fraction like 35/50 will be shown as 3.5 out of 5 marks.

4) The marks obtained by the candidate in all four examinations, to be amalgamated even with fractions. The fraction, if any, is now to be converted into nearest higher round figure.

5) All the records of these examination theory paper/practical record except work will have to be maintained for one year by the Heads of Departments and will have to be produced to the University authority if required for verification.

6) a) The marks obtained by the students for First, Second internal assessment tests should be submitted in the prescribed proforma (Appendix -

D) to the controller of examination within 15 days of completion of second Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix - D , through the Dean / Principal of the college 20 days before of the commencement of the University Theory Examination by Hand delivery or Register post. The Marksheet should be signed by the candidates, teacher incharge/HOD & Dean/Principal.

7) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks.

8) For repeater and detainee students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule. The best out of two of internal assessment marks (Previous Assessment/New Assessment) to be submitted to the University for the computation of marks

9) In case candidate remains absent on valid ground where his presence elsewhere is justified or when he is unable to attend the Examination on health ground and when he has informed the HOD/Dean about the same before or during the Examination Schedule. Candidate should compensate for this absenty by attending fifth (Extra) Internal Assessment Test. Those students who wants to improve their performance, they ay attend this test.(Entire Syllabus will be included for this 5^{th} tests.)

SCHEME OF EXAMINATION FOR B.D.S

Examination are conducted to assess whether the candidate has acquired the necessary minimum skill and clear concepts of fundamentals essential to his day to day professional work. Examination shall be held twice in a year.

1. Maximum Marks for each subject shall be 200. Community and preventive Dentistry, Preclinical Prothodontics practical and Preclinical Conservative Dentistry practicals will be of 100 marks each.

2. It is essential to inculcate the habit of progressive learning everyday, there is a need to have frequent tests. Minimum of Four tests in each academic year i.e. two in each term, to be conducted by the college as per the schedule of Internal Assessment Examination mentioned in Appendix – C.

3 **Attendance**:

i) Minimum 75% attendance in Theory and 80% in Practical / clinical in each subject in each academic year.

ii) The Dean / Principal is authorized to relax condition (i) above, by granting exemption upto 10% for less attendance on valid ground.

iii) The counting of attendance shall be from the start of the term to the end of the term.

iv) The student, who fails in University examination or do not appear in that particular examination is required to have minimum attendance of 75% both in Theory & Practical / Clinical in the next academic term and also required to work upto the satisfaction of the head of the concerned department in that academic term prior to his appearance in University examination.

v) The student will have to attend minimum 70% Theory / Practical classes in these subjects which are thought in that academic year, but having no examination at the end of that academic year. However, when he appears for University Examination in that subject the student will have to satisfy condition (i) above.

4) The Duration of Examination: As specified in Direction No.22/2001, "Conduct of Examination" issued on 08/08/2001.

5) The Theory Paper Pattern: As specified in Direction No. 22/2001, "Conduct of Examination" (Theory paper pattern)" issued on 08/08/2001.

6) Notwithstanding any thing to contrary, in these rules, no person shall be admitted to
an examination under these rules, if he /she has already passed that examination or an equivalent examination of any other statutory university.

7) If a candidate securing 50% marks in theory and Practical/Clinical+Oral and Internal Assessment separately and having minimum 50% marks in that subject as and aggregate shall be provided an exemption in that subject.

8) The gracing the to pass the examination will be according to direction No. 22/2001" Conduct of Examination" issued on 08/08/2001

9) Any complaint regarding use of "Unfair means" by candidate, paper setter, moderator, invigilator, examiner for practicals / clinicals or paper valuer should reach the office of Controller of Examinations within 48 hours of such incidence in Witting with valid proof. Such complaints must be delt with seriousness, on top priority to maintain sanctity of examination by setting an enquiry and judgement shall be given within 30 days after the incidence reported. The person (s) connected with such episodes and if found guilty shall be debarred from University examination work for a period of minimum 3

years. A person if lodging false complaint will be liable for legal action as per the provision of University act.,

10) Valuation of Answer Books: Central spot valuation system shall be adopted. Approved and experience teachers shall be invited for this job. Strictness and most confidential status has to be maintained. Answer book shall be coded.

11) There shall be one external examiner and one internal examiner. Internal examiner will be from colleges / university area (Regional) to conduct practical / clinical examination in every subject. The examiner shall have minimum experience of 5 years as a approved teachers of the University in that subject with post graduate qualification in that subject.

12) The Dean of the college will be the in charge of the practical / clinical examination center where it is not possible for the dean to discharge this duty, he shall appoint Vice-Dean or senior most Professor to work as Center In-charge with prior intimation.

13) The University shall pay the appropriate remunerations to the center in charge and all others connected with the work of examination. The Dean shall inform the names of those persons before the commencement of University examination at that center.

14) The charges for the materials used for the smooth and proper conduction of University practical/clinical examination work shall be paid by the University on

submission of original receipts of the purchases and certificate from the Dean about such material requirement and consumption. Prior permission from the University shall be obtained by the Dean from University in regards to number of items, materials quantity and approximate cost of the material.

15 <u>List of Materials for Dental Material Practical - (Subhead) Manipulation :</u>

(Allotment by draw system)

1 Dental Plaster

2 Zinc Oxide - Eugenol impression paste

3 Alginate impression material

4 Zinc phosphate cement

5 Impression-

6 Silver alloy & mercury

7 Elastomeric impression material (optional)

8 Glass ionomer cement (optional)

9 Dental Casting investing (optional)

16. Oral (Grand Viva) :

: Maximum 20 Marks alloted for each subject in Oral to be conducted separately examiners and the marks to be submitted in a separate sheet as per the proforma supplied by University (Appendix - F.) Marks to be added to Practical Head.

a) General Human anatomy, Histology e.t.c. : 20 marks to be devided equally amongst the available examiners.

b) General Human Physiology and Biochemistry 20 Marks

i) Oral on physiology Syllabus 12 Marks

ii) Oral on Biochemistry syllabus 08 Marks

c) Dental Material - 20 Marks devided as 12 for Prosthodontic Material and 8 for conservative and Orthodontic material.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

Appendix E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination :_____Summer / Winter _____

Centre : _____

Subject : _____ Max. Marks 80

Sub. 1: General Human Anotomy & Histology etc

ROLL NO.	SPOTING (30 MARKS)				PRACTICAL VIVA-VOCE						TOTAL
	HISTOLOGY SLIDES	BONES	ORGANS	HISTOLOGY SLIDES (IDENTIFICATION WITH DIAGRAM AND LABELING)	BONES	SOFT PARTS	EMBRYOLOGY	RADIOLOGY	ORGANS	RECORDS	
	(10 Slides X 1)	(5 X 1)	(5X1)	(2 Slides X 5 = 10)	(10)	(10)	(05)	(05)	(10)	(10)	(80)

Sub. 2: General Human Physiology & Bio-chemistry

ROLL NO.	HAEMATOLOGY (30 MARKS)	BIOCHEMISTRY (20 MARKS)	CLINICAL PHYSIOLOGY (20 MARKS)	RECORDS BOOKS		TOTAL MARKS 80
				PSYSIOLOGY (5 MARKS)	BIOCHEMISTRY (5 MARKS)	

Sub. 3 : Dental Materials

ROLL NO.	SPOTING 10 X 4 (40 MARKS)	MANIPULATION OF ANY ONE MATERIAL			RECORD BOOK (JOURNAL)	TOTAL 80 MARKS
		RATIO (05)	MANIPULATION OR MIXING (20)	QUALITY OF FINAL PRODUCT (05)	(10)	

External Examiners : **Internal Examiners :**

Name: _____ Name : _____

Signature: _____ Signature : _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

First B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		In figures	**In words**

External Examiners : **Internal Examiners :**

Name: _____ Name: _____

Signature: _____ Signature: _____

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enroll. No.**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Sign. of Students**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date :_____ _____ _____

Signature of Subject Teacher Signature of Head of the Department

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS : FINAL BDS

Candidate will be examined in the following subjects :

1. Prosthodontics
2. Conservative Dentistry including Endodontics.
3. Pedodontics.
4. Oral and Maxillofacial Surgery.
5. Periodontics.
6. Orthodontics.
7. Oral Medicine and Radiology.

Subject 1 : PROSTHODONTICS AND CROWN AND BRIDGE

LECTURES: 50 Lectures.

Complete Denture Prosthodontics :

1. Introduction to Prosthodontics, Terminologies , Aims , Objectives and scope
2. Human Masticatory apparatus : General consideration.
3. Anatomical & Physiological Landmarks of the maxillary and Mandibular Foundations and their significance.
4. Patients education related to complete denture prosthesis.
5. History taking, examination, diagnosis and treatment planning of an edentulous patient.
6. Importance of Diet and Nutrition.
7. Surgical and Non surgical preparation of the patient.
8. Impressions for complete Denture:
   Definition, Objectives.
   Theories and Techniques of impression making.
9. Bordor moulding procedure with special attention to Posterior platal seal area.
   Various techniques for cast preparation.
10) Record Bases and occlusion rims :-
   materials and methods of preparation.
11) Jaw relation records – Methods and instrumentation.
   Orientation relation (Face bow record)
   Vertical Jaw Relation
   Horizontal Jaw Relations.
12) Mandibular Movements and different types of articulators.
13) Selection and arrangement of teeth- Anterior and posterior
   Concepts of occlusion, Balanced occlusion and factors responsible for the same.

14) Try in of waxed up Dentures.

Reproduction of gingival tissue morphology .

15) laboratory procedures ; Elasking , wax elimination, , packing, acrylisation, recovery of dentures.

16) Correction of processing errors – laboratory Remount procedure.

17) Trial insertion of Denture and Clinical Remount procedures.

18) Inserton of denture and instruction to a patient ; Recalls.

19) Repair of Broken denture; Relining & Rebasing of a denture.

20) Problems associated with the use of complete denture and their treatment.

21) Prosthetic Management of poor foundation cases (Atrophied Ridges)

22) Treatment of Abused oral tissues.

23) Recent advances.

B] <u>Removable partial Dentures.</u> :30 Lectures.

1. Introduction to partial denture, various terminologies used in partial denture.
2. Various components of fixed and removable partial denture and their comparison.
3. Classification of partially edentulous dental arches.
4. Dental cast surveyor and use of surveying procedure, path of insertion and removal.
5. Components of partial dentures; Their selection, requirements of design and indications. (principles of designing and stress control)
    a) The partial denture bases.
    b) The artificial teeth.
    c) The Direct Retainer.
    d) The major connector.
    e) The minor connector.
    f) The indirect retainer.
    g) The stress breaker.
    h) The precision attachments.
6. Examination, diagnosis , treatment planning, surveying of diagnostic cast.
7. Preparation of patient to receive partial denture : General preparation.
8. Tooth alteration procedure. Making final impression to get master cast. Various impression procedure and Reviews on materials used.
9. Definitive analysis of master cast, work authorization to Dental Technician.
10. Laboratory procedures related to casting for fabrication of partial denture framework (Audio Visual demonstration.)
11. Trying of cast partial framework in mouth, adjusting the occlusion. The functional impression : Altered cast technique.
12. Jaw Relation record, selection and arrangement of teeth & try-in of denture.
13. Acrylization of partial denture bases-
14. Insertion of Removable partial denture & instructions to patient .
15. Patients Complaints and their solution.
16. Factors influencing magnitude of stress transfer on abutment teeth.
17. Management of Kennedy Cl I & II Cases and Cl III & IV cases.
18. Perioprosthodintic relationship.

FIXED PROSTHODONTICS : Lectures :- 30.

1. Aims and objectives of fixed partial denture prosthesis, and effects of loss of natural tooth/ teeth.
2. Examination & Diagnosis for patient of fixed partial denture .
3. Treatment required prior to fixed denture prosthesis.
4. Oral anatomy, physiology and histology as related to fixed partial denture prosthesis
5. Terminologies related to fixed prosthodontics.
6. Types of fixed partial dentures.
7. Component parts of fixed partial denture - Retainer, Pontic & Connector
8. Abutment selection and Questionable abutment.
9. Individual abutment preparation to receive
    1. acrylic jacket crown
    2. Porcelain fused to Metal jacket crown
    3. Partial veneer.
    4. Metal veneer crowns.
10. Tissue management and gingival dilatation methods.
11. Impression procedures in fixed prosthodontics
12. Temporization procedures.
13. Die preparation and review of materials used for die preparation , Laboratory procedures for fabrication.
14. Try in of fixed partial denture.
15. Cementation of fixed partial denture,
16. Maintenance of fixed partial denture, instructions to patients , recall visits repair of F.P.D. Management of failures in fixed partial denture treatment.
17. Restoration of Endodontically treated tooth.
18. Introduction to adhesive bridges, laminates, All ceramic crowns.

Special Prosthesis : Lectures :- 20

Brief introduction & general consideration.

1. Maxillofacial prosthesis - Aims & objectives, various types , materials used for maxillofacial prosthesis. Obturators & splints.
2. Overdentures, Immediate denture, Intermediate/ Interim or denture Implant denture,
3. Prosthodontic consideration in geriatric patient.

Theory Hours :

1.	Complete Denture	:	50 Hours
2.	R.P.D.	:	30 Hours
3.	Fixed partical Denture	:	30 Hours
4.	Maxillofacial Prosthesis	:	20 Hours
	hand special		
	Total		130 Hours

130 Hours Spread over Ist to IVth BDS

Preclinical Hours : .... 360 Hrs.

Spread over Ist & II BDS.

Clinical Hours : .... 540 Hrs.

Spread over IIIrd & IV BDS.

Total Duration : .... 1000 Hrs.

EXAMINATION PATTERN

I. Theory (Maximum) ---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) Clinical for C.D. .... 60 Marks. (breakup as per proforma)

ii) Chairside Orals .... 15 Marks.

iii) Journal (work reacord) .... 05 Marks.

Total .... 80 Marks

B) i) Oral (Viva Voce) 20 Marks.

(A+B)= 100 Marks

III) Internal Assessment (Theory -20 + Practical – 20) = 40 Marks

Subject 2 : <u>CONSERVATIVE DENTISTRY INCLUDING ENDODONTICS</u> :

Theory Hours ... 70 Hrs. Spread over II,III & IV BDS

Preclinical Hrs .. 240 Hrs. Spread over II BDS.

Clinical Hours ... 360 Hrs. Spread over III rd & IV BDS.

Total Duration ... 670 Hrs.

LECTURES :

1. Definition and scope.
2. Oral Hygiene in relation to conservative dentistry.
3. Instruments-Nomenclature, design and formulae, care and Sterilization.
4. Examination, diagnosis and treatment planning.
5. Charting and recording of cases.
6. Histology of the tooth structure as related to the operative procedures.
7. Hypoplasias, Attrition, abrasion, erosion and their management.
8. Dental caries, etiology, Pathology, Clinical features, Classification diagnosis, prevention & control.
9. Cavities-classification and nomenclature.
10. Choice of filling materials.
11. Principles of cavity preparation, control of pain.
12. Prevention of damage to hard and soft tissue during operative procedures.
13. Methods employed for exclusion of saliva.
14. Bio-Mechanics of cavity design and restoration with filling materials. Pulp and tissue protection. Airotors - high speed equipment, air motor and micromotor Cavity preparation for various types of restorations including onlays inlays

and pinlays, Restorative procedures Matrices.

15. Drugs used in conservative dentistry.
16. Introduction to recent advances in restoration materials and procedures.
17. Fractured teeth and their management, effect of systemic diseases on dental tissues.
18. Sensitive dentine - its management.
19. Ceramics in Conservative Dentistry.
20. Perio-operative problems.
21. Biological aspects of restorative materials.
22. Role of conservative Dentistry in esthitics.
23. Current advances

ENDODONTICS :

1. Definition, aims, objects.
2. Rationale of endodontic therapy, morphology of root canal.
3. Diseases of the pulp and periapical tissue & endodontic entries.
4. Diagnostic aids in Endodontics.
5. Endodontic Instruments.
6. Care and sterilization on instruments for endodontics treatment of vital and non vital pulp. Tests for sterility of the root canal.
7. Drug used in root canal therapy.
8. Biomatarial preparation & obularation of Root canal various techniques and material used.

13. Geriatric endodantics.

10. Bleaching of teeth, Restoration of endodontically treated teeth.
11. Surgical treatment in Endodontics.
12. Emergencies in Endodontics, Endo-Perio Problems.
13. Recent advances.

EXAMINATION PATTERN :

I. Theory (Maximum)---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each .... 20 marks

II. A) CLINICALS

i) History taking ---------- 10 Marks

ii) Cavity preparation for silver Amalgam 25 Marks
modified class II MO or DO
or Class I with Buccal and lingual extention

iii) Base / Lining along with matrix Band adaptation 15 Marks

iv) Permanent filling Restoration with Silver Amalgam
& chair side Orals. 25 Marks.

iv) Record (Clinical Journal) 05 Marks.

Total 80 Marks.

B) i] Oral (Viva Voce) 20 Marks.

(A+B)= 100 Marks

III) Internal Assessment (Theory -20 + Practical – 20) = 40 Marks

Subject 3 : PEDODONTICS

Theory Hours ... 40 Hrs. Spread over III & IV BDS.

Clinical Hours ... 150 Hrs. Spread over III & IV BDS.

Total Duration ... 190 Hrs.

LECTURES :

1. Introduction, definition, scope, practice mangagement and importance of pedodontics.
2. Growth and development of Dental and oro- facial structure and normal occlusion. Developmental anomolies Genetics related to pedodontics.
3. Morphology of Dentitions and its applications :
   a) Allied Morphology and Histology of primary and young permanent teeth.
   b) Importance of first permanent molar.
4. Fundamental of Dental Health.
   a) Biological factors responsible for maintenance of dental and Oral Health.
   b) Contributory Local factors affecting oral health plaque & Saliva etc.
5. Child psychology and management of child patient.
   a. Physical development of child
   b. Milestone of child development & behavioral pattern as narrated in various theories.
   c. Fear & anxiety related to pedodontics.
6. Preventic, intercepative and early corrective orthdontics for children.
7. Examination, diagnosis and treatment planning.
8. Preventive dentistry, fluorides, fissure sealants diet counselling etc.Endemic flurosis.
9. Endodontics in pediatric dentistry.
10. Clinical aspects of pediatric dentistry as related to
    Setting of pedodontic clinic.
    Teeth disorders.
    Development Anomalies
    Dental caries in children
    Restorative Dentistry
    Pulp Therapy and Endodontics
    Space Maintainers & Myofunctional appliances .
    Treatment of traumatized teeth.
    Management of problems of the primary and mixed dentition period,
    Gingival disorders in children.
    Stomatological conditions in children

Management of handicapped children

Mouth habits and their managements.

Epidemology- Definition and general principal

11. Current advances.

CLINICALS

Case history diagnosis & treatment planning of 10 cases.

EXAMINATION PATTERN :

I. Theory (maximum)---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) Case History & Diagnosis	...	35 Marks
ii) Chair side Orals	...	25 Marks.
iii) Treatment Planning	...	10 Marks.
iv) Journal	...	10 Marks.
Total ----------		80 Marks.
B) Oral (Viva Voce)		20 Marks.
A + B =		100 Marks

III. Int. Assessment (Theory 20 + Practical 20) ------- 40 Marks

Subject 4 : ORAL & MAXILLOFACIAL SURGERY.

Theory Hours :

1. Anaesthesia (Local & general) ... 10 Hours
2. Exodontia ... 10 Hours
3. Oral & Maxillofacial Surgery ... 40 Hours

---

60 Hours

Spread over III & IV BDS.

Clinical Hours : .... 220 Hours

Total Duration : .... 280 Hours

LECTURES :

Local Anaesthesia :

1. Introduction, Theories of Local Anaesthesia.
2. Properties of an Ideal Local anaesthetic drug.
3. Classification & Properties of common local anaesthetic drugs in use.
4. Choice of anaesthesia, Local and general anesthesia.
5. Indications and contra-indications, advantages and disadvantages of local anaesthesia.
6. Components of a standard local anaesthetic solution.
7. Mechanism of action of local anaesthesia.
8. Pre-anaesthetic medication.
9. Technique of infiltration anaesthesia, Nerve block Anaesthesia. Signs and Symptoms of anaesthesia.
10. Complications associated with local anaesthesia and their management.

General Anaesthesia :

1. Properties of general anaesthetic drugs commonly used.
2. Pre-anaesthetic preparation of a patient and pre-medication.
3. Evaluation of a patient for general anaesthesia.
4. Short anaesthesia in Oral surgery, Endotracheal Anaesthesia, Intravenous anaesthesia.
5. Signs and Symptoms of general anaesthesia.
6. Complications arising during the administration of general naesthesia and their management.

Exodontia :

1. Objectives.

2. Indications and contra-indication for tooth extraction.
3. Pre-operative assessment.
4. Forcep extraction. (Intra-alveolar extraction.)
5. "Surgical extraction" (Trans-alveolar extraction).
6. Extraction under general anaesthesia in the dental chair.
7. Complications of tooth extraction and their management.

Oral & Maxillofacial Surgery :

1. Introduction of oral and maxillofacial surgery.
2. Diagnosis in Oral Surgery.
   a) History taking
   b) Clinical examination.
   c) Special Investigations.
3. importance of general conditions of the patient in relation to Oral surgery.
4. Instruments used in Oral Surgery.
5. Basic principles of surgery. Sterilization & Asepsis, Suturing techniques.
6. Use of antibiotics in oral surgery.
7. Diagnosis, pre-operative assessment and treatment of impacted teeth.
8. Surgical procedure in relation to endodontic therapy (Apicectomy).
9. Pre-prosthetic surgery including oral implantology
10. Oro-facial infections, their diagnosis and treatment.
11. Inflammatory diseases of jaw bone and their management..
12. Diagnosis and management of Cysts of Oral Cavity.
13. Fractures of facial skeleton, Diagnosis and management.
14. Diagnosis and treatment of benign & malignant neoplastic lesions of the oral cavity (odontogenic & non-odontogenic).
15. Precancerous lesions of oral cavity, diagnosis and management.
16. Surgical Orthodontics - broad outlines.
17. Diseases of Maxillary sinus. with special reference to Oro-antral fistula.
18. Management of haemorrhage and shock in Oral Surgery.
19. Diseases of salivary glands, Diagnosis and Treatment.

20. Diseases of temperomandibular joint & its management.
21. Neurological disorders, Trigeminal Neuralgia & facial palsy.
22. Cleft lip & cleft palate.
23. Emergencies in oral surgery and its management.
24. Recent advances

EXAMINATION PATTERN :

I. THEORY (Maximum)---------- 60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) History Taking X-ray Interpretation,
Instruments & Drugs ... 20 Marks

ii) Local Anaesthesia Technique ... 15 Marks.

iii) Exodontia Technique ... 25 Marks.

iv) Post Operative instructions,
Management & Chairside orals ... 15 Marks.

v) Journal ... 05 Marks.

Total 80 Marks.

B) Oral (Viva Voce) .. 20 Marks.

A + B = 100 Marks

III. Int. Assessment (Theory 20 + Prct. 20) ... 40 Marks

Subject 5 : <u>PERIODONTICS</u>.

Theory Hours : ..... 60 Hours.

Clinical Hrs. : ..... 220 Hours.

Total Duration : ... 280 Hours. Spread over III & Final BDS

LECTURES :

1. Introduction - Scope and applicability of the subject.
Historical background of periodontology.
2. Maintenance of Health Role and scope of oral physiotherapy measures, patient education programme and perodic check.
3. Etiopathogenesis Classification of gingival and periodontal discares. Defence machanism of oral cavity.
4. Gingival enlargement.
5. Infective muco-gingival conditions-specific and non-specific.

6. Degenerative conditions-Viz disquanative gignivities and Junvenile periodontics (Gingivosis and Periodontosis.)
7. Atrophic conditions affecting gingival and periodontal tissues including aging.Periodontal problems in growing children.
8. Local and systematic factors in the causation of gingival and periodontal lesions.
9. Periodontitis and its sequelae.
10. Malocclusion, Malalignment and traumatic occlusion, Bruxsim and Tempero mandibular joint disturbances, occlusal equilibration.
11. Diagnosis and diagnostic aids including roentgenography and its uses and limitations.
12. Prognosis.
13. Morphological defects of the muco-gingival structures influencing periodontium and their treatment.
14. Treatment of all gingival and periodontal disturbances treatment planning phase and rationale. And periodontal charting Different available therapeutic procedures.
    Healing Mechanism.
15. Role of Nutrition in etiology and treatment of periodontal diseases.
16. Drugs & materials used in periodontics.
17. Instrumentation.
18. Splints.
19. Preventive periodontics.
20. Concept of focal infection.
21. Oral hygiene practices in India.
22. Inter disciplinary care & recent advances, Implants,
23. Systemic effects of periodontal diseases in brief.
24. Recent advances in perirodontics .

EXAMINATION PATTERN :

I.**THEORY** (Maximum)----------60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i)	Case History	. 20 Marks
ii)	Instrumentation & Scaling	... 40 Marks.
iii)	Post Operative instructions and chairside orals.	... 15 Marks.
iv)	Journal	... 05 Marks.
	Total ----------	80 Marks.
B)	Oral (Viva Voce) .	20 Marks.
	A + B =	100 Marks.

III. **Internal Assessment** (Theory 20 + Practical 20) ..... 40 Marks.

Subject 6 : ORTHODONTICS.

Theory Hours : ..... 40 Hours.

Practicals & Clinical Hrs. : ..... 150 Hours.

Total Duration : ... 190 Hours. Spread over III & Final BDS

LECTURES :

Stress in lectures should be on the Preventive and Interceptive principles of Orthodontics.

1. Definition, Aims, objects and scope of Orthodontics.
2. Growth and Development of jaws, teeth, face and skull.
3. Genetics as applied to Orthodontics.
4. Normal occlusion and its characteristics. Factors responsible for establishment and maintenance of normal occlusion.
5. Malocculsion-types, different classifications & differential diagnosis.
6. Aetiology of malocclusion.
7. History taking and examination of patient and case analysis and differential diagnosis including photographic analysis, cephalometrics and analysis and treatment planning and prognosis.
8. a) Preventive and interceptive treatment aids of malocclusion.
   b) Space management in orthodontics.
   c) Treatment of Cl I, Cl II, Cl III malocclusions
9. Appliances used in Orthodontic treatment - Adequate knowledge of removable and fixed appliances, Mechanical appliances and functional appliances
10. Biological and biomechanical aspects of Orthodontics treatment.
11. Retention after treatment and relapse.
12. Materials used in Orthodontics.
13. Habit breaking appliances.
14. Surgical Orthodontics.
15. Current advances.

EXAMINATION PATTERN :

I.THEORY (Maximum)---------- 60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) PRACTICALS / CLINICALS

i) Wire bending and Preparation of an appliance in wax	...	40 Marks.
ii) Model Analysis (any two indices with brief treatment plan)	...	15 Marks.
iii) Identification of appliances, cephalometric landmarks.	...	20 Marks.
iv) Journal	...	05 Marks.
	Total	80 Marks.
B) Oral (Viva Voce)		... 20 Marks.
A + B =		100 Marks.

III. Internal Assessment (Theory 20 + Prctical. 20) ...40 Marks.

Subject 7 : <u>ORAL MEDICINE, DIAGNOSIS & RADIOLOGY.</u>

Theory Hours : ..... 40 Hours.

Clinical Hrs. : ..... 90 Hours.

Total Duration : ... 130 Hours. Spread over III & IV BDS

LECTURES :

Oral Medicine and Diagnosis :

1. Scope and importance of the subject.
2. Acute infections of oral & perioral structures.
3. Ulcerative & Vesicullobullous lesions of oral cavity.
4. Red and White lesions affecting oralmucosa.
5. Pigmentation of oral-tissues.
6. Diseases of tongue.
7. Diagnosis and differential diagnosis of Caries, Pulpitis & Periodontitis & regressive changes of dentition.
8. Metabolic, allergic and Endocrine disturbances and their oral manifestations.
9. Nutritional deficiencies and their significance in dentistry.
10. Blood dyserasias and their management.
11. Oral sepsis and its effect on general system.
12. Dermatological disorders & their oral manifestations.
13. Disorder of Tempero-mandibular joints.
14. Diseases of Jaw-bone.
15. Diseases of Maxillary-Sinus.
16. Oral Pre-malignant lesions.
17. Benign & malignant neoplasms of oral cavity.
18. Cervico-facial lymphadenopathy.
19. Diseases of salivary glands.
20. Oro-Facial pain.
21. Cysts of the oral cavity.
22. Management of Cardiac patient in dentistry.
23. Methods of diagnosis including special investigations.
24. Immunological concepts of oral lesions, HIV Infection, Hepatitis & other viral infections.
25. Forensic odontology.
26. Recent advances.

RADIOLOGY

1. Physics of radiation Production and properties of X-rays and radiation biology.
2. Principles of X-ray production & fluoroscopy factors affecting procedure radiographs, Intensifying screens and grids and dark room procedures.
3. Technique of intra oral and extra-oral Radiography and normal anatomical land marks.
4. Radiological interpretation of abnormal dental and jaw conditions. & manifestation of systemic disease in jaw.
5. Elements of Radiation treatment in oral and facial conditions and their sequelae.
6. Contrast radiography and recent advances in dental Radiology including Radioactive traces.
7. Recent advances in imaging.

EXAMINATION PATTERN :

I. THEORY(Maximum) 60 Marks.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II.A) CLINICALS

i) Case History, clinical examination, Diagnosis,treatment planning of a case and chairside orals ... 25 Marks.

ii) Taking an IOPA and processing with Interpretation ... 25 Marks.

iii) Interpretation of five clinical slides/or Radiographs. .... 25 Marks.

iv) Journal ... 05 Marks.

Total ---------- 80 Marks.

B) Oral (Viva Voce) ... 20 Marks.

A + B = 100 Marks.

III) Internal Assessment (Theory -20 , Practical – 20) = 40 Marks

APPENDIX-C

SCHEME OF INTERNAL ASSESSMENT

To assess the overall progress of the students by evaluating the professional skills he/she has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

Maximum marks allotted for internal assessment for each subject head in theory and practical/clinical will be 20 % of the total marks.

In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under:

For final B.D.S. subjects :- Four college tests tube conducted in theory in final B.D.S. only. However for clinical & Practical test – 2 tests to be conducted in 3rd B.D.S. as a post ending test and 2 tests to be conducted in final BDS as a post ending test during clinical posting as under.-

FIRST TERM.

a. First internal (for the syllabus completed from the start of term till commencement of the examination) Unit Test.

b. Second Internal : Should include entire syllabus completed in first term (TERMINAL EXAMINATION)

SECOND TERM

c. Third internal : Should including the topics covered only in the second term till the commencement of the examination (Unit Test)

d. Fourth Internal should include entire syllabus prescribed by the university (PRELIMINARY EXAMINATION)

e. The pattern of Internal Assessment will be as under:

1. THEORY

Written .... 40 Marks.

(Section A : 20 MCQ ... 10 Marks, Section B : 10 SAQ ... 20 Marks, Section C : Two LAQ ... 10 Marks,)

Oral .... 10 Marks.

Total -------- 50 Marks.

2. PRACTICAL/CLINICAL ..... 50 Marks.

The marks for each test will be brought down to ... 5 Marks.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

APPENDIX-E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination : Final B.D.S. Summer / Winter 200___

Centre : _____

1) SUBJECT : PROSTHODONTIC, CROWN AND BRIDGE Max. Marks 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Checking of Special Tray/or Record Bases (To Be kept ready by the Student) (10)	Border Moulding Procedure or Establishing Vertical Jaw Relation (25)	Final Impression or Recording Centric Jaw Relation (25)	History and Examinations T/P and Chair Side Orals Related to Clinical Work (15)	Clinical Work Record (Journel) (5)	Total (80)

2) SUBJECT : CONSERVATIVE DENTISTRY INCLUDING ENDOTONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	History taking Examinations and Treatment Planning (10)	Cavity Preparation for Silver Arnolgum Modified Class II MO. or DO or Class one Cavity with Buccal or Lingual Extentions (25)	Base/Lining alwong with Materix Band adapation (15)	Registration with Dental Amalgum and Chair side orals related with exercises (25)	Clinical Work Record (5)	Total (80)

3) SUBJECT : PEDODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case Exam. of a Child History taking and Diagnesis (35)	Chair Side Orals (25)	Treatment Planning (10)	Record (Journal) (10)	Total (80)

4) SUBJECT : ORAL MAXILLOFACIAL SURGERY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. X-ray Enterpretation Instruments and Drugs. (20)	Local Anaesthesia Technique (15)	Exodontia Technique (25)	Post Operative Instructions, Management and Chair Side Orals (15)	Journal (5)	Total (80)

5) SUBJECT : PERIODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. Treatment Planning (20)	Scalling and Polishing and Instrumentation (40)	Post Operative Instructions and Chair Side Orals (15)	Journal (5)	Total (80)

6) SUBJECT : ORTHODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Wire Bending and preparation of an appliance in Wax (40)	Model Analysis (Any tow indices with Brief Treatment Plan) (15)	Identification of Appliances Cephalomteric Landmarks (20)	Journal (5)	Total (80)

7) SUBJECT : ORAL MEDICINES (ORAL DIAGNOSIS) RADIOLOGY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. Treatment Planning and Chair side Oral (25)	Taking IOPA and Processing with Interpretation (25)	Interpretation of Five Clinical Slides or Radiographs (25)	Journal (5)	Total (80)

NAME AND SIGNATURE OF EXAMINERS

1) External Examiner : _____ _____

2) Enternel Examiner :_____ _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Final B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name: _____

Signature: _____

APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for Final B.D.S Examination

Sr.No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	Prosthodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	Conservative Dentistry including Endodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Pedodontics	i) Theory (Written) ii) Oral	60 20	- -		

		iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	80 20 100	40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Oral and Maxillofacial Surgery	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
5	Pedodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		

6	Orthodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
7	Oral Medicine and Radiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
				Grand Total	1400	1050

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

Signature of Subject Teacher) (Signature of Head of the Department)

Duration of the Courses:

The undergraduate dental training programme leading to BDS degree shall be of 4 (four) Academic years with 240 teaching days in each academic year, plus one year paid rotating internship in a dental college. Every candidate will be required, after passing the final BDS examination, to be undergo one year paid rotating internship in a dental college. The detailed curriculum of Dental Internship Dental Programme is annexed as Annexure-A

The Internship shall be compulsory and BDS Degree shall be granted after completion of one year paid internship.

During this period, the student shall be required to have engaged in full time study at a dental college recognized or approved by the Dental Council of India.

Migration:

Migration from one dental college to other is not a right of a student. However, migration of students from one dental college to another dental college in India may be considered by the Dental council of India. Only in exceptional cases on extreme compassionate ground*, provided following criteria are fulfilled. Routine migrations on other ground shall not be allowed.

Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought, are recognised by the Dental Council of India.

The applicant candidate should have passed first professional BDS examination.

The applicant candidate submits his application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the first professional Bachelor of Dental Surgery (BDS) examination.

The applicant candidate must submit an affidavit stating that he/she will pursue 240 days of prescribed study before appearing at IInd professional Bachelor of Dental Surgery (BDS) examination at the transferee dental college, which should be duly certified by the Registrar of the concerned University in which he/she is seeking transfer. The transfer will be applicable only after receipt of the affidavit.

Note 1:

(i) Migration is permitted only in the beginning of IInd year BDS Course in recognized Institution.

All applications for migration shall be referred to Dental Council of India by college authorities. No Institution / University shall allow migrations directly without the prior approval of the Council.

Council reserved the right, not to entertain any application which is not under the prescribed compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

Note 2: *compassionate ground criteria:

Death of supporting guardian.

Disturbed conditions as declared by Government in the Dental College area.

III. Attendance requirement, Progress and Conduct

75% in theory and 75% in practical / clinical in each year.

In case of a subject in which there is no examination at the end of the academic year / semester, the percentage of attendance shall not be less than 70%.

However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (i) above.

IV. Subjects of Study:

First Year

General Human Anatomy including Embryology and Histology

General Human Physiology and Biochemistry, Nutrition and Dietics

Dental Anatomy, Embryology and Oral Histology

Dental Materials

Pre-clinical Prosthodontics and Crown & Bridge

Second Year

General Pathology & Microbiology

General and Dental Pharmacology and Therapeutics

Dental Materials

Pre clinical Conservative Dentistry

Pre clinical Prosthodontics and Crown & Bridge

Oral Pathology & Oral Microbiology

Third Year

General Medicine

General Surgery

Oral Pathology and Oral Microbiology

Conservative Dentistry and Endodontics

Oral & Maxillofacial Surgery

Oral Medicine and Radiology

Orthodontics & Dentofacial Orthopaedics

viii)Paediatric & Preventive Dentistry

Periodontology

Prosthodontics and Crown & Bridge

Fourth Year

Public Health Dentistry

Periodontology

Orthodontics & Dentofacial orthopaedics

Oral Medicine & Radiology

Oral & Maxillofacial Surgery

Conservative Dentistry and Endodontics

Prosthodontics and Crown & Bridge

Paediatric & Preventive Dentistry

OR

Part I

Public Health Dentistry

Periodontology

Orthodontics & Dentofacial orthopaedics

Oral Medicine & Radiology

Part II

Oral & Maxillofacial Surgery

Conservative Dentistry and Endodontics

Prosthodontics and Crown & Bridge

Paediatric & Preventive Dentistry

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY

(BDS COURSE)

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology Biochemistry	120 70	60 60		180 130
Dental Materials	80	240		320
Dental Anatomy Embryology, Oral Histology	105	250		355
Dental Pharmacology & Therapeutics	70	20		90
General Pathology Microbiology	55 65	55 50		110 115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Microbiology	145	130		275
Oral Medicine and Radiology	65		170	235
Paediatric and Preventive Dentistry	65		170	235
Orthodontics and Dental orthopaedics	50		170	220
Periodontology	80		170	250
Oral Maxillofacial Surgery	70		270	340
Conservative Dentistry and Endodontics	135	200	370	705
Prosthodontics and Crown and Bridge	135	300	370	805
Public Health Dentistry	60		200	260
Total	**1590**	**1540**	**1989**	**5200**

Note : *There should be a minimum of 240 teaching days each academic year consisting of 8 working hours including one hour of lunch break.*

Internship – 240X8 hours-1920 clinical hours

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY

(BDS COURSE)

I. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Materials	20	40		60
Dental Anatomy Embryology, Oral Histology	105	250		355
Pre clinical Prosthodontics and crown and bridge	-	100		100
Total	**415**	**685**		**1100**

II. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General & Dental Pharmacology & Therapeutics	70	20		90
General Pathology	55	55		110
Microbiology	65	50		115
Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre clinical Prosthodontics and crown & Bridge	25	200		225
Pre Clinical Conservative Dentistry	25	200		225
Total	**325**	**775**		**1100**

III. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120		80	200
Oral Medicine and Radiology	20		70	90
Paediatric and Preventive Dentistry	20		70	90
Orthodontics and dentofacial orthopaedics	20		70	90
Periodontology	30		70	100
Oral & Maxillofacial Surgery	20		70	90
Conservative Dentistry & Endodontics	30		70	100
Prosthodontics and Crown & Bridge	30		70	100
Total	**410**		**750**	**1160**

IV. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Prosthodontics	80		300	380
Oral Medicine & Radiology	45		100	145
Periodontics	50		100	150
Public Health Dentistry	60		200	260
Conservative Dentistry	80		300	380
Oral Surgery	50		200	250
Orthodontics	30		100	130
Pedodontics	45		100	145
Total	**440**		**1400**	**1840**

HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS

GOAL

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures. So that relevant anatomical and scientific foundations are laid down for the clinical years of the BDS course.

B) OBJECTIVES :

a) KNOWLEDGE AND UNDERSTANDING :

At the end of the 1st year BDS Course in Anatomical Sciences the undergraduate student is Expected to :

Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.

Know the anatomical basis of disease and injury.

Know the microscopic structure of the various tissues, a pre requisite for understanding of the disease processes.

Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.

Have an idea about the basis of abnormal development critical stages of development, effect of teratogens, genetic mutations and environmental hazards.

Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.

Know the anatomy of cardio-pulmonary resuscitation.

b) SKILLS

To locate various structures of the body and to mark the topography of the living anatomy.

To identify various tissues under microscope.

To identify the features in radiographs and modern imaging techniques.

To detect various congenital abnormalities.

C) INTEGRATION :

By emphasizing on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences and clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

This insight is gained in a variety of ways :

Lecturers and small group teaching

Demonstrations

Dissection of the human cadaver

Study of dissected specimens

Osteology

Surface anatomy on living individual

Study of radiographs and other modern imaging techniques

Study of Histology slides

Study of embryology models.

Audio visual aids.

Throughout the course, particular emphasis is placed on the functional correlation, clinical application and on integration with teaching in other bio dental disciplines.

D) AN OUTLINE OF THE COURSE CONTENT :

General anatomy : Introduction of anatomical terms and brief outline of various systems of the body.

Regional anatomy of head and neck with osteology of bones of head and neck with emphasis on topics of dental importance.

General disposition of thoracic, abdominal and pelvic organs.

The regional Anatoly of the sites of intramuscular and intra vascular injections and lumbar puncture

General embryology and systemic embryology with respect to development of head and neck.

6. Histology of basic tissues and of the organs of gastrointestinal, respiratory endocrine, excretory systems and gonads

7. Medical genetics.

E) FURTHER DETAILS OF THE COURSE:

I. INTRODUCTION TO :

Anatomical terms

Skin, superficial fascia and deep fascia

Cardiovascular system, portal system collateral circulation and arteries.

Lymphatic system, regional lymph nodes

Osteology - including ossification and growth of bones

Myology - Including types of muscle tissue and innervation

Syndesmology - including classification of Joints

Nervous system

II. HEAD & NECK :

01. Scalp, face and temple, lacrimal apparatus 02. Neck - Deep fascia of neck, posterior triangle suboccipital triangle, anterior triangle, anterior median region of the neck deep structure in the neck. 03. Cranial cavity - Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland. 04. Cranial nerves - III, IV, V, VI, VII, IX,, XII in detail. 05. Orbital Cavity - Muscles of the eye ball, supports of the eye, ball, nerves and vessels in the orbit. 06. Parotid gland. 07. Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo - palatine fossa. 08. Submandibular region. 09. Walls of the nasal cavity, paranasal air sinuses. 10. Palate. 11. Oral cavity, Tongue 12. Pharynx (palatine tonsil and the auditory tube) Larynx. OSTEOLOGY - foetal skull, adult skull, individual bones of the skull , hyoid bone and cervical vertebrae.

III. THORAX : Demonstration on a dissected specimen of

Thoracic wall

Heart Chambers

Coronary arteries

Pericardium

5, Lungs - surfaces ; pleural cavity

6. Diaphragm

IV. ABDOMEN : Demonstration on a dissected specimen of

Peritoneal cavity

Organs in the abdomonial and pelvic cavity

V. CLINICAL PROCEDURE :

a) Intramuscular injections : Demonstration on a dissected specimen and on a living person of the following sites of injection.

Deltoid muscles and its relation to the axillary nerve and radial nerve.

Gluteal region and the relation of the sciatic nerve.

Vastus lateralis muscle.

Intravenous injections and venesection : Demonstration of veins in the dissected specimen and on a living person.

1. Median cubital vein 2. Cephalic Vein 3. Basilic vein 4. Long saphenous vein

Arterial pulsations : Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.

1. Superficial temporal 2. Facial 3. carotid 4. Axillary 5. Brachial 6. Radial 7. Ulnan Femoral
9. Popliteal 10. Dorsalispedis

d) Lumbar puncture: Demonstration on a dissected specimen of the spinal cord cauda equine and epidural space and the inter vertebral space between L4 & L5

VI. EMBRYOLOGY

Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation and fate, Pharyngeal arches, pouches and clefts, Development of face, tongue, palate, thyroid gland, pituitary gland, salivary glands and anomalies in their development, Tooth development in brief.

VII. HISTOLOGY :

The Cell :

Basic Tissues - Epithelium, connective tissue including cartilage and bone, Muscle Tissues, nervous tissue : Peripheral Nerve, optic nerve, sensory ganglion, motor ganglion, skin.

Classification of Glands

Salivary glands (serous, mucous and mixed gland), Blood vessels, Lymphoid tissue Tooth, lip, tongue, hard palate, oesphagus, stomach, duodenum, ileum, colon, vermiform appendix Liver, Pancreas, Lung, Trachea, Epiglottis, Thyroid gland, para thyroid gland, supra renal gland and pituitary gland, kidney, ureter, Urninary bladder, Ovary and testis.

VIII. MEDICAL GENETICS :

Mitosis, meiosis, Chromoscomes, gene structure, Mendelism, modes of inheritance

RECOMMENDED BOOKS :

SNELL (Richrad S.) Clinical Anatomy for Medical students Ed. 5, Little Brown & Company Boston.

RJ. LAST's Anatomy : McMinn, 9th edition.

ROMNANES (G.J.) Cunningham Manual of Practical Anatomy : Head & Neck & Brain Ed. Vol. III, Oxford Medical Publication.

WHEATER, BURKITT & DANIELS, Functuional Histology, Ed. 2, Churchill Livingstone.

SADLER, LANGMAN'S, Medical Embryology, Ed. 6.

JAMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.

WILLIAMS, Gray's Anatomy, Ed. 38., Churchill Livingstone.

EMERY, Medical Genetics.

Text book of Human Histology with Colour Atlas - Inderbir Singh, 5th Edition

10. B.D. Chaurasiya's Hand Book of General Anatomy - B. D. Chaurasiya – 3rd Edition

11. Human Embryology - Inderbir Singh, C P Pal – 8th Edition

B D Chaurasiya's Human Anatomy Regional & Applied - B.D. Chaurasiya- 5th Edition Vol. I, II, III

Anand's Human Anatomy Complete book for Dental Students (A text book of human Anatomy) - Mahindra Kr. Anand - 1st Edition

Text book of Anatomy with Colour Atlas - Inderbir Singh 4th Edition, Vol. I, II, III

2. HUMAN PHYSIOLOGY

A) GOAL

The broad goal of the teaching undergraduate students in Human Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

OBJECTIVE :

a) KNOWLEDGE :

At the end of the course, the student will be able to :

1. Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.

Assess the relative contribution of each organ systems towards the maintenance of the milieu interior.

List the physiological principles underlying the pathogenesis and treatment of disease.

b) SKILLS :

At the end of the course, the student shall be above to :

Conduct experiments designed for the study of physiological phenomena.

Interpret experimental and investigative data.

Distinguish between normal and abnormal data derived as a result of tests which he / she has performed and observed in the laboratory.

c) INTEGRATION :

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

B) COURSE CONTENT THEORY

1. GENERAL PHYSIOLOGY

Homeostasis: Basic concept, Feed back mechanisms.

Structure of cell membrane, transport across cell membrane.

Membrane potential.

2. BLOOD

Composition & functions of blood

Specific gravity, packed cell volume, factors affecting & methods of determination.

Plasma proteins : Types concentration, functions & variations.

Erythrocyte - Morphology, functions & variations. Erythropoietin & factors affecting erythropoiesis.

ESR - Methods of estimation, factors affecting, variations & significance.

Haemoglobin - Normal concentration, method of determination & variation in concentration. Blood Indices - MCV, MCH,MCHC - definition, normal values, variation.

Anaemia - Definition. classification, life span of RBCs destruction of RBCs, formation & fate of bile pigments, Jaundice - types.

Leucocytes : classification, number percentage, distribution morphology, properties, functions & variation. role of lymphocytes in immunity, leucopoiesis life span & fate of leucocytes.

Thromobocytes - Morphology, number, variations, function & thrombopoiesis.

Haemostatsis - Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.

Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action. Bleeding disorders.

Blood groups : ABO & Rh system method of determination, importance, indications & dangers of blood transfusion, blood substitutes.

Blood volume : Normal values variations.

Body fluids : distribution of total body water, intracellular & extra cellular compartments, major anions & cations in intra and extra cellular fluid.

Tissue fluids & lymph : Formation of tissue fluid, composition, circulation and functions of lymph. Oedema - causes.

Functions of reticulo endotrelial system.

3. MUSCLE AND NERVE

classification of nerves, structure of skeletal muscle - Molecular mechanism of muscle contraction, neuromuscular transmission. Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.

4. DIGESTIVE SYSTEM :

Introduction to digestion : General structure of G.I. tract, Innervation

Salivary glands : Structure of salivary glands, composition, regulation of secretion and functions of saliva.

Stomach : composition and functions of gastric juice, mechanism and regulation of gastric secretion.

Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.

Liver : structure, composition of bile, functions of bile, regulation of

secretion Gall bladder : structure, functions

Small intestine - Composition, functions & Regulation of secretion of intestinal

juice. Large Intestine - Functions

Motor functions of GIT : Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

5. EXTRETORY SYSTEM :

Structure & functions of kidney, functional unit of kidney & functions of different

parts. Juxta glomerular apparatus, renal blood flow.

Formation of Urine : Glomerular filteration rate - definition, determination, normal values, factors influencing G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion Secretion of urea, hydrogen & other substances.

Mechanism of concentration & dilution of urine.

Role of kidney in the regulation of pH of the blood.

Micturition : anatomy & innervation of Urinary bladder, mechanism of miturition & abonrmalities

BODY TEMPERATURE & FUNCTIONS of SKIN

ENDOCRINOLOGY

General endocrinology - Enumeration of endocrine glands & hormones - General functions of endocrine system, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of harmonous.

Hormones of anterior pituitary & their actions, hypothamic regulation of anterior pituitary function. Disorders of secretion of anterior pituitary hormones.

Posterior pituitary : Functions, regulation & disorders of secretion.

Thyroid : Histology, synthesis, secretion & transport of hormones, actions of hormones regulation of secretion & disorders, Thyroid function tests.

Adrenal cortex & Medulla - synthesis, secretion, action, metabolism, regulation of secretion of hormones & disorders.

Other hormones - Angiotensin A.N.F.

8. REPRODUCTION

Sex differentiation, Physiological anatomy of male and female sex organs,

Female reproductive system: Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones tests for ovulation, fertilization, implantation, material changes during pregnancy, pregnancy tests & parturition.

Lactation, composition of milk factors controlling lactation, milk ejection, reflex,

Male reproductive system : spermatogenesis, semen and contraception.

9. CARDIO VASCULAR SYSTEM

Functional anatomy and innervation of heart properties of cardiac

muscle. Origin & propagation of cardiac impulse and heart block.

Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.

Cardiac cycle - Phases, Pressure changes in atria,, ventricles &

aorta. Volume changes in ventricles. Jugular venous pulse, arterial

pulse. Heart sounds : Mention of murmurs

Heart rate : Normal value, variation & regulation

Cardiac output : Definition, normal values, one method of determination, variation factors affecting heart rate and stroke volume.

Arterial blood pressure : Definition, normal values & variations, determinants, regulation & measurement of blood pressure.

coronary circulation.

Cardio vascular homeostasis - Exercise & Posture.

10. RESPIRATORY SYSTEM

Physiology of Respiration: External & internal respiration

Functional anatomy of respiratory passage & lungs.

Respiratory movements : Muscles of respiration, mechanism of inflation & deflation of lungs

Intra pleural & intra pulmonary pressures & their changes during the phases of respiration. Mechanics of breathing - surfactant, compliance & work of breathing.

Spirometry : Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.

Pulmonary ventilation - alveolar ventilation & dead space - ventilation

Composition of inspired air, alveolar air and expired air.

Exchange of gases : Diffusing capacity, factors affecting it

Transport of Oxygen & carbon dioxide in the blood

Regulation of respiration - Neural & chemical

Hypoxia cyanosis, dyspnoea, periodic breathing

Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM

Organization of central nervous system

Neuronal organization at spinal cord level

Synapse receptors, reflexes, sensations and tracts

Physiology of pain

Functions of cerebellum thalamus, hypothalamus and cerebral cortex

Formation and functions of CSF

Autonomic nervous system

12. SPECIAL SENSES

Fundamental knowledge of vision, hearing taste and smell

PRACTICALS

The following list of practical is minimum and essential. all the practical have been categorized as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorized as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURE

Enumeration of Red Blood Cells

Enumeration of White Blood Cells

Differential leucocyte counts

Determination of Haemoglobin

Determination of blood group

Determination of bleeding time and clotting time

Examination of pulse

Recording of blood pressure.

DEMONSTRSTION

Determination of packed cell volume and erythrocyte sedimentation rate

Determination of specific gravity of blood

Determination of erythrocyte fragility

Determination of vital capacity and timed vital capacity

Skeletal muscle experiments

study of laboratory appliance in experimental physiology. Frog's gastocneminus sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of work done.

Electrocardiography : Demonstration of recording of normal Electro cardiogram

Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS

Guyton ; Text book of Physiology, 9th edition

Ganong ; Review of medical Physiology, 19th edition

Vander, Human Physiology, 5th edition

Choudhari ; Concise Medical Physiology, 2nd edition

Chaterjee : Human Physiology, 10th edition

A.K. Jain : Human Physiology for BDS students, 1st edition.

BOOKS FOR REFERENCE

Berne & Levey ; Physiology, 2nd edition

Vest-Best & Taylor's Physiological basis of Medical Practise, 11th edition

EXPERIMENTAL PHYSIOLOGY ;

Rannade ; Practical Physiology, 4th edition

Ghai; a text book of practical physiology

Hutchison's ; Clinical Methods, 20th edition

BIOCHEMISTRY

AIMS AND SCOPE OF THE COURSE IN BIOCHEMISTRY

The major aim is to provide a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental / medical practice. The contents should be organized to build on the already existing information available to the students in the pre university stage and reorienting. A mere rehash should be avoided.

The chemistry portion should strive towards providing information on the functional groups, hydrophobic and hydrophilic moieties and weak valence forces that organize macromolecules. Details on structure need not be emphasized.

Discussion on metabolic processes should put emphasis on the overall change, interdependence and molecular turnover. While details of the steps may be given, the student should not be expected to memories them,. An introduction to biochemical genetics and molecular biology is a must but details should be avoided. The exposure to antivitamins, antimetabolites and enzyme inhibitors at this stage, will provide a basis for the future study of medical subjects. An overview of metabolic regulation is to be taught by covering hormonal action, second messengers and regulation of enzyme activities. Medical aspects of biochemistry should avoid describing innumerable functional tests, most of which are not in vogue. Cataloguing genetic disorders under each head of metabolism is unnecessary. A few examples which correlate genotype change to functional changes should be adequate.

At the end of the course of the students would be able to acquire a useful core of information which can be retained for a long time. Typical acid tests can be used to determine what is to be taught or what is to be learnt. A few examples are given below.

Need not know the structure of cholesterol. Should kbnow why it cannot be carried free in plasma

Mutarotation should not be taught. Student should know why amylase will not hydrolyse cellulose.

Need not know the details of alpha - helix and beta - pleats in proteins should know why haemoglobin is globular and keratin is fibrous.

Need not know mechanism of oxidative phosphorylation.

Should know more than 90% of ATP is formed by this process

5. Need not know details of the conversion of pepsinogen to pepsin

Should know hydrochloric acid cannot break a peptide bond at room

temperature. 6. Need not remember the steps of glycogenesis.

should know that excess intake of carbohudrate will not increase glycogen level in liver or muscle.

7. Need not know about urea or cretinine clearance tests.

Should know the basis of increase of urea and cretinine in blood in renal insufficiency.

8. Need not know the structure of insulin

should know why insulin level in circulation is normal in most cases of maturity onset diabetes.

9. Need not know the structural details of ATP.

Should know why about 10 g of ATP in the body at any given time meets all the energy needs. 10. Need not know the mechanism of action of prolyhydroxylase

should know why the gum bleeds in scurvy.

11. Need not know the structure of vitamin K.

Should know the basis of internal bleeding arising due to its deficiency.

12. Need not remember the structure of HMGCoA.

should know why it does not lead to increased cholesterol synthesis in starvaticn.

BIOCHEMISTRY & NUTRITION

1. CHEMISTRY OF BIOORGANIC MOLECULES

Carbohydrates : Definition, Biological importance and classification. Monosaccharides - Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structure of starch and glycogen.

Lipids : Definition, biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups. Cholesterol. Bile salts. Micelle. Bimolecular leaflet.

Proteins : Biological importance. Aminoacids : Classification. Introduction to peptides. Proteins : simpe and conjugated ; globular and fibrous. Charge properties. Buffer action. Introduction to protein conformation : Denaturation.

Nucleic acids : Building units, Nucleotides. Outline structure of DNA and RNA.

High energy compounds : ATP, Phosphorylamidines, Thiolesters, Enol phosphates.

2. MACRONUTERIENTS AND DIGESTION

Energy needs : Basal metabolic rate. dietary carbohydrates, fibres. Dietary lipids, essential fatty acids. Nitrogen balance. Essential amono acids. Protein quality and requirement (methods for evaluation of protein quality to be excluded). Protein calorie malnutrition. Balanced diet.

Enzymatic hydrolysis of dietary carbohydrates. Mechanism of uptake of monosaccharides.

Digestion and absorption of triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.

3. MICRONUTRIENTS :

Vitamins : Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water- soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation. Introduction to antivitamins and hypervitaminosis.

Minerals : Classification, daily requirement. Calcium and phosphate: sources, uptake, excretion, function, serum calcium regulation. Iron : Sources uptake and transport.

Heme and nonheme iron functions deficiency. Iodine; Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride : function, deficiency and excess indications of role of other minerals.

4. ENERGY METABOLISM

Overview : Outline of glycolysis pyruvate oxidation and citric acid cycle. Beta oxidation of fatty acids. Electron transport chain and oxidative phosphyorylation. Ketone body formation and utilization. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism. Protein utilization for energy. Glucogenic and ketogenic amino acids. Integration of metabolism.

5. SPECIAL ASPECTS OF METABOLISM

Importance of pentose phosphate pathway. Formation of glucuronic acid. Outlines of cholesterol synthesis and breakdown. Ammonia metabolism. Urea formation phosphocretine formation. Transmethylation. amines. Introduction to other functions of amino acids including one carbon transfer. Detoxication : Typical reactions. Examples of toxic compounds. Oxygen toxicity.

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS

Introduction to nucleotides formation and degradation. DNA as genetic material. Introduction to replication and transcription. Forms and function of RNA. Gnetic code and mutation. Outline of translation process. Antimetabolies and antibiotics interfering in replication. transcription and translation. Introduction to cancer, viruses and oncogenes.

7. ENZYME AND METABOLIC RELATION

Enzymes : definition, classification, specificity and active site. Cofactros. Effect of pH temperature and substrate concentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction / repression.

Overview of hormones, Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action steroid hormones, epinephrine, glucagons and insulin in brief. Acid base regulation. Electrolyte balance.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

Connective tissue : Collagen and elastin. Glycosaminoglycans. Bone structure. Structure of membranes. Membrane associated processes in brief. Exocytosis and endocytosis.

Introduction to cytoskeleton. Myofibril and muscle contraction in brief.

Hemoglobin : Functions. Introduction to heme synthesis and degradation. Plasma protein classification and separation. Functions of albumin. A brief account of immunoglobulins.

Plasma lipoproteins : Formation; function and turnover.

9. MEDICAL BIOCHEMISTRY

Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism : Biochemical evaluation. Hyperlipoproteinemias and atherosclerosis, Approaches to treatment. Jaundice : classification and evaluation. Liver function tests : Plasma protein pattern, serum enzymes level. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance evaluation. Gout Examples of genetic disorders including lysosomal storage disorders glycogen storage disorders, glucose 6 - phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). serum enzymes in diagnosis.

PRACTICAL : Contact hours 50

1. Quantitative analysis of carbohydrates	4
2. Color reactions of proteins and amino acids	4
3. Identification of nonprotein nitrogen substance	4
4. Normal constituents of urine	4
5. Abnormal constituents of urine	4
6. Analysis of saliva including amylase	2
7. Analysis of milk Quantitative estimations	2
8. Titrable acidity and ammonia in urine	2
9. Free and total acidity in gastric juice	2
10. Blood glucose estimation	2
11. Serum total protein estimation	2
12. Urine creatinine estimation Demonstration	2
13. Paper electrophoresis charts / clinical data evaluation	2
14. Glucose tolerance test profile	2

15. Serum lipid profiles 1
16. Profiles of hypothyrodisim and hyperthyrodisim 1
17. Profiles of hyper and hypoparathyrodism 1
18. Profiles of liver function 1
19. Urea, uric acid creatinine profile in kidney disorders 1
20. Blood gas profile in acidosis / alkalosis 1

RECOMMENDED BOOKS

"Essential of Biochemistry" as a Text Book for Ist year BDS Course – Pankaja Naik

Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman

Nutritional Biochemistry 1995, S. Ramakrishnan and S. V. Rao

Lecture notes in Biochemistry 1984, J. K. Kandlish

Reference Books :

Test book of Biochemistry with clinical correlations 1997, T. N. Devlin

Harpers Biochemistry, 1996., R. K. Murray et.al

Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C. Elliot.

DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

INTRODUCTION

Dental Anatomy including Embryology and Oral Histology - a composite of basic Dental Sciences and their clinical applications.

SKILLS

The student should acquire basic skills in :

Carving of crowns of permanent teeth in wax.

Microscopic study of Oral tissues.

Identification of Deciduous & Permanent teeth

Age estimation by patterns of teeth eruption from plaster casts of different age groups.

OBJECTIVES :

After a course on Dental Anatomy including Embryology and Oral Histology,

1. The student is expected to appreciate the normal development, morphology, structure and functions of oral tissues and variations in different pathological / non pathological states

The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.

3. The students must know the basic knowledge of various research methodologies.

I. TOOTH MORPHOLOGY

1. Introduction to tooth morphology :

- Human dentition, types of teeth & functions, Palmer s & Binomial notation systems, tooth surfaces, their junctions - line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrasures - clinical significance.

2. Morphology of permanent teeth :

- Description of individual teeth, alongwith their endodontic anatomy and including a note on their chronology of development differences between similar class of teeth and identification of individual teeth.
- Variations and Anomalies commonly seen in individual teeth

3. Morphology of Deciduous teeth :

- Generalized differences between Deciduous & Permanent teeth
- Description of individual deciduous teeth, including their chronology of development endodontic anatomy, differences between similar class of teeth & identification of individual teeth

4. Occlusion :

- Definition, factors influencing occlusion - basal bone, arch, individual teeth, external and internal forces and sequence of eruption.
- Inclination of individual teeth - compensatory curves.
- Centric relation and centric occlusion - protrusive, retrusive and lateral occlusion.
- Clinical significance of normal occlusion.
- Introduction to and classification of Malocclusion.

II. ORAL EMBRYOLOGY :

Brief review of development of face, jaws, lip, palate & tongue, with applied aspects.

Development of teeth :

- Epithelial mesenchymal interaction, detailed study of different stages of development of crown, root & supporting tissues of tooth & detailed study of formation of calcified tissues.
- Applied aspects of disorders in development of teeth.

3. Eruption of deciduous and permanent teeth.

- Mechanisms in tooth eruption, different theories & histology of eruption, formation of dentogingival junction, role of gubernacular cord in eruption of permanent teeth.
- Clinical or applied aspects of disorders of eruption.

4. Shedding of teeth.

- Factors & Mechanisms of shedding of deciduous teeth.
- Complications of shedding.

III ORAL HISTOLOGY

1. Detailed microscopic study of Enamel, Dentine, Cementum and Pulp tissue. Age changes and Applied aspects (clinical and forensic significance) of histological consideration Fluoride applications, transparent dentine; dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine ; Pulp calcifications & Hypercementosis.

2. Detailed microscopic study of Periodontal ligament and alveolar bone, age changes, histological changes in periodontal ligament and bone in normal and orthodontic tooth movement, applied aspects of alveolar bone resorption.

Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinization, clinical parts of gingiva, Dentogingval and Mucocutaneous junctions and lingual papillae. Age changes and clinical considerations.

Salivary Glands :

- Detailed microscopic study of acini and ductal system.
- Age changes and clinical considerations.

5. T.M. Joint :

- Review of basic anatomical aspects and microscopic study and clinical considerations.

6. Maxillary sinus :

- Microscopic study, anatomical variations, functions and clinical relevance of maxillary sinus in dental practice.

7. Processing of Hard and soft tissues for microscopic study :

- Ground sections, decalcified sections and routine staining procedures

8. Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY

1. Saliva :

- Composition of saliva - variations, formation of saliva and mechanisms of secretion, salivary reflexes, brief review of secretomotor pathway, functions, role of saliva in dental caries and applied aspects of hyper and hypo salivation.

2. Mastication :

- Masticatory force and its measurement - need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflexes and neural control of mastication.

3. Deglutition :

- Review of the steps in deglutition, swallowing in infants, neural control of deglutition and dysphagia.

4. Calcium Phosphorous and fluoride metabolism :

- Source, requirements, absorption, distribution, functions and excretion, clinical considerations, hypo & hypercalcemia & hyper & hypo phosphatemia & fluorosis.

5. Theories of Mineralization :

- Definition, mechanisms, theories & their drawbacks.
- Applied aspects of physiology of mineralization, pathological considerations - calculus formation.

6. Physiology of Taste :

- Innervations of taste buds and taste pathway, physiologic basis of taste sensation, age changes and applied aspects - taste disorders.

7. Physiology of speech

- Review of basic anatomy of larynx and vocal cords.
- Voice production, resonators, production of vowels and different consonants - Role of palate, teeth and tongue.
- Effects of dental prosthesis and appliances on speech and basic speech disorders.

RECOMMENDED TEXT BOOKS :

Orban.s Oral Histology & Embryology - S. N. Bhaskar.
Oral Development & Histology - James & Avery
Wheeler.s Dental Anatomy, Physiology & Occlusion - Major M, Ash
Dental Anatomy - its relevance to dentistry - Woelfel & Scheid
Applied Physiology of the mouth - Lavelle
Physiology & Biochemistry of the mouth - Jenkins

4. GENERAL PATHOLOGY

AIM :

At the end of the course the student should be competent to :

Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

OBJECTIVES :

Enabling the student

To demonstrate and apply basic facts, concepts and theories in the field of Pathology.

To recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes.

3. To integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of pathology.

To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.

To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE COUNTENT

A. General Pathology

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ntroduction to Pathology

Terminologies

The cell in health

The normal cell structure

The cellular functions

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tiology and Pathogenesis of Disease

Cell Injury

Types - congenital

Acquired

Mainly Acquired causes of disease

(Hypoxic injury, chemical injury, physical injury, immunological injury)

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egenerations

Amyloidosis

Fatty change

Cloudy swelling

Hyaline change, mucoid degernation

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ell death & Necrosis

Apoptasis

Def, causes, features and types of necrosis

Gangrene - Dry, wet, gas

Pathological Calcification

(Dystrophic and metastatic)

Inflammation

- Definition, causes types, and features Acute inflammation

a. The vascular response

The cellular response

Chemical Mediators

The inflammatory cells

Fate

Chronic inflammation

Granulomations inflammation

Healing

- Regeneration
- Repair

Mechanism

Healing by primary intention

Healing by secondary intention

Fracture healing

Factors influencing healing process

Complications

Tuberculosis

- Epidemiology
- Pathogenesis (Formation of tubercle)
- Pathological features of Primary and secondary TB - Complications and Fate

Syphilis

- Epidemiology
- Types and stages of syphilis
- Pathological features
- Diagnostic criterias
- Oral lesions

Typhoid

- Epidemiology
- Pathogenesis
- Pathological features
- Diagnostic crtiterias.

- Thrombosis
  - Definition, Pathophysiology
  - Formation, complications & Fate of a thrombus.
- Embolism
  - Definition
  - Types
  - Effects
- Ischaemia and infraction
  - Definition, etiology, types
  - Infraction of various organs.
- Derangements of body fluids
  - Oedema - Pathogenesis
    - Different types
- Disorders of circulation
  - Hyperaemia
  - Shock
- Nutritional Disorders
  - Common Vitamin Deficiencies
- Immunological mechanisms in disease
  - Humoral & cellular immunity
  - Hypersensitivity & autommunity
- AIDS and Hepatitis
- Hypertension
  - Definition, classification
  - Pathophysilogy
  - Effects in various organs.
- Diabetes Mellitus
  - Def, Classification, Pathogenesis, Pathology in different organs.l
- Adaptive disorders of growth
  - Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia
- General Aspects of neoplesia

Definition, terminology, classification

Differences between benign and malignant neoplasms

The neoplastic cell

Metastasis

Etiology and pathogenesis of neoplasia, Carcinogenesis

Tumour biology.

Oncogenes and anti oncogenes

Diagnosis

Precancerous lesions

j Common specific tumours, Sq papilloma & Ca, Basal cell Ca, Adenoma & Adenoca, Fibroma & Fibrosarcoma, Lipoma and

liposarcoma B. Systematic Pathology -

Anaemias

Iron Deficiency anaemia, Megaloblastic Anaemia

Leukaemias

Acute and chronic leukaemias, Diagnosis and clinical features

Diseases of Lymph nodes

Hodgkin s disease, Non Hodgkins lymphoma, Metastatic carcinoma

Diseases of Oral cavity

Lichen planus, stomatitis, Leukoplakia, Sq cell ca, Dental caries, Dentigerious cyst, Ameloblastoma

Disease of salivary glands

Normal structure, siaiadenitis, Tumours.

Common diseases of Bones

Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma,

Osteocalstoma, Giant cell Tumours, Ewing s sarcoma, fibrous dysplasia,

Aneurysmal bone cyst.

Diseases of Cardiovascular system

Cardiac failure

Congenital heart disease - ASD, VSD,

PDA Fallot s Tetrology

Infective Endocarditis

Atherosclerosis

Ischaemic heart Disease

Haemorrhagic Disorders

Coagulation cascade

Coagulation disorders

Platelet function

Platelet disorders

Practicals

Urine - Abnormal constitutients

Sugar, albumin, Ketone bodies

Urine - Abnormal constituents

Blood, bile salts, bile pigments

Haemoglobin (Hb) estimation

Total WBC count

Differential WBC count

Packed cell volume (PCV,) rythrocyte sedimentation Rate (ESR)

Bleeding time & Clotting time

Histopathology

Tissue Processing

Staining

Histopathology slides

Acute appendicitis, Granulation tissue, fatty liver.

Histopathology slides.

CVC lung, CVC liver, kidney amyloidosis

11. Histopathology slides

tuberculosis, Actionomycosis,

Rhinosporidiosis 12. Histopathology slides

Papilloma, Basal cell Ca, Sq cell

Ca 13. Histopathology slides

Osteosarcoma, osteoclastoma,

fibrosarcoma 14. Histopathology slides

Malignant melanoma, Ameloblastoma

Adenoma 15. Histopathology slides

Mixed parotid tumour, metastatic

carcinoma in lymph node

List of Textbooks

Robins - Pathologic Basis of Disease Cotran, Kumar, Robbins

Anderson.s Pathology Vol 1 & 2 Editors - Ivan Damjanov & James Linder

Wintrobe.s clinical Haematolog Lee, Bithell, forester, Athens, Lukens

MICROBIOLOGY

AIM:

To introduce the students to the exciting world of microbes. To make the students aware of various branches of microbiology, importance, significance and contribution of each branch to mankind and other fields of medicine. The objectives of teaching microbiology can be achieved by various teaching techniques such as :

Lecturers

Lecture Demonstrations

Practical exercises

Audio visual aids

Small group discussions with regular feed back from the students.

OBJECTIVE :

A. KNOWLEDGE AND UNDERSTANDING

At the end of the Microbiology course the student is expected to:

Understand the basics of various branches of microbiology and able to apply the knowledge relevantly

Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.

Understand and practice various methods of sterilization and disinfection in dental clinics.

Have a sound understanding of various infectious diseases and lesions in the Oral Cavity.

A. SKILLS

Student should have acquired the skill to diagnose, differentiate various oral lesions.

Should be above to select, collect and transport clinical specimens to the laboratory.

Should be able to carry out proper aseptic procedures in the dental clinic

A brief syllabus of Microbiology is given as follows ;

A. GENERAL MICROBIOLOGY

Histology, Introduction, Scope, Aims and Objectives

Morphology and Physiology of Bacteria

Detail account of Sterilization and Disinfection

Brief account of Culture media and Culture techniques

Basic knowledge of selection, collection, transport, processing of clinical specimens and identification of bacteria.

6. Bacterial Genetics and Drug Resistance in bacteria

B. IMMUNOLOGY

Infection - Definition, Classification, Source, mode of transmission and types of infectious disease.

Immunity

Structure and functions of Immune system

The complement system

Antigen

Immunoglobulins : Antibodies - General structure and the role played in defense mechanism of the body.

Immune response

Antigen - Antibody reactions - with reference to clinical utility

Immuno deficiency disorders - a brief knowledge of various types of immuno deficiency disorders - A sound knowledge of immuno deficiency disorders relevant to dentistry.

Hypersensitivity reactions

Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structure

Immunology of Transplantation and Malignancy

Immunehaematology

C. SYSTEMATIC BACTERIOLOGY :

Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus - brief account of each coccus - detailed account of mode of spread, laboratory diagnosis, chemo therapy and prevention - Detailed account of cariogenic streptococci

Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis , Chemotherapy and Active immunization.

Mycobacteria - Tuberculosis and Leprosy

Clostridium - Gas gangrene, food poisoning and tetanus.

Non - sporing Anaerobes - in, brief about classification and morphology, in detail about dental pathogens - mechanism of disease production and prevention.

Spirochaetes - Treponema Pallidum - detailed account of Oral Lesions of syphilis,

Borrelia vincentii

7. Actinomycetes.

D. VIROLOGY

Introduction

General properties, cultivation, host - virus interaction with special reference to interferon 3, Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general

4. A few viruses of relevance to dentistry

- Herpes Virus
- Hepatitis B Virus - brief about other types
- Human Immunodeficiency virus (HIV)
- Mumps Virus
- Brief - Measles and Rubella Virus

5. Bacteriophage - Structure and Significance

E. MYCOLOGY

Brief Introduction

candidosis - in detail

Briefly on oral lesions of systemic mycoses.

F. PARASITOLOGY:

Brief introduction - protozoans and helminths

Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

RECOMMENDED BOOKS FOR REGULAR READING

Text book of Microbilogy - A. Ananthanarayan & C.K. Jayaram Paniker

Medical Microbiology - David Greenwood etal

BOOKS FOR FURTHER READING / REFERENCE

Microbiology - Prescott, etal

Microbiology - Bernard D. Davis, etal

Clinical & Pathogenic Microbiology - Barbara J. Howard, etal

Mechanisms of Microbial diseases - Moselio Schaechter, etal

Immunology an Introduction - Tizard

Immunology 3rd edition - Evan Roitt, etal

5.GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

GOAL :

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and Profession.

OBJECTIVES :

At the end of the course the student shall be able to :

Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular

List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason.

Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy safety for individual and mass therapy needs.

Indicate special care in prescribing, common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients.

Integrate the rational drug therapy in clinical pharmacology

Indicate the principles underlying the concepts of "Essential Drugs".

SKILLS :

At the end of the course the student shall be able to:

Prescribe drugs for common dental and medical ailments

To appreciate adverse reactions and drug interactions of commonly used drugs.

Observe experiments designed for study of effects of drugs

Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

INTEGRATION : practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments.

LECTURE:

GERNERAL PHARMACOLOGY :

General principles of pharmacology ; sources and nature of drugs dosage forms; prescription writing; pharmacokinetics (absorption, distribution, metabolism and excretion of drugs), mode of action of drugs, combined effect of drugs, receptor mechanism of drug action, factors modifying drug response, adverse drug reactions; drug interactions, Implications of General Principles in clinical dentistry.

CNS drugs; General anaesthetics, Hypnotics, analgescis psychotropic drugs, anti-epileptics, muscle relaxants, local anaesthetics, implications of these drugs in clinical dentistry.

Autonomic drugs ; sympathomimetics, antiadrenergic drugs parasympothomimetics and parasympatholytics, Implications of Autonomic drugs in clinical dentistry.

Cardiovascular drugs ; cardiac stimulants ; antihypertensive drugs, vasopressor agents, treatment of shock, Antianginal agents and diuretics, Implications of these drugs in clinical dentistry.

Autocoids :

Histamine, antihistamines, prostaglandins, leukotriens and bronchodilators, Implications of Autocoids in Clinical dentistry.

Drugs acting on blood : coagulants and anticoagulants, hematinics, Implications of these drugs in clinical dentistry.

G.I.T. Drugs, Purgatives, anti-diarrhoeal, antacids, anti-emetics, implications of these drugs in clinical dentistry.

Endocrines; Emphasis on treatment of diabetes and glucocorticoids, thyroid and antithyroid agents, drugs affecting calcium balance and anabolic steroids, Implications of these drugs in clinical dentistry.

Chemotherapy : Antimicrobial agents (against bacteria, anaerobic infections, fungi, virus and broad spectrum). Infection management in dentistry. Pharmacotherapy of Tuberculosis, leprosy and chemotherapy of malignancy in general. Implications of chemotherapy in clinical dentistry.

Vitamins : Water soluble vitamins, Vit. D, Vit.K. and Vit E, Implications of Vitamins in clinical dentistry.

Pharmacotherapy of emergencies in dental office and emergency drugs tray Implications of Pharmacotherapy in clinical dentistry.

Chealating agents - BAL, EDTA and desferrioxamine,

II DENTAL PHARMACOLOGY

Anti - septics, astringents, obtundents, mummifying agents, bleaching agents, styptics, disclosing agents, dentifrices, mouth washes, caries and fluorides.

Pharmacotherapy of common oral conditions in dentistry

Practicals and Demonstrations:

To familiarize the student with the methodology: prescription writing and dispensing. Rationale of drug combinations of marked drugs.

LIST OF BOOKS RECOMMENDED FOR READING AND REFERENCE

R.S. Satoskar, Kale Bhandarkars Pharmacology and Pharmacolherapentics, 10th Edition, Bombay Popular Prakashan 1991.

Bertam G Katzung, Basic and Clinical pharmacology 6th ed. Appleton & Lange 1997.

Lauerence D.R. Clinical Pharmacology 8th ed. Churchill Livingstone 1997.

Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmacotherapeutics part I & part ii, 13th Popular prakashan Bombay 1993.

Tripathi K.D. Essentials of Medical Pharmacology 4th ed Jaypee Brothers 1999.

6. DENTAL MATERIALS

The science of Dental Material has undergone tremendous changes over the years. Continued research has led to new material systems and changing concepts in the dental field. Interlinked with various specialized branched of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as a basic sciences in itself with its own values and principles.

INTRODUCTION

AIMS :

Aim of the course is to present basic chemical and physical properties of Dental materials as they are related to its manipulation to give a sound educational background so that the practice of the dentistry emerged from art to empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufactures.

OBJECTIVES :

To understand the evolution and development of science of dental material

To explain purpose of course in dental materials to personnel concerned with the profession of the dentistry. Knowledge of physical and chemical properties. Knowledge of biomechanical requirements of particular restorative procedure. An intelligent compromise of the conflicting as well as co-ordinating factors into the desired Ernest. Laying down standards or specifications of various materials to guide to manufactures as well as to help professionals. Search for newer and better materials which may answer our requirements with greater satisfaction. To understand and evaluate the claims made by manufactures of dental materials.

NEED FOR THE COURSE

The profession has to rise from an art ot a science, the need for the dentist to possess adequate knowledge of materials to exercises his best through knowledge of properties of different of types of materials. The growing concern of health hazards due to mercury toxicity,

inhalation of certain vapour or dust materials, irritations and allergic reaction to skin due to contact of materials. Materials causing irritation of oral tissues, pH of restorative materials causing inflammation and necrosis of pulp which is a cause for the dentist to posses wider knowledge of physical, chemical and biological properties of materials being used. For the protection for the patient and his own protection certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically accept.

SCOPE

The dental materials is employed in mechanical procedures including restorative dentistry such as Prosthodontics, endodontics, periodontal, Orthodontics and restorative materials. There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry.

Branches such as minor surgery and periodontics require less use of materials but the physical and chemical characters of materials are important in these field.

The toxic and tissue reaction of dental materials and their durability in the oral cavity where the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acid an alkalinity of fluids shown pH varies from 4 to 8.5. The load on 1 sq. mm of tooth or restorative materials can reach to a level as high a many kilograms. Thus the biological properties of dental materials cannot be separated from their physical and chemical properties.

2) STRUCTURE OF MATTER AND PRINCIPLES OF ADHESION

Change of state, inter atomic primary bonds, inter atomic secondary bonds, inter atomic bond distance and bonding energy, thermal energy, crystalline structure, non crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.

3) IMPORTANT PHYSICAL PROPERTIES ALLICABLE TO DENTAL MATERIALS

Physical properties are based on laws of mechnics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena, Hue, value chroma and translucency physical proerties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity and coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain proportional limit, elastic limit yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility and malleability, hardness, abrasion resistance, relaxation, rheology, Thixotropic, creep, static creep, dynamic creep, flow, color, three dimensional colour - hue values, chroma, Munsell system, metamersim, fluorescence, physical properties of tooth stress during mastication.

4) BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of material from perspective of biological compatibility. eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally be inhaled or ingested during handling. Hazards associated with materials : pH effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, Thermal changes, Galvanism, toxic effect of materials. Biological evaluation for systematic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.

5) GYPSUM & GYPSUM PRODUCTS

Gypsum - its origin chemical formula, products manufactured from gypsum.

Dental plaster, Dental stone, Die stone, high strength, high expansion stone.

Application and manufacturing procedure of each, macroscopic and microscopic structure of each. Supplied as and commercial names.

Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.

Setting time : working time and setting time, Measurement of setting time and factors controlling setting time.

Setting expansion, Hygroscopic setting expansion - factors affecting each

Strength : wet strength, dry strength, factors affecting strength, tensile

strength Slurry - need and use.

Care of cast.

ADA classification of gypsum products

Description of impression plaster and dental investment

Manipulation including recent methods or advanced

methods. Disinfection : infection control, liquids, sprays,

radiation Method of use of disinfectants

Storage of material - shelf life

6) IMPRESSION MATERIALS USED IN DENTISTRY

Impression plaster, Impression compound, Zinc oxide eugenol impression paste and bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether, visible light cure polyether urethane dimethacrylate, Historical background and development of each impression material,

Definition of impression, Purpose of making impression, Ideal properties required and application of material, classification as per ADA specification, general & individual impression material.

Application and their uses in different disciplines, Marketed as and their commercial names,

Mode of supply and mode of application bulk / wash impression. Composition, chemistry of setting, Control of setting time, Type of impression trays required, Adhesion to tray manipulation, instruments and equipments required. Techniques of impression, storage of impression, (Compatibility with cast and die material). Any recent advancements in material and mixing devices. Study of properties : Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating Biological properties : tissue reaction, Shelf life & storage of material, Infection control-disinfection, Advantages & disadvantages of each material.

7) SYNTHETIC RESINS USED IN DENTISTRY

Historical, background and development of material, Denture base materials and their classification and requirement

Classification of resins

Dental resins - requirements of dental resins, applications, polymerization, polymerization mechanism stages in addition polymerization, inhibition of polymerisation, co polymerization, molecular weight, crosslinking, plastixizers, Physical properties of polymers, polymer structures types of resins.

ACRYLIC RESINS :

Mole of polymerization : Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerization reaction of each. Technical considerations : Methods of manipulation for each type of resin. Physical properties of denture base resin.

Miscellaneous resins & techniques. Repair resins, Relining and rebasing. Short term and long - term soft - liners, temporary crown and bridge resins, Resin impression trays, Tray materials, Resin teeth materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.

RESTORATIVE RESINS

Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation mechanisms : Chemically activated. Light activated, Dual cure : Degree of conversion, Polymerisation shrinkage

Classification of Composites : Application, co,position and proerties of each Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility - microleakage, pulpal reaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically

activated, light activated, dual cure Polymerisation, finishing and polishing of restoration,

Repoair of composites Direct bonding Bonding: Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure. Extended application for composites : Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlays system - Indirect & direct, Core build up, Orthodontics applications.

8) METAL AND ALLOYS :

Structure and behaviour of metals, Solidification of metals, mechanism of crystallization amorphous & crystalline. Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams : Electric alloys, Physical properties, Peritectic alloys, Solid state reaction other binary systems : Metallography & Heat treatment. Tarnish and corrosion. Definition : cause of corrosion, protection agaist corrosion., Corrosion of dental restorations, clinical significance of galvanic current. Dental Amalgam.

History :

Definition of dental amalgam, application, Alloy classification, manufacture of alloy

powder composition - available as.

Amalgamation : setting reaction & resulting structure, properties, Microleakage

Dimensional stability, Strength, Creep, Clinical performance

Manipulation : Selection of alloy proportioning, mechanism of trituration, condensation, carving & finishing. Effect of dimensional changes, Marginal deterioration., Repair of amalgam, mercury toxicity, mercury hygiene.

DIRECT FILLING GOLD:

Properties of pure gold, mode of adhension of gold for restoration forms of direct filling gold for using as restorative material

Classification : gold Foil, electrolytic precipitate, powdered gold.

Manipulation : Removal of surface impurities and compaction of direct filling

gold. Physical properties of compacted gold, Clinical performance.

DENTAL CASTING ALLOYS :

Historical background, desirable properties of casting alloys.

Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process CAD-CAM process for metal & ceramic inlays - without need of impression of teeth or casting procedure, pure titanium, most bio compatible metal which are difficult to cast can be made into crowns with the aid of CAD -CAM technology. Another method of making classification of casting alloys : By function & description.

Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB)

Alloys for crown & bridge, metal seramic & removable partial denture. Composition, function constituents and application, each alloy both noble and base metal. Properties of alloys: Melting range; mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion.

Casting shrinkage and compensation of casting shrinkage. Biocompatibility - Handling hazards & precautions of base metal alloys; casting investments used. Heat treatment : Softening & hardening heat treatment. Recycling of metals, Titanium alloys & their application, properties & advantages. Technical considerations in casting. Heat source, furnaces.

9) DENTAL WAXES INCLUDING INLAY CASTING WAX

Introduction and importance of waxes : Sources of natural waxes and their chemical nature.

Classification of Waxes :

Properties : melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax : Inlay wax : Mode of supply : Classification & composition, Ideal requirements : properties of inlay wax : Flow, thermal properties Wax distoration & its causes.

Manipulation of inlay wax : instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled wax baths.

Other waxes : Applications, mode of supply & properties.

Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax,

Impression wax for corrective impressions, Bite registration wax.

10) DENTAL CASTING INVESTMENTS

Definition, requirements, classification

Gypsum bonded - classification, Phosphate bonded, silica bonded

Mode of Supply : Composition, application, setting mechanism, setting time & factors controlling.

Expansions : setting expansion, Hygroscopic Setting expansion, & thermal expansion : factors affecting. Properties : Strength porosity, and fineness & storage. Technical consideration :

For casting procedure Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defect in casting.

11) SOLDERING, BRAZING AND WELDING

Need of joining dental appliances, Terms & Definition

Solders : Definition, ideal requirement types of solders - Soft & hard and their fusion temperature, application. Mode of supply of solders, composition and selection, properties.

Tarnish & corrosion resistance mechanical properties, microstructure of soldered joint. Fluxes & Anti fluxed : Definition, function, Types, commonly used fluxes & their selection Technique of soldering & Brazing : Free hand soldering and investment, steps and procedure. Welding : Definition, application, requirements, procedure, weld decay - causes and how to avoid it. Laser welding.

WROUGHT BASE METAL ALLOYS

Applications and different alloys used mainly for orthodontics purpose

Stainless steel

Cobalt chromium nickel

Nickel titanium

Beta titanium

Properties required for orthodontic wires, working range, springiness, stiffness, resilence, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility

Stainless steels : Description, type, composition & properties of each type. Sensitisation & stabilization, Mechanical properties - strength, tensile, yield strength, KHN. Braided & twisted wires their need, Solders for stainless steel, Fluxes, welding

1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, Physical properties

Nickel - Titanium alloys, shape, memory & super elastic

Titanium alloys, application, composition, properties, welding, Corrosion resistance.

12) DENTAL CEMENTS

Definition & Ideal requirements:

Cement : Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionormer, zinc oxide eugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate, Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta Percha.

Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhension, biomechanics of caries inhibition.

Agents for pulpal protection., Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

13) DENTAL CERAMICS

Historical background & General applications.

Dental ceramic : definition, classification, application, mode of supply, manufacturing procedure, methods of strengthening. Properties of fused ceramic : Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, esthetic properties, biocompatability, technical considerations.

Metal Ceramic (PFM) : Alloys - types and composition of alloys. Ceramic - Type and composition.

Metal Ceramic Bond : Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restotations. Recent advances - all porcelain restorations, Manganese core, injection moulded castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays and CAD - CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

14) ABRASION & POLISHING AGENTS

Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives : Finishing, polishing & cleaning. Types of abrasives : Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, Tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide.

ABRASIVE ACTION :

Desirable characteristics of an abrasive, Rate of abrasion, size of particle, pressure and speed Grading of abrasive & polishing agents. Binder, polishing materials & procedures used. Technical consideration - Material and procedure used for abrasion and polishin Electrolytic polishing and burnishing

15) DIE AND COUNTER DIE MATERIALS INCLUDING ELECROFORMING AND ELECTROPOLISHING

types - Gypsum products, Electroforming, Epoxy resin, amalgam

DENTAL IMPLANTS : Evolution of dental implants, types and materials

MECHANICS OF CUTTING : Burns and points

At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use.

RECOMMENDED BOOKS

Philips Science of Dental Materials : 10th edn. - Kenneth J. Anusavice

Restorative Dental Materials - 10 edn. Robert G. Craig

Notes on Dental Materials - E.C. combe

PRE CLINICAL CONSERVATIVE DENTISTRY LABORATORY EXERCISES.

Identification and study of handcutting instrument chisles, gingival margin trimmers, excavators and hatchet.

Identification and use of rotary cutting instruments in contra angle hand pieces burs (Micromotor)

Preparation class I and extended class I and class II and MOD s and class V amounting to 10 exercises in plaster models.

4. 10 exercises in mounted extracted teeth of following class I, 4 in number class I extended cavities 2, class II 4 in number and Class V 2 in number. Cavity preparation base application matrix and wedge placement restoration with amalgam.

Exercises on phantom head models which included cavity preparation base and varnish application matrix and wedge placement followed by amalgam restoration.

Class I	5
Class I with extension	2
Class II	10
Class H mods	2
Class V and III forglass ionmers	4
Class V for amalgam	2

Polishing of above restorations

Demonstration of class III and class V cavity preparation. For composites on extracted tooth completing the restoration.

Polishing and finishing of the restoration of composites.

Identification and manipulation of varnish bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers, Zinc Oxide, Euginol cements.

Identification and manipulation of various matrics, tooth separators and matrials like composites and modified glassionomer cements.

Cast Restoration

Preparation of Class II inlay cavity

Fabrication of wax pattern

sprue for inner attachment investing

Investing of wax pattern

Finishing and cementing of class II inlay in extracted tooth

Endodontics

Identification of basic endodontics instruments

Cornal access cavity preparation on extracted. Upper central incisiors.

Determination of working length

Biomechanical Preparation of root canal space of central incisor

Obfuration of root canal spaces. Absens of cornal access cavity

Closure of acess cavity

8 ORAL PATHOLOGY & ORAL MICROBIOLOGY

OBJECTIVES :

At the end of Oral pathology and Oral Microbiology course, the student should be able to comprehend -

The different types of pathological processes, that involve the oral cavity.

The manifestation of common diseases, their diagnosis and correlation with clinical pathological processes.

An understanding of the oral manifestations of systemic disease should help in correlating with the systemic physical signs and laboratory findings.

The student should understand the underlying biological principles governing treatment of oral disease.

The principles of certain basic aspects of Forensic Odontology.

SKILLS:

Microscopic study of common lesions affecting oral tissues through mocroscopic slides & projection slides.

Study of the disease process by surgical specimen

Study of teeth anomalies / polymorphisms through tooth specimens & plaster casts.

Microscopic study of plaque pathogens.

Study of haematological preparations (blood films) of anaemias & leukemias.

Basic exercises in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

INTRODUCTION:

- A birds eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systemic disease to be brought out. Interrelationship between General Medicine & General Surgery & Oral pathology to be emphasized.

Developmental disturbances of teeth, Jaws and soft tissues of oral & paraoral region :

- Introduction to developmental disturbances - Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.

- Developmental disturbances of teeth - Etiopathogenesis, clinical features, radiological features & histopathological features as appropriate.
  The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies to be emphasized
- Forensic Odontology
- Developmental disturbances of jaws - size & shape of the jaws.
- Developmental disturbances of oral & paraoral soft tissues - lip & palate - clefts, tongue, gingiva, mouth, salivary glands & face.

Dental caries

- Etiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequelae.

Pulp & Periapical Pathology & Osteomyelitis

- Etiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & perapical lesions osteomyelitis.
- Sequelae of periapical abscess - summary of space infections, systemic complications & significance.

Periodontal Diseases :

- Etiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropritate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.

Microbial infections of oral soft tissues :

- Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathology and laboratory diagnosis of common bacterial, viral & fungal infections namely :-
  Bacterial : Tuberculosis, Syphilis, ANUG & its complications - Cancrum Oris.
  Viral : Herpes Simplex, Varicella zoster, Measles, Mumps & HIV
  infection. Fungal : Candidal infection, Apthous Ulcers.

Common non - inflammatory diseases involving the jaws :

- Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of : Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta Paget s disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan s syndrome & down s syndrome.

Diseases of TM joint :

- Ankylosis, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction syndrome.

Cysts of the Oral & Paraoral region :

- Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.

Tumours of the Oral Cavity

- Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. Etiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :

Odontogenic - all lesions.

Non - odontogenic

Benigh Epithelial : Papilloma, Keratoacanthoma & Naevi.

Benign Mesenchymal - Fibroma, Aggressive fibrous lesions, Lipoma Haemangioma, Lymphangioma Neurofibroma Schwannoma, Chondroma, Osteoma & Tori

- Malignant Epithelial - Basal Cell Carcinoma, Verrucous Carcinoma, Squamous Cell carcinoma & Malignant Melanoma.

- Malignant Mesenchymal- Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma Kaposi s sarcoma, Lymphomas, Ewing s sarcoma & Other Reticuloendothelial tumours.

c) Salivary

- Benign Epithelial neoplasms - Pleomorphic Adenoma, Warthin s tumour, & Oncocytoma

- Malignant Epithelial neoplasms - Adenoid Cystic Carcinoma Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.

d) Tumours of Disputed Origin - e) Metastatic Congenital Epulis & Granular Cell Myoblastoma. Tumors metastasizing to & from oral cavity & the routes of metastasis.

Traumatic, Reactive & Regressive lesions Oral Cavity :

- Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.
- Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, pulp calcifications & Resorption of teeth.

- Radiation effects of oral cavity, summary of physical & Chemical injuries including allergic reaction of the oral cavity.
- Healing or Oral wounds & complications - Dry socket.

Non neoplastic Salivary Gland Diseases :

- Sialolithiasis, Sialosis, sialadenitis, Xerostomia & ptyalism.

Systemic Diseases involving Oral Cavity ;

- Brief review & Oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of Oral cavity.

Mucocutaneous Lesions :

- Etiopathogenesis, clinical features & histopathology of the following common lesions. Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & white sponge nevus.

Diseases of the Nerves :

- Facial neuralgias - Trigeminal & Glossopharyngeal. VII nerve paralysis,
- causalgia Psychogenic facial pain & Burning mouth syndrome

Pigmentation of Oral & Paraoral region & Discolouration of teeth :

- Causes & clinical manifestations

Disease of Maxillary Sinus :

- Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum

a) ORAL PRECANCER - CANCER ; Epidemiology, aetiology, clinical and histopatholotgical features, TNM classification. Recent advances in dagnosis, management and prevention.

b) Biopsy : Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral disease.

Principles of Basic forensic Odontology (Pre-clinical Forensic Odontology):

- Introduction, definition, aims & scope.
- Sex and ethnic (racial) differences in tooth morphology and histological age estimation
- Determination of sex & blood groups from buccal mucosa / saliva.
- Dental DNA methods
- Bite marks, rugae patterns & lip prints. Dental
- importance of poisons and corrosives,
- Overview of forensic medicine and toxicology

RECOMMENDED BOOKS

1. A Text Book of Oral Pathology - shafer, Hine & Levy
2. Oral Pathology - Clinical Pathologic correlations - Regezi & Sciubba
3. Oral Pathology - Soames & southam
4. Oral Pathology in the Tropics - Prabhu, Wilson, Johnson & Daftary

GENERAL MEDICINE

GUIDELINES :

Special emphasis should be given throughout on the importance of various disease as applicable to dentistry.

Special precautions / contraindication of anaesthesia and various dental procedures in different systemic diseases.

Oral manifestations of systemic diseases.

Medical emergencies in dental practice.

A dental student should be taught in such a manner he / she is able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body - disease of the heart, lungs, kidneys, blood etc. He should be capable of handling medical emergencies encountered in dental practice.

THEORY SYLLABUS

CORE TOPICS (Must Know)	COLLATERAL TOPICS (Desirable to know)
1. Aims of medicine Definition of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis	
2. Infections Enteric fever, AIDS, herpes simplex, herpes zoster, syphilis diphtheria	Infectious mononucleosis mumps, measles, rubella, malaria.
3. G.I.T. Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.	Diarrhea Dysentery Amoebiasis Malabsorhtion
4. CVS Acute rheumatic fever rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.	
5. RS Pneumonia, COPD, Pulmonary TB, Bronchial Asthma	Lung Abscess Pleural effusion Pneumothorax Bronchiectasis Lung cancers
6. Hematology Anemias, bleeding & clotting, disorders, leukemias lymphomas, agranulocytosis, splenomegaly, oral manifestations of hematologic disorders,	

generalized. Lymphadenopathy	
7. Renal system Acute nephritis Nephrotic syndrome	Renal failure
8. Nutrition Avitaminosis	Balanced diet PEM Avitaminosis
9. CNS Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine.	- Meningitis - Examination of comatose patient - Examination of cranial nerves
10. Endocrines Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.	Addison s disease, Cushing s syndrome
11. Critical care Syncope, cardiac arrest, CPR, Shock	Ac LVF ARDS

CLINICAL TRAINING :

The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, oral cavity) and be able to examine CVS, RS and abdomen and facial nerve.

10. GENERAL SURGERY

AIMS :

To acquaint the student with various diseases, which may require surgical expertise and to train the student to analyze the history and be able to do a through physical examination of the patient. The diseases as related to head and neck region are to be given due importance, at the same time other relevant surgical problems are also to be addressed. At the end of one year of study the student should have a good theoretical knowledge of various ailments, and be practically trained to differentiate benign and malignant diseases and be able to decided which patient requires further evaluation.

HISTORY OF SURGERY

The development of surgery as a speciality over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialities in the practice of modern surgery.

GENERAL PRINCIPLES OF SURGERY

Introduction to various aspects of surgical principles as related to orodental diseases.

Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.

WOUND

Their classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.

INFLAMMATION

Of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.

INFECTIONS :

Acute and chronic abscess skin infections, cellulites, carbuncle and erysepelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincents angina, cancrum oris, Pyaemia, toxaemia and septicaemia.

TRANSMISSABLE VIRAL INFECTIONS :

HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.

SHOCK AND HAEMORRHAGE :

Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage - different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complications of blood and their products. Hemophilias, their transmission, clinical features and management especially in relation to minor dental procedures.

TUMOURS, ULCERS, CYSTS, SINUS AND FISTULAE :

Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, sinus and fistulae.

DISEASES OF LYMPHATIC SYSTEM:

Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.

DISEASES OF THE ORAL CAVITY

Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.

DISEASES OF LARYNX, NASOPHARYNX:

Infections and tumours affecting these sites. Indications, procedure and complications of tracheostmy.

NERVOUS SYSTEM :

Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment.

Detailed description of afflictions of facial nerve and its management. Trigeminal neuralgia, its presentation and treatment.

FRACTURES :

General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.

PRINCIPLES OF OPERATIVE SURGERY:

Principles as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilization, principles of anesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

ANOMOLIES OF DEVELOPMENT OF FACE :

Surgical anatomy and development of face. Cleft lip and cleft palate - principles of management.

DISEASES OF THYROID AND PARATHYROID :

Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid - classification, clinical features and management.

SWELLING OF THE JAW :

Differential diagnosis and management of different types of swellings of the jaw.

BIOPSY :

Different types of biopsies routinely used in surgical practice.

Skills to be developed by the end of teaching is to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy etc.

11. CONSERVATIVE DENTISTRY AND ENDODONTICS :

OBJECTIVES :

Knowledge and understanding

Skills and

Attitudes

A. Knowledge and understanding :

The graduate should acquire the following knowledge during the period of training.

To diagnose and treat simple restorative work for teeth.

To gain knowledge about aesthetic restorative material and to translate the same to patients needs.

To gain the knowledge about endodontic treatment on the basis of scientific foundations.

To carry out simple endodontic treatment.

To carry out simple luexation of tooth and its treatment and to provide emergency endodontic treatment.

SKILLS :

He should attain following skills necessary for practice of dentistry.

To use medium and high speed hand pieces to carry out restorative work.

Poses the skills to use and familiarize endodontics instruments and materials needed for carrying out simple endodontic treatment.

To achieve the skills to translate patients esthetic needs along with function.

ATTITUDES :

Maintain a high standard of professional ethics and conduct and apply theses in all aspects of professional life.

Willingness to participate in CDE programme to update the knowledge and professional skill from time to time.

To help and participate in the implementation of the national oral health policy.

He should be able to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene should be emphasise which will help to maintain the restorative work and prevent future damage.

INTRODUCTION :

Definition aims objectives of Conservative Dentistry scope and future of Conservative Dentistry.

Nomenclature of Dentition :

Tooth numbering systems A.D.A. Zsigmondy palmer and F.D.I. systems.

Principles of Cavity Preparation :

Steps and nomenclature of cavity preparation classification of cavities, nomenclature of floors angles of cavities.

Dental caries :

Aetiology classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries.

Treatment Planning For Operative Dentistry :

Detailed clinical examination, radiographic examination. tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet.

Gnathological Concepts of Restoration.

Physiology of occlusion, normal occlusion, Ideal occlusion, mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.

Aramamentarium For Cavity Preparation :

General classification of operative instruments, Hand cutting instruments design formula and sharpening of instruments. Rotary cutting instruments dental bur, mechanism of cutting, evaluation of hand piece and speed current concepts of rotary cutting procedures. Sterilization and maintenance of instruments. Basic instrument tray set up.

Control of Operating Filed

Light source sterilization field of operation control of moisture, rubber dam in detail, cotton rolls and anti sialogagues.

Amalgam Restoration :

Indication contraindication, physical and mechanical properties, clinical behaviour, cavity preparation for Class I, II, V and III. Step wise procedure for cavity preparation and restoration. Failure of amalgam restoration.

Pulp protection :

Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass inomer cements.

Anterior Restorations :

Selection of cases, selection of material, step wise procedures for using restorations, silicate (theory only) glass inomers, composites, including sand witch restorations and bevels of the same with a note on status of the dentine bonding agents.

Direct filling Gold restoration :

Types of direct filling gold indications and limitations of cohesive gold. Annealing of gold foil cavity preparation and condensation of gold foils.

Preventive Measures In Restorative Practice :

Plaque Control, Pitand fissure sealants dietary measures restorative procedure and periodontal health. Contact and contour of teeth and restorations matrices tooth separation and wedges.

Temporisation or Interim Restoration.

Pin Amalgam Restoration Indication Contra Indication :

Advantages disadvantages of each types of pin methods of placement use of auto matrix. Failure of pin amalgam restoration.

Management of Deep Carious Lesions Indirect And Direct Pulp Capping.

Non carious destructions Tooth Structures Diagnosis and Clinical Management.

Hyper Sensitive Dentine And Its Management.

Cast Restorations

Indications, contra indications, advantages and disadvantages and materials used for same class II and class I cavity preparation for inlays fabrication of wax pattern spurring inverting and casting procedures and casting defects.

Die Materials And Preparation of Dies

Gingival Tissue Management For Cast Restoration And Impression Procedures.

Recent Cavity Modification Amalgam Restoration.

Differences between amalgam and Inlay Cavity preparation with note on all the types of Bewels used for Cast Restoration.

Control of Pain During Operative Procedures.

Treatment Planning for Operative Dentistry Detailed Clinical Examination Radiographic Examination.

Vitality Tests, Diagnosis And Treatment Planning And Preparation Of Case Sheet.

Applied Dental Materials :

Biological Considerations.

Evaluation, clinical application and adverse effects of the following materials. Dental cements, Zinc oxide euginol cements zinc phosphate cements, polycarboxylates glass ionomer cements, silicate cement calcium hydroxides varnishes.

Dental amalgam, technical considerations mercury toxicity mercury hygiene.

Composite, Dentine bonding agents, chemical and light curing composites.

Rubber base Imp. Materials.

Nobel metal alloys & non noble metal alloys.

Investment and die materials

Inlay casting waxes.

Dental porcelain

Aesthetic Dentistry

Endodontics : introduction definition scope and future of endodontics.

Clinical Diagnostic methods

Emergency endodontics procedures

Pulpal diseases causes, types and treatment.

Periapical diseases: acute periapical abscess, acute periodontal abscess phoeix abscess, chronic alveolar abscess granuloma cysts condensing osteits, external resorption.

Vital pulp therapy : indirect and direct pulp capping pulpotony different types and medicaments used.

Apexogenisis and apexification or problems of open apex.

Rationale of endodntic treatment case selection indication and contraindications for root canal treatments.

Principles of root canal treatment mouth preparation root canal instruments, hand instruments, power driven instruments, standardization color coding principle of using endodotic instruments. Sterilisation of root canal instruments and materials rubber dam application.

Anatomy of the pulp cavity : root canals apical foramen. Anomalies of pulp cavities access cavity preparation of anterior and premolar teeth.

Preparation of root canal space. Determination of working length, cleaning and shaping of root canals, irrigating solution chemical aids to instrumentation.

Disinfection of root canal space intracanal medicaments, poly antibiotic paste roos mans paste, mummifying agents. Out line of root canal treatment, bacteriological examinations, culture methods.

Problems during cleaning and shaping of root canal spaces. Perforation and its management. Broken instruments and its management, management of single and double curved root canals.

Methods of cleaning and shaping like step back crown down and conventional methods.

Obturation of the root canal system. Requirements of an ideal root canal filling material obturation methods using guttaa percha healing after endodontic treatment. Failures in endodontics.

Root canal sealers. Ideal properties classification. Manipulation of root canal sealers.

Post endodontic restoration fabrication and components of post core preparation.

Smear layer and its importance in endodontics and conservative treatment.

Discoloured teeth and its management. Bleaching agents, vital and non vital bleaching methods.

traumatized teeth classification of fractured teeth. Management of fractured tooth and root. Luxated teeth and its management.

endodotic surgeries indication contraindications, pre operative preparation. Pre medication surgical instruments and techniques apicectomy, retrograde filling, post

operative sequale trephination hemisection, radiscetomy techniques of tooth reimplantation (both intentional and accidental) endodontic implants.

root resorption.

emergency endodontic procedures.

lasers in conservative endodontics (introduction only) practice management.

professional association dentist act 1948 and its amendment 1993.

duties towards the govt. Like payments of professional tax, income tax.

financial management of practice.

dental material and basic equipment management.

Ethics.

ORAL & MAXILLOFACIAL SURGERY

AIMS :

To produce a graduate who is competent in performing extraction of teeth under both local and general anaesthesia, prevent and manage related complications, acquire a reasonable knowledge and understanding of the various diseases, injuries, infections occurring in the Oral & Maxillofacial region and offer solutions to such of those common conditions and has an exposure in to the in patient management of maxillofacial problems.

OBJECTIVES :

a) Knowledge & Understanding :

At the end of the course and the clinical training the graduate is expected to -

Able to apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.

Able to diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.

Knowledge of range of surgical treatments.

Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment.

Understand the principles of in patient management.

Understanding of the management of major oral surgical procedures and principles involved in patient management.

Should know ethical issues and communication ability.

Skills :

A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.

Should be competent in the extraction of teeth under both local and general anesthesia.

Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures and biopsy etc.

Ability to assess, prevent and manage various complications during and after surgery.

Able to provide primary care and manage medical emergencies in the dental office.

Understanding of the management of major oral surgical problems and principles involved in inpatient management.

DETAILED SYLLABUS

Introduction, definition, scope, aims and objectives.

Diagnosis in oral surgery :

History taking

Clinical examination

Investigations

Principles of infection control and cross-infection control with particular reference to HIV / AIDS and Hepatitis.

Principles of Oral Surgery -

Asepsis: Definition, measures to prevent introduction of infection during surgery.

Preparation of the patient

Measures to be taken by operator

Sterilization of instruments - various methods of sterilization etc.

Surgery set up.

Painless Surgery:

Pre-anaesthetic considerations. Pre-medication: Purpose, drugs used

Anaesthetic considerations -

a) Local b) Local with IV sedations

Use of general anaesthetic

Access:

Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions.

Bone removal : Methods of bone removal

Use of Burs : Advantages & precautions

Bone cutting instruments : Principles of using chisel & osteotome.

Extra - oral : Skin incisions - principles, various extra oral incision to expose facial skeleton.

Submandibular

pre auricular

Incision to expose maxilla & orbit

Bicoronal incision

Control of haemorrhage during surgery

Normal Haemostasis

Local measures available to control bleeding Hypotensive anaesthesia etc.

Drainage & Debridement

Purpose of drainage in surgical wounds Types of drains used

Debridement : Purpose, soft tissue & bone debridement

Closure of wounds

Suturing : Principles, suture material, classification, body response to various materials etc.

post operative care

Post operative instructions

Physiology of cold and heat

Control of pain - analgesics

Control of infection - antibiotics

Control of swelling - anti-inflammatory drugs

Long term post operative follow up - significance.

Exodontia : General considerations

Ideal Extraction.

Indications for extraction of teeth

Extractions in medically compromised patients. Methods of extraction -

Fo rceps or intra-alveolar or closed method

Principles, types of movement, force etc.

Trans-alveolar, Surgical or open method, indications, surgical procedure

Dental elevators : uses, classification, principles in the use of elevators, commonly used elevators.

Complications of Exodontia -

Complications during Exodontia

Common to both maxilla and mandible.

Post-operative complications

Prevention and management of

complications 6. Impacted teeth:

Incidence, definition, aetiology.

Impacted mandibular third molar.

Classification, reasons for removal,

Assessment - both clinical & radiological

Surgical procedures for removal

Complications during and after removal

Prevention and management

Maxilary third molar,

Indications for removal, classification,

surgical procedure for removal

Impacted maxillary canine

Reasons for canine impaction

Localisation, Indications for removal

Methods of management, labial and palatal approach,

Surgical exposure, transplantation, removal etc.

Pre- prosthetic surgery

Definition, classification of procedures

Corrective procedures : Alveoloplasty

Reduction of maxillary tuberosities,

Frenoctemies and removal of tori

Ridge extension or Sulcus extension procedures

Indications and various surgical procedures

Ridge augmentation and reconstruction

Indications, use of bone grafts, Hydroxyapatite

Implants - concept of osseo integration

Knowledge of various types of implants

and surgical procedure to place implants

8. Disease of the maxillary sinus

Surgical anatomy of the sinus

Sinusitis both acute and chronic

Surgical approach of sinus - Caldwell - Luc

procedure Removal of root from the sinus

Oro-antral fistula - aetiology, clinical features and various

surgical methods for closure

9. Disorders of T.M. joint

Applied surgical anatomy of the joint

Dislocation - types, aetiology, clinical features and management

ankylosis - Definition, aetiology, clinical features and management

Myo-facial pain dysfunction syndrome, aetiology, clinical features

management Non surgical and surgical

Internal derangement of the joint

Arthritis of T.M. Joint 10.

Infections of the oral cavity

Introduction, factors responsible for infection, course of odontogenic

Infections, spread of odontogenic infections through various facial spaces

Dento - alveolar abscess - aetiology, clinical features and management

Osteomyelitis of the jaws - definition, aetiology, pre-disposing factors

Classification, clinical features and management

Ludwigs angina - definition, aetiology, clinical features, management and complications

Benign cystic lesions of the jaws Definition

- classification, pathogenesis

Diagnosis, Clinical features, radiological, aspiration biopsy, use of constrast media and histopathology

Management - Types of surgical procedure, rationale of the techniques indications, procedures, complications etc.

Tumours of the Oral cavity

General considerations

Non odontogenetic benign tumours occurring in oral cavity - fibroma, papilloma, lipoma, ossifying fibroma mynoma etc.

Ameloblastoma - clinical features, radiological appearance and methods of management

Carcinoma of the oral cavity

Biopsy - types

TNM classification

outline of management of squamous

Cell carcinoma : Surgery, radiation and chemotherapy

Role of dental surgeons in the prevention and early detection of oral cancer 13. Fractures of the jaws -

General considerations, types of fractures, aetiology, clinical features and general principles of management

Mandibular fractures - Applied anatomy,

classification Diagnosis - clinical and radiological

Management - Reduction closed and open

Fixation and immobilization methods

Outline of rigid and semi-rigid internal fixation

Fractures of the condyle - aetiology, classification, clinical features, principles of management

Fractures of the middle third of the face

Definition of the mid face, applied surgical anatomy, classification,

clinical features and outline of management

Alveolar fracture - methods of management

Fractures of the Zygomatic complex

Classification, clinical features, indications for treatment, various methods of reduction and fixation

Complications of fractures - delayed union, non-union and malunion 14. Salivery gland diseases -

Diagnosis of salivary gland diseases.

Sialography, contrast media, procedure.

Infections of the salivary glands

Sialolithiasis - sub mandibular duct and gland and parotid

duct. Clinical features, management

Salivary fistulae

Common tumours of salivery glands like Pleomorphic adenoma

including minor salivary glands

15. Jaw deformities -

Basic forms - Prognathism, Retrognathism and open bite

Reasons for correction.

Outline of surgical methods carried out on mandible and maxilla 16. Neurological disorders -

Trigeminal neuralgia - definition, aetiology, clinical features and methods of management including surgical

Facial paralysis - Aetiology, clinical features.

Nerve injuries - Classification, neurorhaphy etc.

17. Cleft Lip and Palate -

    Aetiology of the clefts, incidence, classification, role of dental surgeon in the management of cleft patients, Outline of the closure procedures.

18. Medical Emergencies in dental practice -

    Primary care of medical emergencies in dental practice particularly -

    (a) Cardio vascular (b) Respiratory (c) Endocrine

    (d) Anaphylactic reaction (e) Epilepsy (f) Epilepsy

19. Emergency drugs & Intra muscular I.V. Injections -

    Applied anatomy, Ideal Location for giving these injection, techniques etc.

Oral Implantology

Ethics

LOCAL ANAESTHESIA :

Introduction, concept of L.A., classification of local anaesthetic agents, ideal requirements, mode of action, types of local anaesthesia, complications.

Use of Vaso constrictors in local anaesthetic solution -

Advantages, contra-indications, various vaso constrictors used.

Anaesthesia of the mandible -

Pterygomandibular space - boundaries, contents

etc. Interior Dental Nerve Block - various techniques

Complications

Mental foramen nerve block

Anaesthesia of Maxilla-Intra

- Orbital nerve block

Anaesthesia of Maxilla -

Intra - orbital nerve block.

Posterior superior alveolar nerve block

Maxillary nerve block - techniques.

GENERAL ANAESTHESIA -

Concept of general anaesthesia

Indications of general anaesthesia in dentistry

Pre-anaesthetic evaluation of the patient

Pre-anaesthetic medication - advantages, drugs used

Commonly used anaesthetic agents

Complication during and after G.A.

I.V. sedation with Diazepam and Medozolam

Indications, mode of action, technique etc.

Cardiopulmonary resuscitation

Use of oxygen and emergency drugs.

Tracheostomy.

RECOMMENDED BOOKS :

Impacted teeth : Alling John F & etal

Principles of oral and maxillofacial surgery ; Vol.1,2 & 3 peterson LJ & etal

Text book of oral and maxillofacial surgery ; Srinivasan B.

Handbook of medical emergencies in the dental office, Malamed SF.

Killeys Fractures of the mandible ; Banks P.

Killeys fractures of the middle 3rd of the facial skeleton; Banks P.

The maxillary sinus and its dental implications ; McGovanda

Killey and kays outline of oral surgery - part -1 ; Seward GR & etal

Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM

Oral & maxillofacial surgery, Vol 2; Laskin DM

Extraction of teeth; Howe, GL

Minor Oral Surgery ; Howe. GL

Contemporary oral and maxillofacial surgery; Peterson I.J. &EA

Oral and maxillofacial infections ; Topazian RG & Goldberg MH

ORAL MEDICINE AND RADIOLOGY

AIMS :

To train the students to diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.

To train the students about the importance, role, use and techniques radiographs / digital radiograph and other imaging methods in diagnosis.

The principles of the clinical and radiographic aspects of Forensic Odontology.

The syllabus in ORAL MEDICINE & RADIOLOGY is divided into two main parts

(I) Diagnosis, Diagnostic methods and Oral Medicine (II) Oral Radiology, Again the part One is subdivided into three sections. (A) Diagnostic methods (B) Diagnosis and differential diagnosis (C) Oral Medicine & Therapeutics.

COURSE CONTENT

Emphasis should be laid on oral manifestations of systemic diseases and ill-effects oral sepsis on general health.

To avoid confusion regarding which lesion and to what extend the student should learn and know, this elaborate syllabus is prepared. As certain lesions come under more than one group, there is repetition.

Part - I ORAL MEDICINE AND DIAGNOSTIC AIDS

SECTION (A) - DIAGNOSTIC METHODS

Definition and importance of Diagnosis and various types of diagnosis.

Method of clinical examinations.

General Physical examination by inspection.

Oro-facial region by inspection, palpation and other means.

To train the students about the importance, role, use of saliva and techniques diagnosis of saliva as part of oral disease

Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growth pigmented lesions, white and red patches.

Examination of lymph nodes

Forensic examination - Procedures for post-mortem dental examination; maintaining dental records and their use in dental practice and post-mortem identification; jurisprudence and ethics.

Investigations

Biopsy and exfoliative cytology

Hematological, Mecrobiological and other tests and investigations necessary for diagnosis and prognosis.

SECTION (B) - DIAGNOSIS, DIFFERENTIAL DIGNOSIS

While learning the following chapters, emphasis shall be given only on diagnostic aspects including differential diagnosis

Teeth : Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth

Diseases of bone and Osteodystrophies : Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenisis imperfecta. Marfans syndrome,

osteopetrosis. Inflamation - Injury, infection and spread of infection fascial space infections osteoradionecrosis.

metabolic disorders - Histiocytosis

Endocrine - Acro - megaly and hyperparathyroidism

Miscellaneous - Paget s disease, Mono and polyostotic fibrous dysplasia, Cherubism.

Temparomandibular joint : Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.

Common cysts and Tumours:

CYSRS: Cysts of soft tissue : Mucocele and Ranula

Cysts of bone : Odontogenic and nonodontogenic

TUMORS :

Soft Tissue:

Epithelial: Papilloma, Carcinoma, Melanoma

Connective tissue : Fibroma, Lipoma, Fibrosarcoma

Vascular : Haemangioma, Lymphangioma

Nerve Tissue : Neurofibroma, Traumatic Nueroma, Neurofibromatosis

Salivary Glands ; Pleomorphic adenoma, Adenocarcinoma, Warthin s Tumour, Adenoid Cystic carcinoma.

Hard Tissue :

Non Odontogenic : Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chandrosacroma, Central giant cell rumor, and Central haemangioma

Odontogenic : Enameloma, Ameloblastoma, Calcifying Epithlial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysphasia and odontomas

Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyofenic granuloma

Granulomatous diseases : Tuberculosis, Sarcoidosis, Midline lethal granuloma crohn s Disease and Histiocytosis X

Miscellaneous Disorders : Burkitt lymphoma, sturge - Weber syndrome, CREST syndrome, rendu-osler-weber disease.

SECTION (C) : ORAL MEDICINE AND THERAPEUTICS.

The following chapters shall be studied in detail including the eiology, pathogenerals, clinical features, investigations, differential diagnosis, management and prevention.

Infections of oral and paraoral structures:

Bacterial : Streptococcal, tuberculosis, syphills, vincents, leprosy, actinomycosis, diphtheria and tetanus

Fungal : Candida albicans

Virus : Herpes simplex, herpes zoster, ramsay hunt syndrome measles, herpangina mumps, infectious mononucleosis, AIDS and hepatitis B

Important common mucosal lesions :

White lesions : Chemical burns, leukodema, leukoplakia, Fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, licherplanus, discoid lupus erythematosis

Veiculo-bullous lesions : Herpes simplex herpes zoster herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoid erythema multiforme.

Ulcers : Acute and chronic ulcers

Pigmented lesions : Exogenous and endogenous

Red lesions : Eruthroplakia, Stomatitis venenata and medicamentosa, erosive, lesions and denture sore mouth Cervico-

facial lymphadenopathy

Facial Pain :

(i) Organic pain : plain arising from the diseases of orofacial tissues like teeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.

(ii) Pain arising due to C.N.S. diseases:

Pain due to intracranial and extracranial involvement of cranial nerves (Multiple sclerosis, cerebrovascular disease trotter's syndrome etc.)

Neuralgic pain due to unknown causes : Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain.

Referred pain : Pain arising from distant tissues like heart, spine etc.,

Altered sensations : Cacogeusia halitosis.

Tongue in local and systemic disorders : (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotal tongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)

Oral manifestations of :

Metabolic disorders :

Porphyria

Haemochromatosis

Histocytosis X diseases

Endocrine disorders:

Pituitary : Gigantism, acromegaly, hypopituatism

Adrenal cortex : Addison's disease (Hypofunction)

Cushing's syndrome (Hyperfunction)

Parathyroid glands : Hyperparathyroidism.

Thyroid gland : (Hypothyroidism) Cretinism, myxedema

Pancreas : diabetes

Nutritional deficiency : vitamins : riboflavin, nicotinic acid, folic acid vitamin B12, vitamin C (Scurvy)

Blood disorders :

Red blood cell diseases

Deficiency anemias : (Iron deficiency, plummer - Vinson syndrome, pernicious anemia)

Haemolytic anemias : (Thalassemia, sickle cell anemia, erythroblastosis fetails)

Aplastic anemia

Polycythemia

White blood cell diseases

Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and lukemias

Haemorrhagic disorders :

Thrombocytopenia, purpura, hemophilia, chrismas disease and von willebrand's disease

Disease of salivary glands :

Development disturbances : Aplasia, atresia and aberration

Functional disturbances : Xerostomia, ptyalism

Inflammatory conditions : Nonspecific sialadenitis, mumps, sarcoidosis heerdfort's syndrome (Uveoparotid fever), Necrotising sialometaplasia

Cysts and tumors : Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma

Miscellaneous : sialolithiasis, sjogren's syndrome, mikuliez's disease and sialosis

Dermatological diseases with oral manifestations :

Ectodermal dysplasia (b) Hyperkerotosis palmarplantaris with periodontopathy (c) Scleroderma (d) Lichen planus including ginspan's syndrome (e) Luplus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

Immunological diseases with oral manifestations

Leukemia (b) Lymphomas (c) Multiple mycloma (d) AIDS clinical manifestations, opportunistic infections, neoplasms (e) Thrombcytopenia (f) Lupus erythematosus (g) Scleroderma (h) dermatomyositis (I) Submucous firbrosis (j) Rhemtoid arthritis (k) Recurrent oral ulcerations including behcet s syndrome and reiter s syndrome

Allergy : Local allergic reactions anaphylaxis, serum sickness (local and systemic allergic manifestations to food drugs and chemicals)

Foci of oral infection and their ill effects on general health

Management of dental problems in medically compromised persons :

Physiological changes : Puberty, Pregnancy and menopause

The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.

Precancerous lesions and conditions

Nerve and muscle diseases :

Nerves : (a) Neuropraxia (b) Neurotemesis (c) Neuritis (d) Facial nerve paralysis including Bell s palsy, Heerfordt s syndrome, Melkerson Rosenthel syndrome and ramsay hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey syndrome

Muscles : (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus

Forensic Odontology:

Medicolegal aspects of orofacial injuries

Identification of bite marks

Determination of age and sex

Identification of cadavers by dental appliances, Restorations and tissue remanants viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astringents, mouth washes, styptics, demelucents, local surface anaesthetic, sialogogues, antisialogogues and drugs used in the treatment of malignancy.

Part - II BEHAVIOURAL SCIENCES AND ETHICS.

Part - III ORAL RADIOLOGY

Scope of the subject and history of origin

Physics of radiation : (a) Nature and types of radiations (b) source of radiations (c) Production of X-rays (d) Properties of X-rays (e) Compton effect (f) Photoelectric effect Radiation measuring units

Biological effects of radiation

Radiation safety and protection measures

Principles of image production

Radiographic techniques:

Intra-Oral : (a) Periapical radiographs (Bisecting and parallel techniques) (b) Bite wing radiographs (c) Occlsal radiographs

Extra - Oral : (a) Laternal projections of skull and jaw bones and paranasal sinuses Cephalograms (d) Orthopantomograph (e) Projections of temperomandibular joint and condyle of mandible (f) Projections for Zygomatic arches

Specilised techniques : (a) Sialography (b) Xeroradiography (c) Tomography

Factors in production of good radiographs :

K.V.P. and MA of X-ray machine (b) Filters (c) Collimations (d) Intensifying screens (e) Grids (f) X-ray films (g) Exposure time (h) Techniques (i) Dark room (j) Developer and fixer solutions (k) Film processing

Radiographic normal anatomical landmarks

Faculty radiographs and artefacts in radiographs

Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues

Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy

Cantrast radiography and basic knowledge of radio-active isotopes

Radiography in Forensic Odontology - Radiographic age estimation and post-mortem radiographic methods.

PRACTICALS / CLINICALS

Student is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of the orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted on saliva diagnostic procedures. Training also shall be imparted in various radiographic procedures and interpretation of radiographs.

In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of University examination.

The following is the minimum of prescribed work for recording

(a) Recording of detailed case histories of interesting cases 10

(b) Intra-oral radiographs (Periapical, bitewing, occlusal) 25

(c) Saliva diagnostic check as routine procedure.

BOOKS RECOMMENDED:

a) Oral Diagnosis, Oral Medicine & Oral Pathology

Burkit - Oral Medicine _ J.B. Lippincott Company

Coleman - Principles of Oral Diagnosis - Mosby Year Book

Jones - Oral Manifestations of Systemic Diseases - W.B. Saunders Company

Mitchell - Oral Diagnosis & Oral Medicine

Kerr - Oral Diagnosis

Miller - Oral Diagnosis & Treatment

Hutchinson - Clinical Methods

Oral Pathology - Shafers

Sonis. S.T., Fazio. R.C. and Fang. L. - Principles and practice of Oral Medicine

b) Oral Radiology

White & Goaz - Oral Radiology - Mosby year Book

Weahrman - Dental Radiology - C.V. Mosby Company

Stafne - Oral Roentgenographic Diagnosis - W. B. Saunders Co., c) Forensic Odontology

Derek H. Clark - Practical Forensic Odontology - Butterworth - Heinemann (1992)

C. Michael Bowers, Gary Bell - Manual of forensic Odontology - Forensic Pr (1995)

ORTHODONTICS & DENTAL ORTHOPAEDICS

COURSE OBJECTIVE :

Undergraduate programme in orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above objectives.

Introduction, Definition, Historical Background, aims and Objectives of Orthodontics and Need for Orthodontics care

Growth and Development : In General a. Definition

Growth spurts and Differential growth

Factors influencing growth and Development

Methods of measuring growth

Growth theories (Genetic, Sicher.s, Scott.s, Moss.s, Petrovics, Multifactorial)

Genetic and epigenetic factors in growth

Cephalocaudal gradient in growth

Morphologic Development of Craniofacial structures

Methods of bone growth

Prenatal growth of craniofacial structures

Postnatal growth and development of : cranial base, maxilla, mandible, dental arches and occlusion.

Functional Development of Dental Arches and Occlusion

Factors influencing functional development of dental arches and occlusion

Forces of Occlusion

Wolfs law of transformation of bone

Trajectories of forces

Clinical Application of Growth and development

Malocclusion - In General

Concept of normal occlusion

Definition of malocclusion

Description of different types of dental, skeletal and functional malocclusion.

Classification of Malocclusion

Principle, description, advantages and disadvantages of classification of malocclusion by Angle.s simon.s, Licher.s and Ackerman and Proffitt.s

Normal and Abnormal Function of Stomatognathic system

Etiology of Malocclusion

Definition, importance, classification, local and general etiological factors.

Etiology of following different types of malocclusion:

Midline diastema

Spacing

Crowding

Cross - Bite: Anterior / Posterior

Class III Malocclusion

Class II Malocclusion

7)Deep Bite

8) Open Bite

Diagnosis And Diagnostic Aids

a. Definition, Importance and classification of diagnostic aids

b. Importance of case history and clinical examination in orthodontics

c. Study Models: - Importance and uses - Preparation and preservation of study models d. Importance of intraoral X-rays in orthodontics

e. Panoramic radiographs:- Principles, Advantages, disadvantages and uses f. Cephalometrics: Its advantages, disadvantages

1. Definition

2. Description and use of cephalostat

3. Description and uses of anatomical landmarks lines and angels used in cephalometric analysis

4. Analysis - Steiners, Downs, Tweeds, Ricketts-E- line

g. Electromyography and its uses in orthodontics

h. Wrist X-rays and its importance in orthodontics

General Principles in Orthodontic Treatment Planning Of Dental And Skeletal Malocclusions

Anchorage In Orthodontics - Definition, Classification, Types and Stability Of Anchorage

Biomechanical Principles In Orthodontics Tooth movement a.

Different types of tooth movements

b. Tissue response to orthodontic force application

c. Age factor in orthodontic tooth movement

Preventive Orthodontics a.

Definition

b. Different procedures undertaken in preventive orthodontics and their limitations.

Interceptive Orthodontics a.

Definition

b. Different procedures undertaken in interceptive orthodontics

c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.

d. Role of muscle exercises as an interceptive procedure

Corrective Orthodontics

a. Definition, factors to be considered during treatment planning.

b. Model analysis: Ponts, Ashley Howes, Bolton, Careys, Moyers Mixed Dentition Analysis

c. Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions

Extractions in Orthodontics - indications and selection of teeth for extraction.

Orthodontic Appliances: General

Requisites for orthodontics appliances

Classification, indications of Removable and Functional Appliances

Methods of force application

Materials used in construction of various orthodontic appliances - uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.

e. Preliminary knowledge of acid etching and direct bonding,

Ethics

REMOVABLE ORTHODONTIC APPLIANCES

Components of removable appliances

Different types of clasps and their uses

Different types of labial bows and their uses

Different types of springs and their uses

Expansion appliances in orthodontics:

Principles

Indications for arch expansion

Description of expansion appliances and different types of expansion devices and their uses.

Rapid maxillary expansion

FIXED ORTHODONTIC APPLIANCES

Definition, Indications & Contraindications

Component parts and their uses

Basic principles of different techniques: Edgewise, Begg s, straight wire.

EXTRAORAL APPLIANCES

Headgears

chincup

reverse pull headgears

MYOFUNCTIONAL APPLIANCES

Definition and principles

Muscle exercise and their uses in orthodontics

Functional appliances:

Activator, Oral screens, Frankels function regulator, bionatar twin blocks, lip bumper

Inclined planes - upper and lower

Orthodontic Management of Cleft Lip And Palate

Principles of Surgical orthodontics

Brief Knowledge of correction of :

a. Mandibular Prognathism and Retrognathism

b. Maxillary Prognathism and Retrognathism c.

Anterior open bite and deep bite

d. Cross bite

Principle, Differential diagnosis and methods of Treatment of : 1.

Midline diastema

2. Cross bite

3. Open bite

4. Deep bite

5. Spacing

6. Crowding

7. Class II -Division 1, Division 2

8. Class III Malocclusion - True and Psuedo Class III

Retention And Relapse

Definition, Need for retention, causes of relapse, Methods of retention, Different types of retention devices, Duration of retention, Theories of retention.

CLINICALS AND PRACTICALS IN ORTHODONTICS

PRACTICAL TRAINING DURING II YEAR B.D.S.

I. Basic wire bending exercises gauge 22 or 0.7 mm

Straightening of wires (4 Nos.)

Bending of a equilateral triangle

Bending of a rectangle

Bending of a square

Bending of a circle

Bending of U.V.

II. Construction of Clasps (Both sides upper / lower) Gauge 22 or 0.7 mm

¾ clasp (C-clasp)

Full clasp (Jackson s Crib)

Adam s Clasp

Triangular clasp

Construction of Springs (on upper bother sides) Gauge 24 or 0.5mm

Finger Spring

Single Cantelever Spring

Double Cantelever Spring (Z-spring)

T-Springs on premolars

IV. Construction of Canine retractors Gauge 23 or 0.6mm

U-Loop Canine retractor

(Both sides on upper & lower)

Helical canine retractor

(Both sides on upper & lower)

3. Buccal canine retractor

-self supported buccal canine

retractor with

Sleeve - 5mm wire or 24 gauge

Sleeve - 19 gauge needle on any one side.

4. Palatal canine retractor on upper both sides Gauge 23 or 0.6mm

Labial Bow

Gauge 22 or 0.7 mm

One on both upper and lower

CLINICAL TRAINING DURING III YEAR B.D.S.

NO. EXERCISE

Making upper Alignate impression

Making lower Alignate impression

Study moral preparation

Model Analysis

Ponts analysis

Ashley Howes Analysis

Careys Analysis

Boltons Analysis

Moyers Mixed Dentition Analysis

CLINICAL TRAINING DURING FINAL YEAR B.D.S.

No. EXERCISE

Case History taking

Case discussion

Discussion on the given topic

Cephalometric tracings

Down's Analysis

Steiner's Analysis

Tweed's Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S

Adam's Clasp on Anterior teeth Gauge 0.7 mm

Modified Adam's Clasp on upper arch Gauge 0.7 mm

High Labial bow with Apron spring on upper arch

(Gauge of Labial bow - 0.9 mm, Apron spring - 0.3

mm) 4. Coffin spring on upper arch Gauge 1 mm

Appliance construction in Acrylic

Upper and Lower Hawley's Appliance

Upper Hawley's with Anterior bite plane

Upper Habit breaking Appliance

Upper Hawley's with Posterior bite plane with 'Z' Spring

Construction of Activator

Lower inclined plane / Catalan's Appliance

Upper Expansion plate with Expansion screw

RECOMMENDED AND REFERENCE BOOKS

1. CONTEMPORARY ORTHODOTICS — WILLIAM R. PROFIT
2. ORTHODONTICS FOR DENTAL STUDENTS — WHITE AND GARDINER
3. HANDBOOK OF ORTHODONTICS — MOYERS

ORTHODONTICS - PRINCIPLES AND PRACTICE GRABER

DESIGN, CONSTRUCTION AND USE OF REMOVABLE

6. ORTHODONTIC APPLIANCES — C. PHILIP ADAMS
7. CLINICAL ORTHODONTICS: VOL 1 & 2 — SALZMANN

15. PAEDIATRIC & PREVENTIVE DENTISTRY

THEORY :

INTRODUCTION TO PEDODONTICS & PREVENTIVE DENTISTRY

Definition, Scope, Objectives and Importance.

GROWTH & DEVELOPMENT

Importance of study of growth and development in pedodontics

Prenatal and Postnatal factors in growth & development

Theories of growth & development

Development of maxilla and mandible and related age changes

DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADELOSCENCE

Study of variations and abnormalities

DENTAL ANATOMY AND HISTOLOGY

Development of teeth and associated structures.

Eruption and shedding of teeth

Teething disorders and their management

Chronology of eruption of teeth

Differences between deciduous and permanent teeth

Development of dentition from birth to adolescence.

Importance of first permanent molar.

DENTAL RADIOLOGY RELATED TO PEDODONTICS

ORAL SURGICAL PROCEDURES IN CHILDREN

Indication and contraindications of extractions of primary and permanent teeth in children

Knowledge of Local and General Anesthesia

Minor surgical procedures in children

DENTAL CARIES:

Historical background

Definition, aetiology and pathogenesis

Caries pattern in primary, young permanent and permanent teeth in children

Rampant caries, early childhood caries and extensive caries

Definition, aetiology, pathogenesis, Clinical features, Complications & Management

Role of diet and nutrition in Dental Caries

Dietary modifications and diet counseling

Caries activity, tests, caries prediction, caries susceptibility & their clinical application.

GINGIVAL & PERIODONTAL DISEASES IN CHILDREN

Normal gingiva & periodontium in children

Definition, aetiology and Pathogenesis

Prevention & Management of gingival & Periodontal diseases

CHILD PSYCHOLOGY

Definition

Theories of child psychology

Psychological development of children with age

Principles of psychological growth & development while managing child patient.

Dental fear and its management

Factors affecting child s reaction to dental treatment

BEHAVIOUR MANAGEMENT

Definitions.

Types of behaviour encountered in the dental clinic

Non - pharmacological & pharmacological methods of Behaviour Management.

PEDIATRIC OPERATIVE DENTISTRY:

Principles of Pediatric Operative Dentistry

Modifications required for cavity preparation in primary and young permanent teeth

Various Isolation Techniques

Restorations of decayed primary, young permanent and permanent teeth in children using various restrorative materials like Glass Ionomer, Composites and Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.

PEDIATRIC ENDODONTICS

Principles & Diagnosis.

Classification of Pulpal Pathology in primary, young permanent & permanent teeth

Management of Pulpally involved primary, young permanent & permanent teeth

- Pulp capping - direct & indirect
- Pulpotomy
- Pulpectomy
- Apexogenesis
- Apexification

Obturation Techniques & material used for primary, young permanent & permanent teeth in children

TRAUMATIC INJURIES IN CHILDREN

Classifications & Importance

Sequelae & reaction of teeth of trauma

Management of Traumatized teeth.

PREVENTIVE & INTERCEPTIVE ORTHODONTICS:

Definitions.

Problems encountered during primary and mixed dentition phases and their management

Serial extractions.

Space management

ORAL HABITS IN CHILDREN

Definition, Aetiology & Classification.

Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits

Management of oral habits in children

DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS :

-Definition, Aetiology, Classification, Behavioural and Clinical features & Management of children with :

- Physically handicapping conditions:
- Mentally Compromising conditions:
- Medically compromising conditions
- Genetic disorders

CONGENITAL ABNORMALITIES IN CHILDREN:

Definition, Classification, Clinical features & Management

DENTAL IMERGENCIES IN CHILDREN & THEIR MANAGEMENT

DENTAL MATERIAL USED IN PEDIATRIC DENTISTRY

PREVENTIVE DENTISTRY :

Definition

Principles & Scope

Types of prevention

Different preventive measures in Pediatric Dentistry including pit and fissure sealants and caries vaccine.

DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES.

FLUORIDES :

Historical background

Systemic & Topical fluorides

Mechanism of action.

Toxicity & Management

Defluoridation techniques.

CASE HISTORY RECORDING :

Outline of principles of examination, diagnosis & treatment planning.

SETTING UP OF PEDODONTIC CLINIC

ETHICS

PRACTICALS:

Following is the recommended clinical quota for under graduate students in the subject of pediatric & preventive dentistry.

Restorations - Class I & II only : 45

Preventive measures e.g. Oral Prophylaxis - 20

Fluoride applications - 10

Extractions - 25

Case History Recording & Treatment Planning - 10

Education & motivation of the patients using disclosing agents. Educating patients about oral hygiene measures like tooth brushing, flossing etc.

BOOKS RECOMMENDED & REFERENCE:

Pediatric Dentistry (Infancy through Adolescences) - Pinkham.

2. Kennedy s Pediatric Operative Dentistry– Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry– Stephen H. Wei.

Clinical use of Fluorides - Stephen H. Wei

Pediatric Oral & Maxillofacial Surgery - Kaban

Pediatric Medical Emergencies - P.S. Whatt

Understanding of Dental Caries - Niki Foruk

An Atlas of Glass Ionomer cements - G. J. Mount

Clinical Pedodontics - Finn

Textbook of Pediatric Dentistry - Braham Morris

Primary Preventive Dentistry - Norman O. Harris

Handbook of Clinical Pedodontics - Kenneth D.

Preventive Dentistry - Forrester.

The Metobolism and Toxicity of Fluoride - Garry M. Whitford

Dentistry for the Child and Adolescence - Mc Donald.

Pediatric Dentistry - Damle S.G.

Behaviour Management - Wright

18 Pediatric Dentistry _ Mathewson

Traumatic Injuries - andreason

Occlusal guidance in Pediatric Dentistry - Nakata

Pediatric Drug Therapy - Tomare

Contemporary Orthodontics - Profitt.

Preventive Dentistry - Depaola

Metabolism & Toxicity of Fluoride - whitford G.M.

Endodontic Practice - Grossman

Principles of Endodontics - Munford

Endodontics - Ingle

Pathways of Pulp - Cohen

Management of Traumatized anterior Teeth - Hargreaves.

PUBLIC HEALTH DENTISTRY

GOAL :

To prevent and control oral diseases and promote oral health through organized community efforts.

OBJECTIVES :

Knowledge :

At the conclusion of the course the student shall have a knowledge of the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics if dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy.

Skill & Attitude :

At the conclusion of the course the student shall have require at the skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health.

Communication abilities :

At the conclusions of the course the student should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease.

Syllabus :

Introduction to Dentistry : Definition of Dentistry, History of dentistry, Scope, aims and objective dentistry.

Public Health :

Health & Disease : Concepts, Philosophy, Definition and Characteristics.

Public Health : Definition & Concepts, History of Public Health

General Epidemiology : Definition, objectives, methods

Environmental Health - Concepts, principles, protection, sources, purification environmental sanitation of water disposal of waste sanitation, then role in mass disorder.

Health Education : Definition, concepts, principles, methods, and health education aids.

Public health administration : Priority, establishment, manpower, private practice management, hospital management.

Ethics and Jurisprudence : Professional liabilities, negligence, malpractice, consents, evidence, contracts and methods of identification in forensic dentistry.

Nutrition in oral diseases

Behavioural science : Definition of sociology, anthropology and psychology and their in dental practice and community.

Health care delivery system : Centre and state, oral health policy, primary health care, national programmes health organizations.

Dental Public Health

Definition and difference between community and clinical health

Epidemiology of dental diseases dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.

Survey procedures : Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.

Delivery of dental care : Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.

Payments of dental care : Methods of payments and dental insurance, government plans.

Preventive Dentistry - definition, Levels, role of individual, Community and profession, fluorides in dentistry, plaque control programmes.

Research Methodology and Dental Statistics

Health Information : Basic Knowledge of Computers, MS Office, Window 2000, Statistical Programmes

Research Methodology : Definition, types of research, designing a written protocol

Bio-Statistics : Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques types, errors, bias, blind trails and calibration.

Practice Management

Place and locality

Premises & Layout

Selection of equipments

Maintenance of records / accounts / audit Dentist Act 1948 with amendment

Dental Council of India and State Dental Councils

Composition and responsibilities

Indian Dental Association

Head Office, State, Local and branches.

PRACTICALS / CLINICALS / FIELD PROGRAMME IN COMMUNITY DENTISTRY

These exercises designed to help the student in IV year students:

Understand the community aspects of dentistry.

To take up leadership role in solving community oral health programme.

Exercises :

Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capita income

Incidence and prevalence of common oral diseases like dental caries, periodontal disease, oral cancer, fluorosis at national and international levels.

Preparation of oral health education material posters, models, slides, lecturers, play acting skits etc.

Oral health status assessment of the community using indices and WHO basic oral health survey methods

Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment of finance for dental practices-preparing project report.

Visit to primary health centre-to acquaint with activities and primary health care delivery

Visit to water purification plant / public health laboratory / centre for treatment of western and sewage water.

Visit to schools-to assess the oral health status of school children, emergency treatment and health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse programme etc.)

Visit to institution for the care of handicapped, physically, mentally or medically compromised patients

Preventive dentistry : in the department application of pit and fissure sealants, fluoride gel application procedure, A.R.T., Comprehensive health for 5 pts at least 2 patients.

The colleges are encouraged to involve in the N.S.S. programme for college students for carrying out social work in rural areas.

SUGGESTED INTERNSHIP PROGRAMME IN COMMUNITY DENTISTRY

AT THE COLLEGE

Students are posted t the department to get training in dental practice management

Total oral health care approach - in order to prepare the new graduates in their approach to diagnosis, treatment planning, cost of treatment, prevention of treatment on schedule, recall maintenance of records etc. at least 10 patients (both children and adults of all types posting for at least one month).

The practice of chair side preventive dentistry including oral health education

AT THE COMMUNITY ORAL HEALTH CARE CENTRE (ADOPTED BY THE DENTAL COLLEGE IN RURAL AREAS)

Graduates posted for at least on month to familiarize in :

Survey methods, analysis and presentation of oral health assessment of school children and community independently using WHO basic oral health survey methods.

Participation in rural oral health education programmes

Stay in the village to understand the problems and life in rural areas.

III. DESIRABLE : Learning use of computers at least basic programme

Examination Pattern

Index : Case History

Oral hygiene indices simplified - Green and vermilion

Silness and Loe index for Plaque

Loe and Silness index for gingival

CPI

DMF : T & S, df:t and s

Deans fluoride index

Health Education

Make on - Audio visual aid

Make a health talk

Practical work

Pit and fissure sealant

Topical fluoride application

BOOKS RECOMMENDED & REFERENCE :

Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt, Edn. - 1983, W.B. Saunders Company

Principles of Dental public health by James Morse Dunning. IVth Edition, 1986, Harward University Press.

Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by the C. V. Mosby Company 1981

Community Oral Health - A system approach by Patricia P. Cormier and Jouce I. Levy published by Appleton Century -Crofts / New York - 1981

Community Dentistry - A problem oriented approach by P.C. Dental Hand book series Vol 8 by Stephen L. Silverman and Ames F. Tryon, Series editor Alvin F. Gardner, PSG publishing company Inc. Littleton Massachuseltts, 1980

Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wrigth and sons Bristol, 1980

Oral Health Surveys - Basic methods, 4th edition, 1997, published by W.H.O. Geneva available at the regional office, New Delhi.

Preventive Medicine and Hygiene - By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.

Preventive Dentistry - by J.O. Forrest published by John Wright and sons Bristoli, 1980

Preventive Dentistry by Murray, 1997

Text Book of Preventive and Social Medicine by Park and Park, 14th Edition.

Community Dentistry by Dr. Soben Peter

Introduction to Bio-statistics by B.K. Mahajan

Research Methodology and Bio-statistics by

Introduction to statistical Methods by Garewal.

PERIODONTOLOGY

OBJECTIVES :

The student shall acquire the skill to perform dental scaling, diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same.

The student shall develop attitude to impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. The student shall also develop an attitude to perform the treatment with full aseptic precautions; shall develop an

attitude to prevent iatrogenic diseases; to conserve the tooth to the maximum possible time by maintaining periodontal health and to refer the patients who require specialist s care

Introduction : Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics

Development of perio-dental tissues, micro structural anatomy and biology of periodontal tissues in detail Gingiva . Junctional epithelium in detail, Epithelial Mesenchymal Interaction, Periodontal, ligament Cementum, Alveolar bone.

Defensive mechanisms in the oral cavity : Role of Epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment

4.	Age changes in periodontal structures and their significance in Geriatric dentistry	Age changes in teeth and periodontal structures and 1 their association with periodontal diseases
5.	Classification of periodontal diseases	Need for classification, scientific basis of 1 classification Classification of gingival and periodontal disease as described in world workshop 1989 Gingivitis : Plaque associated, ANUG, steroid hormone influenced Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc. Periodontitis : Adult periodontitis, Rapidly progressive periodontitis A & B, Juvenile periodontitis (localized, generalized, and post juvenile), Prepubertal periodontitis Refractory periodontits
6	Gingival diseases	Localized and generalized gingivitis, papillary, 6 marginal and diffuse gingivitis Etiology, Pathogenesis, clinical signs, symptoms and management of i) Plaque associated gingivitis ii) Systemically aggravated gingivitis (sex hormones, drugs and systemic diseases) iii) ANUG iv) Desquamative gingivitis-Gingivitis associated with lichen planus, pemphigoid, pemphigus and other vesiculobullous lesions v) Allergic gingivitis vi) Infective gingivitis-Herpetic, bacterial and candidial vii) Pericoronitis viii) Gingival enlargement (classification and differential diagnosis)
7	Epidemiology of periodontal diseases	- Definition of index, indidence, prevalence, epidemiology, endemic, epidemic and pandemic - classification of indices (Irreversible and reversible) - Deficiencies of earlier indices used in Perodontics

		- Detailed understanding of Silness & Loe Plaque Index, Loe & Silness Gingival Index, CPITN & CPI - Prevalence of periodontal diseases in India and other countries - Public health significance (all these topics are covered at length under community dentistry. Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination.
8	Extension of inflammation from gingiva	Mechanism of spread of inflammation from gingival area to deeper periodontal structures factors that modify the spread
9.	Pocket	Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket.
10.	Etiology	- Dental plaque (Biofilm) - Definition, New concept of biofilm - Types composition, bacterial colonization, growth, maturation and disclosing agents - Role of dental plaque in periodontal diseases - Plaque microorganism in detail and bacteria associated with periodontal diseases - Plaque retentive factors - Materia alba - Food debris - Calculus - Definition - Types, composition, attachment, theories of formation - Role of calculus in disease Food impaction - Definition - Types, Etiology - Hirschfelds classification - Signs, symptoms & sequelae of treatment Trauma from Occlusion - Definition, Types - Histopathological changes - Role in periodontal disease - Measures of management in brief Habits - Their periodontal significance - Bruxism & parafunctional habits, tongue thrusting, lip biting, occupational habits. IATROGENIC FACTORS Conservative Dentistry - Restorations - Contact point, marginal ridge, surface roughness, overhanging restorations, interface between restoration and teeth Prosthodontics - Interrelationship - Bridges and other prosthesis pontics (types) surface contour, relationships of margins to

		the perodontium, Gingival protection theory, muscle action theory and theory of access to oral hygiene. Orthodontics - Interrelationship, removable appliances & fixed appliances - Retention of plaque, bacterial changes Systemic diseases - Diabetes, sex hormones, nutrition (Vit.C & proteins) - AIDS & periodontium - Hemorrhagic disease, Leukemia, clotting factor disorders, PMN disorders
11.	Risk factors	- Definition, Risk factors for periodontal diseases 1
12.	Host response	- Mechanism of initiation and progression of3 periodontal diseases - Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulin, complement system, immune mechanisms & cytokines in brief - Stages in gingivitis - initial, early , established and advanced - Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis
13.	Periodontitis	- Etiology, histopathology, clinical signs & 6 symptoms, dignosis and treatment of adult periodontitis - Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment - Furcation involvement, Glickman s classification, prognosis and management - Rapidly progressive periodontitis - Juvenile periodontitis : Localised and generalized - Post juvenile periodontitis - Periodontitis associated with systemic diseases - Refractory periodontitis
14.	Diagnosis	- Routine procedures, methods of probing, types of probes (According case history) - Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.
15.	Prognosis	- Definition, types, purpose and factors to be taken into consideration
16.	Treatment plan	- Factors to be considered
17.	Periodontal Therapy	A. General principles of periodontal therapy. Phase I, II, III, IV therapy Definition of periodontal regeneration, repair, new attachment and reattachment B. Plaque control i. Mechanical tooth brushes, interdental cleaning aids, dentifrices

		ii. Chemical ; classification and mechanism of action of each & Pocket irrigation
18.	Pocket eradication procedures	- Scaling & root planning - indications - Aims & objectives - Healing following root planning - Hand instruments, sonic, ultrasonic & peizo electric scalers - curettage & present concepts - definition - indications - Aims & objectives - procedures & healing response - Flap surgery - Definition - Types of flaps, Design of flaps, papilla preservation - Indications & contraindications - Armamentarium - Surgical procedure & healing response
19.	Osseous Surgery	Osseous defects in periodontal disease - Definition - Classification - Surgery : resective, addictive osseous surgery (osseous grafts with classification of grafts) - Healing responses - Other regenerative procedures ; root conditioning - Guided tissue regeneration
20.	Mucogingival surgery & periodontal plastic surgeries	Definition Muscogingival problems : etiology, classification of gingival recession (P.D. Miller Jr. and Sulivan and atkins) Indications & objectives Gingival extension procedures : laternal predicle graft, frenectomy, frenotomy Crown lengthening procedures Periodontal microsurgery in brief
21.	Splints	- Periodontal splints - Purpose & Classification - Principles & splinting
22.	Hypersensitivity	Causes, Theories & Management
23.	Implants	Definition, types, scope & biomaterials uses Periodontal consideration : Such as implant-bone interface, implant - gingival interface, implant failure, peri implantitis & management
24.	Maintenance phase (SPT)	- Aims, objective and principles - Importance - Procedures - Maintenance of implants
25.	Pharmaco - therapy	- Periodontal dressings - antibiotics & anti-inflammatory drugs - Local drug delivery systems
26.	Periodontal management of medically	Topics concerning periodontal management of

	Compromised patients	medically compromised patients
27.	Inter-disciplinary care	- Pulpo-periodontal involvement - Routes of spread of infection - Simons classification - Management
28.	Systemic effects of periodontal diseases in brief	- Cardiovascular diseases Low birth weight babies etc.
29.	Infection control protocol	Sterilization and various aseptic procedures
30.	Ethics	

TUTORIALS DURING CLINICAL POSTING ;

Infection control

Periodontal instruments

Chair position and principles of instrumentation

Maintenance of instruments (sharpening)

Ultrasonic, Peizoelectric and sonic scaling - demonstration of technique

Diagnosis of periodontal disease and determination of prognosis

Radiographic interpretation and lab investigations

Motivation of patients - oral hygiene instructions

Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment. Student should perform scaling, root planning local drug delivery and SPT. Shall be given demonstration of all periodontal surgical procedures.

DEMONSTRATIONS :

History taking and clinical examination of the patients

Recording different indices

Methods of using various scaling and surgical instruments

Polishing the teeth

Bacterial smear taking

Demonstration to patients about different oral hygiene aids

Surgical procedures - gingivectomy, gingivoplasty and flap operations

Follow up procedures, post operative care and supervision

REQUIREMENTS:

Diagnosis, treatment planning and discussion and total periodontal treatment - 25 cases

Dental scaling, oral hygiene instructions - 50 complete cases / equivalent

Assistance in periodontal surgery - 5 cases

A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the heal of the department.

Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

PRESCRIBED BOOK :

Glickman.s Clinical Periodontology - Carranza

REFERENCE BOOKS

Essentials of Periodontology and periodontics - Torquil MacPhee

Contemporary periodontics - Cohen

Periodontal therapy - Goldman

Orbans periodontics - Orban

Oral Health Survey - W.H.O.

Preventive Periodontics - Young and Stiffler

Public Health Dentistry - Slack

Advanced Periodontal Disease - John Prichard

Preventive Dentistry - Forrest

Clinical Periodontology - Jan Lindhe

Periodontics - Baer & Morris.

18. PROSTHODONTICS AND CROWN & BRIDGE

Complete Dentures

Applied Anatomy and Physiology

Introduction

Biomechanics of the edentulous state

Residual ridge resorption

Communicating with patient

Understanding the patients.

- Mental Attitude

Instructing the patient

C.Diagnosis and treatment planning for patients

With some teeth remaining

With no teeth remaining

Systemic status

Local factor

The geriatric patients

d) Diagnostic procedures

Articulators - discussion

Improving the patient s denture foundation and ridge relation - an overview.

Pre-operative examination

Initial hard tissue & soft tissue procedures

Secondary hard and soft tissue procedure

Implant procedure

Congenital deformities

Postoperative procedure.

Principles of Retention, Support and Stability

Impressions - detail

Muscles of facial expression

Biological considerations for maxillary and mandibular impression including anatomy landmark and their interpretation.

Impression objectives

Impression materials

Impression techniques

Maxillary and mandibular impression procedures.

Preliminary impressions

final Impressions

Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation)

Record bases and occlusion rims - in detail

Materials & techniques

useful guidelines and ideal parameters

recording and transferring bases and occlusal rims

Biological consideration in jaw relation & jaw movements - craniomandibular relations.

Mandibular movements

Maxillo - mandibular relation including vertical and horizontal jaw relations.

Concept of occlusion - discuss in brief

Relating the patient to the articulator

Face bow types and uses - discuss in brief

Face bow transfer procedure - discuss in brief

Recording maxillo mandibular relation

Vertical relations

Centric relation records

- Eccentric relation records.
- Lateral relation records

Tooth selection and arrangement

- Anterior teeth
- Posterior teeth
- Esthetic and functional harmony

Relating inclination of teeth to concept of occlusion - in brief

- Neutrocentric concept
- Balanced occlusal concept

Trial dentures

Laboratory procedures

- Wax contouring
- Investing of dentures
- Preparing of mold
- Preparing & Packing acrylic resin
- Processing of dentures
- Recovery of dentures
- Lab remount procedures
- Recovering the complete denture from the cast
- Finishing and polishing the complete denture
- Plaster cast for clinical denture remount procedure

Denture insertion

- Insertion procedures
- Clinical errors
- Correcting occlusal disharmony
- Selective grinding procedures.

Treating problems with associated denture use - discuss in brief (tabulation / flow chart form)

Treating abused tissues - discuss in brief

Relining and rebasing of dentures - discuss in brief

Immediate complete dentures construction procedure - discuss in brief

The single complete denture - discuss in brief

Overdentures denture - discuss in brief

Dental implants in complete denture - discuss in brief.

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indication, contrindications

Maintenance phase

Oral Implantology

Ethics

Removable Flexible Dentures

Introduction

- Terminologies and scope

Classification

Examination, Diagnosis & Treatment planning and evaluation of diagnostic data

Components of a removable parital

- Major connectors,
- Minor connectors
- Rest and rest seats

Components of a Removable Partial Denture

- Direct retainers
- Indirect retainers
- Tooth replacement

Principles of Removable Partial Denture Design

Survey and design - in brief

- Surveyors
- Surveying
- Designing

Mouth preparation and masters cast

Impression materials and procedures for removable partial dentures

Preliminary jaw relation and esthetic try in for some anterior replacement teeth

Laboratory procedures for framework construction - in brief.

Fitting the framework - in brief.

Try - in of the partial denture - in brief

Completion of the partial denture - in brief

Inserting the Removable Partial Denture - in brief

Postinsertion observations.

Temporary Acrylic Partial Dentures.

Immediate Removable Partial Denture.

Removable Partial Dentures opposing Complete denture.

Note: It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / Classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indications, contradictions

Maintenance Phase

Fixed Partial Dentures

Topics To Be Covered In Detail

Introduction

Fundamentals of occlusion - in brief.

Articulators - in brief

Treatment planning for single tooth restorations.

Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.

Fixed partial denture configurations.

Principles of tooth preparations.

Preparations for full veneer crowns - in detail.

Preparations for partial veneer crowns - in brief

Provisional Restorations

Fluid Control and Soft Tissue Management

Impressions

Working Casts and Dies

Wax patterns

Pontics and Edentulous Ridges

Esthetic Considerations

Finishing and Cementation

Topics To Be Covered In Brief -

Solder Joints and Other Connectors

All - Ceramic Restorations

Metal - Ceramic Restorations

Preparations of intracoronal restorations.

Preparations for extensively damaged teeth.

Preparations for periodontally weakened teeth

The Functionally Generated Path Technique

Investing and Casting

Resin - Bonded Fixed Partials Denture

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / Classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indications, contradictions

Maintenance Phase

RECOMMENDED BOOKS :

Syllabus of Complete denture by - Charles M. Heartwell Jr. and Arthur O. Rahn.

Boucher's "Prosthodontic treatment for edentulous patients"

Essentials of complete denture prosthodontics by - Sheldon Winkler.

Maxillofacial prosthetics by - Willam R. Laney.

McCraken's Removable partial Prosthodontics

Removable partial prosthodontics by - Ernest L. Miller and Joseph E. Grasso.

AESTHETIC DENTISTRY

Aesthetic Dentistry is gaining more popularity since last decade. It is better that undergraduate students should understand the philosophy and scientific knowledge of the esthetic dentistry.

Introduction and scope of esthetic dentistry

Anatomy & physiology of smile

Role of the colour in esthetic dentistry

Simple procedures (roundering of central incisors to enhance esthetics appearance)

Bleaching of teeth

Veneers with various materials

Preventive and interceptive esthetics

Ceramics

Simple gingival contouring to enhance the appearance

Simple clinical procedures for BDS students

Recommended books:

Esthetic guidelines for restorative dentistry; Scharer & others

Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)

Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

FORENSIC ODONTOLOGY (30 HRS OF INSTRUCTION)

Definition

Forensic is derived from the Latin word forum, which means court if law, Odontology literally implies the study of teeth. Forensic odontology, therefore, has been defined by the Federation Dentaire International (FDI) as "that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence, and with the proper evaluation and presentation of dental findings."

Objectives of the undergraduate curriculum

At the end of the programme, the dental graduate should:

- Have sound knowledge of the theorectial and practical aspects of forensic odontology.
- Have an awareness of ethical obligations and legal responsibilities in routine practice and forensic casework.
- Be competent to recognize forensic cases with dental applications when consulted by the police, forensic pathologists, lawyers and associated professionals.
- Be competent in proper collection of dental evidence related to cases of identification, ethnic and sex differentiaton, age estimation and bite marks.

Be able to assist in analysis, evaluation, and presentation of dental facts within the realm of law.

Curriculum for forensic odontology

Introduction to forensic dentistry

- Definition and history
- Recent developments and future trends

Overview of forensic medicine and toxicology

- Cause of death and postmortem changes
- Toxicological manifestations in teeth and oral tissues

Dental identification

- Definition
- Basis for dental identification
- Postmortem procedures
- Dental record compilation and interpretation
- Comparison of data, and principles of report writing
- Identification in disasters and handling incinerated remains
- Postmortem changes to oral structures

Maintaining dental records

- Basic aspects of good record - keeping
- Different types of dental records
    - Dental charts
    - Dental radiographs
    - Study casts
    - Denture marking
    - Photographs
- Dental notations
- Relevance of dental records in forensic investigation

Age estimation

- Age estimation in children and adolescents
    - Advantages of tooth calcification over eruption in estimating age
    - Radiographic methods of Schour & Massler, Demirjian et al
- Age estimation in adults
    - Histological methods - Gustafson's six variables and Johanson's modification,

Bang & Ramms dentine translucency

- Radiographic method of Kvaal et al
- Principles of report writing

Sex differentiation

- Sexual dimorphism in tooth dimensions (Odontometrics)

Ethnic variations (racial differences) in tooth morphology

- Description of human population groups
- Genetic and environmental influences on tooth morphology
- Description of metric and non-metric dental features used in ethnic differentiation

Bite mark procedures

- Definition and classification
- Basis for bite mark investigation
- Bite mark appearance
- Macroscopic and microscopic ageing of bite marks
- Evidence collection from the victim and suspect of bite mark
- Analysis and comparison
- Principles of report writing
- Animal bite investigation

Dental DNA methods

- Importance of dental DNA evidence in forensic investigations
- Types of DNA and dental DNA isolation procedures
- DNA analysis in personal identification
- Gene-linked sex dimorphism
- Population genetics

Jurisprudence and ethics

- Fundamentals of law and the constitution
- Medical legislation and statutes (Dental and /medical Council Acts, etc)
- Basics of civil law (including torts, contracts and consumer protection act)
- Criminal and civil procedure code (including expert witness requirement)
- Assessment and quantification of dental injuries in courts of law
- Medical negligence and liability
- Informed consent and confidentiality
- Rights and duties of doctors and patients
- Medical and dental ethics (as per Dentists Act)

Theory session and practical exercises

Total hours for the course

- Didactic - 10-12 hours
- Practical - 20-25 hours

Detailed didactic sessions for the above components, either in the form of lectures or as structured student - teacher interactions, is essential. Specialists from multiple disciplines, particularly from legal and forensic sciences, can be encouraged to undertake teaching in their area of expertise.

An interactive, navigable and non-linear (INN) model may also be utilized for education. Practical exercises (real-life casework and / or simulated cases) must complement didactic sessions to facilitate optimal student understanding of the subject. Mandatory practical training in dental identification methods, dental profiling (ethnic and sex differences, radiographic age estimation), and bite mark procedures, is of paramount importance. In addition, practical exercises / demonstrations in histological age estimation, comparative dental anatomy, DNA methods, medical autopsy, court visits, and other topics may be conducted depending on available expertise, equipment and feasibility.

Approach to teaching forensic odontology

Forensic odontology could be covered in two separate streams. The divisions include a preclinical stream and a clinical stream.

Preclinical stream

- introduction to forensic odontology
- Sex differences in odontometrics
- Ethnic variations in tooth morphology
- Histological age estimation
- Dental DNA methods
- Bite marks procedures
- Overview of forensic medicine and toxicology

It could prove useful to undertake the preclinical stream in II or III year under Oral Biology / Oral Pathology since these aspects of forensic odontology require grounding in dental morphology, dental histology and basic sciences,which, students would have obtained in I and / or II BDS.

Clinical stream

- Dental identification
- Maintaining dental records
- Radiographic age estimation

- Medical jurisprudence and ethics

It would be suitable to undertake these topics in the IV or V year as part of Oral Medicine and Radiology, since students require reasonable clinical exposure and acumen to interpret dental records, perform dental postmortems and analyse dental radiographs for age estimation.

ORAL IMPLANTOLOGY (30 hrs of instruction)

INTRODUCTION TO ORAL IMPLANTOLOGY

Oral Implantology is now emerged as a new branch in dentistry world wide and it has been given a separate status in the universities abroad. In India day to day the practice of treating patients with implants are on rise. In this contest inclusion of this branch into under graduate curriculum has become very essential. The objective behind this is to impart basic knowledge of Oral Implantology to undergraduates and enable them to diagnose, plan the treatment and to carry out the needed pre surgical mouth preparations and treat or refer them to speciality centres. This teaching programme may be divided and carried out by the Dept. of Oral Surgery, Prosthodontics and Periodontics.

- History of implants, their design & surface characteristics and osseo-integration
- Scope of oral & maxillofacial implantology & terminologies
- A brief introduction to various implant systems in practice
- Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.
- Soft tissue considerations in implant dentistry
- Diagnosis & treatment planning in implant dentistry
  - Case history taking / Examination / Medical evaluation / Orofacial evaluation / Radiographic evaluation / Diagnostic evaluation / Diagnosis and treatment planning / treatment alternatives / Estimation of treatment costs / patient education and motivation
- Pre surgical preparation of patient
- Implant installation & armamentarium for the Branemark system as a role model
- First stage surgery - Mandible - Maxilla
- Healing period & second stage surgery
- Management of surgical complications & failures
- General considerations in prosthodontic reconstruction & Bio mechanics
- Prosthodontic components of the Branemark system as a role model
- Impression procedures & Preparation of master cast
- Jaw relation records and construction of suprastructure with special emphasis on occlusion for osseointegrated prosthesis
- Management of prosthodontic complications & failures

17. Recall & maintenance phase.

Criteria for success of osseointegrated implant supported prosthesis

SUGGESTED BOOKS FOR READING

1. Contemporary Implant Dentistry - Carl .E. Misch
   Mosby 1993 First Edition.
2. Osseointegration and Occlusal Rehabilitation Hobo S., Ichida. E. and Garcia L. T.
   Ouintessence Publishing Company, 1989 First Edition.

BEHAVIOURAL SCIENCES (20 hrs of instruction)

GOAL:

The aim of teaching behavioural sciences to undergraduate student is to impart such knowledge & skills that may enable him to apply principles of behaviour -

For all round development of his personality

In various Therapeutic situations in dentistry.

The student should be able to develop skills of assessing psychological factors in each patient, explaining stress, learning simple counseling techniques, and improving patients compliance behaviour.

OBJECTIVES:

KNOWLEDGE & UNDERSTANDING:

At the end of the course, the student shall be able to:

Comprehend different aspects of normal behaviour like learning, memory, motivation, personality & intelligence.

Recognise difference between normal and abnormal behaviour.

Classify psychiatric disorders in dentistry.

Recognise clinical manifestations of dental phobia, dental anxiety, facial pain orofacial manifestations of psychiatric disorders, and behavioural problems in children. Addictive disorders, psychological disorders in various dental departments.

Should have understanding of stress in dentistry and knowledge of simple counseling techniques.

Have some background knowledge of interpersonal, managerial and problem solving skills which are an integral part of modern dental practice.

Have knowledge of social context of dental care.

SKILLS

The student shall be able to:

Interview the patient and understand different methods of communication skills in dentist - patient relationship.

Improve patients compliance behaviour.

Develop better interpersonal, managerial and problem solving skills.

Diagnose and manage minor psychological problems while treating dental patients.

INTEGRATION:

The training in Behavioural sciences shall prepare the students to deliver preventive, promotive, curative and rehabilitative services to the care of the patients both in family and community and refer advanced cases to specialized psychiatric hospitals.

Training should be integrated with all the departments of Dentistry, Medicine, Pharmacology, Physiology and Biochemistry.

PSYCHOLOGY:

1) Definition & Need of Behaioural Science. Determinants of Behaviour. Hrs 1

Scope of Behavioural Science.

Sensory process & perception perceptual process - clinical applications.

Attention - Definition - factors that determine attention. Clinical application.

Memory - Memory process - Types of memory, Forgetting:

Methods to improve memory, Clinical assessment of memory & clinical applications.

Definition - Laws of learning

Type of learning. Classical conditioning, operant conditioning, cognitive learning, Insight learning, social learning, observational learning, principles of learning - Clinical application.

Intelligence - Definition: Nature of intelligence stability of intelligence

Determinants of intelligence, clinical application

Thinking - Definition: Types of thinking, delusions, problem solving 8)

Motivation - Definition: Motive, drive, needs classification of motives

Emotions - Definition differentiation from feelings - Role of hypothalamus, Cerebral cortex, adrenal glands ANS. Theories of emotion, Types of emotions.

Personality. Assessment of personality: Questionaries, personality inventory, rating scales, Interview projective techniques - Rorshach ink blot test, RAT, CAT

SOCIOLOGY:

Social class, social groups - family, types of family, types of marriages, communities and Nations and institutions.

REFERENCE BOOKS:

General psychology - S. K. Mangal

General psychology - Hans Raj, Bhatia

General psychology - Munn

Behavioural Sciences in Medical practice - Manju Mehta

Sciences basic to psychiatry - Basanth Puri & Peter J Tyrer

ETHICS (20 hrs. of instruction)

Introduction:

There is a definite shift now from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the healthcare delivery to prepare themselves to deal with these problems. To accomplish this and develop human values Council desires that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

Course content:

Introduction to ethics -

- what is ethics?
- What are values and norms?
- How to form a value system in ones personal and professional life?
- Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, DCI code of ethics.

Ethics of the individual -

- The patient as a person
- Right to be respected
- Truth and confidentiality
- Autonomy of decision
- Doctor Patient relationship

Profession Ethics -

Code of conduct

Contract and confidentiality

Charging of fees, fee splitting

Prescription of drugs

Over - investigating the patient

Malpractice and

negligence Research Ethics -

Animal and experimental research / humanness

Human experimentation

Human volunteer research - informed consent

Drug trials

Ethical workshop of cases

Gathering all scientific

factors Gathering all value

Identifying areas of value - conflict, setting of

priorities Working our criteria towards decisions

Recommended Reading:

Medical Ethics, Francis C.M., I Ed. 1993, Jaypee Brothers, New Delhi p. 189

Maj Gen (Retd.) P. N. AWASTHI, Secy.

Following name has recommended by Board of Studies & Faculty of Dentistry

1. Oral & Maxillofacial Pathology - 2nd edition, 2004 by Neville, Damm, Allen, Bonequot , Publication – Elsevier
2. Oral Medicine & Radiology : Oral Radiology - White and Pharogh
3. Essentials of Medical Microbiology & Dental Students - 4th edition–Bhatia R. B. & Ichhpujani R.L.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS SECOND B.D.S.

Candidate will be examine in the following subjects :

1. **General Pathology, Microbiology and Parasitology**
2. **General and Dental Pharmacology**
3. **Oral and Dental Anatomy, Physiology, Histology & Embryology**
4. **Preclinical Prosthodontics (Practicals)**
5. **Preclinical Conservative Dentistry (Practicals)**

Subject 1: General Pathology, Microbiology and Parasitology

A. General Pathology

Lectures -	45 Hours
Practicals and demonstration	60 Hours
Total Duration	105 Hours (Minimum)

I. Introduction to Pathology, definition, branches, scope of Pathology, scientific study of disease and some techniques used in the same.

2. Degenerative processes and disturbances of metabolism. Cloudy swelling," Fatty changes, Amyloidosis, Hyaline degeneration, Pigmentation, Calcification

Necrosis, Gangrene.

Circulatory Disturbances.

Hyperaemia, Venous congestion, Ischaemia, Infarction, Hemorrhage, Thrombosis, Embolism, Oedema, Shock.

3. Inflammation, Response of soft and hard tissues to injuries.

Acute inflammation

Chronic inflammation

Repair with special emphasis of repair of bones, wounds and the effect of modern treatment on repair.

Hypersensitivity and Allergy

4. Common Bacterial infection i.e. Pyogenic, Enteric fever, Tuberculosis, Syphilis, Leprosy, Actinomycosis.

5. AIDS

6. Common diseases of bone like osteomylitis

Effects of Chemical, Physical agents including ionising radiation especially on bones and teeth.

7. Disturbances of nutrition with special reference to Indian conditional Metabolic disorders e.g. Rickets, Scurvy, Diabetes Mellitus etc.

8. Growth and its disorder.

Metaplasia, Atrophy, Hypertrophy

Elementary knowledge of malformation and maldevelopment

Tumour

Classification

Characters of malignant and Benign Tumour

Carcinogenesis

Methods of spread

Diagnostic methods in cancer

9. Anaemias i.e. Irondeficiency, Megaloblastic, Haemolytic, Bleeding disorder and their laboratory investigations, leukaemia.

B. Microbiology

Lectures	30 hours
Practicals	60 hours
Total Duration	90 hours (Minimum)

1. Introduction with reference to Medical and Dental microbiology including public health and preventive aspects of infections.
2. Methods and Principles of sterilization-physical and chemical.
3. Pyaemia, Septicemia.& Toxaemia.
4. Immunity and Immunising agents.
5. Auto-immunity-emphasis on practical application.

6. Morphology, Laboratory diagnosis, Physiology, Characteristics, Pathogenesis and classification of micro organisms particularly the followings.

a) Gram positive and negative cocci and bacilli in dental and general infections.

b) Spirochetal oral infections.

c) Normal oral microbial flora.

d) Organism causing specific infections such as meningitis, diphtheria, tetanus, gas gangrene, Tuberculosis, syphilis,

e) Organisms related to Dental caries.

7. Methods of taking swabs and smears from various oral regions and their staining.

8. Elementary knowledge of virology and mycology with examples of Orofacial lesions.

9. Common parasites and parasitic diseases such as amoebiasis, Malaria, Helminthic infections such as Tapeworm, Hookworm Roundworm

10. AIDS, Hepatitis, Biosefty and waste disposal.

PRACTICALS & DEMONSTRATIONS

Lecture Demonstration and practicals in Clinical Pathology comprising of Anemias and their laboratory investigations, Blood transfusion and cross matching, Bleeding disorders and their investigations.

Laboratory investigations commonly required by Dental Surgeons

a) Hemoglobinometry and Hemocytometry, Total leucocytes count.
b) Iron deficiency anemia, Megaloblastic.
c) Preparation of Blood Smears and staining them or differential count.
d) Demonstration of Bleeding time, Clotting time.
e) Leukaemia, Acute and chronic.
f) Blood groups and blood transfusion. Exam. of Urine.
g) Microscope, its various parts, Micrometry, care of microscope.
h) Gram's staining and Ziehl- Neeilsen's staining.
i) Histopathology, practicals and specimans, demonstrations.

EXAMINATIONS PATTERN

I : Theory (Written) paper shall be of three hours duration.

Theory paper shall have three parts A, B & C.

Section A: MCQ.

Multiple choice questions of 20 marks.

20 questions shall include 10 questions of General pathology and 10 General Microbiology.

Section B: General Patholgy

Q.No.1 : Short answer question. (SAQ)

Five short questions carrying two marks each 10 marks.

Q..No.2: One Long answer question or 2 short notes (5 x 2) 10 marks

Section C: Microbiology

Q.No.3: Short answer question. (SAQ)

Five short questions carrying two marks each 10 marks.-------- 10 Marks

Q.No.4 One long answer question or 2 short notes (5 x 2)- ---------- 10 marks

II: Practicals	MAXIMUM : 80 Marks
Clinical pathology	20 Marks
Histopathology(2 slides X 5)	10 Marks
Microbiology Staining (any One)	20 Marks
Spotting (10 spot X 2)	20 Marks
Journal (Micro & Patho)	10 Marks
Oral (Marks to be added to Practical)	20 Marks
III : Internal Assessment Theory+Practical	20 Marks each

Subject 2 : General & Dental Pharmacology

Duration of syllabus	40 Hrs (Minimum)
1) General Pharmacology	- Scope
	- Nature & Sources
	- Dosage form & routes of administration
	- Prescription writing
	- Pharmacokinetics
	- Mode of Action
	- Factors modifying drug action
	- Adverse drug reaction
	- Drug Interaction
2) CNS	- General Anaesethetics
	- Hypnosedatives
	- Analgesics
	- Psychotropics
	- Antiepileptics
	- Analaptics
	- Local Anaesthetics
3) ANS	- Sympathomimetic
	- Anti adrenergic drug
	- Parasympathomimetics
	- Parasympatholytics
	- Histamine
	- Antihistamincs
4)CVS	- Cardiac stimulent(Glycosides)
	- Anti anginal drugs
	- Anti hypertensive drugs
	- Vesopressors & Treatment of shock
5) Drug acting on blood	- Coagulents
	- Anti coagulents

- Haematinics..

6) G.I.T.Drugs
- Purgatives
- Anti diorrheals
- Antacids
- Anti emetics

7)Endocrines
- Treatment of diabetics
- Adrenal Carticosteroids

8) Chemo therapy
- Sulfonamides & cotrimoxazole
- Penicillins
- Cephalosporins
- Aminoglycosides
- Broad spectrum antibiotics
- Other antibiotics
- Fluroquinolones
- Chemotheraphy of tuberocolosis leprosy, malignancy, Maleria & Amoebiasis Antihelmanthic
- Antiviral

9) Vitamins & Anti oxidants

10) Misc. drugs
- Diuretics

Heavy Metal antagonists

Dental Pharmacology & Thearapeutics

Antiseptics

Astringents

Obtundant, Mummifying agents

Bleeching agents

Dentifrices & Mouthwashes

11) Respiratory system : Cough & Bronchial asthma

PRACTICALS .20 HOURS DURATION. (MINIMUM)

1) Prescription Writing and weights, measures, instruments

2) Antiseptic Mouthwash

3) Obtundant Preparation

4) Gum Paint

5) Tooth Powder

6) Tooth Paste

7) Lotion

8) Display of Trade Market Combination

-Mention
-Therapeatic action
-Toxic actions
-Contraindications
-Indications

} Only for training and not for University Examination

9) Criticism & Correction of Prescription on basis of drug interaction.

10) Drugs of Choice.

EXAMINATION PATTERN :

Theory (Written) Paper: Maximum 60 Marks Duration : 3Hours

Section -A- MCQ (20 Question) 20 Marks

Section - B

Q .1 Short Answer Question (SAQ) 10 Marks

Q.2. One Long question/ 2 Short Notes (2 x 5) 10 Marks

Section -C

Q.3 Short Answer Question (SAQ) 10 Marks

Q. 4 One Long Question /2 Short Notes (2x5) 10 Marks

ORALS:

GRAND ORAL FOR 20 MARKS, to be added to Practical. It is conducted separately by examiners and submitted in a separate sheet as per the proforma supplied by University (Appendix -F)

PRACTICAL: Maximum 80 marks.

Distributions is as under:

a) Pharmacy Practical	- 25 marks
b) Correction of wrong prescription	- 25 marks
c) Drug of choice & Dose (5 Drugs x 4)	- 20 marks.
d) Journals /Record book	- 10 marks.

Subject : 3 ORAL AND DENTAL ANATOMY, PHYSIOLOGY,

HISTOLOGY & EMBRYOLOGY

A Course of 150 Hrs. lectures and Practicals including demonstrations and tooth carving to be covered in two academic years.

A. Lectures: 45 Hours {Minimum)

1. Development including mineralization, histology, applied anatomy age changes, functions and stress on clinical significance from the view point of histology and embryology etc. of the following:

a) Structures of teeth (ENAMEL. DENTINE. CEMENTUM. & PULP)

b) Periodential ligament.

c) Jaws .

d) T. M. Joint.

f) Face

g) Oral mucosa

h) Salivary glands.

2) Active and passive eruption of teeth and shedding of Primary teeth.

3) Preparation of hard-soft tissue sections for histological Examination.

4) Applied Anatomy of: -

a) Blood and nerve supply with lymphtic drainage of Oral Tissues.

b) Muscles of Mastication and Facial. expression.

5) Detail Morphology. Chronology. Occlusion (including its controlling factors) of primary & permanent dentitions. Differences between primary and permanent dentitions.

6) Physiology of mastication, deglutition, speech and sensation with their relevance to oral structures.

7) Composition & Physiology of Saliva and their influencing factors.

8) Chemical composition and Physical properties of enamel dentine, cementum & bone.

9) Broad outline of bio-chemistry of oral tissues.

B) Examination (Theory Pattern)

Written -Theory -Paper shall be of 3 hours duration of maximum 60 marks.

Section A: MCQ --- 20 Marks.

20 questions shall be answered by students in a seperate answer sheet within first 20 minutes. This answer sheet to be collected by invigillator immediately after 20 minutes completion.

Section B & C : 20 Marks each.

Q.No.1	S.A.Q. 5 SAQ x 2 Marks each	-10Marks
Q.No.2	L.A.Q. 1 Essay type Or 2 Short Notes	-10 Marks

Section B should cover syllabus of topics No. 1,2,3, & 4

Section C should include the rest of the syllabus.

C. PRACTICALS

I) Demonstration of Various methods of Histological preparation of

a) Oral soft tissues

b) Ground decalcified Sections of teeth and Jaws

2) Brief introduction to Microscope and Microscopy

3) Microscopic study (Histological and Histochemical) of normal oral and dental tissues and their drawing in Journals. .

4) Identification of teeth

5) Determination of Age

6) Carving of permanent teeth including drawing in Journals.

7) Elective presentation of a specific topics.

Subject 4 : PRECLINICAL PROSTHODONTICS (PRACTICALS)

Duration of syllabus: First and Second Year B.D.S.

(360 Hours in Two Years period)

Practical Exercises:

A) Fabrication of complete Denture Prosthesis using edentulous Models (Cast)

1) Introduction, Aims, Objective and Scope.

2) Masticatory apparatus- Applied anatomy of the components

3) Anatomical landmarks and Physiological considerations of the Edentulous maxillary and mandibular arches.

4) Preliminary impression, (Demonstration only) and cast preparatio.

5) Construction of special trays in shellac base and self cured acrylic resin.

a) Close-fit type b) Tray with full spacer and tissue stop.

6) Final impression & Master cast preparation by box-in technique (only Demonstration)

7) Preparation of Record bases..

a) Temporary denture bases (shellac/ selfaired acrylic resin)

b) Occlusion Rims of standard dimensions.

8) Brief introduction and Demonstration of J aw Relation recording

9) Brief introductions of articulators- Detail about Mean value articulator.

10) Transfer of Jaw Relation record on articulator.

11) Brief information about the selection of teeth.

12) Arrangement of teeth -Anteriors and posterior.

13) Reproducing gingival tissue morphology (Waxing and carving)

14) Laboratory Procedures:

i) Flasking -Various techniques in brief

ii) Wax elimination from mould (Dewaxing)

iii) Preparation and packing the mould with Denture base resin.

iv) Acrylization -Brief introduction about curing cycles

v) Deflasking -Denture recovery from flask.

vi) Laboratory Remount Procedure and selective grinding.

vii) Face bow preservation Record (optional)

viii) Finishing and polishing of Dentures

ix) Making Remount cast for Clinical remount procedure.

15) Teeth arrangement in Prognathic and Retrognathic ridge relations.

16) Repair to a broken complete denture.

B) Fabrication of Removable partial Dentures:

1. Brief introduction to partial Dentures.
2. Comparison between Removable and fixed partial dentures.
3. Classification (introduction) and rules governing the classification.
4. Making one tooth (Anterior) partial denture in acrylic resin.
5. Making (posterior) removable partial denture with 'C′ clasp adaptation.
6. Surveying procedure (Demonstration only)
7. Brief introduction of various components of partial Denture.
8. Designing partial denture framework on partially edentulous cast (Drawing as Diagnostic model and in journal)
9. Brief introduction to various laboratory steps in fabrication of cast partial denture framework by using audio-visual aids.

C) Fixed partial Denture Prosthesis :

1. Brief introduction to crown and Bridge prosthesis
2. Principles of tooth reduction (Preparing abutment) to receive
    a) Full crown for anteriors and posterior teeth .
    b) partial veneer crown for anteriors and posterior teeth
    c) Dowel crown/post and core crown (Demonstration only)

3. Casting procedure to fabricate 3 unit bridge (Demonstrition only) with special consideration to making of dyes and working models.
4. Brief introduction of pontic designs.

D) Special Prosthesis :

1. Making of cap spints & gunning splint (only Demonstrations.)
2. Fabrication of obturators (only demonstration)
3. Introduction (with models/charts/photographs) of various maxillofacial prosthesis & Dental Implant.

EXAMINATION PATTERN :

I) Internal assessment. 20 Marks

a) First test of 5 Marks -- Making of special tray/Occlusion rims

b) Second test of 5 Marks -- Arrangement of teeth

c) Third test of 5 Marks -- Designing a removable partial denture for (cast partial framework) given model (Drawing on Cast and Lab. prescription slip)

d) Fourth test of 5 Marks -- Preparation of tooth to receive Full/P.V. Crown with wax pattern

First two tests to be conducted in first Year B.D.S. and third & fourth test to be con- ducted in Second Year B.D.S. Marks of First two tests must be submitted to university along with the marks of other First year subjects.

II Practical Examination: 80 Marks

To be conducted at the end of Second Year B.D.S. along with university practical programme of other subjects. Break-up is as under:

Exercise I a) Teeth arrangement for complete denture .25 Marks } Duration
b) Waxing and carving (Gingival tissue morphology)..15 Marks } 3 Hrs.

Exercise II c) Abutment preparation to receive crown .20 Marks. } Duration
d) Wax pattern for that preparation ..10 Marks. } 2 Hrs.

e) Journals/Record of the-two Year work ..10 Marks.

Subject 5: PRECLINICAL CONSERVATIVE DENTISTRY (PRACTICALS)

Duration of Syllabus: Second Year B.D.S. (240 Hrs minimum)

Syllabus :

Practical Exercises :

A. Exercises to improve the dexterity:

i) Preparation of plaster models of teeth

ii) Finishing and polishing of plaster models

iii) Marking of cavity as per Black's classification on these plaster models for Dental Amalgum fillings and inlays.

iv) Preparation of cavities for Amalgum fillings and Inlays on plaster model

v) Restoration of the prepared cavities with modelling wax.

B. Exercises for cavity preparation of Dental Amalgum Restoration on natural/ivorine

1) Mounting of the Natural/Ivorine teeth on phantom head.

2) Preparation of Cl. I/Cl.I Comp./Cl.II/Cl. V /M.O./D. cavities of posterior teeth with special amphesis on Cl. II cavities.

3) Cavity lining on all the prepared cavities

4) Restoration &.polishing of all teeth restored with dental amalgam.

C. Exercises for anterior teeth restoration.

1) Preparation of CI. III/Cl. IV cavities in anterior teeth.

2} Preparation of wax pattern for the same with inlay wax.

DEMONSTRATIONS ONLY

1. Casting procedures
2. Restoration of fractured anterior teeth with compositer resins.
3. Opening of root canal for anterior/ opsterior teeth.

EXAMINATION PATTERN

I. Internal assessment. 20 Marks.

a) First Test of 5 Marks. ..Cavity Preparation & filling on plaster models

b) Second Test of 5 Marks . .Cavity preparation class II on ivorine/Extracted (Natural) tooth & filling in Amalgum.

c) Third Test of 5 Marks ...Restoration of prepared cavity by using /GIC/ Composite resin or any other suitable material.

d) Fourth test of 5 Marks ...Class I inlay preparation of wax pattern on ivorine/extracted tooth.

First two test in First Term & Last two test in second term to be conducted. The marks in proforma to be submitted along with other subjects. .

II. Practical Examination. 80 Marks

To be conducted along with university practical examination of other subjects. Break-up is as under.

Exercise . I : 2 Hours duretion.

i) Class II cavity preparation on ivorine/Extracted tooth (for Amalgum fillings)	20 Marks
ii) Lining	05 Marks
iii) Filling of the cavity with amalgum and carving	15 Marks

Exercise. II : 1 Hours duretion.

i) Class I Inlay cavity preparation on ivorine/ natural tooth	20 Marks
ii) Wax pattern for inlay	10 Marks
iii) Records/ Journals	10 Marks

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

Appendix E

Format of the Practical / Clinical Examination Marks
Maharashtra University of Health Sciences, Nashik

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover though the Dean of the college to the Controller of Examination, MUHS, Nashik

Name of Examination :_____Summer / Winter _____

Centre : _____

Subject : PHARMAOLOGY

Roll No.	Pharmacy Practical	Correction of wrong Prescription	Drug of Choice & Dose 5 Drug	Journal	Total
	25	25	20	10	80

Subject : GENERAL PATHOLOGY AND MICROBIOLOGY

Roll No.	Clinical Pathology	Histopathology (2 Slices x 5 Marks)	Microbiology Staining	Spotting 10 x 2 Marks	Journal	Total
	20	10	20	20	10	80

Subject : ORAL DENTAL ANATOMY, HISTOLOGY ETC.

Roll No.	Slides (6 Spots 5 Marks	Spotting & Specimen (4 Spots x 5 Marks	Carving of tooth	Journal	Total
	30	20	20	20	80

Subject : PRE-CLINICAL PROSTHODONTICS PRACTICAL

Roll No.	Teeth Arrangement	Waxing & Carving	Abutment Preparation For Crown	Wax Pattern	Journal	Total
	25	15	20	10	10	80

Subject : PRECLINICAL CONSERVATIVE DENTISTRY

Roll No	Caviti Amalgam Preparation	Lining	Filling	Inlay	Wax pattern	Journal	Total
	20	10	15	20	5	10	80

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name : _____

Signature : _____

(Common to All)

Appendix C

SCHEDULE FOR INTERNAL ASSESSMENI MARKS

To assess the overall progress of the students by evaluating the professional skills he has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20% of the total marks.

2) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under

.

		Theory	Practical/Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5 Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination).

3) The pattern of Internal Assessment Examination should be as under :

Theory : Written. .. 50 Marks

Practical .. 50 Marks
Including Oral

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in proforma even in fraction like 35/50 will be shown as 3.5 out of ;5 marks.

4) The marks obtained by the candidate even with fractions. The fraction, if any, is now to be converted into nearest high round figure when the fraction is 0.5 or more.

5) All the records of this examination will have to be maintained by the Heads o Departments and will have to verification.

6) All records of this examination shall be preserved up to the commencement of next university examination of that batch by head of Department in consoltation with the Dean.

7) a) The marks obtained by candidate should be submitted in controller of examination Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix -D, by HOD, through the Dean / Principal of the college before 20 days of the commencement of the University Theory Examination by Hand delivery or Register post.

8) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks. The internal assessment marks of this examination to be submitted to University Authority

9) For repeater students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule.

10) In case candidate remains absent only on valid ground where his presence elsewhere is justified or when he is unable to attend the examination on health ground and when he informed the H.OD and Dean about his inability to attend such examination before or during the examination schedule, the Dean in consultation with heads of Department of concerned subject shall conduct re-

examination for the student within 20 days or before commencement of next internal assessment test of University Examination.

The marks should be submitted for these students separately, if required.

11) The marks obtained by candidate as internal assessment will not be taken into account for passing the subject head, but will be added to the aggregate of that subject Head.

12) The internal assessment Tests for Preclinical Prosthodontic Practicals and

Preclinical Conservative Dentistry Practical will be conducted as per the details mention in syllabus of these subjects under the title of examination. (Please refer Page No. 9,12)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

First B.D.S. Summer / Winter 200- Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name: _____

Signature: _____

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

Signature of Subject Teacher Signature of Head of the Department

APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for Second B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	General Pathology and Microbiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General and Dental Pharmacology & Therapeutics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150

		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Human Oral Anatomy (Including Embryology and Histology)	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Pre-clinical Prosthodontics Practicals	i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50	100	75
5	Pre-Clinical Conservative Practicals	i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50	100	75
				Grand Total	800	600

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS : THIRD B.D.S.

Candidate will be examined in the following subjects:

1) **General Medicine**
2) **General Surgery**
3) **Oral Pathology & Microbiology.**
4) **Preventive and Community Dentistry.**

Subject 1 : GENERAL MEDICINE

Lectures - 40 Hours.
Clinicals - 90 Hours.
Total Duration 130 Hours.

LECTURES :

1. Aims of Medicine.
2. Definition of diagnosis, prognosis and treatment.
3. History taking and physical examination of a medical case.
4. Medical emergencies in dental practice, Anaphylactic shock, Hemophillia, Syncope etc. Cardiac arrest etc.
5. G.I. Disorders:
   Stomatitis, Glossitis, Gastritis, Diarrhoea, Amoebiasis, Ascites, Malabsorption syndrome, Peptic ulcer.
6. Liver.- Jaundice, Viral hepatitis, Cirrhosis of liver. Tender hepatomegaly.
7. Cardiovascular System:
   Congenital heart diseases, classification, Rheumatic heart diseases, subacute bacterial endocarditis. Congestive heart failures, left ventricular failure. Hypertension. Coronary artery disease.
8. Respiratory System:
   Pneumonia, Bronchitis, Emphysema, Lung Abscess. Eosinophilia, Pulmonary Embolism, Pulmonary Tuberculosis, Respiratory failure, Chronic obstructive Pulmonary diseases.

9. Renal Diseases :

Nephritis, Nephrotic Syndrome.

10. Hematology:

Anaemia, Coagulation defects, Bleeding disorders. Agranulocytosis, Leukaemia Oral manifestations of Hematological disorders, Lymphadenopathy and splenomegaly.

11. Central Nervous System:

Meningitis, Facial Palsy, Facial pain, Epilepsy, Headache, Vertigo, Nervousness, Anxieties & Depression.

12. Nutritional and Metabolic disorders :

Balanced diet, Normal daily requirements.

Protein Calorie Malnutrition.

Avitaminosis., Diabetes Mellitus.

Calcium homeostasis, Flouride & Phosphorous metabolism.

13. Endocrine Disorders:

Thyroid-Hypo and hyper, Pituitary - Hypo and hyper, Parathyroid - Hypo & Hyper, Adrenal - Hypo & Hyper.

14. Infection:

Enteric fever, Mumps, Leprosy, Diphtheria, Syphilis, Gonorrhoaea, Herpes, AIDS., Hepatitis, Maleria fever.

15. Miscellaneous : Allergy, Anaphylaxis, Drug reactions, Drug interactions, Poisoning.

Evaluation of a case for general anaesthesia. Case history and Examination of patient. Diagnosis, Prognosis & Treatment planning.

16. Recent advances in general medicine.

I . Theory ..... 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each .... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

60 Marks.

II. CLINICALS

A) Practical

Maximum . ..... 80 Marks.

i] Long Case ..... 35 Marks.

ii] Short Case ..... 20 Marks.

iii] X-Rays & Drugs ..... 20 Marks.

iv] Journal ..... 05 Marks.

Total 80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.

A+B = 100 Marks.

III. Internal Assessment (Theory 20 + Practical 20) .....40 marks

Subject 2 :GENERAL SURGERY

Lectures - 40 Hours.

Clinicals - 90 Hours.

Total Duration 130 Hours.

LECTURES :

1. Introduction to surgery, especially related to Oro-dental surgery, classification of diseases.
2. Inflammation of soft-tissue & hard tissue-Causes, Varieties, sequelae and treatment.
3. Infection-Acute and Chronic, Abscess, Carbuncles, Sinus, Fistula, Ulceration, Gangrene, Cellulitis, Erysipelas, Septicaemia, Pyaemia, Toxaemia, Cancrum Oris, Tuberculosis, Syphilis, Gonorrhoea, Actinomycosis, Anthrax, Tetanus.
4. Wounds-complications, Treatment, Repairs, Suturing technique, Asepsis and antiseptic measures and procedure with particular reference to the Oral cavity. Haemorrhage and its treatment, Haemophillia, Syncope, Shock, Collapse, Head injury and its management.
5. Cysts and new growths- Their general consideration with special reference to those occurring in the Oral Cavity.
6. Diseases of the Lymphatic glands, especially of the neck.
7. Outline of diseases of the mouth, lips, tongue, palate, tonsils and salivary glands.
8. Infections and diseases of the Larynx, Tracheostomy.
9. Nervous system, Facial palsy, Trigeminal Neuralgia.
10. Principles of surgical treatment, diathermy and radition Therapy.
11. Fracture-General principles of treatment, and healing.
12. Cleft lip and cleft palate.
13. Thyroid and parathyroid.
14. Swellings of jaws.

15. Burns:-outline & treatment in brief.
16. Diseases of arteries & Veins.
17. Blood grouping & transfusion.
18. Methods of administration of general anaesthesia, Precautions, Management, Resuscitation in Dentistry.
19. Operation theatre techniques.
20. Recent advances in general surgery.

EAMINATION PATTERN :

I. Theory ----------max 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each .. .. 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. CLINICALS

A) Clinical/Practical

i] Long Case	.....	35 Marks.
ii] Short Case	.....	20 Marks.
iii] X-Rays, Instruments	...	20 Marks.
iv] Journal	.....	05 Marks.
Total	-------	80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.

A+B = 100 Marks

13. **Internal Assessment (Theory 20 +Practical 20) ....**40 Marks.

Subject 3 : ORAL PATHOLOGY AND MICROBIOLOGY.

Lectures .. 50 Hours.

Practical .... 90 Hours.

Total Duration . .140 Hours.

LECTURES :

1. Aims & Objectives.
2. Developmental disturbances of dental, oral and paraoral structures, including hereditary disorders.
3. Dental caries.
4. Pulpal and periapical pathosis and their sequelae.
5. Environmental lesions of the oral and para-oral structures.
6. Defense mechanism of oral tissues and healing following injuries.
7. Diseases of periodontal ligament, gingiva and cementum.
8. Effects of nutritional disturbances and normal disorders on the oral and para-oral structures.
9. Infections & Diseases of oral mucosa.
10. Bone disorders affecting jaws.
11. Traumatic injuries of teeth, Gums & soft tissues, their sequelae and healing.
12. Cysts of oral cavity.
13. Pre-cancerous lesions-etiology and pathology.
14. Neoplasms of Oral Cavity.
15. Diseases of salivary and lymph glands.
16. Diseases of Tempero-Mandibular joint.
17. Diseases of nerves, skin, blood and their implications to oral tissues.
18. Concept of immunology as related to oral lesions. HIV Infection, Hepatitis.
19. Effects of radiation on oral and para-oral tissues.
20. Outline of forensic odontology.
21. Oral Microbiology - Oral Flora, Diagnostic procedures in oral microbiology & Histopathology.
22. Recent advances.

PRACTICAL:

1. Identifications of hard and soft tissue specimens.
2. Identification of Histopathological & Microbiological slides.
3. Biopsy and exfoliative cytology techniques.

I. Theory ----------Max 60 Marks.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. PRACTICAL

A) i] Spotting of 8 slides .... 40 Marks.
ii] Spotting of 6 specimens ... 30 Marks.
iii] Journals ... 10 Marks,
Total --------- 80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.
A+B = 100 Marks.

III. Internal Assessment (Theory 20+Practical 20) ------ 40 Marks.

Subject 4 : Preventive and Community Dentistry.

Lectures - 30 Hours. (Spread over Two Terms)
Field Programs - 100 Hours.
Total Duration - 130 Hours.

LECTURES :

1. History of Dentistry.
2. Biostatistics:
   Introduction and General Principles of Biostatistics, Statistical procedures.
3. Psychology:
   Introduction, Psychological development from birth to adolescence, Management of Child in the dental office, parent counseling in respect of dental health and Hygiene of the child.

4. Public Health:

Concept and philosophy of Health administration in India National health programmes, General Epidemiology, Health Education, Environmental Health (Norms for portability, purification) Fluorine-contents of water and implications of its deviation. Water treatment to ensure its proper concentration.

5. Preventive Dentistry:

Prevention, levels of prevention, various measures in the prevention of Dental and Oral diseases at individual and community level. Nutrition and Dental Health.

6. Public Health Dentistry:

Introduction, definition, objectives, function of public health dentist, procedural steps in dental public health, indices for dental diseases, surveying and evaluation. epidemiology of dental caries, periodontal diseases, oral cancer, Utilization of dental manpower, payment for dental care, public dental Health programme. School dental health programme. Dental health services at state and center. Private practice administration, ethics, Jurisprudence, Dental Council and Dental Association. Parameters used in clinical and population studies for dental Health. Dentist and consumer protection Act.

7. Social Sciences:

As applied to health, social structure concepts, groups, social institutions, urban and rural societies, their concepts of health. Application of sociology in health programs, social environment. Cultural Anthropology, objective, different aspects of Folk medicine and popular medicine, Cultural pattern and complexes, taboos as related to health.

8. Epidermology of Dental & Oral diseases.

Defination of indices , Classification of indices , commonly used indices for dental caries & periodental diseases.

9. Recent advances and other oral diseases.

FIELD PROGRAMME :

1. In rural areas to conduct survey of Dental diseases. Provide Dental Health Education, emergency treatment.
2. School-Health programme, Dental Care for school children and preventive programme. Topical fluoride application and oral hygiene demonstrations.

EXAMINATION PATTERN :

I. Theory (written) paper shall be of three hours duration max 60 Marks.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each .... 20 marks

II. ORAL (VIVA VOCE) .... 20 Marks.

III. Int. Assessment in Theory 20 Marks.

Total 100 marks.

APPENDIX - C

SCHEDULE FOR INTERNAL ASSESSMENT MARKS

To assess the overall progress of the students by evaluating the professional skills he has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20 marks each.

2.A) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under

		Theory	Practical / Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5 Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination).

2.B) For Final B.D.S. Subjects :- Four College test to be conducted theory as per above pattern in final year only. However, for Clinical Practical test -- 2 test to be conducted in third year teaching during clinical posting and 2 test to be conducted in IV year clinical posting.

3) The pattern of Internal Assessment Examination should be as under :

a) Theory . . . 50 Marks

b) Practical . . . 50 Marks

c) Exception : For community Dentistry the written Examination will be of 40 Marks & Oral will be of 10 Marks.

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in Performa even in fraction like 35/50 will be shown as 3.5 out of 5 marks.

4) The marks obtained by the candidate in all four examinations, to be amalgamated even with fractions. The fraction, if any, is now to be converted into nearest higher round figure.

5) All the records of these examination P/T will have to be maintained till the start of next University Examination by the Heads of Departments and will have to be produced to the University authority if required for verification.

6) a) The marks obtained by the students for First, Second internal assessment tests should be submitted in the prescribed proforma (Appendix - D) to the controller of examination immediately after 15 days of completion of second Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix - D , through the Dean / Principal of the college before 20 days of the commencement of the University Theory Examination by Hand delivery or Register post. The Mark sheet should be signed by the candidates, teacher in charge/HOD & Dean/Principal.

7) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks.

8) For repeater and detainee students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule. The best out of two of internal assessment marks (Previous Assessment/New Assessment) to be submitted to the University for the computation of marks

9) In case candidate remains absent on valid ground where his presence elsewhere is justified or when he is unable to attend the Examination on health ground and when he has informed the HOD/Dean about the same before or during the Examination Schedule. Candidate should compenset for this absenty by attending fifth (Extra) Internal Assessment Test. Those students who wants to improve their performance, they ay attend this test.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of

practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

APPENDIX-E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination : Third B.D.S. Summer / Winter 200___

Centre : _____

1) SUBJECT : GENRAL MEDICINE Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Long Case (35Marks)	Short Case (20 Marks)	X-rays & Drugs (20 Marks)	Journal (5 Marks)	Total (80Marks)

2) SUBJECT : GENRAL SURGERY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Long Case (35Marks)	Short Case (20 Marks)	Xrays, Instrumentation (20 Marks)	Journal (5 Marks)	Total (80Marks)

3) SUBJECT : PATHOLOGY & MICROBIOLOGY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Spotting of 8 Slides (8 X 5 = 40 Marks)	Spotting of 6 Specimens (6 X 5 = 30 Marks)	Journal (10 Marks)	Total (80Marks)

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name : _____

Signature : _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Third B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners : **Internal Examiners :**

Name: _____ Name: _____

Signature: _____ Signature: _____

APPENDIX B
MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK
Scheme of Examination for Third B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	General Medicine	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General Surgery	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		

3	Oral Pathology & Microbiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Preventive and Community Dentistry	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	100	75
		Grand Total			700	525

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

(Signature of Subject Teacher) (Signature of Head of the Department

DENTAL COUNCIL OF INDIA

BDS COURSE REGULATIONS 2007

DENTAL COUNCIL OF INDIA
Temple Lane, Kotla Road
New Delhi – 110 002

PREFACE

TO

BDS COURSE REGULATIONS 2007

(Modified: 25.07.2007)

Framed by the Dental Council of India and approved by the Central Government under the Dentists Act, 1948 – vide Government of India, Ministry of Health & Family Welfare (Deptt. of Health's) letter No.V.12012/3/2006-DE dated 25.07.2007.

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   - Department : Paediatric and Preventive Dentistry
   - Department : Orthodontics & Dentofacial Orthopaedics
   - Department : Periodontology
   - Department : Conservative Dentistry and Endodontics
   - Department : Oral & Maxillofacial Surgery
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6. **Staffing Pattern – Teaching & Non-Teaching Staff**
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   2. Human Physiology & Biochemistry, Nutrition & Diatics
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   4. General Pathology & Microbiology
   5. General and Dental Pharmacology and Therapeutics
   6. Dental Materials
   7. Pre Clinical Conservative Dentistry Laboratory Exercisesz
   8. Oral Pathology & Oral Microbiology
   9. General Medicine
   10. General Surgery
   11. Conservative Dentistry and Endodontics
   12. Oral & Maxillofacial Surgery
   13. Oral Medicine and Radiology
   14. Orthodontics & Dentofacial Orthopaedics
   15. Paediatric & Preventive Dentistry
   16. Public Health Dentistry
   17. Periodontology
   18. Prosthodontics and Crown & Bridge
   19. Aesthetic Dentistry
   20. Forensic Odontology
   21. Oral Implantology
   22. Behavioural Science
   23. Ethics

DENTAL COUNCIL OF INDIA
NOTIFICATION
New Delhi, the 25th July, 2007

No.DE-22-2007.-In exercise of the powers conferred by Sectioin 20 of the Dentists Act, 1948, the Dental Council of India with the previosus sanction of th Central Government hereby makes the following Revised BDS Course Regulations :-

1. Short title and commencement. – (i) These Regulations may be called the Dental Council of India Revised BDS Course Regulations, 2007.
(ii) They shall come into force on the date of their publication in the Official Gazette.

REGULATIONS FOR THE DEGREE OF BACHELOR OF DENTAL SURGERY

GENERAL: Universities awarding the degrees in Bachelor of Dental Surgery (BDS) and Master of Dental Surgery (MDS) shall establish independent Dental Faculty.

The heading 'ADMISSION, SELECTION, AND MIGRATION' shall be read as under, in terms of (8th Amendment) notification published on 12.7.2017 in the Gazette of India.

~~**ADMISSION, SELECTION AND MIGRATION:-**~~

ADMISSION, SELECTION, COUNSELLING AND MIGRATION:-

I. Admission to the Dental Course – Eligibility Criteria:

No Candidate shall be allowed to be admitted to the Dental Curriculum of first Bachelor of Dental Surgery (BDS) Course until:

1. He/she shall complete the age of 17 years on or before 31st December, of the year of admission to the BDS course;

   The following has been inserted, and the existing sub-regulation "2." is re-numbered as "3"., in terms of (5th Amendment) notification published on 31st May, 2012 in the Gazette of India.

2. He/She has obtained a minimum of marks in National Eligibility-cum-Entrance Test as prescribed in sub-regulation 5 of Regulation II under the heading **"Selection of students:"**

   The following has been inserted in terms of (5th Amendment) notification published on 1st June, 2012 in the Gazette of India

3. ~~2.~~ In order to be eligible to take National Eligibility-cum-Entrance Test he/she has passed qualifying examination as under:-
   a. The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of Physics, Chemistry, Biology and Mathematics or any other elective subjects with English at a level not less than the core course for English as prescribed by the National Council for Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee on education;
   Note: Where the course content is not as prescribed for 10+2 education structure of the National Committee, the candidates will have to undergo a period of one year pre-professional training before admission to the dental colleges;

   or

   b. The intermediate examination in science of an Indian University/Board or other recognised examining body with Physics, Chemistry and Biology which shall include a practical test in these subjects and also English as a compulsory subject;

   or

   c. The pre-professional/pre-medical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination, or the pre-university or an equivalent examination. The pre-professional/pre-medical examination shall include a practical test in Physics, Chemistry and Biology and also English as a compulsory subject;

   or

d. The first year of the three years degree course of a recognized university, with Physics, Chemistry and Biology including a practical test in three subjects provided the examination is a "University Examination" and candidate has passed 10+2 with English at a level not less than a core course;

or

e. B.Sc examination of an Indian University, provided that he/she has passed the B.Sc examination with not less than two of the following subjects Physics, Chemistry, Biology (Botany, Zoology) and further that he/she has passed the earlier qualifying examination with the following subjects-Physics, Chemistry, Biology and English.

or

f. Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology including practical test in each of these subjects and English.

The following have been added under the heading "Admission to the Dental Course- Eligibility Criteria" after sub-clause 2 (f), in terms of (2nd Amendment) notification published on 29th October, 2010 in the Gazette of India.

"3. 3% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50% to 70%
Provided that in case any seat in this 3% quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50% to 70% then any such unfilled seat in this 3% quota shall be filled up by persons with locomotory disability of lower limbs between 40% to 50% before they are included in the annual sanctioned seats for General Category candidates.

Provided further that this entire exercise shall be completed by each Dental College/Institution as per the statutory time schedule for admissions and in no case any admission will be made in the BDS course after 30th of September."

The following has been deleted in terms of (5th Amendment) notification published on 1st June, 2012 in the Gazette of India

Note:

- ~~Marks obtained in Mathematics are not to be considered for admission to BDS Course.~~
- After the 10+2 course is introduced, the integrated courses should be abolished.

II. Selection of Students: The selection of students to dental college shall be based solely on merit of the candidate and for determination of the merit, the following criteria be adopted uniformly throughout the country:

The following has been deleted in terms of (5th Amendment) notification published on 1st June, 2012 in the Gazette of India

~~1. In states, having only one Dental College and one university board/examining body conducting the qualifying examination, the marks obtained at such qualifying examination may be taken into consideration;~~

~~2. In states, having more than one university/board/examining body conducting the qualifying examination (or where there is more than one dental college under the administrative control of one authority) a competitive entrance examination should be held so as to achieve a uniform evaluation as there may be variation of standards at qualifying examinations conducted by different agencies;~~

~~3. Where there are more than one college in a state and only one university/board conducting the qualifying examination, then a joint selection board be constituted for all the colleges;~~

~~4. A competitive entrance examination is absolutely necessary in the cases of institutions of All India character;~~

The following has been deleted and substituted in terms of (5th Amendment) notification published on 1st June, 2012 in the Gazette of India

5. Procedure for selection to BDS course shall be as follows:-

~~i. in case of admission on the basis of qualifying examination under clause (1) based on merit, candidate for admission to BDS course must have passed in the subjects of Physics, Chemistry, Biology & English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry, and Biology at the qualifying examination. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or Other Backward Classes, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be 40% instead of 50% as above and must have qualifying marks in English.~~

~~The following have been added before the clause 5 (ii) under the heading "selection of students", in terms of (2nd Amendment) notification published on 29th October,2010 in the Gazette of India.~~

~~"Provided that the eligibility criteria for admission to persons with locomotory disability of lower limbs in terms of Clause 3 above- will be a minimum of 45% marks instead of 50% taken together in qualifying examination and competitive entrance examination for admission in BDS Course."~~

~~ii. In case of admission of the basis of competitive entrance examination under clause (2) to (4) of this regulation, a candidate must have passed in the subjects of Physics, Chemistry, Biology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology at the qualifying examination and in addition must have come in the merit list prepared as a result of such competitive entrance examination by securing not less that 50% marks in Physics, Chemistry and Biology taken together in the competitive examination. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or any other categories notified by the Government the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination and competitive entrance examination be 40% instead of 50% as stated above:~~

~~Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he may be provisionally permitted to take up the competitive entrance examination and in case of selection for admission to the BDS course, he shall not be admitted to that course until he fulfils the eligibility criteria as per above regulations.~~

i. There shall be a single eligibility-cum-entrance examination namely "National Eligibility-cum-Entrance Test for admission to BDS course" in each academic year."

ii. In order to be eligible for admission to BDS Course for a particular academic year, it shall be necessary for a candidate to obtain minimum of marks of 50th percentile in 'National Eligibility-cum-Entrance Test to BDS course' held for the said academic year. However, in respect of candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, the minimum marks shall be at 40th percentile. In respect of candidates with locomotory disability of lower amendments, the minimum marks shall be at 45th percentile. The percentile shall be determined on the basis of highest marks secured in the All-India common merit list in "National Eligibility-cum-Entrance Test for admission to BDS course."

Provided when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in National Eligibility-cum-Entrance Test held for any academic year for admission to BDS Course, the Central Government in consultation with Dental Council of India may at its discretion lower the minimum marks required for admission to BDS Course for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

iii. The reservation of seats in dental colleges for respective categories shall be as per applicable laws prevailing in States/Union Territories. An all India merit list as well as State-wise merit list of the

eligible candidates shall be prepared on the basis of the marks obtained in National Eligibility-cum-Entrance Test and candidates shall be admitted to BDS course from the said lists only.

iv. No Candidate who has failed to obtain the minimum eligibility marks as prescribed in Clause (ii.) above shall be admitted to BDS course in the said academic year.

v. All admissions to BDS course within the respective categories shall be based solely on marks obtained in the National Eligibility-cum-Entrance Test.

vi. To be eligible for admission to BDS Course, a candidate must have passed in the subjects of Physics, Chemistry, Biology/Biotechnology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology/Biotechnology at the qualifying examination as mentioned in Sub-regulation 2 of Regulation I and in addition must have come in the merit list of "National Eligibility-cum-Entrance Test" for admission to BDS course. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or other Backward Classes the minimum marks obtained in Physics, Chemistry and Biology/Bio-technology taken together in qualifying examination shall be 40% instead of 50%. In respect of candidates with locomotory disability of lower limbs in terms of sub-regulation 4, after the commencement of these amendments, of Regulation 1 above, the minimum marks in qualifying examination in Physics, Chemistry and Biology/Bio-technology taken together in qualifying examination shall be 45% instead of 50%.

Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he/she may be provisionally permitted to take up the National Eligibility-cum-Entrance Test and in case of selection for admission to the BDS course, he/she shall not be admitted to that course until he fulfills the eligibility criteria under Regulation 1.

vii. The Central Board of Secondary Education shall be the organization to conduct National Eligibility-cum-Entrance Test for admission to BDS course.

The following has been added under clause II 'Selection of Students', in terms of (8th Amendment) notification published on 27th July, 2017 in the Gazette of India:

II. **A Common Counselling.**

1 There shall be a common counselling for admission to BDS course in all dental educational institutions on the basis of merit list of the National Eligibility-cum-Entrance Test.

2. The designated authority for counselling for the 15% All India Quota seats of the contributing States and all BDS seats of Dental Education Institutions of the Central Government universities established by an Act of Parliament and the Deemed Universities shall be the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.

3. The counselling for admission to BDS course in a State/Union Territory, including Dental Education Institutions established by the State Government, University established by an Act of State/Union Territory Legislature, Trust, Society, Minority Institutions shall be conducted by the State/Union Territory Government.

4. In case any dispute arises on such common counselling, the respective State Government shall refer the matter to the Central Government and its decision shall be final, in this regard.

III. Duration of the Course:

The following provision has been substituted to the extent indicated hereunder in terms of (3rd Amendment) notification published on **25th August, 2011** in the Gazette of India and the same is as under:-

~~The undergraduate dental training programme leading to BDS degree shall be of 5 years with 240 teaching days in each academic year. During this period, the student shall be required to have engaged in full time study at a dental college recognized or approved by the Dental Council of India.~~

The undergraduate dental programme leading to BDS Degree shall be of 4 (four) Academic years with 240 teaching days in each academic year, plus one year paid rotating Internship in a dental college. Every candidate will be required, after passing the final BDS Examination to undergo one year paid rotating internship in a dental college. The detailed curriculum of Dental Internship Programme is annexed as Annexure-A.
The internship shall be compulsory and BDS Degree shall be granted after completion of one year paid Internship.

~~NOTE: It is recommended by the DCI that the colleges who have implemented the revised BDS Course Regulation, 2007 itself, has to carry on with the existing five year programme. Regarding internship for this batch it is upto the respective university to decide.~~

Further, the admissions made from the year 2008-09, the students may be included in this amendment provided the concerned University's rules permit.

Provided that the Affiliating University/State Government are free to make applicable these amendment is upto the University to implement this amendment provided it abides by their Act/Rules and Regulations.

The above NOTE has been deleted and the following proviso is inserted below the NOTE in terms of (4th Amendment) notification published on 9**.12.2011** in the Gazette of India and the same is as under:-

NOTE: Provided that the students of the batch admitted during the academic session 2007-2008, and consequently they are going to pursue their 5th year BDS Course as per the course curriculum and syllabus prescribed in the principal Revised BDS Course Regulations, 2007, may complete their Theory in 4 (four) subjects with 160 Lecture hours within a period of 6 (six) months as given below:-

Subject	Lecture Hours
Oral & Maxillofacial Surgery	30
Conservative Dentistry & Endodontics	50
Prosthodontics and Crown & Bridge	50
Public Health Dentistry	30
Total	160

On completion of such study, they shall have to appear in the University Examination and only after passing University Examination successfully, they shall be allowed to do six months Paid Rotating Internship Programme in all the Departments for the duration indicated against each Department as under:-

Departments	Period of Postings
1. Oral Medicine & Radiology	20 days
2. Oral && Maxillofacial Surgery	30 days
3. Prosthodontics	30 days
4. Periodontics	15 days
5. Concervative Dentist	10 days
6. Pedodontics	15 days
7. Oral Pathology & Microbiology	10 days
8. Orthodontics	10 days
9. Community Dentist/Rural Service	30 days
10. Elective	10 days
Total	180 days

The following proviso has been inserted in terms of (6th Amendment) notification published on 24.6.2013 in the Gazette of India:-

Provided further that students of 2007-2008 BDS batch who are declared passed with 4 ½ + 6 months Paid Rotatory Internship or 5-year duration course, as the case may be, as per Revised BDS Course (4th Amendment) Regulations, 2011, shall be deemed at par/equivalent with 4+1 year BDS Course, including one year Paid Rotatory Internship programme, for all interns and purposes i.e. for admission in MDS Course, applying for Govt Jobs, registration in State Dental Councils etc.

IV. Migration:

(1) Migration from one dental college to other is not a right of a student. However, migration of students from one dental college to another dental college in India may be considered by the Dental Council of India. Only in exceptional cases on extreme compassionate ground*, provided following criteria are fulfilled. Routine migrations on other ground shall not be allowed.

(2) Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought, are recognised by the Dental Council of India.

(3) The applicant candidate should have passed first professional BDS examination.

(4) The applicant candidate submits his application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the first professional Bachelor of Dental Surgery (BDS) examination.

(5) The applicant candidate must submit an affidavit stating that he/she will pursue 240 days of prescribed study before appearing at IInd professional Bachelor of Dental Surgery (BDS) examination at the transferee dental college, which should be duly certified by the Registrar of the concerned University in which he/she is seeking transfer. The transfer will be applicable only after receipt of the affidavit.

Note 1:

(i) Migration is permitted only in the beginning of IInd year BDS Course in recognized Institution.

(ii) All applications for migration shall be referred to Dental Council of India by college authorities. No Institution/University shall allow migrations directly without the prior approval of the Council.

(iii) Council reserved the right, not to entertain any application which is not under the prescribed compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

Note 2: *Compassionate ground criteria:

(i) Death of supporting guardian.

(ii) Disturbed conditions as declared by Government in the Dental College area.

V. Attendance requirement, Progress and Conduct

(i) 75% in theory and 75% in practical/clinical in each year.

(ii) In case of a subject in which there is no examination at the end of the academic year/semester, the percentage of attendance shall not be less than 70%. However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (i) above.

VI. Subjects of Study:

First Year

i) General Human Anatomy including Embryology and Histology
ii) General Human Physiology and Biochemistry, Nutrition and Dietics
iii) Dental Anatomy, Embryology and Oral Histology
iv) Dental Materials
v) Pre-clinical Prosthodontics and Crown & Bridge

Second Year

i) General Pathology and Microbiology
ii) General and Dental Pharmacology and Therapeutics
iii) Dental Materials
iv) Pre clinical Conservative Dentistry
v) Pre clinical Prosthodontics and Crown & Bridge
vi) Oral Pathology & Oral Microbiology

Third Year

i) General Medicine

ii) General Surgery
iii) Oral Pathology and Oral Microbiology
iv) Conservative Dentistry and Endodontics
v) Oral & Maxillofacial Surgery
vi) Oral Medicine and Radiology
vii) Orthodontics & Dentofacial Orthopaedics
viii) Paediatric & Preventive Dentistry
ix) Periodontology
x) Prosthodontics and Crown & Bridge

Fourth Year

i) Orthodontics & dentofacial orthopaedics
ii) Oral Medicine & Radiology
iii) Paediatric & Preventive Dentistry
iv) Periodontology
v) Oral & Maxillofacial Surgery
vi) Prosthodontics and Crown & Bridge
vii) Conservative Dentistry and Endodontics
viii) Public Health Dentistry

~~**Fifth Year**~~

~~i) Oral & Maxillofacial Surgery~~
~~ii) Prosthodontics and Crown & Bridge~~
~~iii) Conservative Dentistry and Endodontics~~
~~iv) Public Health Dentistry~~

The above 5th year subjects have been deleted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India.

EXAMINATIONS

SCOPE: These regulations shall be applicable for the B.D.S. degree examinations conducted by various universities in the country.

I. PREFACE:

(A) Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned B.D.S. programme.

(B) Evaluation is achieved by two processes
1. Formative or internal assessment
2. Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution.

Summative evaluation is done by the university through examination conducted at the end of the specified course.

II. METHODS OF EVALUATION:

Evaluation may be achieved by the following tested methods:
1. Written test
2. Practicals
3. Clinical examination
4. Viva voce

INTERNAL ASSESSMENT EXAMINATION

The continuing assessment examinations may be held frequently at least ***3*** times in a particular year and the average marks of these examinations should be considered. 10% of the total marks in each subject for both theory, practical and clinical examination separately should be set aside for the internal assessment examinations.

SCHEME OF EXAMINATION:

The following has been substituted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India and the same is as under:-

~~The scheme of examination for B.D.S. Course shall be divided into 1st B.D.S. examination at the end of the first academic year, 2nd B.D.S. examination at the end of second year, 3rd B.D.S. examination at the end of third, 4th BDS at the end of 4th and final B.D.S at the end of 5th year. 240 days minimum teaching in each academic year is mandatory.~~

The Scheme of Examination for BDS Course shall be divided into 1st BDS examination at the end of the first academic year, 2nd BDS examination at the end of second year, 3rd BDS examination at the end of third, 4th and final BDS at the end of 4th year. Where semester system exists, there shall be two examinations in the final year, designated as part 1 and part 2 of the respective examinations (regulations 1983) 240 days minimum teaching in each academic year is mandatory.

In terms of (6th Amendment) notification published on 24.6.2013 in the Gazette of India, in 1st line of 2nd paragraph under the heading (III) "Scheme of Examination", the word "semester" has been substituted by the word "Part I or Part II, whichever is applicable", as follows:-

For University opting for ~~semester~~ Part I or Part II, whichever is applicable mode, the subjects that are to be covered in each semester proposed below.

Part-I

- Public Health Dentistry
- Periodontology
- Orthodontics and Dentogacial Orthopaetic
- Oral Medicine and Radiology

Part-II

- Oral & Maxillofacial Surgery
- Conservative and Endodontics
- Prosthodontics and Crown & Bridge
- Paediatric and preventive Dentistry

The examination shall be open to a candidate who satisfies the requirements of attendance, progress and other rules laid down by the University.

(1) Universities shall organize admission timings and admission process in such a way that teaching starts from 1st day of August in each academic year.

I B.D.S. Examination:

1. General anatomy including embryology and histology
2. General human physiology and biochemistry
3. Dental Anatomy, Embryology and Oral Histology

~~Any student who does not clear the first BDS University Examination in all subjects within 3 years from the date of admission, shall be discharged from the Course.~~

The above clause has been substituted by the following clause in terms of (7th Amendment) notification published in the Gazette of India and the same is as under:-

Any student who does not clear the BDS Course in all the subjects within a period of 9 years, including one year Compulsory Rotatory paid Internship from the date of admission shall be discharged from the course.

~~*Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appear for the subject and complete it successfully before he is permitted to appear for the next higher examination.*~~

The above has been substituted in terms of (3rd Amendment) notification published on 25th August,2011 in the Gazette of India and the same is as under:-

Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appears for the said failed subject and complete it successfully before he is permitted to appear for the next higher examination. However, the Dental Council of India would have no objection, if the concerned University follows their examination scheme provided in their statute/regulations.

II B.D.S. Examination:

A candidate who has not successfully completed the 1st B.D.S. examination can not appear in the IInd year Examination.

1. General pathology and Microbiology
2. General and dental pharmacology and therapeutics
3. Dental Materials
4. Pre Clinical Conservative – Only Practical and Viva Voce
5. Pre Clinical Prosthodontics – Only Practical and Viva Voce

The following has been added after Sl. No. 5 of the subject, Pre-clinical Prosthodontics, in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India and the same is as under:-

Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appears for the said failed subject and complete it successfully before he is permitted to appear for the next higher examination. However, the Dental Council of India would have no objection, if the concerned University follows their examination scheme provided in their statute/regulations.

III B.D.S. Examination:

A candidate who has successfully completed the 2nd B.D.S. examination can appear IIIrd B.D.S. Examination.

1. General Medicine
2. General Surgery
3. Oral Pathology and Oral Microbiology

The following has been added after Sl. No. 3 of the subject Oral Pathology and Oral Microbiology, in terms of (3rd Amendment) notification published on **25th August, 2011** in the Gazette of India and the same is as under:-

Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appear for the subject and complete it successfully before he is permitted to appear for the next higher examination. However, the Dental Council of India would have no objection, if the concerned follows their examination scheme (2nd year onwards) provided in their statute/regulations.

~~**IV B.D.S. Examination:**~~

~~1. Oral Medicine and radiology~~
~~2. Paediatric & Preventive Dentistry~~
~~3. Orthodontics & dentofacial orthopaedics~~
~~4. Periodontology~~

The above has been substituted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India and the same is as under:-

Final BDS (Fourth Year):

- Public Health Destistry
- Periodontology
- Orthodontics and Dentofacial Orthopaetic
- Oral Medicine and Radiology
- Oral & Maxillofacial Surgery
- Conservative and Endodontics
- Prosthodontics and Crown & Bridge
- Paediatric and Preventive Dentistry

OR

Part-I

- Public Health Dentistry
- Periodontology
- Orthodontics and Dentogacial Orthopaetic
- Oral Medicine and Radiology

Part-II

- Oral & Maxillofacial Surgery
- Conservative and Endodontics
- Prosthodontics and Crown & Bridge
- Paediatric and preventive Dentistry

Note:-

1. **The concerned Universities may opt for any one of the examination pattern mentioned above in 4th BDS final year.**
2. **If any University opt for the part examination system then any candidate who fails in any subject in 4th (final) year Part-I examination is permitted to go to the Part-II examination and should complete both parts successfully before he/she is permitted to go for Internship programme.**
3. **Since there are Inadequate teaching staffs in Department of Public Health Dentistry, the same may be clubbed together under the head of periodontics. This arrangement shall be reviewed after three years.**

~~**V BDS Examination:**~~

~~1. Prosthodontics and Crown & Bridge~~
~~2. Conservative Dentistry and Endodontics~~
~~3. Oral and Maxillofacial Surgery~~
~~4. Public Health Dentistry~~

The V BDS examination has been deleted in terms of (3rd Amendment) notification published on **25th August, 2011** in the Gazette of India.

WRITTEN EXAMINATION:

1. The written examination in each subject shall consist of one paper of three hours duration and shall have maximum marks of 70.
2. In the subjects of Physiology & Biochemistry and Pathology & Microbiology each paper will be divided into two parts, A and B of equal marks.
3. The question paper should contain different types of questions like essay, short answer and objective type / M.C.Q's.
4. The nature of questions set, should be aimed to evaluate students of different standards ranging from average to excellent.
5. The questions should cover as broad an area of the content of the course. The essay questions should be properly structured and the marks specifically allotted.
6. The University may set up a question bank

PRACTICAL AND CLINICAL EXAMINATION:

1. **Objective Structured Clinical Evaluation:** The present system of conducting practical and clinical examination at several universities provide chance for unrealistic proportions of luck. Only a particular clinical procedure or experiment is usually given for the examination. The clinical and practical examination should provide a number of chances for the candidate to express one's skills. A number of examination stations with specific instructions to be provided. This can include clinical procedures, laboratory experiments, spotters etc. Evaluation must be made objective and structured. The method of objective structured clinical examinations should be followed. This will avoid examiner bias because both the examiner and the examinee are given specific instructions on what is to be observed at each station.
2. **Records/ Log Books:** The candidate should be given credit for his records based on the scores obtained in the record. The marks obtained for the record in the first appearance can be carried over to the subsequent appearances if necessary.
3. **Scheme of clinical and practical examinations:** The specific scheme of clinical and practical examinations, the type of clinical procedures/ experiments to be performed and marks allotted for each are to be discussed and finalized by the Chairman and other examiners and it is to be published prior to the conduct of the examinations along with the publication of the time table for the practical examinations. This scheme should be brought to the notice of the external examiner as and when the examiner reports. The practical and clinical examinations should be evaluated by two examiners of which one shall be an external examiner appointed from other universities preferably outside the State. Each candidate should be evaluated by each examiner independently and marks computed at the end of the examination.
4. **Viva Voce:** Viva voce is an excellent mode of assessment because it permits a fairly broad coverage and it can assess the problem solving capacity of the student. An assessment related to the affective domain is also possible through viva voce. It is desirable to conduct the viva voce

independently by each examiner. In order to avoid vagueness and to maintain uniformity of standard and coverage, questions can be pre-formulated before administering them to each student. Twenty marks are exclusively allotted for viva voce and that can be divided equally amongst the examiners, i.e., 10 marks per examiner.

MARKS DISTRIBUTION IN EACH SUBJECT :

Each subject shall have a maximum of 200 marks.

Theory	100
Practical/ Clinical	100

Theory – 100		**Practicals/ clinicals – 100**	
University written exam	70	University Exam	90
Viva Voce	20		
Internal assessment (Written)	10	Internal assessment (Written)	10
Total	100		100

Practical and Viva Voce Only in University Examination

Pre-clinical Prosthodontics
Pre-clinical Conservative Dentistry.....

Internal Assessment	-	20
Practical	-	60
Viva Voce	-	20
		100

Criteria for a pass:

Fifty percent of the total marks in any subject computed as aggregate for theory, i.e., written, viva voce and internal assessment and practicals including internal assessment, separately is essential for a pass in all years of study.

For declaration of pass in a subject, a candidate shall secure 50% marks in the University examination both in Theory and Practical/ Clinical examinations separately, as stipulated below:

- A candidate shall secure 50% marks in aggregate in University theory including Viva Voce and Internal assessment obtained in University written examination combined together.
- In the University Practical/ clinical examination, a candidate shall secure 50% of University practical marks and Internal Assessment combined together.
- In case of pre clinical Prosthetic Dentistry and Pre clinical conservative dentistry in II BDS, where there is no written examination, minimum for pass is 50% of marks in Practical and Viva voce combined together in University examination including Internal Assessment i.e. 50/100 marks.
- Successful candidates who obtain 65% of the total marks or more shall be declared to have passed the examination in First Class. Other successful candidates will be placed in Second Class. A candidate who obtains 75% and above is eligible for Distinction. Only those candidates who pass the whole examination in the first attempt will be eligible for distinction or class.
- First Class and Distinction etc. to be awarded by the University as per their respective rules.

Grace Marks: Grace marks upto a maximum of 5 marks may be awarded to students who have failed only in one subject but passed in all other subjects.

Re-evaluation: The objective of re-evaluation is to ensure that the student receives a fair evaluation in the university examination and to minimize human error and extenuating circumstances. There shall be two mechanisms for this purpose.

1. **Re-totaling**: The University on application and remittance of a stipulated fee to be prescribed by the university, shall permit a recounting or opportunity to recount the marks received for various questions in an answer paper/ papers for theory of all subjects for which the candidate has appeared in the university examination. Any error in addition of the marks awarded if identified should be suitably rectified.

2. **Re-evaluation:** Re-evaluation of theory papers in all years of study of the BDS course may be permissible by the university on application and remittance of a prescribed fee. Such answer script shall be re-evaluated by not less than two duly qualified examiners and the average obtained shall be awarded to the candidate and the result accordingly reconsidered. However in those universities where double evaluation provision exists, this provision of re-evaluation will not be applicable.

Qualification and experience to be eligible for examinership for BDS examination

1. M.D.S. Degree from a recognized Institution
2. 4 years teaching experience in the subject in a dental college after MDS

3. Should be holding the post of a Reader or above in a Dental Institution approved/recognised by the Dental Council of India for B.D.S.

Note:

1. In case of Public Health Dentistry, as there is acute shortage of teachers one examiner from Public Health Dentistry and the second one could be from Periodontics. To be reviewed after three years.
2. In case of Physiology and Biochemistry if Internal examiner is from Physiology, External examiner should be from Biochemistry or wise versa
3. Incase of Pathology and Microbiology if Internal is examiner is from Pathology, External examiner should be from Microbiology or wise versa
4. In case of Dental Materials, if internal is from Prosthodontics, external should be from Conservative Dentistry and wise versa

50% of Examiners appointed shall be external from Dental Institutions approved/recognised by the Dental Council of India for B.D.S. Course, from other University, preferably from outside the State.

Reciprocal arrangement of Examiners should be discouraged, in that, the Internal Examiner in a subject should not accept external examinership for a College from which External Examiner is appointed in his subject for the corresponding period.

No person shall be an external Examiner to the same University for more than 3 consecutive years. However, if there is a break of one year the person can be re-appointed.

"Minimum Physical Requirement and Minimum Staffing Pattern (as per DCI Regulations 2006)."

GOALS AND OBJECTIVES

GOALS:

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out all activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. The graduate also should understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

OBJECTIVES:

The objectives are dealt under three headings (a) Knowledge and understanding (b) skills and (c) Attitudes.

(A) KNOWLEDGE AND UNDERSTANDING:

The graduate should acquire the following during the period of training.

1. Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and be able to evaluate and analyse scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general state of health and also bearing on physical and social well being of the patient.
3. Adequate knowledge of clinical disciplines and methods which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive diagnostic and therapeutic aspects of dentistry.
4. Adequate clinical experience required for general dental practice.
5. Adequate knowledge of the constitution, biological function and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affect dentistry.

(B) SKILLS:

A graduate should be able to demonstrate the following skills necessary for practice of dentistry.

1. Able to diagnose and manage various common dental problems encountered in general dental practice keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.
2. Acquire the skill to prevent and manage complications if encountered while carrying out various surgical and other procedures.
3. Possess skill to carry out certain investigative procedures and ability to interpret laboratory findings.
4. Promote oral health and help prevent oral diseases where possible.
5. Competent in the control of pain and anxiety among the patients during dental treatment.

(C) ATTITUDES:

A graduate should develop during the training period the following attitudes.

1. Willing to apply the current knowledge of dentistry in the best interest of the patients and the community.
2. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
3. Seek to improve awareness and provide possible solutions for oral health problems and needs through out the community.
4. Willingness to participate in the CPED Programmes to update the knowledge and professional skill from time to time.
5. To help and participate in the implementation of the national oral health policy.

RECOMMENDATIONS

GENERAL:

1. The undergraduate course involves organisation of teaching programmes year-wise. However, this course, as a whole, should demonstrate integration of the basic sciences, clinical dentistry and practical or the laboratory skills. The course should be designed and integrated in such a way to permit smooth progression from pre-clinical to clinical phase. Collaboration should be encouraged between teachers of basic sciences, dental sciences and clinical subjects.
2. The undergraduate dental course consists of three main components. The first component consists subjects common to medicine and dentistry like anatomy, physiology, biochemistry and behavioural science, leading to pharmacology, pathology, microbiology and then on to general medicine and general surgery. The second component runs concurrently with the first and deals with special aspects of oral and dental tissues, oral biology and oral pathology. Finally, the third component based on the foundations of the first two, deals with the clinical and technical aspects of dentistry as is required for general dental practice.
3. The first component of the course is intended to provide initially, an appreciation of normal human structure, development, function and behaviour, leading to understanding of the diseases, its prevention and treatment. The main objective is to provide the student a broad knowledge of the normal structures and functions of the body, the alterations which take place in disease with particular reference to those conditions in which medical and dental co-operation is essential for proper management. At this stage, the student should also be made aware of the social and psychological aspects of patient care with special reference to the relationship between dentist and patient. The behavioural sciences including both sociology and psychology should be introduced at the initial stages of the training programme, much before the students actually deal with the patients.
4. The second component of dental undergraduate programme consists instruction in the subjects dealing with dental and oral aspects to ensure a detailed knowledge of the structure and function of the dental and oral tissues. This enables the student to diagnose, prevent and treat the dental and oral diseases and disorders which were not included in the first component. The subject of oral biology is to be introduced at this level to provide the students a comprehensive knowledge and application of oral physiology, microbiology, biochemistry and oral immunology. Students should be exposed to the basic aspects of forensic odontology at this stage of the course along with oral biology/oral pathology.
5. The third component of the course comprising the clinical and technical aspects of dentistry actually prepares the student to undertake total oral and dental health care of the patients of all ages. The emphasis at this stage should be on the prevention of the various dental diseases and how to preserve natural teeth with their supporting structures. The importance of the various preventive methods need to be stressed. The significance of diagnosis of various dental and oral problems needs to be emphasized along with treatment planning before actual treatment procedures are undertaken.

   In addition to acquiring the knowledge, the students need to gain adequate clinical hands-on-experience in extractions and other minor oral surgical procedures, all aspects of conservative dentistry, endodontics, crown and bridge, provision of partial and complete dentures, various periodontal therapeutic procedures and use of removable orthodontic appliances. Familiarity with various radiological techniques, particularly intra-oral methods and proper interpretation of the radiographs, is an essential part of this component of training and has application in clinical diagnosis, forensic identification and age estimation.

   Towards the final stage of the clinical training, each student should be involved in comprehensive oral health care or holistic approach to enable them to plan and treat patients as a whole, instead of piece-meal treatment provided in each speciality. The Dental Council of India strongly recommends that all the dental colleges should provide facilities and required infrastructure for this purpose.

   The aim of the undergraduate programme should undoubtedly be to produce a graduate, competent in general dental practice.

6. The commitment towards the society as a whole, needs to be stressed along with the knowledge and treatment skills gained. Instruction in public health dentistry should emphasise the sociological aspects of health care particularly, oral health care, including the reasons for the

variation in oral and dental needs of different sections of the society. It is important to know the influence of the social, behavioural, environmental and economic factors on oral and dental health. Students should be made aware of the National oral health Policy and the importance of being a member of the Health care team delivering medical and oral health care particularly among rural population.

7. Scientific advancement of any profession is based largely on continuous research activities. Dentistry is no exception. It is important that in every dental college proper facilities should be provided for research and the faculty members should involve themselves in such activities. Inter-disciplinary research should be encouraged to bring in integration among various specialities. The teaching and training methodology should be such that the students are motivated to think and indulge in self study rather than playing a passive role. Provision should be made in the daily schedules for adequate time for reading. Proper library facilities with adequate timings and seating capacity should be made available in all dental colleges. Adequate audio visual aids, like video tapes, computer assisted learning aids, Medline and internet facilities should be provided in all dental colleges to encourage self-study. Students should be encouraged to participate in simple research project work and the system of electives, spending some stipulated amount of time in another dental college within the country or outside should be given a serious consideration by all the dental institutions.

8. The society has a right to expect high standards and quality of treatment. Hence, it is mandatory and a social obligation for each dental surgeon to upgrade his or her knowledge and professional skills from time to time. The Dental Council of India strongly recommends that facilities and proper infrastructure should be developed to conduct the continuous professional education programmes in dentistry to enable the practitioners to update their knowledge and skills. The Council is of the opinion that the dental colleges by virtue of their infrastructural facilities will be ideal to conduct such courses and recommends establishment of a Department of continuing dental education in each of the dental colleges. In addition, the practitioners should be encouraged to attend conferences of state and national level, workshops, seminars and any other such activity which the Council feels is suitable to upgrade the knowledge and skills.

9. The undergraduate curriculum should stress the significance of infection and cross- infection control in dental practice. Aspects like sources of infection, measures to be adopted both general and specific for control particularly the HIV and hepatitis should be properly incorporated into the curriculum so that the graduates are aware of its significance and follow it in their practice.

10. The information technology has touched every aspect of an individual's personal and professional life. The Council hence recommends that all undergraduates acquire minimum computer proficiency which will enable them to enhance their professional knowledge and skills.

RECOMMENDATIONS

SPECIFIC:

1. The undergraduate dental training programme leading to B.D.S. degree shall be a minimum of five years duration. During this period, the students shall be required to engage in full time study at a dental college recognized or approved by the Dental Council of India.

   During the five years undergraduate course, the instruction in clinical subjects should be at least for three years

2. Basic Medical & Dental Subjects:

   The basic medical and dental sciences comprise anatomy gross and microscopic, physiology, biochemistry, pharmacology, oral biology and science of dental materials. Subjects like behavioural sciences, which is useful to develop communication skills, should also be introduced in the first year itself and spread over the undergraduate course. An introduction to Public Health Dentistrty & Preventive Dentistry also will be useful to develop the concept of commitment to community. The laboratory skills to be developed by the students like pre-clinical Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology exercises and studying dental morphology also is a part of initial training. The instruction in the above medical and dental sciences shall be for two years duration. At the end of this period the student should be in a position to understand and comprehend in general the development, structure and function of the human body in both health and disease.

3. The instruction in basic dental sciences should include theoretical and practical aspects of oral anatomy and physiology, to provide a detailed knowledge of the form and structure of teeth associated tissues and occlusal relationships.

   The study should also aim at development of a concept regarding physiological and biochemical processes relevant to oral cavity for better understanding of the changes which occur with the onset of disease in the oral cavity.

The student should be made aware of the importance of various dental tissues in forensic investigation.

4. Clinical, Medical and Dental subjects:

The students should be introduced to clinics in the initial stage, preferably in the first year, as an observer to familiarise with clinical set-up and working. The period of instruction in the clinical subjects shall be not less than three years full time. During this, the student shall attend a dental hospital, general hospital, community camps and satellite clinics, in order to obtain instruction and experience in the practice of dentistry. The main objective of training in clinical dental subjects is to produce a graduate able and competent to recognize or diagnose various dental and oral diseases, to undertake general dental treatment, advise on the provision of specialized treatment available and finally advise the patient on prevention. The student should also understand the relationship between oral and systemic diseases.

5. The general medicine and surgery training should provide sufficient knowledge on human disease to enable the student to understand its manifestations as relevant to the practice of dentistry. This requires clinical teaching on patients and shall be carried out in in-patient and outpatient medical departments and specialist clinics.

This clinical instruction should enable the student to understand and perhaps diagnose common systemic diseases which have relevance to dental practice, by adopting a systematic approach of history taking and clinical examination. The student should also realize the significance of various general and special investigations in the diagnosis of diseases. The ability to recognize physical and mental illness, dealing with emergencies, effective communication with patients, interaction with various professional colleges also become important aspects of this training.

6. The Dental Council of India considers it important for all dental students to receive instruction in first-aid and principles of cardio-pulmonary resuscitation. It is also desirable that the student spend time in an accident and emergency department of a general hospital.

7. The purpose of the clinical training is to provide sufficient practical skill in all aspects of clinical dentistry. The instruction should also include patient management skills, treatment of patients of all ages with special reference to children (paediatric), very elderly (geriatric), medically compromised and disabled patients.

8. During the three years clinical course, the students should receive thorough instruction which involves history taking, diagnosis and treatment planning in all aspects of dentistry and should be competent on graduation to carry out all routine general procedures.

In Oral & Maxillofacial Surgery and Oral Implantolgy, instruction should include the knowledge of various maxillofacial problems like injuries, infections and deformities of the jaws and associated structures. The clinical experience should include those procedures commonly undertaken in general practice like extraction of teeth, minor oral surgical procedure etc.

In Conservative, Endodontics & Aesthetic Dentistry, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology students should be competent on graduation to carry out routine treatment like restorations of various kinds, endodontic procedures, removable and fixed prosthodontics, concept of osseointegration and finally various kinds of periodontal therapy. In addition, students should be aware of their limitations on graduation, need to refer patients for consultant opinion and/or treatment and also the need for postgraduate and continuous education programmes.

In Orthodontics & Dento Facial Orthopedics, students should carry out simple appliance therapy for patients. Students should also be able to appreciate the role of dentofacial growth in the development and treatment of malocclusion.

In Paediatric dentistry, the students should concentrate on clinical management, efficacy of preventive measures, treatment needs particularly for children with disabilities. In oral medicine and oral diagnosis, the student should receive instruction in various lesions, occurring in the oral cavity with particular reference to oral cancer.

9. The successful control and management of pain is an integral part of dental practice. Upon graduation the students should be competent to administer all forms of local anaesthesia. The value of behavioural methods of anxiety management should be emphasised. The students should also have the practical experience in the administration of intra-muscular and intra-venous injections. Knowledge of pain mechanisms and strategies to control post-operative pain is essential for practice of dentistry.

10. All students should receive instructions and gain practical experience in taking processing and interpretation of various types of intra and extra oral radiographs. They should be aware of the hazards of radiation and proper protective measures from radiation for the patient, operator and other staff.

11. Instruction should be given in dental jurisprudence, legal and ethical obligations of dental practitioners and the constitution and functions of Dental Council of India.

12. Infection and cross infection control assume significance in dental practice. The students should be made aware of the potential risk of transmission in the dental surgery, various infectious diseases particularly HIV and hepatitis. The students should be aware of their professional responsibility for the protection of the patients, themselves and their staff and the requirements of the health and safety regulations.

13. In the recent times, the subjects of esthetic dentistry, oral implantology, behavioural sciences and forensic odontology have assumed great significance. Hence, the Council recommends that these four specialities should be incorporated into the undergraduate curriculum. The instruction and clinical training in aesthetic dentistry shall be carried out by the departments of Conservative, Endodontics & Aesthetic Dentistry and prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology. Similarly, the instruction and clinical training in oral implantology shall be done by the departments of Oral & Maxillofacial Surgery, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology. The instruction in behavioural sciences should ideally commence before the students come in contact with the patients and shall be carried out by the departments of Public Health Dentistry & Preventive Dentistry and Pedodontics & Preventive Dentistry. Forensic Odontology will be a part of Oral Pathology & Oral Microbiology and Oral Medicine and Radiology.

COMPETENCIES

At the completion of the undergraduate training programme the graduates shall be competent in the following.-

General Skills

Apply knowledge& skills in day to day practice
Apply principles of ethics
Analyze the outcome of treatment
Evaluate the scientific literature and information to decide the treatment
Participate and involve in professional bodies
Self assessment & willingness to update the knowledge & skills from time to time
Involvement in simple research projects
Minimum computer proficiency to enhance knowledge and skills
Refer patients for consultation and specialized treatment
Basic study of forensic odontology and geriatric dental problems

Practice Management

Evaluate practice location, population dynamics & reimbursement mechanism
Co-ordinate & supervise the activities of allied dental health personnel
Maintain all records
Implement & monitor infection control and environmental safety programs
Practice within the scope of one's competence

Communication & Community Resources

Assess patients goals, values and concerns to establish rapport and guide patient care
Able to communicate freely, orally and in writing with all concerned
Participate in improving the oral health of the individuals through community activities.

Patient Care – Diagnosis

Obtaining patient's history in a methodical way
Performing thorough clinical examination
Selection and interpretation of clinical, radiological and other diagnostic information
Obtaining appropriate consultation
Arriving at provisional, differential and final diagnosis

Patient Care – Treatment Planning

Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic and prognostic information
Able to order appropriate investigations

Patient Care – Treatment

Recognition and initial management of medical emergencies that may occur during Dental treatment
Perform basic cardiac life support
Management of pain including post operative
Administration of all forms of local anaesthesia
Administration of intra muscular and venous injections
Prescription of drugs, pre operative, prophylactic and therapeutic requirements

Uncomplicated extraction of teeth
Transalveolar extractions and removal of simple impacted teeth
Minor oral surgical procedures
Management of Oro-facial infections
Simple orthodontic appliance therapy
Taking, processing and interpretation of various types of intra oral radiographs
Various kinds of restorative procedures using different materials available
Simple endodontic procedures
Removable and fixed prosthodontics
Various kinds of periodontal therapy

ORAL MEDICINE & RADIOLOGY

- Able to identify precancerous and cancerous lesions of the oral cavity and refer to the concerned speciality for their management
- Should have an adequate knowledge about common laboratory investigations and interpretation of their results.
- Should have adequate knowledge about medical complications that can arise while treating systemically compromised patients and take prior precautions/ consent from the concerned medical specialist.
- Have adequate knowledge about radiation health hazards, radiations safety and protection.
- Competent to take intra-oral radiographs and interpret the radiographic findings
- Gain adequate knowledge of various extra-oral radiographic procedures, TMJ radiography and sialography.
- Be aware of the importance of intra- and extra-oral radiographs in forensic identification and age estimation
- Should be familiar with jurisprudence, ethics and understand the significance of dental records with respect to law

PAEDIATRIC & PREVENTIVE DENTISTRY

- Able to instill a positive attitude and behaviour in children towards oral health and understand the principles of prevention and preventive dentistry right from birth to adolescence.
- Able to guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry.
- Able to treat dental diseases occurring in child patient.
- Able to manage the physically and mentally challenged disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

- Understand about normal growth and development of facial skeleton and dentition.
- Pinpoint oberrations in growth process both dental and skeletal and plan necessary treatment
- Diagnose the various malocclusion categories
- Able to motivate and explain to the patient (and parent) about the necessity of treatment
- Plan and execute preventive orthodontics (space maintainces or space regaines)
- Plan and execute interceptive orthodontics (habit breaking appliances)
- Manage treatment of simple malocclusion such as anterior spacing using removable appliances
- Handle delivery and activation of removable orthodontic appliances
- Diagnose and appropriately refer patients with complex malocclusion to the specialist

PERIODONTOLOGY

- Diagnose the patients periodontal problem, plan and perform appropriate periodontal treatment
- Competent to educate and motivate the patient
- Competent to perform thorough oral prophylaxis, subgingival scaling, root planning and minor periodontal surgical procedures
- Give proper post treatment instructions and do periodic recall and evaluation
- Familiar with concepts of osseointegration and basic surgical aspects of implantology

PROSTHODONTICS AND CROWN & BRIDGE

- Able to understand and use various dental materials
- Competent to carry out treatment of conventional complete and partial removable dentures and fabricate fixed partial dentures
- Able to carry out treatment of routine prosthodontic procedures.
- Familiar with the concept of osseointegration and the value of implant-supported Prosthodontic procedures

CONSERVATIVE DENTISTRY AND ENDODONTICS

- Competent to diagnose all carious lesions
- Competent to perform Class I and Class II cavities and their restoration with amalgam
- Restore class V and Class III cavities with glass ionomer cement
- Able to diagnose and appropriately treat pulpally involved teeth (pulp capping procedures)
- Able to perform RCT for anterior teeth
- Competent to carry out small composite restorations
- Understand the principles of aesthetic dental procedures

ORAL & MAXILLOFACIAL SURGERY

- Able to apply the knowledge gained in the basic medical and clinical subjects in the management of patients with surgical problems
- Able to diagnose, manage and treat patients with basic oral surgical problems
- Have a broad knowledge of maxillofacial surgery and oral implantology
- Should be familiar with legal, ethical and moral issues pertaining to the patient care and communication skills
- Should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner
- Understand and practice the basic principles of asepsis and sterilisation
- Should be competent in the extraction of the teeth under both local and general anaesthesia
- Competent to carry out certain minor oral surgical procedure under LA liketrans-alveolar extraction, frenectomy, dento alveolar procedures, simple impaction, biopsy, etc.
- Competent to assess, prevent and manage common complications that arise during and after minor oral surgery
- Able to provide primary care and manage medical emergencies in the dental office
- Familiar with the management of major oral surgical problems and principles involved in the in-patient management

PUBLIC HEALTH DENTISTRY

- Apply the principles of health promotion and disease prevention
- Have knowledge of the organization and provision of health care in community and in the hospital service
- Have knowledge of the prevalence of common dental conditions in India.
- Have knowledge of community based preventive measures
- Have knowledge of the social, cultural and env. Factors which contribute to health or illness.
- Administer and hygiene instructions, topical fluoride therapy and fissure sealing.
- Educate patients concerning the aetiology and prevention of oral disease and encourage them to assure responsibility for their oral health.

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY
(B.D.S COURSE)

The following has been substituted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India and the same is as under:-

~~**Subjects**~~	~~**Lecture Hours**~~	~~**Practical Hours**~~	~~**Clinical Hours**~~	~~**Total Hours**~~
~~General Human Anatomy Including Embryology, Osteology and Histology.~~	~~100~~	~~175~~		~~275~~
~~General Human Physiology~~ ~~Biochemistry~~	~~120~~ ~~70~~	~~60~~ ~~60~~		~~180~~ ~~130~~
~~Dental Materials~~	~~80~~	~~240~~		~~320~~
~~Dental Anatomy Embryology, and Oral Histology~~	~~105~~	~~250~~		~~355~~
~~Dental Pharmacology & Therapeutics~~	~~70~~	~~20~~		~~90~~
~~General Pathology~~ ~~Microbiology~~	~~55~~ ~~65~~	~~55~~ ~~50~~		~~110~~ ~~115~~
~~General Medicine~~	~~60~~		~~9~~	~~150~~
~~General Surgery~~	~~60~~		~~90~~	~~150~~
~~Oral Pathology & Microbiology~~	~~145~~	~~130~~		~~275~~
~~Oral Medicine & Radiology~~	~~65~~		~~200~~	~~265~~
~~Paediatric & Preventive Dentistry~~	~~65~~		~~200~~	~~265~~
~~Orthodontics & dental orthopaedics~~	~~50~~		~~200~~	~~250~~
~~Periodontology~~	~~80~~		~~200~~	~~280~~
~~Oral & Maxillofacial Surgery~~	~~70~~		~~360~~	~~430~~
~~Conservative Dentistry & Endodontics~~	~~135~~	~~200~~	~~460~~	~~795~~
~~Prosthodontics & Crown & Bridge~~	~~135~~	~~300~~	~~460~~	~~895~~
~~Public Health Dentistry~~	~~60~~		~~290~~	~~350~~
~~**Total**~~	~~**1590**~~	~~**1540**~~	~~**2550**~~	~~**5680**~~

~~*Note:*~~
~~*There should be a minimum of 240 teaching days every year consisting of 8 working hours including one hour of lunch break.*~~

Subjects	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology.	100	175		275
General Human Physiology Biochemistry	120 70	60 60		180 130
Dental Materials	80	240		320
Dental Anatomy Embryology, and Oral Histology	105	250		355
Dental Pharmacology & Therapeutics	70	20		90
General Pathology Microbiology	55 65	55 50		110 115
General Medicine	60		9	150
General Surgery	60		90	150
Oral Pathology & Microbiology	145	130		275
Oral Medicine & Radiology	65		170	235
Paediatric & Preventive Dentistry	65		170	235
Orthodontics & dental orthopaedics	50		170	220
Periodontology	80		170	250
Oral & Maxillofacial Surgery	70		270	340
Conservative Dentistry & Endodontics	135	200	370	705
Prosthodontics & Crown & Bridge	135	300	370	805
Public Health Dentistry including Lectures on Tobacco Control & Habit Cessation	60		200	260
Total	1590	1540	1989	5200

Note:
There should be a minimum of 240 teaching days each academic year consisting of 8 working hours, including one hour of lunch break.
Internship – 240x8 hours-1920 clinical hours

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY
(B.D.S COURSE)

I B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry.	70	60		130
Dental Anatomy Embryology, and Oral Histology	105	250		355
Dental Materials	20	40		60
Pre clinical Prosthodontics & Crown & Bridge	-	100		100
Total	**415**	**685**		**1100**

II B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General & Dental Pharmacology and therapeutics	70	20		90
General Pathology	55	55		110
Microbiolog	65	50		115
Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre Clinical Prosthodontics & Crown & Bridge	25	200		225
Pre Clinical Conservative Dentistry	25	200		225
Total	**325**	**775**		**1100**

III B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120	80		200
Oral Medicine and Radiology	20		70	90
Paediatric and Preventive Dentistry	20		70	90
Orthodontics & Dentofacial Orthopaedics	20		70	90
Periodontology	30		70	100
Oral & Maxillofacial Surgery.	20		70	90
Conservative Dentistry & Endodontics.	30		70	100
Prosthodontics and Crown & Bridge	30		70	100
Total	**410**		**750**	**1160**

IV B.D.S

The following has been substituted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India and the same is as under:-

~~Subject~~	~~Lecture Hours~~	~~Practical Hours~~	~~Clinical Hours~~	~~Total Hours~~
~~Oral Medicine and Radiology~~	~~45~~		~~130~~	~~175~~
~~Paediatric and Preventive Dentistry~~	~~45~~		~~130~~	~~175~~
~~Orthodontics & Dentofacial Orthopaedics~~	~~30~~		~~130~~	~~160~~
~~Periodontology~~	~~50~~		~~130~~	~~180~~
~~Oral & Maxillofacial Surgery.~~	~~20~~		~~90~~	~~110~~
~~Conservative Dentistry & Endodontics.~~	~~30~~		~~90~~	~~120~~
~~Prostodontics and Crown & Bridge~~	~~30~~		~~90~~	~~120~~
~~Public Health Dentistry~~	~~30~~		~~90~~	~~120~~
~~**Total**~~	~~**280**~~		~~**880**~~	~~**1160**~~

Subjects	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Prosthodontics	80		300	380
Oral Medicine	45		100	145
Periodontics	50		100	150
Public Heatlh	60		200	260
Conservative Dentistry	80		300	380
Oral Surgery	50		200	250
Orthodontics	30		100	130
Pedodontics	45		100	145
Total	**440**		**1400**	**1840**

Provided that nothing contained in the provision of this regulations or statue or rules, regulations or guidance or notifications of the concerned university, or any other law for the time being in force shall prevent any student pursuing his/her 4th year BDS Course who fails in any one or more subjects of 1st semester will carry over those subjects to the 2nd Semester and will appear in those subjects together with the subjects of the 2nd semester. A pass in all the eight subjects is mandatory for completion of the 4th BDS Course before undergoing internship programme.

The following teaching Hours as prescribed for "V BDS" Course has been deleted in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India.

~~V B.D.S~~

~~Subject~~	~~Lecture Hours~~	~~Practical Hours~~	~~Clinical Hours~~	~~Total Hours~~
~~Oral & Maxillofacial Surgery.~~	~~30~~		~~200~~	~~230~~

~~Conservative Dentistry & Endodontics.~~	~~50~~		~~300~~	~~350~~
~~Prostodontics and Crown & Bridge~~	~~50~~		~~300~~	~~350~~
~~Public Health Dentistry~~	~~30~~		~~200~~	~~230~~
~~**Total**~~	~~**160**~~		~~**1000**~~	~~**1160**~~

The following has been substituted only for Punjab and Andhra Pradesh in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India

Only 2007 batch (Punjab & Andhra Pradesh) will have to follow the existing 5th year only programme.
Thereafter this 3rd amendment will be applicable.
Provided the concerned University follows the proposed amendment.

Note:

The following footnote has been modified/deleted as under in terms of (3rd Amendment) notification published on **25th August,2011** in the Gazette of India:-

* Behavioral Sciences Classes shall commence in 1st Year.
* Forensic odontology shall be covered in the department of Oral pathology and Oral Medicine during 3rd Year.
* Esthetic Dentistry shall be covered in the Departments of Conservative Dentistry and Prosthodontics during 4th ~~& 5th Year~~.
* Oral Implantology shall be covered in the Department of Maxillofacial Surgery, Prosthodontics & Crown & Bridge and Periodontology during 4th ~~& 5th Years~~.
* Ethics and dental jurisprudence shall be covered in Public Health Dentistry in 4th ~~and 5th years~~.
* ~~Electives / Research work should be encouraged during the 5th Year lasting for a period of atleast one month to be spent in a different dental institution in India / overseas.~~
* ~~All the institutions shall compulsorily make arrangements for Comprehensive oral health care training for atleast 3 months during 5th Year. The department of Public Health Dentistry may be ustilised in case, the institution does not have separate department for this purpose. Qualified faculty members from the departments of Prosthodontics, Conservative and periodontics should guide the students along with faculty of Public Health Dentistry Department.~~
* The minimum working hours indicated each year of study does not include one month mid year vacation and one month of university examination.

It is the prerogative of the Dental Council of India to conduct inspections, at any of the colleges, at any time during the calendar year for inspecting whether the colleges are following the internship norms as laid down by DCI.

RECOMMENDED BOOKS

1. Human Anatomy, Embryology, Histology & Medical Genetics

1. SNELL (Richard S.) Clinical Anatomy for Medical Students, Ed. 5, Llittle Brown & company, Boston.
2. RJ LAST'S Anatomy – McMinn, 9th edition.
3. ROMANES(G.J.) Cunningham Manual of Practical Anatomy : Head & Neck & Brain Ed.15.Vol.III, Oxford Medical publication.
4. WHEATER,BURKITT & DANIELS, Functional Histology, Ed. 2, Churchill Livingstone.
5. SADLER , LANGMAN'S, Medical Embryology, Ed. 6.
6. JAMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.
7. WILLIAMS, Gray's Anatomy, Ed.38. ,Churchill Livingstone.
8. EMERY,Medical Genetics.

2. Physiology

1. Guyton; Text book of Physiology, 9th edition.
2. Ganong; Review of Medical Physiology, 19th edition
3. Vander; Human physiology, 5th edition
4. Choudhari; Concise Medical Physiology, 2nd edition
5. Chaterjee; Human Physiology, 10th edition
6. A.K. Jain; Human Physiology for BDS students, 1st edition
7. Berne & Levey; Physiology, 2nd edition
8. West-Best & Taylor's, Physiological basis of Medical Practise, 11th edition

EXPERIMENTAL PHYSIOLOGY:

1. Rannade; Practical Physiology, 4th edition
2. Ghai; a text book of practical physiology
3. Hutchison's; Clinical Methods, 20th edition

3. Biochemistry

1. Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman
2. Nutritional Biochemistry 1995, S. Ramakrishnan and S.V. Rao
3. Lecture notes in Biochemistry 1984, J.K. Kandlish

REFERENCE BOOKS:

1. Text book of Biochemistry with clinical correlations 1997, T.N. Devlin
2. Harper's Biochemistry, 1996., R.K. Murray et.al
   Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C.Elliot

4. Dental Anatomy, Embryology and Oral Histology

1. Orban's Oral Histology & Embryology - S.N. Bhaskar
2. Oral Development & Histology - James & Avery
3. Wheeler's Dental Anatomy, Physiology & Occlusion - Major M. Ash
4. Dental Anatomy - its relevance to dentistry - Woelfel & Scheid
5. Applied Physiology of the mouth - Lavelle
6. Physiology & Biochemistry of the mouth - Jenkins

5. General Pathology

1. Robbins – Pathologic Basis of Disease Cotran, Kumar, Robbins
2. Anderson's Pathology Vol 1 & 2 Editors – Ivan Damjanov & James Linder
3. Wintrobe's clinical Haematolog Lee, Bithell, Foerster, Athens, Lukens

6. Microbiology

1. Text book of Microbiology – R.Ananthanarayan & C.K.Jayaram Paniker.
2. Medical Microbiology – David Greenwood et al.
3. Microbiology – Prescott, et al.
4. Microbiology – Bernard D. Davis , et al.
5. Clinical & Pathogenic Microbiology – Barbara J Howard, et al.
6. Mechanisms of Microbial diseases – Moselio Schaechter, et al.
7. Immunology an Introduction – Tizard
8. Immunology 3rd edition – Evan Roitt , et al.

7. Dental Materials

1. Phillips Science of Dental Materials – 10th edn.- Kenneth J. Anusavice
2. Restorative Dental Materials - 10 edn. Robert G.Craig
3. Notes on Dental Materials - E.C. Combe
4. Prep. Manual for undergraduates – Dental Materials – Dr. M.S. Koudi & Dr. SanjayGouda B. Patil

8. General and dental pharmacology and therapeutics

1. R.S.Satoskar, Kale Bhandarkar's Pharmacology and Pharmacolherapentics, 10th Edition, Bombay Popular Prakashan 1991.
2. Bertam G Katzung, Basic and Clinical pharmacology 6th ed. Appleton & Lange 1997
3. Lauerence D.R. Clinical Pharmacology 8th ed. Churchill Livingstone 1997
4. Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmaco Therapeutics part I & part ii, 13th Popular Prakashan Bombay 1993
5. Tripathi K.D., Essentials of Medical Pharmacology 4th ed Jaypee Brothers 1999.

9. General Medicine

Textbook of Medicine Davidson
Textbook of Medicine Hutchinson

10. General Surgery

Short practice of Surgery Baily & Love

11. Oral Pathology & Oral Microbiology

1. A Text Book of Oral Pathology Shafer, Hine & Levy
2. Oral Pathology - Clinical Pathologic correlations Regezi & Sciubba.
3. Oral Pathology Soames & Southam.
4. Oral Pathology in the Tropics Prabhu, Wilson, Johnson & Daftary

12. Public Health Dentistry

1. Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt, Edn. – 1983, W. B. Saunders Company
2. Principles of Dental Public Health by James Morse Dunning, IVth Edition, 1986, Harward University Press.

3. Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by The C. V. Mosby Company 1981
4. Community Oral Health-A system approach by Patricia P. Cormier and Joyce I. Levy published by Appleton-Century-Crofts/ New York, 1981
5. Community Dentistry-A problem oriented approach by P. C. Dental Hand book series Vol.8 by Stephen L. Silverman and Ames F. Tryon, Series editor-Alvin F. Gardner, PSG Publishing company Inc. Littleton Massachuseltts, 1980.
6. Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wrigth and sons Bristol, 1980
7. Oral Health Surveys- Basic Methods, 4th edition, 1997, published by W. H. O. Geneva available at the regional office New Delhi.
8. Preventive Medicine and Hygiene-By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.
9. Preventive Dentistry-by J. O. Forrest published by John Wright and sons Bristoli, 1980.
10. Preventive Dentistry by Murray, 1997.
11. Text Book of Preventive and Social Medicine by Park and park, 14th edition.
12. Community Dentistry by Dr. Soben Peter.
13. Introduction to Bio-statistics by B. K. Mahajan
14. Introduction to Statistical Methods by Grewal

13. Paediatric and Preventive Dentistry

1. Pediatric Dentistry (Infancy through Adolescences) – Pinkham.
2. Clinical Use of Fluorides – Stephen H. Wei.
3. Understanding of Dental Caries – Niki Foruk.
4. Handbook of Clinical Pedodontics – Kenneth. D.
5. Dentistry for the Child and Adolescence – Mc. Donald.
6. Pediatric Dentistry – Damle S. G.
7. Behaviour Management – Wright
8. Traumatic Injuries – Andreason.
9. Textbook of Pedodontics – Dr. Shobha Tandon

14. Oral Medicine and Radiology

a) Oral Diagnosis, Oral Medicine & Oral Pathology
   1. Burkit – Oral Medicine – J.B. Lippincott Company
   2. Coleman – Principles of Oral Diagnosis – Mosby Year Book
   3. Jones – Oral Manifestations of Systemic Diseases – W.B. Saunders company
   4. Mitchell – Oral Diagnosis & Oral Medicine
   5. Kerr – Oral Diagnosis
   6. Miller – Oral Diagnosis & Treatment
   7. Hutchinson – clinical Methods
   8. Oral Pathology – Shafers
   9. Sonis.S.T., Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine

b) Oral Radiology
   1. White & Goaz – Oral Radiology – Mosby year Book
   2. Weahrman – Dental Radiology – C.V. Mosby Company
   3. Stafne – Oral Roentgenographic Diagnosis – W.B.Saunders Co.,

c) Forensic Odontology
   1. Derek H.Clark – Practical Forensic Odontology - Butterworth-Heinemann (1992)
   2. C Michael Bowers, Gary Bell – Manual of Forensic Odontology - Forensic Pr (1995)

15. Orthodontics and Dentofacial Orthopedics

1. Contemporary Orthodontics William R. Proffit
2. Orthodontics For Dental Students White And Gardiner
3. Handbook Of Orthodontics Moyers
4. Orthodontics - Principles And Practice Graber
5. Design, Construction And Use Of Removable Orthodontic Appliances C. Philip Adams
6. Clinical Orthodontics: Vol1 & 2 Salzmann

16. Oral and Maxillofacial Surgery

1. Impacted teeth; Alling John F & etal.
2. Principles of oral and maxillofacial surgery; Vol.1,2 & 3 Peterson LJ & etal.
3. Handbook of medical emergencies in the dental office, Malamed SF.
4. Killeys Fractures of the mandible; Banks P.
5. Killeys fractures of the middle 3rd of the facial skeleton; Banks P.
6. Killey and Kays outline of oral surgery – Part-1; Seward GR & etal
7. Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM
8. Extraction of teeth;Howe, GL
9. Minor Oral Surgery; Howe.GL

17. Prosthodontics, Crown & Bridge

1. Syllabus of Complete denture by – Charles M. Heartwell Jr. and Arthur O. Rahn.

2. Boucher's "Prosthodontic treatment for edentulous patients"
3. Essentials of complete denture prosthodontics by – Sheldon Winkler.
4. Maxillofacial prosthetics by – Willam R.Laney.
5. McCraken's Removable partial prosthodontics
6. Removable partial prosthdontics by – Ernest L. Miller and Joseph E. Grasso.

18. Periodontology

1. Glickman's Clinical Periodontology – Carranza

REFERENCE BOOKS :

1. Essentials of Periodontology and Periodontics – Torquil MacPhee
2. Contemporary Periodontics – Cohen
3. Periodontal therapy – Goldman
4. Orbans' Periodontics – Orban
5. Oral Health Survey – W.H.O.
6. Preventive Periodontics – Young and Stiffler
7. Public Health Dentistry – Slack
8. Advanced Periodontal Disease – John Prichard
9. Preventive Dentistry – Forrest
10. Clinical Periodontology – Jan Lindhe
11. Periodontics – Baer & Morris.

19. Conservative Dentistry and Endodontics

1. Esthetic guidelines for restorative dentistry; Scharer & others
2. Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)
3. Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

20. Aesthetic Dentistry

1. Aesthetic guidelines for restorative dentistry; Scharer & others
2. Aesthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)
3. Aesthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

21. Forensic Odontology

1. Practical Forensic odontology – Derek Clark

22. Oral Implantology

1. Contemporary Implant Dentistry - Carl .E. Misch Mosby 1993 First Edition.
2. Osseointegration and Occlusal Rehabilitation Hobo S., Ichida .E. and Garcia L.T. Quintessence Publishing Company, 1989 First Edition.

23. Behaviourial Science

1. General psychology -- Hans Raj, Bhatia
2. Behavioural Sciences in Medical practice -- Manju Mehta

24. Ethics

1. Medical Ethics, Francis C.M., I Ed. 1993, Jaypee Brothers, New Delhi p. 189.

Note: 1. Books titles will keep on adding in view of the latest advances in the Dental Sciences.
2. Standard Books from Indian Authors are also recommended.

LIST OF JOURNALS:

1. Journal of Dentistry
2. British Dental Journal
3. International Dental Journal
4. Dental Abstracts
5. Journal of American Dental Association
6. British Journal of Oral and Maxillofacial Surgery
7. Oral Surgery, Oral Pathology and Oral Medicine
8. Journal of Periodontolgy
9. Journal of Endodontics
10. American journal of Orthodontics and Dentofacial Orthopedics
11. Journal of Prosthetic Dentistry
12. Journal of Public Health Dentistry
13. Endodontics and Dental Traumatology
14. Journal of Dental Education
15. Dental Update
16. Journal of Dental Material

Note : This is the minimum requirement. More journals both Indian and Foreign are recommended for imparting research oriented education.

INFRASTRUCTURE & FUNCTIONAL REQUIREMENTS

50 ADMISSIONS

General Facilities:

1. **Administrative block**: 2000 sq.ft.
   consisting of –
   (a) Dean's room,
   (b) Administrative officer's room
   (c) Meeting room
   (d) Office
   (e) Office stores
   (f) Pantry etc.
2. **Library**: 4500 sq.ft.
   consisting of –
   (a) Reception & waiting
   (b) Property counter
   (c) Issue counter
   (d) Photocopying area
   (e) Reading room to accommodate 50% of total students strength.
   (f) Postgraduates & staff reading room
   (g) Journal room
   (h) Audio-visual room
   (i) Chief librarian room
   (j) Stores and stocking area.
3. **Lecture halls – 4** : 3200 sq.ft.
   Each hall to accommodate 10% more of admission strength with proper seating arrangement, blackboard, microphone and facilities for slide, overhead and multi-media projection.
4. **Central stores**: 400 sq.ft.
   With proper storing facilities like racks, refrigerator, preferably compact storage systems.
5. **Maintenance room:** 600 sq.ft.
   Equipped with proper facilities to maintain and repair dental chairs and units and various other equipments in the college and hospital.
6. **Photography and artist room**: 250 sq.ft.
   With proper studio facilities for clinical photography, developing, preparation of slides, charts, models etc.
7. **Medical stores:** 200 sq.ft.
   Stocked with all the necessary drugs usually prescribed in a dental hospital.
8. **Aminities area:** 2000 sq.ft.
   (a) Boys' and Girls' locker rooms
   (b) Boys' and Girls' common rooms
   (c) Common room for non-teaching staff
   (d) Common room for teaching staff
   (e) Change room for men
   (f) Change room for women
9. **Compressor and room for gas plant:** 200 sq.ft.
   Adequate to accommodate required capacity compressors, gas cylinders etc.
10. **Pollution control measures:**
    All the dental institutions shall take adequate pollution control measures by providing incernation plant, sewage water treatment plant, landscaping of the campus etc.
11. **Cafetaria:** 800 sq.ft.
    With accommodation for 100 people with kitchen, stores, washing area etc.
12. **Examination hall:** 1800 sq.ft.
    A separate hall for university and other examination furnished with chairs and individual tables to accommodate 125 students at a time.
13. **Hostels:**
    The hostel accommodation shall be provided based on number of admissions for all the boys and girls in the Dental College campus itself. The accommodation may be increased in a phased manner over a period of 4 years.
14. **Staff quarters:**
    All the staff members, teaching and non-teaching working in the institution shall be provided adequate accommodation in the 5 acres land earmarked for the college. The staff quarters may be built in a phased manner over a period of 4 years.

15. **Play ground:**
There shall be facilities for both indoor and out-door games in the premises.

Against Serial No. 17. Auditorium, the word serial No. 17 has been deleted and substituted by 16, in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

16.~~17~~. **Auditorium:**
To accommodate at least 400 people consisting of –
Proper seating arrangements, reception counter, green rooms, lobby, fitted with sound system, slide and multimedia presentation facility.

Against Serial No. 18. Laboratories, the word serial No. 18 has been deleted and substituted by 17, in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

17.~~18.~~ **Laboratories :**

I. Dental subjects:
(a) Pre-clinical Prosthodontics and dental material lab – 1500 sq.ft.
(b) Pre-clinical conservative lab – 1300 sq.ft.
(c) Oral biology and oral pathology lab – 1300 sq.ft.
(d) Laboratory for orthodontics and pedodontics – 800 sq.ft.

II. Medical subjects: (only for independent dental colleges): 4500 sq.ft.

(a) Anatomy dissection hall with storage for cadavers, osteology, demonstration room etc. Area– 1500 sq.ft.

The following have been added in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

(b) One laboratory for physiology and pathology and microbiology with stores and preparation rooms for individual subjects attached to it. Area–1500 sq.ft. for each subject
(c) Laboratory for biochemistry and pharmacology with store and preparation rooms separately for both subjects. Area–1500 sq.ft. for each subject

III. Clinical:
(a) Prosthodontics-Plaster room
Polymers room
Wax room
Casting laboratory
Ceramic lab ..... 1300 sq.ft.
(b) Conservative Dentistry – Plaster room
Casting & ceramic laboratories ... 300 sq.ft.
(c) Oral pathology for histopathology ... 400 sq.ft.
(d) Haematology and clinical biochemistry: a laboratory for routine blood and biochemical investigation and urine analysis ... 200 sq.ft.

Against Serial No. 16. Distilled Water Plant, the word serial No. 16 has been deleted and substituted by 18, in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

18. ~~16.~~**Distilled Water Plant**

The following have been added after the substituted Serial No. 18 Distilled Water Plant, in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

"Note: Minimum built up area of the dental college building other than Hostel and Staff Quarters should not be less than 30,000 sq. ft. in 3rd Year as per DCI Regulations, 2006."

100 ADMISSIONS

General:

1. **Administrative block:** 3000 sq.ft.
consisting of –
(e) Dean's room,
(f) Administrative officer's room
(g) Meeting room
(h) Office

(i) Office stores
(j) Pantry etc.

2. **Library:** 8000 sq.ft.
consisting of –
(a) Reception & waitingProperty counter
(b) Issue counter
(c) Photocopying area
(d) Reading room to accommodate 50% of total students strength.
(e) Postgraduates & staff reading room
(f) Journal room
(g) Audio-visual room
(h) Chief librarian room
(i) Stores and stocking area.
(j) E-Consortium provision to be provided in the College Library connected with the National Medical Library.

3. **Lecture halls – 4 :** 6400 sq.ft.
Each hall to accommodate 10% more of admission strength with proper seating arrangement, blackboard, microphone and facilities for slide, overhead and multi-media projection.

4. **Central stores:** 800 sq.ft.
With proper storing facilities like racks, refrigerator, preferably compact storage systems.

5. **Maintenance room:** 1000 sq.ft.
Equipped with proper facilities to maintain and repair dental chairs and units and various other equipments in the college and hospital.

6. **Photography and artist room:** 400 sq.ft.
With proper studio facilities for clinical photography, developing, preparation of slides, charts, models etc.

7. **Medical stores:** 300 sq.ft.
Stocked with all the necessary drugs usually prescribed in a dental hospital.

8. **Aminities area:** 3200 sq.ft.
(a) Boys' and Girls' locker rooms
(b) Boys' and Girls' common rooms
(c) Common room for non-teaching staff
(d) Common room for teaching staff
(e) Change room for men
(f) Change room for women

9. **Compressor and room for gas plant:** 300 sq.ft.
Adequate to accommodate required capacity compressors, gas cylinders etc.

10. **Pollution control measures:**
All the dental institutions shall take adequate pollution control measures by providing incernation plant, sewage water treatment plant, landscaping of the campus etc.

11. **Cafetaria:** 1500 sq.ft.
With accommodation for 100 people with kitchen, stores, washing area etc.

12. **Examination hall:** 3600 sq.ft.
A separate hall for university and other examination furnished with chairs and individual tables to accommodate 250 students at a time.

13. **Hostels:**
The hostel accommodation shall be provided based on number of admissions for all the boys and girls in the Dental College campus itself. The accommodation may be increased in a phased manner over a period of 4 years.

14. **Staff quarters:**
All the staff members, teaching and non-teaching working in the institution shall be provided adequate accommodation in the 5 acres land earmarked for the college. The staff quarters may be built in a phased manner over a period of 4 years.

15. **Play ground:**
There shall be facilities for both indoor and out-door games in the premises.

16. **Auditorium:**
To accommodate at least 500 people consisting of –
Proper seating arrangements, reception counter, green rooms, lobby, fitted with sound system, slide and multimedia presentation facility.

17. **Laboratories:**

I. Dental subjects:
(a) Pre-clinical Prosthodontics and dental material lab – 3000 sq.ft.
(b) Pre-clinical conservative lab – 2500 sq.ft.
(c) Oral biology and oral pathology lab – 2500 sq.ft.
(d) Laboratory for orthodontics and pedodontics – 1500 sq.ft.

II. Medical subjects: (only for independent dental colleges):7500 sq.ft.
(a) Anatomy dissection hall with storage for cadavers, osteology, demonstration room etc. Area – 2500 sq.ft.

The following have been added in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

(b) One laboratory for physiology and pathology and microbiology with stores and preparation rooms for individual subjects attached to it. Area – 2500 sq.ft. for each subject
(c) Laboratory for biochemistry and pharmacology with store and preparation rooms separately for both subjects – 2500 sq.ft. for each subject

III. Clinical:
(a) Prosthodontics - Plaster room
Polymers room
Wax room
Casting laboratory
Ceramic lab ..... 2500 sq.ft.
(b) Conservative Dentistry – Plaster room
Casting & ceramic laboratories ... 600 sq.ft.
(c) Oral pathology for histopathology ... 600 sq.ft.
(d) Haematology and clinical biochemistry: a laboratory for routine blood and biochemical investigation and urine analysis ... 300 sq.ft.

18. **Distilled Water Plant**

The following have been added after the Serial No. 18. Distilled Water Plant, in terms of (1st Amendment) notification published on 7th January,2008 in the Gazette of India.

"Note: Minimum built up are of the dental college building other than Hostels and Staff Quarters should not be less then 60.000 sq. ft. in 1st Year and 1,00,000 sq. ft. in 3rd Year as per DCI Regulations, 2006."

TEACHING AIDS:

Audiovisual – Adequate number of overhead projectors, slide projectors shall be provided in the lecture halls and seminar rooms attached to various departments. It is also desirable to have an LCD or DLP projector for multimedia presentations.

Computers – The administrative area, clinics, stores and library shall be provided with computers & printers preferably interconnected for better co-ordination.

General Hospital:

The applicant owns and manages a General Hospital of not less than 100 beds as per DCI (Establishment of New Dental Colleges, Opening of New or Higher Course of Study or Training and Increase of Admission Capacity in Dental Colleges) Regulations, 2006 with necessary infrastructure facilities including teaching pre-clinical, para-clinical and allied medical sciences in the campus of the proposed dental college,

or

The proposed dental college is located in the proximity of a Government Medical College or a Medical College recognised by the Medical Council of India and an undertaking of the said Medical College to the effect that it would facilitate training to the students of the proposed dental college in the subjects of Medicine, Surgery and Allied Medical Sciences has been obtained,

or

Where no Medical College is available in the proximity of the proposed dental college, the proposed dental college gets itself tied up at least for 5 years with a Government General Hospital having a provision of at least 100 beds and located within a radius of 10 K.M. of the proposed dental college and the tie-up is extendable till it has its own 100 bedded hospital in the same premises. In such cases, the applicant shall produce evidence that necessary infrastructure facilities including teaching pre-clinical, para-clinical and allied medical sciences are owned by the proposed dental college itself.

A 100 bedded teaching hospital should have a definite out patient departments, in-patient services and 24 hours emergency and critical care services. It should have a medical programme as under:-

I. MEDICAL PROGRAMME

A) Medical & Allied Disciplines

- General Medicine
- General Surgery
- Obstetrics and Gynaecology
- Orthopaedics
- Critical Medicine
- Emergency Medicine
- Otrohino Laryngology
- Paediatrics
- Pathology
- Anaesthesiology
- Blood Bank & Transfusion
- Community Medicine
- Hospital Administration

B) Nursing, Paramedical, Technical and Allied Services

- Dielities and Therapeutics
- Drugs & Pharmacy
- ECG Technology
- Imaging Technology
- Central Sterlic Supply department
- Physiotherapy
- Medical Record Sections

C) Engineering & Allied Services

- Fire protection
- Electrical
- Air conditioning/Central heating
- Medical Gases
- Refrigeration
- Central Workshop
- Ambulance Service
- Water Supply
- Sewage Treatment/Disposal and waste disposal cell

D) Administration and Ancillary Services

- General Administration
- Material Management
- Medical Social Worker
- PRO
- Library
- Security

II. FUNCTIONAL PROGRAMME

A) Site

Site should be within 10 k.m. radius of the teaching block of Dental College – a site with high degree of sensitivity to outside noise should not be present. It should be accessible by transport and building should be well ventilated.

B) Category wise Bed Distribution

(i)	General Ward – Medical including allied specialities	30 beds
(ii)	General Ward – Surgical including allied specialities.	30 beds
(iii)	Private Ward (A/C & Non A/C)	9 beds
(iv)	Maternity Ward	15 beds
(v)	Pediatric Ward	6 beds

The intensive care services for medical/surgical intensive care with bed complement of 4 beds (4% of bed strength).

The critical care services for medical/surgical emergencies with bed complement of 6 beds (6% of bed strength).

III. AREA REQUIREMENTS (AS PER BUREAU OF INDIAN STANDARDS)

- Covered area requirement is 20 sq. m. / bed
  Out of the total covered area
- 40% inpatient services
- 35% outpatient services

- 25% department and supportive services

IV. MAN POWER REQUIREMENTS

The consultants in the various departments should have atleast 8 years teaching experience after post graduation.

MEDICAL STAFF

- General Surgery	-	2
- General Medicine	-	2
- Obstetrics & Gynaecology	-	2
- ENT	-	2
- Paediatrics	-	2
- Anaesthesia	-	2
- Orthopaedics	-	2
- Pharmacologist	-	1
- Radiologist	-	1
- G. DMO	-	1
- Community Medicine	-	1
- Hospital Administration	-	1

NURSING STAFF

- Matron	-	1
- Sister in-charge	-	6
- O. T. Nurses	-	6
- General Nurses	-	20
- Labour Room Nurses	-	4

HEALTH STAFF

- Female Health Assistant	-	1
- Extension Educator	-	1
Paramedical Staff		
- Lab Technician/Blood Bank Tech.	-	4
- ECG Technician	-	1
- Pharmacist	-	4
- Sr. Radiographer	-	1
- CSSD	-	2
- Medical Records	-	1

ENGINEERING STAFF

- Civil	-	2
- Mechanical	-	2
- Electrical	-	2
- Engineering aid	-	4

OTHER STAFF

- Drivers	-	2
- Carpenter	-	1
- Cooks	-	2
- Barber	-	1
- Class IV including chowkidars	-	55

ADMINISTRAIVE STAFF

- Office Superintendent	-	1
- Head Clerk	-	1
- Cashier	-	1
- Stenographer	-	1
- U.D.C.	-	2
- L.D.C.	-	4

Satellite Dental Clinics:

All the dental colleges are encouraged to establish atleast one or two satellite centers with all the infrastructural facilities with in 50 kms distance to train and expose students in community oral health care programmes.

Dental Hospital:

The following are the clinical departments in a Dental College.

1. Oral Medicine and Radiology
2. Oral Pathology and Oral Microbiology
3. Public Health Dentistry.
4. Paediatric and Preventive Dentistry
5. Orthodontics & Dental orthopaedics
6. Periodontology
7. Conservative Dentistry and Endodontics.

8. Oral & Maxillofacial Surgery.
9. Prosthodontics and Crown & Bridge

Out patients:
Since dentistry being more clinical oriented speciality, the Council desires that all the institutions make efforts to have adequate clinical material for satisfactory training of undergraduate students. There shall be atleast 75 to 100 new patients on an average each day in colleges with 50 admissions and 100 – 150 new patients in colleges with 100 admissions.

Each of the clinical departments should have the following functional areas –

50 ADMISSIONS:

(a) Reception and waiting room – 200 sq.ft.
(b) Undergraduate clinic adequate to accommodate the prescribed number of dental chairs and units.
(c) Sterilization room where central sterilization facilities are not provided – 150 sq.ft.
(d) Small department stores – 100 sq.ft.
(e) Seminar room – 200 sq.ft.

Staff rooms :

1. H.O.Ds room - 180 sq.ft.
2. Readers' room - 150 sq.ft.
3. Lecturers' room - 250 sq.ft.

Note: Departments having postgraduate training should provide additional functional requirements as per MDS regulations.

Main reception and dental records section: 800 sq.ft.

100 ADMISSIONS:

(a) Reception and waiting room – 300 sq.ft.
(b) Undergraduate clinic adequate to accommodate the prescribed number of dental chairs and units.
(c) Sterilization room where central sterilization facilities are not provided – 200 sq.ft.
(d) Small department stores – 100 sq.ft.
(e) Seminar room – 400 sq.ft.

Staff rooms:

1. H.O.Ds room - 180 sq.ft.
2. Readers' room - 150 sq.ft.
3. Lecturers' room - 300 sq.ft

Note: Departments having postgraduate training should provide additional functional requirements as per MDS regulations.

Main reception and dental records section: 1500 sq.ft.
There should be adequate area for patients reception, waiting, registration, storage of patients records etc.

Requirement of dental chairs and units:
For 50 admissions – 100
For 100 admissions – 200

Note: Requirement of Dental Chairs for 1st and 2nd BDS will be as per DCI (Establishment of New Dental Colleges, Opening of New or Higher Course of Study or Training and Increase of Admission Capacity in Dental Colleges) Regulations, 2006.

Distribution of dental chairs and units in various departments (Specification is mentioned in the DCI Regulations 2006):

Department	**50 admissions**	**100 admissions**
Oral Medicine & Radiology	06	12
Oral Pathology & Oral Microbiology	01	02
Public Health Dentistry	08	16
Paediatrics and Preventive Dentistry	10	20
Orthodontics	09	18
Periodontology	17	34
Conservative Dentistry and Endodontics	17	34
Oral & Maxillofacial Surgery	15	30
Prosthodontics and Crown & Bridge	17	34
	100	200

Total approximate area for U.G. clinics (50 admissions) – 12,500 sq.ft.
Total approximate area for U.G. clinics (100 admissions) – 25,000 sq.ft

EQUIPMENT REQUIREMENTS

Department : ORAL MEDICINE AND RADIOLOGY

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
	(Space allocation for each Dental chair 100 Sq Ft in all the Departments)		
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, Air Ventury Suction, X-Ray viewer, 3 way syringe, instrument tray, Dental Operator's Stool with height adjustment.	6	12
Panoramic X-Ray with Cephalometric	Preferably digital	1	1
Intra Oral X-ray Unit	70 KV , 8mA, high frequency preferably Digital timer	2	3
Pulp testers	Digital	2	3
Automatic periapical X-ray Developer		1	1
Automatic Panoramic with Cephalometric X-ray Developer		1	1
X-ray viewer	For Panoramic and Cephalometric films	2	2
Radiovisiography	Digital Intra X-ray System with one Sensor and Software	1	1
General X-ray Unit		1	1
Ortho Pantmograph	preferably digital	1	1
Automatic Developers/*Dark Room*		1	2
Lead aprons		2	2
Lead Gloves		1	1
X-ray Hangers		6	6
X-ray viewers		2	2
Diagnostic Kits	Mouth mirror, dental probe, college tweezers	20	40
Lead Screen		*1*	*1*
Biopsy Kit		*1*	*1*
Autoclave	Having wet and dry cycle, which can achieve 135^0C with minimum capacity of 20 liters	1	2
Computers	Minimum Pentium –IV	1	1
Intra Oral Camera	With High resolution	1	1
Needle Burner with Syringe Cutter		2	2

Department : ORAL PATHOLOGY AND ORAL MICROBIOLOGY

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	With shadowless lamp, spittoon, 3 way syringe, instrument tray and suction	1	2
Microscopes		20	40
Microtome		1	1
Wax bath		1	1
Water bath		1	1
Knife sharpner		1	1
Hot plate		1	1
Spencer knife		1	1

Department : PUBLIC HEALTH DENTISTRY

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, Air ventury suction, micromotor control light cure 3 way syringe, X-ray viewer, instrument tray Dental Operators stool with height adjustment With shadowless lamp, spittoon, 3 way	8	16

	syringe, instrument tray and suction, micromotor, airotor, light cure		
Autoclaves	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters.	1	2
Ultrasonic cleaner	Minimum capacity 13 liters with mesh bucket with digital timer	1	2
Needle burner with syringe cutter		2	4
MOBILE CLINIC			
Mobile dental van	Mobile dental van with two dental chairs with all the attachments and adequate sitting space for 15 to 20 people		
Dental chair with unit	Hydraulically operated with spittoon attachment, halogen light with 2 intensity, air ventury suction, airrotor, micromotor, 3 way-scaler and light cure, x-ray viewer, instrument tray, operating stool.	2	
Autoclaves	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters.	1	1
Intraoral x-ray	Portable, 70 KV, 8mA	1	1
Glass bead sterilizers		1	1
Compressor	1.25HP	1	1
Metal Cabinet	With wash basin	1	1
Portable dental chair	Suitcase unit with airrotor, micromotor, scaler and compressor 0.25HP	2	2
Stabilizer	4KV	1	1
Generator	4KV	1	1
Water tank	400ltrs	1	1
Oxygen cylinder		1	1
Public address system		1	1
TV and video cassette player		1	1
Demonstration models			

Department : PAEDIATRIC AND PREVENTIVE DENTISTRY

NAME	**SPECIFICATION**	**QUANTITY**	
		50 Admns.	**100 Admns.**
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, high power motorized evacuation system, Air rotor with miniature, Airrotor HPS, Micro motor with miniature contrangle Hand piece, 3 way syringe, ultrasonic sealer with 3 tips, Light cure unit LED based heat free, X-ray viewer, instrument tray Dental Operator's stool with height adjustment (Pedo chair preferred)	10	20
Autoclaves	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters.	1	2
Ultrasonic cleaner	Minimum capacity 13 liters with mesh bucket with digital timer	1	2
Needle Burner with syringe cutter		2	3
Amalgamator		1	1
Pulp Tester-Digital		1	1
Rubber dam kit for pedo		3	5
Apex locator		1	1
Endo motor	With torque control HPs	1	1
Injectable gutta percha with condensation		1	1
Radiovisiography	Digital intra X-ray system with pedo sensor and software	1	1
Intra Oral Camera	With high resolution	1	1
Scaling instruments		5	10
Restorative instruments		5	10
Extraction forceps		5	10
Intra-oral X-ray		1	1
Automatic Developer		1	1
Computer	Minimum Pentium IV	1	1
PEDO LAB			

Plaster dispenser	One each for plaster and stone plaster	2	2
Model Trimmer	With diamond disc	1	1
Model Trimer	Double disc one diamond and one carborandum disc	1	1
Welder with soldering attachments		1	1
Vibrator		2	2
Lab micro motor	Heavy duty with Hps	2	3
Dental Lathe		1	1
Model Trimmer		1	1
Steam cleaner		1	1
Pressure moulding machine		1	1
Carborandum Disc		1	1
Diamond disc		1	1

Department : ORTHODONTICS

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, Air ventury suction, micromotor control light cure 3 way syringe, X-ray viewer, instrument tray Dental Operators stool with height adjustment	9	18
Unit mount scaler		3	5
Autoclave	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters	1	2
Ultrasonic Cleaner	Minimum capacity 13 liters with mesh bucket with digital timer	1	2
ORTHO LAB			
Plaster dispenser	One each for plaster and stone plaster	2	2
Vibrator		2	2
Model Trimmer		1	2
Micromotor –	heavy duty	2	4
Lathe		1	2
X-ray viewers		2	2
OPG with cephalostat	If available in radiology its is adequate.	1	1
Welders		2	4
Blue Torch		1	1
Base Formers		2	4
Typodont		2	4
Set of Pliers		5	10
Welder with soldering attachments		1	1
Hydro solder		1	1
Typhodont articulator	With metal teeth wax rim of Class I, II, III	3	4
Pressure moulding machine		1	1

Department : PERIODONTOLOGY

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, high power evacuation system, Air ventury suction, X-ray viewer, Airrotor, Micromotor with straight and contrangle Handpiece, With shadowless lamp, spittoon, 3 way syringe, ultrasonic sealer with 3 tips, X-ray viewer, instrument tray dental operator's stool with height adjustment	17	34
	Note: Atleast 25% of the units should have the Airpolisher.		
Scaling instrument sets		5	10
Surgical instrument sets		3	6
Autoclave	Having wet and dry cycle, which can achieve	2	3

	135°C with minimum capacity of 20 liters		
Ultrasonic scaler	Minimum capacity 13 liters with mesh bucket	1	2
Electro surgical cautery		1	1
Needle burner with syringe cutter		4	6
LASER	Soft tissue laser	1	1
Surgical motor with physio dispenser		1	1

Department : CONSERVATIVE DENTISTRY AND ENDODONTICS

NAME	**SPECIFICATION**	**QUANTITY**	
		50 Admns.	**100 Admns.**
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, high power evacuation system, Air ventury suction, X-ray viewer, Airrotor, Micromotor with straight and contrangle Handpiece, With shadowless lamp, spittoon, 3 way syringe, ultrasonic sealer with 3 tips, X-ray viewer, instrument tray dental operator's stool with height adjustment	17	34
Rubber dam kits		4	6
Restorative instruments kits		5	10
R.C.T. instrument kits		5	10
Autoclaves	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters	2	3
Ultrasonic cleaner	Minimum capacity 13 liters with mesh bucket	1	2
Needle burner with syringe cutter		3	4
Amalgamator	With auto proportion, auto dispenser	2	3
Rubber dam kits		4	6
Pulp Tester-Digital		2	4
Apex Locator		1	2
Glass bead sterilizers		4	6
Plaster dispensers		2	2
Vibrator		1	2
Ceramic Unit		1	1
Casting machine		1	1
Intra-oral X-ray Unit	Proper radiation safety	1	1
Automatic Developer		1	1
Radiovisiography	RVG with Computer	1	1
Endo motor	With torque control Hps	1	1
Bleaching unit		1	1
Magnification loops		1	2
Injectable gutta percha		1	2
PHANTOM LAB UNIT	Phantom Table fitted with Halogen Operating Light Phantom Head body type neck joint for all the movement, TMJ movement. Modular with Air rotor, Micro motor with contra angle Hps, 3-way syringe, jaw with ivorine teeth, preferably soft gingival, dental operator's stool (not to use extracted or cadaver teeth).	30	60

CHEMICAL LABORATORY

Plaster Dispenser	One each for plaster and stone plaster	2	2
Model Trimmer	Carborandum disc	1	1
	Diamond disc	1	1
Lathe	Heavy Duty	1	2
Lab Micromotor	With heavy duty handpiece	2	3
Ultrasonic cleaner	Minimum capacity 5 liters	1	1
Spindle Grinder		1	1
Vibrator		1	2
Burnout furnace		1	1
Porcelain furnace		1	1

Sandblasting Machine		1	1
Lab Airrotor		1	1
Pindex System		1	1
Circular saw		1	1
Vacuum mixer		1	1
Pneumatic chisel		1	1
Casting machine	Motor cast/induction casting preferred	1	1

Department : ORAL & MAXILLOFACIAL SURGERY
A) EXODONTIA

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, Air ventury suction, X-ray viewer, 3 way syringe, instrument tray Dental Operator's stool and height adjustment and suction, Micromotor/ Airotor	15	30
Autoclaves	Front loading Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters	2	2
Ultrasonic Cleaner	Minimum capacity 13 liters with mesh bucket	1	2
Needle burner with syringe cutter		4	6
Extraction forceps sets	Complete set	10	20
Dental elevators	Complete set	5	10
Minor Oral surgery kits		3	6
Emergency drugs tray		1	1
Oxygen cylinder with mask		1	1
X-ray viewers		2	2
Computer	Minimum Pentium IV	1	1

B) MINOR SURGERY

Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, high power evacuation system, Air ventury suction, X-ray viewer, Airrotor, Micromotor with straight and contrangle Handpiece, 3 way syringe, instrument tray Dental Operator's stool and height adjustment and suction,	3	5

Department : PROSTHODONTICS AND CROWN & BRIDGE

NAME	SPECIFICATION	QUANTITY 50 Admns.	QUANTITY 100 Admns.
Dental Chairs and Units	Electrically operated, Spittoon attachment, Halogen Light with 2 intensity, high power evacuation system, Air ventury suction, X-ray viewer, Airrotor, Micromotor with straight and contrangle Handpiece, 3 way syringe, ultrasonic sealer with 3 tips, Light cure unit, instrument tray and suction, Dental operator stool with height adjustment Electrically operated, Spittoon attachment, Halogen Light with 2 intensity , Air ventury suction, instrument tray, Dental operator stool with height adjustment	17	34
Semi adjustable articulator	With face bow	2	2
Extra oral/intra oral tracer		2	2
Dewaxing unit		1	2
Curing unit		1	2
Dental casting machine		1	1
Wax burnout furnace		1	1
Pre heating furnace		1	1
Surveying unit		1	2
Heavy duty hand piece	Lab micromotors	3	4

Autoclave	Having wet and dry cycle, which can achieve 135°C with minimum capacity of 20 liters	1	2
Needle burner with syringe cutter		1	2
Plaster Dispenser	One each for plaster and stone plaster	2	2
Model Trimmer with Carborandum Disc		1	1
Model Trimmer with Diamond Disc		1	2
Acrylizer		2	3
Lathe		1	2
Flask press		4	4
Deflasking unit		4	4
Dewaxing unit		2	3
Hydraulic Press		2	3
Mechanical Press		1	2
Vacuum mixing machine		1	1
Lab Micro motor	With heavy duty handpiece	3	4
Curing pressure pot		1	1
Porcelain furnace Vibrator Sand blasting unit Ultrasonic cleaner Model Trimmer Hot water sterilizer Geyser H.P. grinder with suction Heavy duty lathe Phantom heads Pre-clinical working tables	 Compound bath Gas connection & bunson burner	1 1 2 1 2 1 1 2 2 50 50	2 2 2 2 4 2 2 3 2 50 100

CERAMIC AND CAST PARTIAL LABORATORY

NAME	**SPECIFICATIONS**	**50 ADMN**	**100 ADMN**
Plaster Dispensor	One each for plaster and stone plaster	2	2
Duplicator		1	1
Pindex System		1	1
Circular saw		1	1
Burn out furnace		1	1
Sandblasting machine	With two containers	1	1
Electro-polisher		1	1
Model Trimmer with Carborandum disc		1	1
Model Trimmer with Diamond disc		1	1
Induction casting machine		1	1
Programmable porcelain furnace with vacuum pump with instrument kit and material kit		1	1
Spot welder with soldering, attachment of cable		1	1
Vacuum mixing machine		1	1
Steam Cleaner		1	1
Spindle Grinder 24,000 RPM with vacuum suction		1	1
Wax heater		1	1
Wax carver		1	1
Curing pressure pot		1	1
Milling machine		1	1
Heavy duty lathe with suction		1	1
Preheating furnace		1	1
Palatal trimmer		1	1
Ultrasonic cleaner	5 liters capacity	1	1
Composite curing unit		1	1
Micro surveyor		1	1
PRE-CLINICAL PROSTHETICS LABORATORY	Work table preferably complete stainless steel fitted with light, Bunsen burner, air	30	60

	blower, working stool. Adequate number of lab micro motor with attached hand piece	10	20
PLASTER ROOM FOR PRE-CLINICAL WORK			
Plaster dispenser	One each for plaster and stone plaster	2	2
Vibrator		2	2
Lathe		2	2
Model Trimmer		1	1
Carborandum Disc		1	1
Diamond disc		1	1

MINIMUM BASIC QUALIFICATION AND TEACHING EXPERIENCE REQUIRED FOR TEACHERS FOR UNDER-GRADUATE DENTAL STUDIES.

(A) Dental Staff

Principal/Dean: Same qualifications as prescribed for a Professor. Experience as Professor for not less than 5 years in a Dental Institution.

Professors: A BDS Degree of an Indian University or an equivalent qualification with Post-graduate qualification /Diplomate of National Board in the subject and with 5 years teaching experience as Reader.

Readers: A BDS Degree of an Indian University or an equivalent qualification with Post-graduate qualification /Diplomate of National Board in the subject and with 4 year's teaching experience after post-graduation.

Lecturers: A recognised MDS Degree of an Indian University/Diplomate of National Board or an equivalent qualification.

Tutors A recognised BDS Degree of Indian University or an equivalent qualification with at least one year experience.

Note:
In case of individuals with discrepancy between teaching experience and the post-graduate qualification, a reference may be made to the Dental Council of India through competent authority for consideration. This is not applicable for future entrants.

(B) Medical Staff The requirement of medical teaching staff is to be as per DCI Regulations 2006

Qualification and Teaching Experience of the medical teaching staff will be as per MCI Regulations.

MINIMUM STAFFING PATTERN FOR UNDER GRADUATE DENTAL STUDIES FOR 50 ADMISSIONS
(As per DCI Regulations 2006)

Principal/Dean**: - 1 (One post of Professor can be deleted in the under mentioned tabulation according to the subject of specialisation)**
Each Dental Department should be headed by a Professor.

	I Year			II Year			III Year			Total Posts in position from the beginning of 3rd year onwards		
	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor
	2*	2	10	3*	4	20	6*	11	30	6	11	30#
Prosthodontics and Crown & Bridge	1	1	-	1	2	-	1	2	-	1	2	-
Oral Pathology and Oal Microbiology	-	-	-		1	-	1	1	-	1	1	-
Conservative Dentistry and Endodontics	-	1	-	1	1	-	1	2	-	1	2	-
Oral & Maxillofacial Surgery	-	-	-	-	-	-	1	1	-	1	1	-
Periodontology	-	-	-	-	-	-	1	1	-	1	1	-
Orthodontics	-	-	-	-	-	-	1	1	-	1	1	-
Paediatric & Preventive Dentistry	-	-	-	-	-	-	-	1	-	-	1	-
Oral Medicine & Radiology	-	-	-	-	-	-	-	1	-	-	1	-
Public Health Dentistry	-	-	-	-	-	-	-	1	-	-	1	-
Dental Materials	-	-	-	-	-	-	-	-	-	-	-	-
Dental Anatomy, Embryology & Oral Histology	-	-	-	-	-	-	-	-	-	-	-	-

***** Includes the Principal who can head any one of the six specialities.
# 25% MDS and 75% BDS.

MINIMUM STAFFING PATTERN FOR UNDER GRADUATE DENTAL STUDIES FOR 100 ADMISSIONS
(As per DCI Regulations 2006)

Each Dental Department should be headed by a Professor

	I Year			II Year			III Year			Total Posts in position from the beginning of 3rd year onwards		
	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor	Prof.	Reader	Lecturer/ Tutor
	2*	3	16	4*	5	30	6*	13	40	6*	13	40#
Prosthodontics and Crown & Bridge	1	2	-	1	2	-	1	2	-	1	2	-
Oral Pathology and Oral Microbiology	-	-	-	1	1	-	1	1	-	1	1	-
Conservative Dentistry and Endodontics	-	1	-	1	2	-	1	2	-	1	2	-
Oral & Maxillofacial Surgery	-	-	-	-	-	-	1	2	-	1	2	-

Periodontology	-	-	-	-	-	-	1	2	-	1	2	-
Orthodontics	-	-	-	-	-	-	1	1	-	1	1	-
Paediatric & Preventive Dentistry	-	-	-	-	-	-	-	1	-	-	1	-
Oral Medicine & Radiology	-	-	-	-	-	-	-	1	-	-	1	-
Public Health Dentistry	-	-	-	-	-	-	-	1	-	-	1	-
Dental Materials	-	-	-	-	-	-	-	-	-	-	-	-
Dental Anatomy, Embryology & Oral Histology	-	-	-	-	-	-	-	-	-	-	-	-

***** Includes the Principal who can head any one of the six specialities.

25% MDS and 75% BDS.

Medical Teaching Staff in a Dental College
(As per DCI Regulations 2006)

Year	**Subjects**	**Intake and Designation**					
		50 Admissions			**100 Admissions**		
		Prof	**Reader**	**Lecturer**	**Prof**	**Reader**	**Lecturer**
I	**Anatomy**	-	1	2	-	1	4
I	**Physiology**	-	1	2	-	1	2
I	**Biochemistry**	-	1	2	-	1	2
II	**Pharmacology**	-	1	2	-	1	3
II	**General Pathology**	-	1	2	-	1	2
II	**Microbiology**	-	1	2	-	1	2
III	**General Medicine**	-	1	2	-	1	3
III	**General Surgery**	-	1	2	-	1	3
III	**Anaesthesia**	-	1	1	-	1	1

OTHER STAFF PATTERN FOR 50 ADMISSIONS

Administrative Officer 1
Secretary to Dean 1
Public Relation officer 1

Designation	Receptionist	Establishment	Accounts	Admissions	Exams	Stores	Library	Maintenance	Security	Illustration	Clinical Depts.	Computer	Laboratories	Sports	Total
Managers/ Office Suptd.		1	1						1			1			4
Assistants		1	1	1	1	1	2	1							8
Receptionist	8														8
Librarian							1								1
D.S.A.(Chair side Attendant)											10				10
Dent. Tech. (Dental Mechanic)											6				6
Dent. Hygst.											3				3
Radiographer											2				2
Photographer										1					1
Artist										1					1
Programmer												1			1
Data Entry Operators												1			1
Physical Director														1	1
Engineer								1							1
Electricians								2							2
Plumber								1							1
Carpenter								1							1
Mason								1							1
A.C. Tech.								1							1
Helpers Electrical								1							1
Sweepers & Scavengers							2	2			3		3		10
Attenders	2	1	1		1	1	1	2			4	1	4		18
Security Personal									5						5
Dept. Secretaries											4				4
Driver									4						4
Nurses											3				3
Lab. Technicians													3		3

Note:
The above staff pattern indicates minimum requirements for the stipulated admissions. However, the actual staff requirements may marginally vary depending upon the patients' flow, work culture and design of the building.

OTHER STAFF PATTERN FOR 100 ADMISSIONS

Administrative Officer 1
Secretary to Dean 1
Public Relation officer 1

Designation	Receptionist	Establishment	Accounts	Admissions	Exams	Stores	Library	Maintenance	Security	Illustration	Clinical Depts.	Computer	Laboratories	Sports	Total
Managers / Office Supdt.	1	1	1		1	1			1			1			7
Assistants		2	2	2	1	1	4	1							13
Receptionist	14														14
Librarian							1								1
D.S.A.(Chair side Attendant)											20				20
Dent. Tech.(Dental											10				10

Mechanic)															
Dent. Hygst.											5				5
Radiographer											3				3
Photographer										1					1
Artist										1					1
Programmer												1			1
Data Entry Operators												2			2
Physical Director														1	1
Engineer								1							1
Electricians								4							4
Plumber								2							2
Carpenter								1							1
Mason								1							1
A.C. Tech.								1							1
Helpers Electrical								3							3
Sweepers & Scavangers							2	4			5		6		17
Attenders	3	1	1		1	2	2	3			5	1	6		25
Security Personal									6						6
Dept. Secretaries											8				8
Driver									5						5
Nurses											9				9
Lab. Technicians													5		5

Note:
The above staff pattern indicates minimum requirements for the stipulated admissions. However, the actual staff requirements may marginally vary depending upon the patients' flow, work culture and design of the building.

SYLLABUS OF STUDY

1. HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS

A) GOAL

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures. So that relevant anatomical & scientific foundations are laid down for the clinical years of the BDS course.

B) OBJECTIVES :

a) KNOWLEDGE & UNDERSTANDING:

At the end of the 1st year BDS course in Anatomical Sciences the undergraduate student is Expected to:

1. Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.
2. Know the anatomical basis of disease and injury.
3. Know the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.
4. Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.
5. Have an idea about the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards.
6. Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.
7. Know the anatomy of cardio-pulmonary resuscitation.

b) SKILLS

1. To locate various structures of the body and to mark the topography of the living anatomy.
2. To identify various tissues under microscope.
3. To identify the features in radiographs and modern imaging techniques.
4. To detect various congenital abnormalities.

C) INTEGRATION

By emphasising on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences & clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

This insight is gained in a variety of ways:

1) Lectures & small group teaching
2) Demonstrations
3) Dissection of the human cadaver
4) Study of dissected specimens

5) Osteology
6) Surface anatomy on living individual
7) Study of radiographs & other modern imaging techniques.
8) Study of Histology slides.
9) Study of embryology models
10) Audio-visual aids

Throughout the course, particular emphasis is placed on the functional correlation, clinical application & on integration with teaching in other bio dental disciplines.

D) AN OUTLINE OF THE COURSE CONTENT:

1. General anatomy: Introduction of anatomical terms and brief outline of various systems of the body.
2. Regional anatomy of head & neck with osteology of bones of head & neck, with emphasis on topics of dental importance.
3. General disposition of thoracic, abdominal & pelvic organs.
4. The regional anatomy of the sites of intramuscular & intra vascular injections, & lumbar puncture.
5. General embryology & systemic embryology with respect to development of head & neck.
6. Histology of basic tissues and of the organs of gastroinstenstinal, respiratory, Endocrine, excretory systems & gonads.
7. Medical genetics.

E) FURTHER DETAILS OF THE COURSE.

I. INTRODUCTION TO :

1. Anatomical terms.
2. Skin, superficial fascia & deep fascia
3. Cardiovascular system, portal system collateral circulation and arteries.
4. Lymphatic system, regional lymph nodes
5. Osteology - Including ossification & growth of bones
6. Myology – Including types of muscle tissue & innervation.
7. Syndesmology – Including classification of Joints.
8. Nervous system

II. HEAD & NECK:

01. Scalp, face & temple, lacrimal apparatus 02. Neck - Deep fascia of neck, posterior triangle, suboccipital triangle, anterior triangle, anterior median region of the neck, deep structures in the neck. 03.Cranial cavity - Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland. 04. Cranial nerves - III, IV, V, VI, VII, IX,XII in detail. 05. Orbital cavity – Muscles of the eye ball, supports of the eye ball, nerves and vessels in the orbit. 06. Parotid gland. 07. Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo - palatine fossa. 08. Submandibular region 09. Walls of the nasal cavity, paranasal air sinuses 10. Palate 11. Oral cavity, Tongue 12. Pharynx (palatine tonsil and the auditory tube) Larynx. OSTEOLOGY – Foetal skull, adult skull, individual bones of the skull, hyoid bone and cervical vertebrae

III.THORAX : Demonstration on a dissected specimen of

1. Thoracic wall
2. Heart chambers
3. Coronary arteries
4. Pericardium
5. Lungs – surfaces ; pleural cavity
6. Diaphragm

IV. ABDOMEN : Demonstration on a dissected specimen of

1. Peritoneal cavity
2. Organs in the abdominal & pelvic cavity.

V. CLINICAL PROCEDURES :

a) Intramuscular injections: Demonstration on a dissected specimen and on a living person of the following sites of injection.
   1. Deltoid muscle and its relation to the axillary nerve and radial nerve.
   2. Gluteal region and the relation of the sciatic nerve.
   3. Vastus lateralis muscle.
b) Intravenous injections & venesection: Demonstration of veins in the dissected specimen and on a living person.

1. Median cubital vein 2. Cephalic vein 3. Basilic vein 4. Long saphenous vein

c) Arterial pulsations: Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.

1. Superficial temporal 2. Facial 3. Carotid 4. Axillary 5. Brachial 6. Radial 7. Ulnar 8. Femoral 9. Popliteal 10. Dorsalispedis

d) Lumbar puncture: Demonstration on a dissected specimen of the spinal cord, cauda equina & epidural space and the inter vertebral space between L4 & L5 .

VI. EMBRYOLOGY :

Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation & fate, Pharyngeal arches, pouches & clefts, Development of face, tongue, palate, thyroid gland, pituitary gland, salivary glands, and anomalies in their development, Tooth development in brief.

VII. HISTOLOGY :

The Cell :

Basic tissues - Epithelium, Connective tissue including cartilage and bone, Muscle Tissue, Nervous tissue : Peripheral nerve, optic nerve, sensory ganglion, motor ganglion, Skin

Classification of Glands

Salivary glands (serous, mucous and mixed gland), Blood vessels, Lymphoid tissue Tooth, lip, tongue, hard palate, oesphagus, stomach, ,duodenum ,ileum, colon, vermiform appendix Liver, Pancreas, Lung, Trachea ,Epiglottis, Thyroid gland , para thyroid gland , supra renal gland and pituitary gland, Kidney, Ureter, Urninary bladder, Ovary and testis.

VIII. MEDICAL GENETICS :

Mitosis, meiosis, Chromosomes, gene structure, Mendelism, modes of inheritance

RECOMMENDED BOOKS:

1. SNELL (Richard S.) Clinical Anatomy for Medical Students, Ed. 5, Llittle Brown & company, Boston.
2. RJ LAST'S Anatomy – McMinn, 9th edition.
3. ROMANES(G.J.) Cunningham Manual of Practical Anatomy : Head & Neck & Brain Ed.15.Vol.III, Oxford Medical publication.
4. WHEATER,BURKITT & DANIELS, Functional Histology, Ed. 2, Churchill Livingstone.
5. SADLER , LANGMAN'S, Medical Embryology, Ed. 6.
6. JAMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.
7. WILLIAMS, Gray's Anatomy, Ed.38. ,Churchill Livingstone.
8. EMERY,Medical Genetics.

2. HUMAN PHYSIOLOGY

A) GOAL

The broad goal of the teaching undergraduate students in Human Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

OBJECTIVES

a) KNOWLEDGE

At the end of the course, the student will be able to:

1. Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.
2. Assess the relative contribution of each organ system towards the maintenance of the milieu interior.
3. List the physiological principles underlying the pathogenesis and treatment of disease.

b) SKILLS

At the end of the course, the student shall be able to :

1. Conduct experiments designed for the study of physiological phenomena.
2. Interprete experimental and investigative data
3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

c) INTEGRATION

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

B) COURSE CONTENTS THEORY

1. GENERAL PHYSIOLOGY
    1. Homeostasis: Basic concept, Feed back mechanisms
    2. Structure of cell membrane, transport across cell membrane
    3. Membrane potentials

2. BLOOD:

Composition & functions of blood.

Specific gravity, Packed cell volume, factors affecting & methods of determination.

Plasma proteins - Types, concentration, functions & variations.

Erythrocyte - Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.

ESR- Methods of estimation, factors affecting, variations & significance.

Haemoglobin - Normal concentration, method of determination & variation in concentration.

Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.

Anaemia - Definition, classification, life span of RBC's destruction of RBC's , formation & fate of bile pigments, Jaundice - types.
Leucocytes : Classification, number, percentage, distribution morphology, properties, functions & variation. Role of lymphocytes in immunity , leucopoiesis life span & fate of leucocytes.
Thromobocytes - Morphology, , number, variations, function & thrombopoiesis.
Haemostatsis - Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.
Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action. Bleeding disorders.
Blood groups: ABO & Rh system, method of determination, importance,indications & dangers of blood transfusion, blood substitutes.
Blood volume: Normal values, variations.
Body fluids : distribution of total body water, intracellular & extracellular compartments, major anions & cations in intra and extra cellular fluid.
Tissue fluids & lymph : Formation of tissue fluid, composition, circulation & functions of lymph. Oedema - causes.
Functions of reticulo endotrelial system.

3. MUSCLE AND NERVE
Classification of nerves, structure of skeletal muscle - Molecular mechanism of muscle contraction, neuromuscular transmission. Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.

4. DIGESTIVE SYSTEM :
Introduction to digestion : General structure of G.I. tract, Innervation.
Salivary glands: Structure of salivary glands, composition , regulation of secretion & functions of saliva.
Stomach: Composition and functions of gastric juice, mechanism and regulation of gastric secretion.
Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.
Liver : structure , composition of bile, functions of bile, regulation of secretion –
Gall bladder : structure, functions.
Small intestine - Composition, functions & regulation of secretion of intestinal juice.
Large intestine - Functions.
Motor functions of GIT: Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

5. EXCRETORY SYSTEM :
Structure & functions of kidney, functional unit of kidney & functions of different parts.
Juxta glomerular apparatus, renal blood flow.
Formation of Urine : Glomerular filteration rate - definition, determination , normal values, factors influencing G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion - secretion of urea, hydrogen and other substances.
Mechanism of concentration & dilution of urine.
Role of kidney in the regulation of pH of the blood.
Micturition : anatomy & innervation of Urinary bladder, mechanism of miturition & abonrmalities.

6. BODY TEMPERATURE & FUNCTIONS OF SKIN

7. ENDOCRINOLOGY
General endocrinology - Enumeration of endocrine glands & hormones - General functions of endocrine system, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of hormones.
Hormones of anterior pituitary & their actions, hypothamic regulation of anterior pituitary function. Disorders of secretion of anterior pituitary hormones.
Posterior pituitary : Functions, regulation & disorders of secretion.
Thyroid: Histology, synthesis, secretion & transport of hormones, actions of hormones, regulation of secretion & disorders, Thyroid function tests.
Adrenal cortex & Medulla -synthesis, secretion, action, metabolism, regulation of secretion of hormones & disorders.
Other hormones - Angiotensin, A.N.F.

8. REPRODUCTION
Sex differentiation, Physiological anatomy of male and female sex organs,
Female reproductive system : Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal changes during pregnancy, pregnancy tests & parturition.
Lactation, composition of milk, factors controlling lactation, milk ejection, reflex, Male reproductive system :spermatogenesis, semen and contraception.

9. CARDIO VASCULAR SYSTEM
Functional anatomy and innervation of heart Properties of cardiac muscle
Origin & propagation of cardiac impulse and heart block.
Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.

Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta.
Volume changes in ventricles. Jugular venous pulse, arterial pulse.
Heart sounds: Mention of murmurs.
Heart rate: Normal value, variation & regulation.
Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heart rate and stroke volume.
Arterial blood pressure: Definition, normal values & variations,determinants, regulation & measurement of blood pressure.
Coronary circulation.
Cardio vascular homeostasis - Exercise & posture.

10. RESPIRATORY SYSTEM
Physiology of Respiration : External & internal respiration.
Functional anatomy of respiratory passage & lungs.
Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs.
Intra pleural & intra pulmonary pressures & their changes during the phases of respiration.
Mechanics of breathing - surfactant, compliance & work of breathing.
Spirometry: Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.
Pulmonary ventilation - alveolar ventilation & dead space – ventilation.
Composition of inspired air, alveolar air and expired air.
Exchange of gases: Diffusing capacity, factors affecting it.
Transport of Oxygen & carbon dioxide in the blood.
Regulation of respiration – neural & chemical.
Hypoxia, cyanosis, dyspnoea, periodic breathing.
Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM
1. Organisation of central nervous system
2. Neuronal organisation at spinal cord level
3. Synapse receptors, reflexes, sensations and tracts
4. Physiology of pain
5. Functions of cerebellum, thalamus, hypothalamus and cerebral cortex.
6. Formation and functions of CSF
7. Autonomic nervous system

12. SPECIAL SENSES
Fundamental knowledge of vision, hearing, taste and smell.

PRACTICALS
The following list of practical is minimum and essential. All the practical have been categorised as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorised as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURES
1. Enumeration of Red Blood Cells
2. Enumeration of White Blood Cells
3. Differential leucocyte counts
4. Determination of Haemoglobin
5. Determination of blood group
6. Determination of bleeding time and clotting time
7. Examination of pulse
8. Recording of blood pressure.

DEMONSTRATION:
1. Determination of packed cell volume and erythrocyte sedimentation rate
2. Determination of specific gravity of blood
3. Determination of erythrocyte fragility
4. Determination of vital capacity and timed vital capacity
5. Skeletal muscle experiments.
   Study of laboratory appliances in experimental physiology. Frog's gastrocneminus sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of work done.
6. Electrocardiography: Demonstration of recording of normal Electro cardiogram
7. Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS:
Guyton; Text book of Physiology, 9th edition.

Ganong; Review of Medical Physiology, 19th edition
Vander; Human physiology, 5th edition
Choudhari; Concise Medical Physiology, 2nd edition
Chaterjee; Human Physiology, 10th edition
A.K. Jain; Human Physiology for BDS students, 1st edition

BOOKS FOR REFERENCE:

i) Berne & Levey; Physiology, 2nd edition
ii) West-Best & Taylor's, Physiological basis of Medical Practise, 11th edition

EXPERIMENTAL PHYSIOLOGY:

i) Rannade; Practical Physiology, 4th edition
ii) Ghai; a text book of practical physiology
iii) Hutchison's; Clinical Methods, 20th edition

BIOCHEMISTRY

AIMS AND SCOPE OF THE COURSE IN BIOCHEMISTRY

The major aim is to provide a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental/medical practice. The contents should be organised to build on the already existing information available to the students in the pre-university stage and reorienting. A mere rehash should be avoided.

The chemistry portion should strive towards providing information on the functional groups, hydrophobic and hydrophilic moieties and weak valence forces that organise macromolecules. Details on structure need not be emphasised.

Discussion on metabolic processes should put emphasis on the overall change, interdependence and molecular turnover. While details of the steps may be given, the student should not be expected to memorise them. An introduction to biochemical genetics and molecular biology is a must but details should be avoided. The exposure to antivitamins, antimetabolites and enzyme inhibitors at this stage, will provide a basis for the future study of medical subjects. An overview of metabolic regulation is to be taught by covering hormonal action, second messengers and regulation of enzyme activities. Medical aspects of biochemistry should avoid describing innumerable functional tests, most of which are not in vogue. Cataloguing genetic disorders under each head of metabolism is unnecessary. A few examples which correlate genotype change to functional changes should be adequate.

At the end of the course the student would be able to acquire a useful core of information, which can be retained for a long time. Typical acid tests can be used to determine what is to be taught or what is to be learnt. A few examples are given below.

1. Need not know the structure of cholesterol. Should know why it cannot be carried free in plasma.
2. Mutarotation should not be taught. Student should know why amylase will not hydrolyse cellulose.
3. Need not know the details of alpha - helix and beta - pleats in proteins.
   Should know why haemoglobin is globular and keratin is fibrous.
4. Need not know mechanism of oxidative phosphorylation.
   Should know more than 90 % of ATP is formed by this process.
5. Need not know details of the conversion of pepsinogen to pepsin.
   Should know hydrochloric acid cannot break a peptide bond at room temperature.
6. Need not remember the steps of glycogenesis.
   Should know that excess intake of carbohydrate will not increase glycogen level in liver or muscle.
7. Need not know about urea or cretinine clearance tests.
   Should know the basis of increase of urea and creatinine in blood in renal insufficiency.
8. Need not know the structure of insulin.
   Should know why insulin level in circulation is normal in most cases of maturity onset diabetes.
9. Need not know the structural details of ATP.
   Should know why about 10 g of ATP in the body at any given time meets all the energy needs.
10. Need not know the mechanism of action of prolylhydroxylase.
    Should know why the gum bleeds in scurvy.
11. Need not know the structure of Vitamin K.
    Should know the basis of internal bleeding arising due to its deficiency.
12. Need not remember the structure of HMGCoA.
    Should know why it does not lead to increased cholesterol synthesis in starvation.

BIOCHEMISTRY AND NUTRITION

1. CHEMISTRY OF BIOORGANIC MOLECULES

Carbohydrates: Definition, biological importance and classification. Monosaccharides - Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structures of starch and glycogen.

Lipids : Definition, biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups. Cholesterol. Bile salts. Micelle. Bimolecular leaflet.

Proteins: Biological importance. Aminoacids: Classification. Introduction to peptides. Proteins : Simple and conjugated; globular and fibrous. Charge properties. Buffer action . Introduction to protein conformation . Denaturation.
Nucleic acids: Building units . Nucleotides. Outline structure of DNA and RNA.
High energy compounds: ATP , Phosphorylamidines, Thiolesters, Enol phosphates.

2. MACRONUTERIENTS AND DIGESTION
Energy needs: Basal metabolic rate. Dietary carbohydrates, fibres. Dietary lipids, essential fatty acids. Nitrogen balance. Essential amino acids. Protein quality and requirement (methods for evaluation of protein quality to be excluded). Protein calorie malnutrition. Balanced diet.
Enzymatic hydrolysis of dietary carbohydrates. Mechanism of uptake of monosaccharides. Digestion and absorption of triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.

3. MICRONUTRIENTS
Vitamins: Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water-soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation. Introduction to antivitamins and hypervitaminosis.

Minerals :Classification, daily requirement. Calcium and phosphate: sources, uptake, excretion, function. Serum calcium regulation. Iron: sources, uptake and transport.
Heme and nonheme iron functions; deficiency. Iodine: Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride: function, deficiency and excess. Indications of role of other minerals.

4. ENERGY METABOLISM
Overview: Outlines of glycolysis, pyruvate oxidation and citric acid cycle. Beta oxidation of fatty acids. Electron transport chain and oxidative phosphyorylation. Ketone body formation and utilisation. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism . Protein utilisation for energy. Glucogenic and ketogenic amino acids. Integration of metabolism.

5. SPECIAL ASPECTS OF METABOLISM
Importance of pentose phosphate pathway. Formation of glucuronic acid. Outlines of cholesterol synthesis and breakdown. Ammonia metabolism. Urea formation. Phosphocreatine formation. Transmethylation. Amines. Introduction to other functions of amino acids including one carbon transfer. Detoxication : Typical reactions. Examples of toxic compounds. Oxygen toxicity

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS
Introduction to nucleotides; formation and degradation. DNA as genetic material. Introduction to replication and transcription. Forms and functions of RNA. Genetic code and mutation. Outline of translation process. Antimetabolites and antibiotics interfering in replication, transcription and translation. Introduction to cancer, viruses and oncogenes.

7. ENZYME AND METABOLIC REGULATION
Enzymes: Definition, classification, specificity and active site. Cofactors. Effect of pH, temperature and substrate concentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction/repression.

Overview of hormones. Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action of steroid hormones, epinephrine, glucagon and insulin in brief. Acid base regulation. Electrolyte balance.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS
Connective tissue: Collagen and elastin. Glycosaminoglycans. Bone structure. Structure of membranes. Membrane associated processes in brief. Exocytosis and endocytosis. Introduction to cytoskeleton. Myofibril and muscle contraction in brief.

Haemoglobin: functions. Introduction to heme synthesis and degradation. Plasma proteins: classification and separation. Functions of albumin. A brief account of immunoglobulins. Plasma lipoproteins: Formation, function and turnover.

9. MEDICAL BIOCHEMISTRY
Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism: Biochemical evaluation. Hyperlipoproteinemias and atherosclerosis, Approaches to treatment. Jaundice: Classification and evaluation. Liver function tests: Plasma protein pattern, serum enzymes levels. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance: evaluation. Gout. Examples of genetic disorders including lysosomal storage disorders, glycogen storage disorders, glucose 6- phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). Serum enzymes in diagnosis.

PRACTICALS: Contact hours 50

1. Qualitative analysis of carbohydrates 4
2. Color reactions of proteins and amino acids 4

3. Identification of nonprotein nitrogen substance	4
4. Normal constituents of urine	4
5. Abnormal constituents of urine	4
6. Analysis of saliva including amylase	2
7. Analysis of milk Quantitative estimations	2
8. Titrable acidity and ammonia in urine	2
9. Free and total acidity in gastric juice	2
10. Blood glucose estimation	2
11. Serum total protein estimation	2
12. Urine creatinine estimation Demonstration	2
13. Paper electrophoresis charts/clinical data evaluation	2
14. Glucose tolerance test profiles	2
15. Serum lipid profiles	1
16. Profiles of hypothyrodisim and hyperthyrodisim	1
17. Profiles of hyper and hypoparathyrodism	1
18. Profiles of liver function	1
19. Urea, uric acid creatinine profile in kidney disorders	1
20. Blood gas profile in acidosis/ alkalosis	1

RECOMMEDED BOOKS:
1. Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman
2. Nutritional Biochemistry 1995, S. Ramakrishnan and S.V. Rao
3. lecture notes in Biochemistry 1984, J.K. Kandlish

Reference books:
1. Text book of Biochemistry with clinical correlations 1997, T.N. Devlin
2. Harper's Biochemistry, 1996., R.K. Murray et.al
3. Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C.Elliot

3. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

INTRODUCTION

Dental Anatomy including Embryology and Oral Histology – a composite of basic Dental Sciences & their clinical applications.

SKILLS

The student should acquire basic skills in :
1. Carving of crowns of permanent teeth in wax.
2. Microscopic study of Oral tissues.
3. Identification of Deciduous & Permanent teeth.
4. Age estimation by patterns of teeth eruption from plaster casts of different age groups.

OBJECTIVES

After a course on Dental Anatomy including Embryology and Oral Histology,
1. The student is expected to appreciate the normal development, morphology, structure & functions of oral tissues & variations in different pathological/non-pathological states.
2. The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.
3. The students must know the basic knowledge of various research methodologies.

I. TOOTH MORPHOLOGY

1. Introduction to tooth morphology:
- Human dentition, types of teeth, & functions, Palmer's & Binomial notation systems, tooth surfaces, their junctions - line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrasures - Clinical significance.

2. Morphology of permanent teeth :
- Description of individual teeth, along with their endodontic anatomy & including a note on their chronology of development, differences between similar class of teeth & identification of individual teeth.
- Variations & Anomalies commonly seen in individual teeth.

3. Morphology of Deciduous teeth :
- Generalized differences between Deciduous & Permanent teeth.
- Description of individual deciduous teeth, including their chronology of development, endodontic anatomy, differences between similar class of teeth & identification of individual teeth.

4. Occlusion :
- Definition, factors influencing occlusion - basal bone, arch, individual teeth, external & internal forces & sequence of eruption.
- Inclination of individual teeth - compensatory curves.
- Centric relation & Centric occlusion - protrusive, retrusive & lateral occlusion.
- Clinical significance of normal occlusion.
- Introduction to & Classification of Malocclusion.

II. ORAL EMBRYOLOGY

1. Brief review of development of face, jaws, lip, palate & tongue, with applied aspects.
2. Development of teeth :

- Epithelial mesenchymal interaction, detailed study of different stages of development of crown, root & supporting tissues of tooth & detailed study of formation of calcified tissues.
- Applied aspects of disorders in development of teeth.

3. Eruption of deciduous & Permanent teeth :

- Mechanisms in tooth eruption, different theories & histology of eruption, formation of dentogingival junction, role of gubernacular cord in eruption of permanent teeth.
- Clinical or Applied aspects of disorders of eruption.

4. Shedding of teeth :

- Factors & mechanisms of shedding of deciduous teeth.
- Complications of shedding.

III. ORAL HISTOLOGY

1. Detailed microscopic study of Enamel, Dentine, Cementum & Pulp tissue. Age changes & Applied aspects (Clinical and forensic significance) of histological considerations - Fluoride applications, transparent dentine, dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine ; Pulp calcifications & Hypercementosis.
2. Detailed microscopic study of Periodontal ligament & alveolar bone, age changes, histological changes in periodontal ligament & bone in normal & orthodontic tooth movement, applied aspects of alveolar bone resorption.
3. Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinization, clinical parts of gingiva, Dentogingival & Mucocutaneous junctions & lingual papillae. Age changes & clinical considerations.
4. Salivary Glands :

- Detailed microscopic study of acini & ductal system.
- Age changes& clinical considerations.

5. TM Joint :

- Review of basic anatomical aspects & microscopiuc study & clinical considerations.

6. Maxillary Sinus :

- Microscopic study, anatomical variations, functions & clinical relevance of maxillary sinus in dental practice.

7. Processing of Hard & soft tissues for microscopic study :

- Ground sections, decalcified sections & routine staining procedures.

8. Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY

1. Saliva :

- Composition of saliva - variations, formation of saliva & mechanisms of secretion, salivary reflexes, brief review of secretomotor pathway, functions, role of saliva in dental caries & applied aspects of hyper & hypo salivation.

2. Mastication :

- Masticatory force & its measurement - need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflexes & neural control of mastication.

3. Deglutition :

- Review of the steps in deglutition, swallowing in infants, neural control of deglutition & dysphagia.

4. Calcium, Phosphorous & fluoride metabolism :

- Source, requirements, absorption, distribution, functions & excretion, clinical considerations, hypo & hypercalcemia & hyper & hypo phosphatemia & fluorosis.

5. Theories of Mineralization :

- Definition, mechanisms, theories & their drawbacks.
- Applied aspects of physiology of mineralization, pathological considerations - calculus formation.

6. Physiology of Taste :

- Innervation of taste buds & taste pathway, physiologic basis of taste sensation, age changes & applied aspects - taste disorders.

7. Physiology of Speech :

- Review of basic anatomy of larynx & vocal cords.
- Voice production, resonators, production of vowels & different consonants - Role of palate, teeth & tongue.
- Effects of dental prosthesis & appliances on speech & basic speech disorders.

RECOMMENDED TEXT BOOKS

1. Orban's Oral Histology & Embryology - S.N.Bhaskar
2. Oral Development & Histology - James & Avery
3. Wheeler's Dental Anatomy, Physiology & Occlusion - Major.M.Ash
4. Dental Anatomy - its relevance to dentistry - Woelfel & Scheid
5. Applied Physiology of the mouth - Lavelle
6. Physiology & Biochemistry of the mouth - Jenkins

4. GENERAL PATHOLOGY

AIM:
At the end of the course the student should be competent to:
Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

OBJECTIVES:
Enabling the student
1. To demonstrate and apply basic facts, concepts and theories in the field of Pathology.
2. To recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes.
3. To Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
4. To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.
5. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE CONTENT
A. General Pathology –
1. Introduction to Pathology
   Terminologies
   The cell in health
   The normal cell structure
   The cellular functions
2. Etiology and Pathogenesis of Disease
   Cell Injury
   Types – congenital
   Acquired
   Mainly Acquired causes of disease
   (Hypoxic injury, chemical injury, physical injury, immunological injury)
3. Degenerations
   Amyloidosis
   Fatty change
   Cloudy swelling
   Hyaline change, mucoid degeneration
4. Cell death & Necrosis
   Apoptasis
   Def, causes, features and types of necrosis
   Gangrene - Dry, wet, gas
   Pathological Calcifications
   (Dystrophic and metastatic)
5. Inflammation
   - Definition, causes types, and features
   - Acute inflammation
   a. The vascular response
   b. The cellular response
   c. Chemical mediators
   d. The inflammatory cells
   e. Fate
   - Chronic inflammation
   Granulomations inflammation
6. Healing
   - Regeneration
   - Repair
   a. Mechanisms
   b. Healing by primary intention
   c. Healing by secondary intention
   d. Fracture healing
   e. Factors influencing healing process
   f. Complications
7. Tuberculosis
   - Epidemiology
   - Pathogenesis (Formation of tubercle)
   - Pathological features of Primary and secondary TB
   - Complications and Fate
8. Syphilis
   - Epidemiology
   - Types and stages of syphilis

- Pathological features
- Diagnostic criterias
- Oral lesions

9. Typhoid
   - Epidemiology
   - Pathogenesis
   - Pathological features
   - Diagnostic criterias
10. Thrombosis
    - Definition, Pathophysiology
    - Formation, complications & Fate of a thrombus
11. Embolism
    - Definition
    - Types
    - Effects
12. Ischaemia and Infraction
    - Definition, etiology, types
    - Infraction of various organs
13. Derangements of body fluids
    - Oedema – pathogenesis
      Different types
14. Disorders of circulation
    - Hyperaemia
    - Shock
15. Nutritional Disorders
    - Common Vitamin Deficiencies
16. Immunological mechanisms in disease
    - Humoral & cellular immunity
    - Hypersensitivity & autommunity
17. AIDS and Hepatitis.
18. Hypertension
    - Definition, classification
    - Pathophysiology
    - Effects in various organs
19. Diabetes Mellitus
    - Def, Classification, Pathogenesis, Pathology in different organs
20. Adaptive disorders of growth
    - Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia
21. General Aspects of neoplesia
    a. Definition, terminology, classification
    b. Differences between benign and malignant neoplasms
    c. The neoplastic cell
    d. Metastasis
    e. Etiology and pathogenesis of neoplasia, Carcinogenesis
    f. Tumour biology
    g. Oncogenes and anti-oncogenes
    h. Diagnosis
    i. Precancerous lesions
    j. Common specific tumours, Sq papilloma & Ca, Basal cell Ca, Adenoma & Adenoca, Fibroma & Fibrosarcoma, Lipoma and liposarcoma

B. Systemic Pathology –

22 Anaemias
- Iron Deficiency anaemia, Megaloblastic anaemia

23.Leukaemias
- Acute and chronic leukaemias, Diagnosis and clinical features

24. Diseases of Lymph nodes
- Hodgkin's disease, Non Hodgkins lymphoma, Metastatic carcinoma

25. Diseases of oral cavity
- Lichen planus, Stomatitis, Leukoplakia, Sq cell Ca, Dental caries, Dentigerious cyst, Ameloblastoma

26. Diseases of salivary glands
- Normal structure, Sialadenitis, Tumours

27. Common diseases of Bones
- Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Osteocalstoma, Giant cell Tumour, Ewing's sarcoma, Fibrous dysplasia, Aneurysmal bone cyst

28.Diseases of Cardiovascular system
- Cardiac failuare
- Congenital heart disease – ASD, VSD,PDA
  Fallot's Tetrology

- Infective Endocarditis
- Atherosclerosis
- Ischaemic heart Disease

29. Haemorrhagic Disorders
Coagulation cascade
Coagulation disorders
- Platelet funtion
- Platelet disorders

Practicals
1.Urine – Abnormal constitutients
- Sugar, albumin, ketone bodies

2. Urine – Abnormal consittuents
- Blood, bile salts, bile pigments

3. Haemoglobin (Hb) estimation
4. Total WBC count
5. Differential WBC Count
6. Packed cell volume(PCV,) rythrocyte sedimentation Rate (ESR)
7. Bleeding Time & clotting Time
8. Histopathology
Tissue Processing
Staining
9.Histopathology slides
- Acute appendicitis, Granulation tissue, fatty liver

10. Histopathology slides
CVC lung, CVC liver, Kidney amyloidosis
11. Histopathology slides
Tuberculosis, Actionomycosis, Rhinosporidiosis
12. Histopathology slides
Papilloma, Basal cell Ca, Sq cell Ca
13. Histopathology slides
Osteosarcoma, osteoclastoma, fibrosarcoma
14. Histopathology slides
Malignant melanoma, Ameloblastoma, Adenoma
15. Histopathology slides
Mixed parotid tumour, metastatic
carcinoma in lymph node

List of Textbooks

1. Robbins – Pathologic Basis of Disease Cotran, Kumar, Robbins
2. Anderson's Pathology Vol 1 & 2 Editors – Ivan Damjanov & James Linder
3. Wintrobe's clinical Haematolog Lee, Bithell, Foerster, Athens, Lukens

MICROBIOLOGY

AIM:

To introduce the students to the exciting world of microbes. To make the students aware of various branches of microbiology, importance, significance and contribution of each branch to mankind and other fields of medicine. The objectives of teaching microbiology can be achieved by various teaching techniques such as :

a) Lectures
b) Lecture Demonstrations
c) Practical exercises
d) Audio visual aids
e) Small group discussions with regular feed back from the students.

OBJECTIVES:

A. KNOWLEDGE AND UNDERSTANDING

At the end of the Microbiology course the student is expected to :

1. Understand the basics of various branches of microbiology and able to apply the knowledge relevantly.
2. Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.
3. Understand and practice various methods of Sterilisation and disinfection in dental clinics.
4. Have a sound understanding of various infectious diseases and lesions in the oral cavity.

A. SKILLS

1. Student should have acquired the skill to diagnose, differentiate various oral lesions.
2. Should be able to select, collect and transport clinical specimens to the laboratory.
3. Should be able to carry out proper aseptic procedures in the dental clinic.

A brief syllabus of Microbiology is given as follows:

A. GENERAL MICROBIOLOGY:

1. History, Introduction, Scope, Aims and Objectives.
2. Morphology and Physiology of bacteria.
3. Detail account of Sterlisation and Disinfection.
4. Brief account of Culture media and Culture techniques.
5. Basic knowledge of selection, collection, transport, processing of clinical Specimens and identification of bacteria.
6. Bacterial Genetics and Drug Resistance in bacteria.

B. IMMUNOLOGY:

1. Infection - Definition, Classification, Source, Mode of transmission and types of Infectious disease.
2. Immunity
3. Structure and functions of Immune system
4. The Complement System
5. Antigen
6. Immunoglobulins - Antibodies - General structure and the role played in defense mechanism of the body.
7. Immune response
8. Antigen - Antibody reactions - with reference to clinical utility.
9. Immuno deficiency disorders - a brief knowledge of various types of immuno deficiency disorders - A sound knowledge of immuno deficiency disorders relevant to dentistry.
10. Hypersensitivity reactions
11. Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structures.
12. Immunology of Transplantation and Malignancy
13. Immunehaematology

C. SYSTEMATIC BACTERIOLOGY:

1. Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus – brief account of each coccus - detailed account of mode of spread, laboratory diagnosis, Chemo therapy and prevention - Detailed account of Cariogenic Streptococci.
2. Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis, Chemotherapy and Active immunisation.
3. Mycobacteria - Tuberculosis and Leprosy
4. Clostridium - Gas gangrene, food poisoning and tetanus.
5. Non-sporing Anaerobes - in brief about classification and morphology, in detail about dental pathogens - mechanism of disease production and prevention.
6. Spirochaetes - Treponema pallidum - detailed account of Oral Lesions of syphilis, Borrelia vincentii.
7. Actinomycetes.

D. VIROLOGY:

1. Introduction
2. General properties, cultivation, host - virus interaction with special reference to Interferon.
3. Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general.
4. A few viruses of relevance to dentistry.

- Herpes Virus
- Hepatitis B Virus - brief about other types
- Human Immunodeficiency Virus (HIV)
- Mumps Virus
- Brief - Measles and Rubella Virus

5. Bacteriophage - structure and Significance

E. MYCOLOGY

1. Brief Introduction
2. Candidosis - in detail
3. Briefly on oral lesions of systemic mycoses.

F. PARASITOLOGY:

1. Brief introduction - protozoans and helminths
2. Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

RECOMMENDED BOOKS FOR REGULAR READING:

1. Text book of Microbiology – R.Ananthanarayan & C.K.Jayaram Paniker.
2. Medical Microbiology – David Greenwood etal.

BOOKS FOR FURTHER READING/REFERENCE.

i) Microbiology – Prescott, etal.
ii) Microbiology – Bernard D. Davis , etal.
iii) Clinical & Pathogenic Microbiology – Barbara J Howard, etal.
iv) Mechanisms of Microbial diseases – Moselio Schaechter, etal.
v) Immunology an Introduction – Tizard
vi) Immunology 3rd edition – Evan Roitt , etal.

5. GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

GOAL:

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and Profession.

OBJECTIVES:

At the end of the course the student shall be able to:

i) Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular.
ii) List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason.
iii) Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, safety for individual and mass therapy needs.
iv) Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients.
v) Integrate the rational drug therapy in clinical pharmacology.
vi) Indicate the principles underlying the concepts of "Essential drugs".

SKILLS:

At the end of the course the student shall be able to:

1) Prescribe drugs for common dental and medical ailments.
2) To appreciate adverse reactions and drug interactions of commonly used drugs.
3) Observe experiments designed for study of effects of drugs.
4) Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

5) INTEGRATION: Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments.

LECTURE:

I. GENERAL PHARMACOLOGY:

1. General principles of pharmacology; sources and nature of drugs dosage forms; prescription writing; pharmacokinetics (absorption, distribution, metabolism and excretion of drugs), mode of action of drugs, combined effects of drugs, receptor mechanism of drug action, factors modifying drug response, adverse drug reactions; drug interactions, Implications of General Principles in clinical dentistry.
2. CNS drugs; General anaesthetics, hypnotics, analgescis psychotropic drugs, anti – epileptics, muscle relaxants, local anaesthetics, Implications of these drugs in clinical dentistry.
3. Autonomic drugs; sympathomimetics, antiadrenergic drugs parasympothomimetics and parasympatholytics, Implications of Autonomic drugs in clinical dentistry.
4. Cardiovascular drugs; Cardiac stimulants ; antihypertensive drugs, vasopressor agents, treatment of shock, Antianginal agents and diuretics, Implications of these drugs in clinical dentistry.
5. Autocoids:
   Histamine, antihistamines, prostaglandins, leukotriens and bronchodilators, Implications of Autocoids in clinical dentistry.
6. Drugs acting on blood : coagulants and anticoagulants, hematinics, Implications of these drugs in clinical dentistry.
7. G.I.T. Drugs, Purgatives, anti-diarrhoeal, antacids, anti-emetics, Implications of these drugs in clinical dentistry.
8. Endocrines; Emphasis on treatment of diabetes and glucocorticoids, thyroid and antithyroid agents, drugs affecting calcium balance and anabolic steroids, Implications of these drugs in clinical dentistry.
9. Chemotherapy: Antimicrobial agents (against bacteria, anaerobic infections, fungi, virus and broad spectrum). Infection management in dentistry. Phamacotherapy of Tuberculosis, leprosy and chemotherapy of malignancy in general. Implications of Chemotherpy in clinical dentistry.
10. Vitamins : Water soluble vitamins, Vit. D, Vit.K. and Vit. E, Implications of Vitamins in clinical dentistry.
11. Pharmacotherapy of emergencies in dental office and emergency drugs tray Implications of Pharmacotherapy in clinical dentistry.
12. Chealating agents – BAL,EDTA and desferrioxamine,

II. DENTAL PHARMACOLOGY

1. Anti - septics, astrigents, obtundents, mummifying agents, bleaching agents, styptics, disclosing agents, dentifrices, mouth washes, caries and fluorides.
2. Pharmacotherapy of common oral conditions in dentistry.
   Practicals and Demonstrations :
   To familiarise the student with the methodology: prescription writing and dispensing. Rationale of drug combinations of marketed drugs.

LIST OF BOOKS RECOMMENDED FOR READING AND REFERENCE

1. R.S.Satoskar, Kale Bhandarkar's Pharmacology and Pharmacolherapentics, 10th Edition, Bombay Popular Prakashan 1991.
2. Bertam G Katzung, Basic and Clinical pharmacology 6th ed. Appleton & Lange 1997.
3. Lauerence D.R. Clinical Pharmacology 8th ed. Churchill Livingstone 1997.
4. Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmacotherapeutics part I & part ii, 13th Popular Prakashan Bombay 1993.
5. Tripathi K.D., Essentials of Medical Pharmacology 4th ed Jaypee Brothers 1999.

6. DENTAL MATERIALS

The science of Dental Material has undergone tremendous changes over the years. Continued research has led to new material systems and changing concepts in the dental field. Interlinked with various specialised branches of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as a basic sciences in itself with its own values and principles.

INTRODUCTION

AIMS:

Aim of the course is to present basic chemical and physical properties of Dental materials as they are related to its manipulation to give a sound educational background so that the practice of the dentistry emerged from art to empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufactures.

OBJECTIVES:

To understand the evolution and development of science of dental material.

To explain purpose of course in dental materials to personnels concerned with the profession of the dentistry. Knowledge of physical and chemical properties. Knowledge of biomechanical requirements of particular restorative procedure. An intelligent compromise of the conflicting as well as co-ordinating factors into the desired Ernest. Laying down standards or specifications of various materials to guide to manufacturers as well as to help professionals.

Search for newer and better materials which may answer our requirements with greater satisfaction. To understand and evaluate the claims made by manufactures of dental materials

NEEDS FOR THE COURSE:

The profession has to rise from an art to a science, , the need for the dentist to possess adequate knowledge of materials to exercises his best through knowledge of properties of different types of materials. The growing concern of health hazards due to mercury toxicity, inhalation of certain vapour or dust materials, irritations and allergic reaction to skin due to contact of materials. Materials causing irritation of oral tissues, pH of restorative materials causing inflammation and necrosis of pulp which is a cause for the dentist to posses wider knowledge of physical, chemical and biological properties of materials being used. For the protection for the patient and his own protection certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically accept.

SCOPE:

The dental materials is employed in mechanical procedures including restorative dentistry such as Prosthodontics, endodontics, periodontal, orthodontics and restorative materials. There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry. Branches such as minor surgery and periodontics require less use of materials but the physical and chemical characters of materials are important in these fields.

The toxic and tissue reaction of dental materials and their durability in the oral cavity where the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acid an alkalinity of fluids shown pH varies from 4 to 8.5. The load on 1 sq. mm of tooth or restorative materials can reach to a level as high as many kilograms. Thus the biological properties of dental materials cannot be separated from their physical and chemical properties.

2). STRUCTURE OF MATTER AND PRINCIPLES OF ADHESION.

Change of state, inter atomic primary bonds, inter atomic secondary bonds, inter atomic bond distance and bonding energy, thermal energy, crystalline structure, non crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.

3). IMPORTANT PHYSICAL PROPERTIES APPLICABLE TO DENTAL MATERIALS

Physical properties are based on laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena. Hue, value, chroma and translucency physical properties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity & coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain, proportional limit, elastic limit yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility & malleability, hardness, abrasion resistance, relaxation, rheology, Thixotropic, creep, static creep, dynamic creep, flow, colour, three dimensional colour – hue, values, chroma, Munsell system, metamersim, fluorescence, physical properties of tooth, stress during mastication

4). BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS.

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of materials from perspective of biological compatibility. eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally be inhaled or ingested during handling. Hazards associated with materials: pH-effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, Thermal changes, Galvanism, toxic effect of materials. Biological evaluation for systemic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.

5). GYPSUM & GYPSUM PRODUCTS.

Gypsum – its origin, chemical formula, Products manufactured from gypsum.
Dental plaster, Dental stone, Die stone, high strength, high expansion stone.
Application and manufacturing procedure of each, macroscopic and microscopic structure of each .
Supplied as and Commercial names.
Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.
Setting time: working time and setting time, Measurement of setting time and factors controlling setting time .
Setting expansion, Hygroscopic setting expansion – factors affecting each
Strength :wet strength, dry strength, factors affecting strength, tensile strength
Slurry – need and use.
Care of cast.
ADA classification of gypsum products
Description of impression plaster and dental investment
Manipulation including recent methods or advanced methods.
Disinfection : infection control, liquids, sprays, radiation
Method of use of disinfectants
Storage of material – shelf life

6) IMPRESSION MATERIALS USED IN DENTISTRY

Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether, Visible light cure polyether urethane dimethacrylate, Historical background & development of each impression material,
Definition of impression , Purpose of making impression, Ideal properties required and application of material, Classification as per ADA specification, general & individual impression material.
Application and their uses in different disciplines, Marketed as and their commercial names, Mode of supply & mode of application bulk/wash impression. Composition, chemistry of setting ,Control of setting time , Type of impression trays required, Adhesion to tray, manipulation, instruments & equipments required. Techniques of impression, storage of impression, (Compatibility with cast and die material). Any recent advancements in material and mixing devices. Study of properties: Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating Biological properties: tissue reaction , Shelf life & storage of material, Infection control – disinfection, Advantages & disadvantages of each material.

7). SYNTHETIC RESINS USED IN DENTISTRY.

Historical background and development of material, Denture base materials and their classification and requirement
Classification of resins
Dental resins – requirements of dental resins, applications, polymerisation, polymerisation mechanism stages in addition polymerisation, inhibition of polymerisation, co polymerization, molecular weight, crosslinking, plastixizers, Physical properties of polymers, polymer structures types of resins.
ACRYLIC RESINS:
Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerisation reaction of each. Technical considerations: Methods of manipulation for each type of resin. Physical properties of denture base resin. Miscellaneous resins & techniques: Repair resins, Relining and rebasing. Short term and long-term soft-liners, temporary crown

and bridge resins, Resin impression trays, Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.

RESTORATIVE RESINS:
Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation mechanisms: Chemically activated, Light activated, Dual cure: Degree of conversion, Polymerisation shrinkage Classification of Composites: Application, composition and properties of each Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility – microleakage, pulpal reaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically activated, light activated, dual cure Polymerisation, Finishing and polishing of restoration, Repair of composites Direct bonding Bonding: Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure. Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlays system – Indirect & direct, Core build up, Orthodontic applications.

8). METAL AND ALLOYS:
Structure and behaviour of metals, Solidification of metals, mechanism of crystallisation amorphous & crystalline. Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams:Electric alloys, Physical properties, Peritectic alloys, Solid state reaction other binary systems: Metallography & Heat treatment. Tarnish and corrosion. Definition: causes of corrosion, protection against corrosion., Corrosion of dental restorations, clinical significance of galvanic current. Dental Amalgam.

History:
Definition of dental amalgam, application, Alloy classification, manufacture of alloy powder composition - available as.
Amalgamation : setting reaction & resulting structure , properties , Microleakage
Dimensional stability, Strength, Creep, Clinical performance
Manipulation: Selection of alloy, proportioning, mechanism of trituration, condensation, carving & finishing. Effect of dimensional changes, Marginal deterioration., Repair of amalgam, mercury toxicity, mercury hygiene.

DIRECT FILLING GOLD:
Properties of pure gold, mode of adhesion of gold for restoration forms of direct filling gold for using as restorative material
Classification : Gold Foil, Electrolytic precipitate, powdered gold.
Manipulation: Removal of surface impurities and compaction of direct filling gold.
Physical properties of compacted gold, Clinical performance.

<u>DENTAL CASTING ALLOYS:</u>
Historical background, desirable properties of casting alloys.
Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process. CAD-CAM process for metal & ceramic inlays - without need of impression of teeth or casting procedure, pure titanium, most bio compatible metal which are difficult to cast can be made into crowns with the aid of CAD- CAM technology . Another method of making copings - by copy milling (without casting procedures).
Classification of casting alloys: By function & description.
Recent classification , High noble (HN), Noble (N) and predominantly base metal (PB)
Alloys for crown & bridge, metal ceramic & removable partial denture. Composition, function, constituents and application, each alloy both noble and base metal. Properties of alloys: Melting range, mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion.
Casting shrinkage and compensation of casting shrinkage. Biocompatability - Handling hazards & precautions of base metal alloys, casting investments used. Heat treatment : Softening & hardening heat treatment. Recycling of metals. Titanium alloys & their application , properties & advantages. Technical considerations In casting . Heat source, furnaces.

9). DENTAL WAXES INCLUDING INLAY CASTING WAX
Introduction and importance of waxes. Sources of natural waxes and their chemical nature.
Classification of Waxes:
Properties: melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: Inlay wax: Mode of supply : Classification & composition, Ideal requirements: Properties of inlay wax: Flow, thermal properties Wax distortion & its causes.
Manipulation of inlay wax: Instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled wax baths.
Other waxes: Applications, mode of supply & properties.
Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax, Impression wax for corrective impressions, Bite registration wax.

10). DENTAL CASTING INVESTMENTS.
Definition, requirements, classification
Gypsum bonded - classification. Phosphate bonded, Silica bonded
Mode of Supply: Composition, application , setting mechanism, setting time & factors controlling.

Expansions :Setting expansion, Hygroscopic Setting expansion, & thermal expansion : factors affecting. Properties : Strength, porosity, and fineness & storage. Technical considerations: For Casting procedure, Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defects in casting.

11). SOLDERING, BRAZING AND WELDING

Need of joining dental appliances, Terms & Definition

Solders: Definition, ideal requirement, types of solders – Soft & hard and their fusion temperature, application. Mode of supply of solders, Composition and selection, Properties. Tarnish & corrosion resistance mechanical properties, microstructure of soldered joint. Fluxes & Anti fluxes: Definition, Function, Types, commonly used fluxes & their selection Technique of Soldering & Brazing : free hand soldering and investment, steps and procedure. Welding,: Definition, application, requirements, procedure, weld decay - causes and how to avoid it. Laser welding.

WROUGHT BASE METAL ALLOYS

Applications and different alloys used mainly for orthodontics purpose

1. Stainless steel
2. Cobalt chromium nickel
3. Nickel titanium
4. Beta titanium

Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility

Stainless steels: Description, type, composition & properties of each type. Sensitisation & stabilisation , Mechanical properties – strength, tensile, yield strength, KHN. Braided & twisted wires their need , Solders for stainless steel, Fluxes, Welding

1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties
2. Nickel – Titanium alloys, shape, memory & super elastic
3. Titanium alloys, application, composition, properties, welding, Corrosion resistance

12). DENTAL CEMENTS

Definition & Ideal requirements:

Cements: Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionomer, zinc oxide eugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate, Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta percha

Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechansim of caries inhibition.

Agents for pulpal protection., Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

13). DENTAL CERAMICS

Historical background & General applications.

Dental ceramics : definition, classification, application, mode of supply, manufacturing procedure, methods of strengthening. Properties of fused ceramic: Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, esthetic properties, biocompatability, technical considerations.

Metal Ceramics (PFM): Alloys - Types and composition of alloys. Ceramic - Type and Composition.

Metal Ceramic Bond - Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restorations. Recent advances - all porcelain restorations, Manganese core, injection moulded, castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays, and CAD - CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

14). ABRASION & POLISHING AGENTS

Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives: Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide

ABRASIVE ACTION :

Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressure and speed.

Grading of abrasive & polishing agents. Binder, Polishing materials & procedures used. Technical consideration - Material and procedure used for abrasion and polishin Electrolytic polishing and burnishing.

15). DIE AND COUNTER DIE MATERIALS INCLUDING ELECTROFORMING AND ELECTROPOLISHING.

Types – Gypsum products, Electroforming, Epoxy resin, Amalgam.

16). DENTAL IMPLANTS : Evolution of dental implants, types and materials.
17). MECHANICS OF CUTTING : Burs and points.

At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use.

RECOMMENDED BOOKS:

1. Phillips Science of Dental Materials – 10th edn.- Kenneth J. Anusavice
2. Restorative Dental Materials – 10 edn. Robert G.Craig
3. Notes on Dental Materials – E.C. Combe

7. PRE CLINICAL CONSERVATIVE DENTISTRY LABORATORY EXERCISES

1. Identification and study of handcutting instruments chisles, gingival margin trimmers, excavators and hatchet.
2. Identification and use of rotary cutting instruments in contra angle hand pieces burs (Micromotor)
3. Preparation class I and extended class I and class II and MOD's and class V amounting to 10 exercises in plaster models.
4. 10 exercises in mounted extracted teeth of following class I, 4 in number class I extended cavities 2, class II 4 in number and Class V 2 in number. Cavity preparation base application matrix and wedge placement restoration with amalgam.
5. Exercises on phantom head models which includes cavity preparation base and varnish application matrix and wedge placement followed by amalgam restoration.

Class I	5
Class I with extension	2
Class II	10
Class II Mods	2
Class V and III forglass ionmers	4
Class V for amalgam	2

6. Polishing of above restorations.
7. Demonstration of Class III and Class V cavity preparation. For composites on extracted tooth completing the restoration.
8. Polishing and finishing of the restoration of composites.
9. Identification and manipulation of varnish bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers, Zinc Oxide, Euginol cements.
10. Identification and manipulation of various matrices, tooth separators and materials like composites and modified glassionomer cements.
11. Cast Restoration
    1. Preparation of Class II inlay cavity
    2. Fabrication of wax pattern
    3. Sprue for inner attachment investing
    4. Investing of wax pattern
    5. Finishing and cementing of class II inlay in extracted tooth.
12. Endodontics
    1. Identification of basic endodontic instruments
    2. Cornal access cavity preparation on extracted. Upper central incisiors
    3. Determination of working length.
    4. Biomechanical preparation of root canal space of central incisor
    5. Obfuration of root canal spaces. Absens of cornal access cavity.
    6. Closure of acess cavity

8. ORAL PATHOLOGY & ORAL MICROBIOLOGY

OBJECTIVES:

At the end of Oral Pathology & Oral Microbiology course, the student should be able to comprehend -

1. The different types of pathological processes, that involve the oral cavity.
2. The manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.
3. An understanding of the oral manifestations of systemic diseases should help in correlating with the systemic physical signs & laboratory findings.
4. The student should understand the underlying biological principles governing treatment of oral diseases.
5. The principles of certain basic aspects of Forensic Odontology.

SKILLS:

1. Microscopic study of common lesions affecting oral tissues through microscopic slides & projection slides.
2. Study of the disease process by surgical specimens.
3. Study of teeth anomalies/polymorphisms through tooth specimens & plaster casts.
4. Microscopic study of plaque pathogens.
5. Study of haematological preparations (blood films) of anaemias & leukemias.

6. Basic exercises in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

1. INTRODUCTION:

♦ A bird's eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systemic diseases to be brought out. Interrelationship between General Medicine & General Surgery & Oral pathology to be emphasized.

2. Developmental disturbances of teeth, jaws and soft tissues of oral & paraoral region :

♦ Introduction to developmental disturbances - Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.

♦ Developmental disturbances of teeth - Etiopathogenesis, clinical features, radiological features & histopathological features as appropriate :-
The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies to be emphasized.

♦ Forensic Odontology.

♦ Developmental disturbances of jaws - size & shape of the jaws.

♦ Developmental disturbances of oral & paraoral soft tissues - lip & palate - clefts, tongue, gingiva, mouth, salivary glands & face.

3. Dental Caries :

♦ Etiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequelae.

4. Pulp & Periapical Pathology & Osteomyelitis.

♦ Etiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & periapical lesions & osteomyelitis.

♦ Sequelae of periapical abscess - summary of space infections, systemic complications & significance.

5. Periodontal Diseases :

♦ Etiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropriate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.

6. Microbial infections of oral soft tissues :

♦ Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathogy and laboratory diagnosis of common bacterial, viral & fungal infections namely :-
Bacterial : Tuberculosis, Syphilis, ANUG & its complications - Cancrum Oris.
Viral : Herpes Simplex, Varicella zoster, Measles, Mumps & HIV infection.
Fungal : Candidal infection. Apthous Ulcers.

7. Common non- inflammatory diseases involving the jaws :

♦ Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of :
Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta, Paget's disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan's syndrome & Down's syndrome.

8. Diseases of TM Joint :

♦ Ankylosis, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction syndrome.

9. Cysts of the Oral & Paraoral region :

♦ Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.

10. Tumours of the Oral Cavity :

♦ Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. Etiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :-

a) Odontogenic - all lesions.

b) Non-odontogenic

- Benign Epithelial - Papilloma, Keratoacanthoma & Naevi.
- Benign Mesenchymal - Fibroma, Aggressive fibrous lesions, Lipoma, Haemangioma,Lymphangioma, Neurofibroma, Schwannoma, Chondroma, Osteoma & Tori.
- Malignant Epithelial - Basal Cell Carcinoma, Verrucous Carcinoma, Squamous Cell carcinoma & Malignant Melanoma.
- Malignant Mesenchymal - Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma, Kaposi's sarcoma, Lymphomas , Ewing's sarcoma & Other Reticuloendothelial tumours.

c) Salivary Gland

- Benign Epithelial neoplasms - Pleomorphic Adenoma, Warthin's tumour, & Oncocytoma.
- Malignant Epithelial neoplasms - Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.

d) Tumours of Disputed Origin - Congenital Epulis & Granular Cell Myoblastoma.
e) Metastatic tumours - Tumors metastasizing to & from oral cavity & the routes of metastasis.

11. Traumatic, Reactive & Regressive lesions of Oral Cavity :
- Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.
- Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, Pulp calcifications & Resorption of teeth.
- Radiation effects of oral cavity, summary of Physical & Chemical injuries including allergic reactions of the oral cavity.
- Healing of Oral wounds & complications - Dry socket.

12. Non neoplastic Salivary Gland Diseases :
- Sialolithiasis, Sialosis, Sialadenitis, Xerostomia & Ptyalism.

13. Systemic Diseases involving Oral cavity :
- Brief review & oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of Oral cavity.

14. Mucocutaneous Lesions :
- Etiopathogenesis, clinical features & histopathology of the following common lesions.
  Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & White sponge nevus..

15. Diseases of the Nerves :
- Facial neuralgias - Trigeminal & Glossopharyngeal. VII nerve paralysis, Causalgia.
- Psychogenic facial pain & Burning mouth syndrome.

16. Pigmentation of Oral & Paraoral region & Discolouration of teeth :
- causes & clinical manifestations.

17. Diseases of Maxillary Sinus :
- Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum.

18. a) ORAL PRECANCER – CANCER; Epidemiology, aetiology, clinical and histopatholotgical features, TNM classification. Recent advances in diagnosis, management and prevention.
    b) Biopsy : Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral diseases.

19. Principles of Basic Forensic Odontology (Pre-clinical Forensic Odontology):
- Introduction, definition, aims & scope.
- Sex and ethnic (racial) differences in tooth morphology and histological age estimation
- Determination of sex & blood groups from buccal mucosa / saliva.
- Dental DNA methods
- Bite marks, rugae patterns & lip prints.
- Dental importance of poisons and corrosives.
- Overview of forensic medicine and toxicology

RECOMMENDED BOOKS

1. A Text Book of Oral Pathology - Shafer, Hine & Levy.
2. Oral Pathology - Clinical Pathologic correlations - Regezi & Sciubba.
3. Oral Pathology - Soames & Southam.
4. Oral Pathology in the Tropics - Prabhu,Wilson,Johnson & Daftary

9. GENERAL MEDICINE

GUIDELINES:

Special emphasis should be given throughout on the importance of various diseases as applicable to dentistry.

1. Special precautions/ contraindication of anaesthesia and various dental procedures in different systemic diseases.
2. Oral manifestations of systemic diseases.
3. Medical emergencies in dental practice.

A dental student should be taught in such a manner he/she is able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body – diseases of the heart, lungs, kidneys, blood etc. He should be capable of handling medical emergencies encountered in dental practice.

THEORY SYLLABUS

CORE TOPICS (Must Know)	COLLATERAL TOPICS (Desirable to Know)
1. Aims of medicine Definitions of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis.	
2. Infections. Enteric fever, AIDS, herpes simplex, herpes zoster, syphilis diphtheria.	Infectious mononucleosis mumps, measles, rubella, malaria.

3. G.I.T. Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.	Diarrhea Dysentery Amoebiasis Malabsorhtion
4. CVS Acute rheumatic fever rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.	
5. RS Pneumonia, COPD, Pulmonary TB, Bronehial asthma	Lung Abscess Pleural effusion Pneumothorax Bronchiectasis Lung cancers.
6. Hematology Anemias, bleeding & clotting disorders, leukemias, lymphomas, agranulocytosis, splenomegaly, oral manifestations of hematologic disorders, generalized Lymphadenopathy.	
7. Renal System Acute nephritis Nephrotic syndrome	Renal failure
8, Nutrition Avitaminosis	Balanced diet PEM Avitaminosis
9. CNS Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine.	- Meningitis - Examination of comatose patient - Examination of cranial nerves.
10. Endocrines Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.	Addison's disease, Cushing's syndrome.
11. Critical care Syncope, cardiac arrest, CPR, shock	Ac LVF ARDS

CLINICAL TRAINING:
The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, oral cavity) and be able to examine CVS, RS and abdomen and facial nerve.

10. GENERAL SURGERY

AIMS:
To acquaint the student with various diseases, which may require surgical expertise and to train the student to analyze the history and be able to do a thorough physical examination of the patient. The diseases as related to head and neck region are to be given due importance, at the same time other relevant surgical problems are also to be addressed. At the end of one year of study the student should have a good theoretical knowledge of various ailments, and be practically trained to differentiate benign and malignant diseases and be able to decide which patient requires further evaluation.

1. HISTORY OF SURGERY:
   The development of surgery as a speciality over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialities in the practice of modern surgery.
2. GENERAL PRINCIPLES OF SURGERY:
   Introduction to various aspects of surgical principles as related to orodental diseases. Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.
3. WOUNDS:
   Their classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.
4. INFLAMMATION:
   Of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.
5. INFECTIONS:
   Acute and chronic abscess skin infections, cellulitis, carbuncle, and erysepelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincents angina, cancrum oris. Pyaemia, toxaemia and septicaemia.
6. TRNSMISSABLE VIRAL INFECTIONS:

HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.

7. SHOCK AND HAEMORRHAGE:
Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage – different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complications of blood and their products. Hemophilia's, their transmission, clinical features and management especially in relation to minor dental procedures.

8. TUMOURS, ULCERS, CYSTS, SINUS AND FISTULAE:
Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, sinus and fistulae.

9. DISEASES OF LYMPHATIC SYSTEM:
Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.

10. DISEASES OF THE ORAL CAVITY:
Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.

11. DISEASES OF LARYNX, NASOPHARYNX:
Infections and tumours affecting these sites. Indications, procedure and complications of tracheostmy.

12. NERVOUS SYSTEM:
Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment. Detailed description of afflictions of facial nerve and its management. Trigeminal neuralgia, its presentation and treatment.

13. FRACTURES:
General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.

14. PRINCIPLES OF OPERATIVE SURGERY:
Principles as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilisation, principles of anaesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

15. ANOMOLIES OF DEVELOPMENT OF FACE:
Surgical anatomy and development of face. Cleft lip and cleft palate—principles of management.

16. DISEASES OF THYROID AND PARATHYROID:
Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid—classification, clinical features and management.

17. SWELLINGS OF THE JAW:
Differential diagnosis and management of different types of swellings of the jaw.

18. BIOPSY:
Different types of biopsies routinely used in surgical practice.
Skills to be developed by the end of teaching is to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy etc.

11. CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

A. Knowledge and understanding
B. Skills and
C. Attitudes

A). Knowledge and under standing:

The graduate should acquire the following knowledge during the period of training.

i. To diagnose and treat simple restorative work for teeth.
ii. To gain knowledge about aesthetic restorative material and to translate the same to patients needs.
iii. To gain the knowledge about endodontic treatment on the basis of scientific foundation.
iv. To carry out simple endodontic treatment.
v. To carry out simple luexation of tooth and its treatment and to provide emergency endodontic treatment.

SKILLS:

He should attain following skills necessary for practice of dentistry

i) To use medium and high speed hand pieces to carry out restorative work.
ii) Poses the skills to use and familiarise endodontic instruments and materials needed for carrying out simple endodontic treatment.
iii) To achieve the skills to translate patients esthetic needs along with function.

ATTITUDES:

i). Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
ii). Willingness to participate in CDE programme to update the knowledge and professional skill from time to time.
iii). To help and participate in the implementation of the national oral health policy.
iv). He should be able to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene should be emphasise which will help to maintain the restorative work and prevent future damage.

INTRODUCTION :

Definition aims objectives of Conservative Dentistry scope and future of Conservative Dentistry.

1. Nomenclature Of Dentition:
   Tooth numbering systems A.D.A. Zsigmondy Palmer and F.D.I. systems.
2. Principles Of Cavity Preparation :
   Steps and nomenclature of cavity preparation classification of cavities, nomenclature of floors angles of cavities.
3. Dental Caries :
   Aetiology, classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries.
4. Treatment Planning For Operative Dentistry:
   Detailed clinical examination , radiographic examination, tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet.
5. Gnathological Concepts Of Restoration:
   Physiology of occlusion, normal occlusion, Ideal occlusion, mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.
6. Aramamentarium For Cavity Preparation:
   General classification of operative instruments, Hand cutting instruments design formula and sharpening of instruments. Rotary cutting instruments dental bur, mechanism of cutting, evaluation of hand piece and speed current concepts of rotary cutting procedures. Sterilisation and maintenance of instruments. Basic instrument tray set up.
7. Control of Operating Filed:
   Light source sterilisation field of operation control of moisture, rubber dam in detail, cotton rolls and anti sialogagues.
8. Amalgam Restoration :
   Indication contraindication, physical and mechanical properties , clinical behaviour. Cavity preparation for Class I , II, V and III. Step wise procedure for cavity preparation and restoration. Failure of amalgam restoration.
9. Pulp Protection :
   Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass inomer cements.
10. Anterior Restorations :
    Selection of cases, selection of material, step wise procedures for using restorations , silicate (theory only) glass inomers, composites, including sand witch restorations and bevels of the same with a note on status of the dentine bonding agents.
11. Direct Filling Gold Restorations :
    Types of direct filling gold indications and limitations of cohesive gold. Annealing of gold foil cavity preparation and condensation of gold foils.
12. Preventive Measures In Restorative Practice :
    Plaque Control, Pitand fissure sealants dietary measures restorative procedure and periodontal health. Contact and contour of teeth and restorations matrices tooth separation and wedges.
13. Temporisation or Interim Restoration.
14. Pin Amalgam Restoration Indication Contra Indication :
    Advantages disadvantages of each types of pin methods of placement use of auto matrix. Failure of pin amalgam restoration.
15. Management Of Deep Carious Lesions Indirect And Direct Pulp Capping.
16. Non Carious Destruction's Tooth Structures Diagnosis and Clinical Management
17. Hyper Sensitive Dentine And Its Management.
18. Cast Restorations
    Indications, contra indications, advantages and disadvantages and materials used for same Class II and Class I cavity preparation for inlays fabrication of wax pattern spurring inverting and casting procedures & casting defects.

19. Die Materials And Preparation Of Dies.
20. Gingival Tissue Management For Cast Restoration And Impression Procedures
21. Recent Cavity Modification Amalgam Restoration.
22. Differences between Amalgam And Inlay Cavity preparation with note on all the types of Bewels used for Cast Restoration.
23. Control Of Pain During Operative Procedures.
24. Treatment Planning For Operative Dentistry Detailed Clinical Examination Radiographic Examination
25. Vitality Tests, Diagnosis And Treatment Planning And Preparation Of Case Sheet.
26. Applied Dental Materials.
    1. Biological Considerations.
       Evaluation, clinical application and adverse effects of the following materials. Dental cements, Zinc oxide euginol cements zinc phosphate cements, polycarboxylates glass ionomer cements, silicate cement calcium hydroxides varnishes.
    2. Dental amalgam, technical considerations mercury toxicity mercury hygiene.
    3. Composite, Dentine bonding agents, chemical and light curing composites
    4. Rubber base Imp. Materials
    5. Nobel metal alloys & non noble metal alloys
    6. Investment and die materials
    7. Inlay casting waxes
    8. Dental porcelain
    9. Aesthetic Dentistry
27. Endodontics: introduction definition scope and future of endodontics
28. Clinical diagnostic methods
29. Emergency endodontic procedures
30. Pulpal diseases causes, types and treatment .
31. Periapical diseases: acute periapical abscess, acute periodontal abscess phoeix abscess, chronic alveolar abscess granuloma cysts condensing osteits, external resorption.
32. Vital pulp therapy: indirect and direct pulp capping pulpotomy different types and medicaments used.
33. Apexogenisis and apexification or problems of open apex.
34. Rationale of endodontic treatment case selection indication and contraindications for root canal treatments.
35. Principles of root canal treatment mouth preparation root canal instruments, hand instruments, power driven instruments, standardisation color coding principle of using endodontic instruments. Sterilisation of root canal instruments and materials rubber dam application.
36. Anatomy of the pulp cavity: root canals apical foramen. Anomalies of pulp cavities access cavity preparation of anterior and premolar teeth.
37. Preparation of root canal space . Determination of working length, cleaning and shaping of root canals, irrigating solution chemical aids to instrumentation.
38. Disinfection of root canal space intracanal medicaments, poly antibiotic paste ross mans paste, mummifying agents. Out line of root canal treatment, bacteriological examinations, culture methods.
39. Problems during cleaning and shaping of root canal spaces. Perforation and its management. Broken instruments and its management, management of single and double curved root canals.
40. Methods of cleaning and shaping like step back crown down and conventional methods.
41. Obturation of the root canal system. Requirements of an ideal root canal filling material obturation methods using gutta percha healing after endodontic treatment. Failures in endodontics.
42. Root canal sealers. Ideal properties classification. Manipulation of root canal sealers.
43. post endodontic restoration fabrication and components of post core preparation.
44. smear layer and its importance in endodontics and conservative treatment.
45. discoloured teeth and its management. Bleaching agents, vital and non vital bleaching methods.
46. traumatised teeth classification of fractured teeth. Management of fractured tooth and root. Luxated teeth and its management.
47. endodontic surgeries indication contraindications, pre operative preparation. Pre medication surgical instruments and techniques apicectomy, retrograde filling, post operative sequale terphination hemisection, radiscetomy techniques of tooth reimplantation (both intentional and accidental) endodontic implants.
48. root resorption.
49. emergency endodontic procedures.
50. lasers in conservative endodontics (introduction only) practice management
51. professional association dentist act 1948 and its amendment 1993.
52. duties towards the govt. Like payments of professional tax, income tax.
53. financial management of practice
54. dental material and basic equipment management.
55. Ethics

12. ORAL & MAXILLOFACIAL SURGERY

AIMS:
To produce a graduate who is competent in performing extraction of teeth under both local and general anaesthesia, prevent and manage related complications, acquire a reasonable knowledge and understanding of the various diseases, injuries, infections occurring in the Oral & Maxillofacial region and offer solutions to such of those common conditions and has an exposure in to the in-patient management of maxillofacial problems.

OBJECTIVES:
a) Knowledge & Understanding:

At the end of the course and the clinical training the graduate is expected to -

1. Able to apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.
2. Able to diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.
3. Knowledge of range of surgical treatments.
4. Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment.
5. Understand the principles of in-patient management.
6. Understanding of the management of major oral surgical procedures and principles involved in patient management.
7. Should know ethical issues and communication ability.

b) Skills:

1. A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.
2. Should be competent in the extraction of teeth under both local and general anaesthesia.
3. Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc.
4. Ability to assess, prevent and manage various complications during and after surgery.
5. Able to provide primary care and manage medical emergencies in the dental office.
6. Understanding of the management of major oral surgical problems and principles involved in inpatient management.

DETAILED SYLLABUS

1. Introduction, definition, scope, aims and objectives.
2. Diagnosis in oral surgery:
   (A) History taking
   (B) Clinical examination
   (C) Investigations.
3. Principles of infection control and cross-infection control with particular reference to HIV/AIDS and Hepatitis.
4. Principles of Oral Surgery -
   a) Asepsis: Definition, measures to prevent introduction of infection during surgery.
      1. Preparation of the patient
      2. Measures to be taken by operator
      3. Sterilisation of instruments - various methods of sterilisation etc.
      4. Surgery set up.
   b) Painless Surgery:
      1. Pre-anaesthetic considerations. Pre-medication: purpose, drugs used
      2. Anaesthetic considerations -
         a) Local b) Local with IV sedations
      3. Use of general anaesthetic
   c) Access:
      Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions.
      Bone Removal: Methods of bone removal.
      Use of Burs: Advantages & precautions
      Bone cutting instruments: Principles of using chisel & osteotome.
      Extra-oral: Skin incisions - principles, various extra-oral incision to expose facial skeleton.
         a) Submandibular
         b) Pre auricular
         c) Incision to expose maxilla & orbit
         d) Bicoronal incision
   d) Control of haemorrhage during surgery
      Normal Haemostasis
      Local measures available to control bleeding
      Hypotensive anaesthesia etc.
   e) Drainage & Debridement
      Purpose of drainage in surgical wounds

Types of drains used
Debridement: purpose, soft tissue & bone debridement.

f) Closure of wounds
Suturing: Principles, suture material, classification, body response to various materials etc.

g) Post operative care
Post operative instructions
Physiology of cold and heat
Control of pain - analgesics
Control of infection - antibiotics
Control of swelling - anti-inflammatory drugs
Long term post operative follow up - significance.

5. Exodontia: General considerations
Ideal Extraction.
Indications for extraction of teeth
Extractions in medically compromised patients.
Methods of extraction -
(a) Forceps or intra-alveolar or closed method.
Principles, types of movement, force etc.
(b) Trans-alveolar, surgical or open method, Indications, surgical procedure.
Dental elevators: uses, classification, principles in the use of elevators, commonly used elevators.
Complications of Exodontia -
Complications during exodontia
Common to both maxilla and mandible.
Post-operative complications -
Prevention and management of complications.

6. Impacted teeth:
Incidence, definition, aetiology.
(a) Impacted mandibular third molar.
Classification, reasons for removal,
Assessment - both clinical & radiological
Surgical procedures for removal.
Complications during and after removal,
Prevention and management.
(b) Maxillary third molar,
Indications for removal, classification,
Surgical procedure for removal.
(c) Impacted maxillary canine
Reasons for canine impaction,
Localization, indications for removal,
Methods of management, labial and palatal approach,
Surgical exposure, transplantation, removal etc.

7. Pre-prosthetic Surgery:
Definition, classification of procedures
(a) Corrective procedures: Alveoloplasty,
Reduction of maxillary tuberosities,
Frenoctemies and removal of tori.
(b) Ridge extension or Sulcus extension procedures
Indications and various surgical procedures
(c) Ridge augmentation and reconstruction.
Indications, use of bone grafts, Hydroxyapatite
Implants - concept of osseo integration
Knowledge of various types of implants and
surgical procedure to place implants.

8. Diseases of the maxillary sinus
Surgical anatomy of the sinus.
Sinusitis both acute and chronic
Surgical approach of sinus - Caldwell-Luc procedure
Removal of root from the sinus.
Oro-antral fistula - aetiology, clinical features and various surgical methods for closure.

9. Disorders of T.M. Joint
Applied surgical anatomy of the joint.
Dislocation - Types, aetiology, clinical features and management.
Ankylosis - Definition, aetiology, clinical features and management
Myo-facial pain dysfunction syndrome, aetiology, clinical features, management- Non surgical and surgical.

Internal derangement of the joint.
Arthritis of T.M. Joint.

10. Infections of the Oral cavity
    Introduction, factors responsible for infection, course of odontogenic infections, spread of odontogenic infections through various facial spaces.
    Dento-alveolar abscess - aetiology, clinical features and management.
    Osteomyelitis of the jaws - definition, aetiology, pre-disposing factors, classification, clinical features and management.
    Ludwigs angina - definition, aetiology, clinical features, management and complications.
11. Benign cystic lesions of the jaws -
    Definition, classification, pathogenesis.
    Diagnosis - Clinical features, radiological, aspiration biopsy, use of contrast media and histopathology.
    Management - Types of surgical procedures, Rationale of the techniques, indications, procedures, complications etc.
12. Tumours of the Oral cavity -
    General considerations
    Non odontogenetic benign tumours occuring in oral cavity - fibroma, papilloma, lipoma, ossifying fibroma, mynoma etc.
    Ameloblastoma - Clinical features, radiological appearance and methods of management.
    Carcinoma of the oral cavity -
    Biopsy - types
    TNM classification.
    Outline of management of squamous
    Cell carcinoma: surgery, radiation and chemotherapy
    Role of dental surgeons in the prevention and early detection of oral cancer.
13. Fractures of the jaws -
    General considerations, types of fractures, aetiology, clinical features and general principles of management.
    mandibular fractures - Applied anatomy, classification.
    Diagnosis - Clinical and radiological
    Management - Reduction closed and open
    Fixation and immobilisation methods
    Outline of rigid and semi-rigid internal fixation.
    Fractures of the condyle - aetiology, classification, clinical features, principles of management.
    Fractures of the middle third of the face.
    Definition of the mid face, applied surgical anatomy, classification, clinical features and outline of management.
    Alveolar fractures - methods of management
    Fractures of the Zygomatic complex
    Classification, clinical features, indications for treatment, various methods of reduction and fixation.
    Complications of fractures - delayed union, non-union and malunion.
14. Salivary gland diseases -
    Diagnosis of salivary gland diseases'
    Sialography, contrast media, procedure.
    Infections of the salivary glands
    Sialolithiasis - Sub mandibular duct and gland and parotid duct.
    Clinical features, management.
    Salivary fistulae
    Common tumours of salivary glands like Pleomorphic adenoma including minor salivary glands.
15. Jaw deformities -
    Basic forms - Prognathism, Retrognathism and open bite.
    Reasons for correction.
    Outline of surgical methods carried out on mandible and maxilla.
16. Neurological disorders -
    Trigeminal neuralgia - definition, aetiology, clinical features and methods of management including surgical.
    Facial paralysis - Aetiology, clinical features.
    Nerve injuries - Classification, neurorhaphy etc.
17. Cleft Lip and Palate -
    Aetiology of the clefts, incidence, classification, role of dental surgeon in the management of cleft patients. Outline of the closure procedures.

18. Medical Emergencies in dental practice –

Primary care of medical emergencies in dental practice particularly -
(a)Cardio vascular (b) Respiratory(c) Endocrine
(d)Anaphylactic reaction (e) Epilepsy (f) Epilepsy

19. Emergency drugs & Intra muscular I.V. Injections -
Applied anatomy, Ideal location for giving these injections, techniques etc.
20. Oral Implantology
21. Ethics

LOCAL ANAESTHESIA:
Introduction, concept of L.A., classification of local anaesthetic agents, ideal requirements, mode of action, types of local anaesthesia, complications.

Use of Vaso constrictors in local anaesthetic solution -
Advantages, contra-indications, various vaso constrictors used.
Anaesthesia of the mandible -
Pterygomandibular space - boundaries, contents etc.
Interior Dental Nerve Block - various techniques
Complications
Mental foramen nerve block
Anaesthesia of Maxilla -
Intra - orbital nerve block.
Posterior superior alveolar nerve block
Maxillary nerve block - techniques.

GENERAL ANAESTHESIA –

Concept of general anaesthesia.
Indications of general anaesthesia in dentistry.
Pre-anaesthetic evaluation of the patient.
Pre-anaesthetic medication - advantages, drugs used.
Commonly used anaesthetic agents.
Complication during and after G.A.
I.V. sedation with Diazepam and Medozolam.
Indications, mode of action, technique etc.
Cardiopulmonary resuscitation
Use of oxygen and emergency drugs.
Tracheostomy.

RECOMMENDED BOOKS:

1. Impacted teeth; Alling John F & etal.
2. Principles of oral and maxillofacial surgery; Vol.1,2 & 3 Peterson LJ & etal.
3. Text book of oral and maxillofacial surgery; Srinivasan B.
4. Handbook of medical emergencies in the dental office, Malamed SF.
5. Killeys Fractures of the mandible; Banks P.
6. Killeys fractures of the middle 3rd of the facial skeleton; Banks P.
7. The maxillary sinus and its dental implications; McGovanda
8. Killey and Kays outline of oral surgery – Part-1; Seward GR & etal
9. Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM
10. Oral & maxillofacial surgery, Vol 2; Laskin DM
11. Extraction of teeth;Howe, GL
12. Minor Oral Surgery; Howe.GL
13. Contemporary oral and maxillofacial surgery; Peterson I.J.& EA
14. Oral and maxillofacial infections; Topazian RG & Goldberg MH

13. ORAL MEDICINE AND RADIOLOGY

AIMS:

(1) To train the students to diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.
(2) To train the students about the importance, role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis.
(3) The principles of the clinical and radiographic aspects of Forensic Odontology.
The syllabus in ORAL MEDICINE & RADIOLOGY is divided into two main parts.
(I) Diagnosis, Diagnostic methods and Oral Medicine (II) Oral Radiology. Again the part ONE is subdivided into three sections. (A) Diagnostic methods (B) Diagnosis and differential diagnosis (C) Oral Medicine & Therapeutics.

COURSE CONTENT

(1) Emphasis should be laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health.
(2) To avoid confusion regarding which lesion and to what extent the student should learn and know, this elaborate syllabus is prepared. As certain lesions come under more than one group, there is repetition.

Part-I ORAL MEDICINE AND DIAGNOSTIC AIDS

SECTION (A) – DIAGNOSTIC METHODS.

(1) Definition and importance of Diagnosis and various types of diagnosis
(2) Method of clinical examinations.
(a) General Physical examination by inspection.
(b) Oro-facial region by inspection, palpation and other means
(c) To train the students about the importance, role, use of saliva and techniques of diagnosis of saliva as part of oral disease
(d) Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches
(e) Examination of lymph nodes
(f) Forensic examination – Procedures for post-mortem dental examination; maintaining dental records and their use in dental practice and post-mortem identification; jurisprudence and ethics.
(3) Investigations
(a) Biopsy and exfoliative cytology
(b) Hematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis

SECTION (B) – DIAGNOSIS, DIFFERENTIAL DIAGNOSIS

While learning the following chapters, emphasis shall be given only on diagnostic aspects including differential diagnosis

(1) Teeth: Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth
(2) Diseases of bone and Osteodystrophies: Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenisis imperfecta, Marfans syndrome, osteopetrosis. Inflamation – Injury, infection and sperad of infection,fascial space infections, osteoradionecrosis.
Metabolic disorders – Histiocytosis
Endocrine – Acro-megaly and hyperparathyroidism
Miscellaneous – Paget's disease, Mono and polyostotic fibrous dysplasia, Cherubism.
(3) Temparomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.
(4) Common cysts and Tumors:
CYSTS: Cysts of soft tissue: Mucocele and Ranula
Cysts of bone: Odontogenic and nonodontogenic.

TUMORS:
Soft Tissue:
Epithelial: Papilloma, Carcinoma, Melanoma
Connective tissue: Fibroma, Lipoma, Fibrosarcoma
Vascular: Haemangioma, Lymphangioma
Nerve Tissue: Neurofibroma, Traumatic Neuroma, Neurofibromatosis
Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma.
Hard Tissue:
Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chandrosarcoma, Central giant cell rumor, and Central haemangioma
Odontogenic: Enameloma, Ameloblastoma, Calcifying Epithelial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysphasia and odontomas

(5) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma
(6) Granulomatous diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn's Disease and Histiocytosis X
(7) Miscellaneous Disorders: Burkitt lymphoma, sturge – Weber syndrome, CREST syndrome, rendu-osler-weber disease

SECTION (C): ORAL MEDICINE AND THERAPEUTICS.

The following chapters shall be studied in detail including the eiology, pathogenesis, clinical features, investigations, differential diagnosis, management and prevention

(1) Infections of oral and paraoral structures:
Bacterial: Streptococcal, tuberculosis, syphillis, vincents, leprosy, actinomycosis, diphtheria and tetanus
Fungal: Candida albicans
Virus: Herpes simplex, herpes zoster, ramsay hunt syndrome, measles, herpangina, mumps, infectious mononucleosis, AIDS and hepatitis-B
(2) Important common mucosal lesions:
White lesions: Chemical burns, leukodema, leukoplakia, fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, lichenplanus, discoid lupus erythematosis
Veiculo-bullous lesions: Herpes simplex, herpes zoster, herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoid erythema multiforme.
Ulcers: Acute and chronic ulcers
Pigmented lesions: Exogenous and endogenous

Red lesions: Erythroplakia, stomatitis venenata and medicamentosa, erosive lesions and denture sore mouth.

(3) Cervico-facial lymphadenopathy

(4) Facial pain:

(i)Organic pain: Pain arising from the diseases of orofacial tissues like teeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.,

(ii) Pain arising due to C.N.S. diseases:

(a) Pain due to intracranial and extracranial involvement of cranial nerves. (Multiple sclerosis, cerebrovascular diseases, trotter's syndrome etc.)

(b) Neuralgic pain due to unknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain

(iii) Referred pain: Pain arising from distant tissues like heart, spine etc.,

(5) Altered sensations: Cacogeusia, halitosis

(6) Tongue in local and systemic disorders: (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotal tongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)

(7) Oral manifestations of:

(i) Metabolic disordeers:

(a) Porphyria

(b) Haemochromatosis

(c) Histocytosis X diseases

(ii) Endocrine disorders:

(a) Pituitary: Gigantism, acromegaly, hypopitutarism

(b) Adrenal cortex: Addison's disease (Hypofuntion)
Cushing's syndrome (Hyperfunction)

(c) Parathyroid glands: Hyperparathyroidism.

(d) Thyroid gland: (Hypothyroidism) Cretinism, myxedema

(e) Pancreas: Diabetes

(iii) Nutritional deficiency: Vitamins: riboflavin, nicotinic acid, folic acid Vitamin B12, Vitamin C (Scurvy)

(iv) Blood disorders:

(a) Red blood cell diseases
Defficiency anemias: (Iron deficiency, plummer – vinson syndrome, pernicious anemia)
Haemolytic anemias: (Thalassemia, sickle cell anemia, erythroblastosis fetalis)
Aplastic anemia
Polycythemia

(b) White Blood cell diseases
Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and leukemias

(c) Haemorrhagic disorders:
Thrombocytopenia, purpura, hemophillia, chrismas disease and von willebrand's disease

(8) Disease of salivary glands:

(i)Development distrubances: Aplasia, atresia and aberration

(ii) Functional disturbances:Xerostomia, ptyalism

(iii) Inflammatory conditions: Nonspecific sialadenitis, mumps, sarcoidosis heerdfort's syndrome (Uveoparotid fever), Necrotising sialometaplasia

(iv) Cysts and tumors: Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma

(v) Miscellaneous: Sialolithiasis, sjogren's syndrome, mikuliez's disease and sialosis

(9) Dermatological diseases with oral manifestations:

(a) Ectodermal dysplasia (b) Hyperkerotosis palmarplantaris with periodont0opathy (c) Scleroderma (d) Lichen planus including ginspan's syndrome (e) Luplus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

(10)Immunological diseases with oral manifestations

(a) Leukemia (b) Lymphomas (c) Multiple mycloma (d) AIDS clinical manifestations, opportunistic infections, neoplasms (e) Thrombcytopenia (f) Lupus erythematosus (g) Scleroderma (h) dermatomyositis (I) Submucous fibrosis (j) Rhemtoid arthritis (k) Recurrent oral ulcerations including behcet's syndrome and reiter's syndrome

(11)Allergy: Local allergic reactions, anaphylaxis, serum sickness (local and systemic allergic manifestations to food drugs and chemicals)

(12)Foci of oral infection and their ill effects on general health

(13)Management of dental problems in medically comrpomised persons:

(i)Physiological changes: Puberty, pregnancy and menopause

(ii) The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.

(14)Precancerous lesions and conditions

(15)Nerve and muscle diseases:

(i)Nerves: (a) Neuropraxia (b) Neurotemesis (c) Neuritis (d) Facial nerve paralysis including Bell's palsy, Heerfordt's syndrome, Melkerson Rosenthel syndrome and ramsay hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey'syndrome

(ii) Muscles: (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus

(16)Forensic odontology:

(a) Medicolegal aspects of orofacial injuries
(b) Identification of bite marks
(c) Determination of age and sex
(d) Identification of cadavers by dental appliances, Restorations and tissue remanants

(17)Therapeutics: General therapeutic measures – drugs commonly used in oral medicine viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astringents, mouth washes, styptics, demelucents, local surface anaesthetic, sialogogues, antisialogogues and drugs used in the treatment of malignancy

Part – II BEHAVIOURAL SCIENCES AND ETHICS.

Part – III ORAL RADIOLOGY

(1) Scope of the subject and history of origin
(2) Physics of radiation: (a) Nature and types of radiations (b) Source of radiations (c) Production of X-rays (d) Properties of X-rays (e) Compton effect (f) Photoelectric effect (g) Radiation measuring units
(3) Biological effects of radiation
(4) Radiation safety and protection measures
(5) Principles of image production
(6) Radiographic techniques:
(i)Intra-Oral: (a) Periapical radiographs (Bisecting and parallel technics) (b) Bite wing radiographs (c) Occlusal radiographs
(ii) Extra-oral: (a) Lateral projections of skull and jaw bones and paranasal sinuses (c) Cephalograms (d) Orthopantomograph (e) Projections of temperomandibular joint and condyle of mandible (f) Projections for Zygomatic arches
(iii) Specialised techniques: (a) Sialography (b) Xeroradiography (c) Tomography
(7) Factors in production of good radiographs:
(a) K.V.P. and mA.of X-ray machine (b) Filters (c) Collimations (d) Intensifying screens (e) Grids (f) X-ray films (g) Exposure time (h) Techniques (i) Dark room (j) Developer and fixer solutions (k) Film processing
(8) Radiographic normal anatomical landmarks
(9) Faculty radiographs and artefacts in radiographs
(10) Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues
(11) Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy
(12) Cantrast radiography and basic knowledge of radio-active isotopes
(13)Radiography in Forensic Odontoloy - Radiographic age estimation and post-mortem radiographic methods

PRACTICALS / CLINICALS:

1. Student is trained to arrive at proper diagnosis by following a scientific and systematic proceedure of history taking and examination of the orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted on saliva diagnostic procedures. Training also shall be imparted in various radiographic proceedures and interpretation of radiographs.
2. In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of university examination
3. The following is the minimum of prescribed work for recording
   (a) Recording of detailed case histories of interesting cases 10
   (b) Intra-oral radiographs (Periapical, bitewing, occlusal) 25
   (c) Saliva diagnostic check as routine procedure

BOOKS RECOMMENDED:

a) Oral Diagnosis, Oral Medicine & Oral Pathology
1. Burkit – Oral Medicine – J.B. Lippincott Company
2. Coleman – Principles of Oral Diagnosis – Mosby Year Book
3. Jones – Oral Manifestations of Systemic Diseases – W.B. Saunders company
4. Mitchell – Oral Diagnosis & Oral Medicine
5. Kerr – Oral Diagnosis
6. Miller – Oral Diagnosis & Treatment
7. Hutchinson – clinical Methods
8. Oral Pathology – Shafers
9. Sonis.S.T., Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine

b) Oral Radiology
1. White & Goaz – Oral Radiology – Mosby year Book
2. Weahrman – Dental Radiology – C.V. Mosby Company
3. Stafne – Oral Roentgenographic Diagnosis – W.B.Saunders Co.,

c) Forensic Odontology

1. Derek H.Clark – Practical Forensic Odontology - Butterworth-Heinemann (1992)
2.C Michael Bowers, Gary Bell – Manual of Forensic Odontology - Forensic Pr (1995)

14. ORTHODONTICS & DENTAL ORTHOPAEDICS

COURSE OBJECTIVE:

Undergraduate programme in Orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above objectives.

1. Introduction, Definition, Historical Background, Aims And Objectives Of Orthodontics And Need For Orthodontics Care.
2. Growth And Development: In General
   a. Definition
   b. Growth spurts and Differential growth
   c. Factors influencing growth and Development
   d. Methods of measuring growth
   e. Growth theories (Genetic, Sicher's, Scott's, Moss's,Petrovics, Multifactorial)
   f. Genetic and epigenetic factors in growth
   g. Cephalocaudal gradient in growth.
3. Morphologic Development Of Craniofacial Structures
   a. Methods of bone growth
   b. Prenatal growth of craniofacial structures
   c. Postnatal growth and development of: cranial base, maxilla, mandible, dental arches and occlusion.
4. Functional Development Of Dental Arches And Occlusioin
   a. Factors influencing functional development of dental arches and occlusion.
   b. Forces of occlusion
   c. Wolfe's law of transformation of bone
   d. Trajectories of forces
5. Clinical Application Of Growth And Development
6. Malocclusion - In General
   a. Concept of normal occlusion
   b. Definition of malocclusion
   c. Description of different types of dental, skeletal and functional malocclusion.
7. Classification of Malocclusion
   Principle, description, advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffitt's.
8. Normal And Abnormal Function Of Stomatognathic System
9. Etiology Of Malocclusion
   a. Definition, importance, classification, local and general etiological factors.
   b. Etiology of following different types of malocclusion:
   1) Midline diastema
   2) Spacing
   3) Crowding
   4) Cross-Bite: Anterior/Posterior
   5) Class III Malocclusion
   6) Class II Malocclusion
   7) Deep Bite
   8) Open bite
10. Diagnosis And Diagnostic Aids
    a. Definition, Importance and classification of diagnostic aids
    b. Importance of case history and clinical examination in orthodontics
    c. Study Models: - Importance and uses - Preparation and preservation of study models
    d. Importance of intraoral X-rays in orthodontics
    e. Panoramic radiographs: - Principles, Advantages, disad vantages and uses
    f. Cephalometrics: Its advantages, disadvantages
    1. Definition
    2. Description and use of cephalostat
    3. Description and uses of anatomical landmarks lines and angles used in cephalometric analysis
    4. Analysis- Steiner's, Down's, Tweed's, Ricket's-E- line
    g. Electromyography and its uses in orthodontics
    h. Wrist X-rays and its importance in othodontics
11. General Principles In Orthodontic Treatment Planning Of Dental And Skeletal Malocclusions
12. Anchorage In Orthodontics - Definition, Classification, Types and Stability Of Anchorage
13. Biomechanical Principles In Orthodontic Tooth Movement
    a. Different types of tooth movements
    b. Tissue response to orthodontic force application

c. Age factor in orthodontic tooth movement

14. Preventive Orthodontics
    a. Definition
    b. Different procedures undertaken in preventive orthodontics and their limitations.
15. Interceptive Orthodontics
    a. Definition
    b. Different procedures undertaken in interceptive orthodontics
    c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.
    d. Role of muscle exercises as an interceptive procedure
16. Corrective Orthodontics
    a. Definition, factors to be considered during treatment planning.
    b. Model analysis: Pont's, Ashley Howe's, Bolton, Careys, Moyer's Mixed Dentition Analysis
    c. Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions
    d. Extractions in Orthdodontics - indications and selection of teeth for extraction.
17. Orthodontic Appliances: General
    a. Requisites for orthodontic appliances
    b. Classification, indications of Removable and Functional Appliances
    c. Methods of force application
    d. Materials used in construction of various orthodontic appliances - uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.
    e. Preliminary knowledge of acid etching and direct bonding.
18. Ethics

REMOVABLE ORTHODONTIC APPLIANCES

1) Components of removable appliances
2) Different types of clasps and their uses
3) Different types of labial bows and their uses
4) Different types of springs and their uses
5) Expansion appliances in orthodontics:
   i) Principles
   ii) Indications for arch expansion
   iii) Description of expansion appliances and different types of expansion devices and their uses.
   iv) Rapid maxillary expansion

FIXED ORTHODONTIC APPLIANCES

1. Definition, Indications & Contraindications
2. Component parts and their uses
3. Basic principles of different techniques: Edgewise, Begg's, straight wire.

EXTRAORAL APPLIANCES

1. Headgears
2. chincup
3. reverse pull headgears

MYOFUNCTIONAL APPLIANCES

1. Definition and principles
2. Muscle exercises and their uses in orthodontics
3. Functional appliances:
   i) Activator, Oral screens, Frankels function regulator, bionator twin blocks, lip bumper
   ii) Inclined planes - upper and lower

18. Orthodontic Management Of Cleft Lip And Palate
19. Principles Of Surgical Orthodontics
    Brief knowledge of correction of:
    a. Mandibular Prognathism and Retrognathism
    b. Maxillary Prognathism and Retrognathism
    c. Anterior open bite and deep bite
    d. Cross bite
20. Principle, Differential Diagnosis & Methods Of Treatment Of:
    1. Midline diastema
    2. Cross bite
    3. Open bite
    4. Deep bite
    5. Spacing
    6. Crowding
    7. Class II - Division 1, Division 2
    8. Class III Malocclusion - True and Psuedo Class III

21. Retention And Relapse

Definition, Need for retention, Causes of relapse, Methods of retention, Different types of retention devices, Duration of retention, Theories of retention.

CLINICALS AND PRACTICALS IN ORTHODONTICS

PRACTICAL TRAINING DURING II YEAR B.D.S.

I. Basic wire bending exercises Gauge 22 or 0.7mm
   1. Straightening of wires (4 Nos.)
   2. Bending of a equilateral triangle
   3. Bending of a rectangle
   4. Bending of a square
   5. Bending of a circle
   6. Bending of U.V.

II. Construction of Clasps (Both sides upper/lower) Gauge 22 or 0.7mm
   1. 3/4 Clasp (C-Clasp)
   2. Full Clasp (Jackson's Crib)
   3. Adam's Clasp
   4. Triangular Clasp

III. Construction of Springs (on upper both sides) Gauge 24 or 0.5mm
   1. Finger Spring
   2. Single Cantelever Spring
   3. Double Cantelever Spring (Z-Spring)
   4. T-Springs on premolars

IV. Construction of Canine retractors Gauge 23 or 0.6mm
   1. U - Loop canine retractor
      (Both sides on upper & lower)
   2. Helical canine retractor
      (Both sides on upper & lower)
   3. Buccal canine retractor:
      - Self supported buccal canine retractor with
        a) Sleeve - 5mm wire or 24 gauge
        b) Sleeve - 19 gauge needle on any one side.
   4. Palatal canine retractor on upper both sides
      Gauge 23 or 0.6mm

V. Labial Bow
   Gauge 22 or 0.7mm
   One on both upper and lower

CLINICAL TRAINING DURING III YEAR B.D.S.

NO. EXERCISE

01. Making upper Alginate impression
02. Making lower Alginate impression
03. Study Model preparation
04. Model Analysis
   a. Pont's Analysis
   b. Ashley Howe's Analysis
   c. Carey's Analysis
   d. Bolton's Analysis
   e. Moyer's Mixed Dentition Analysis

CLINICAL TRAINING DURING FINAL YEAR B.D.S.

NO. EXERCISE

01. Case History taking
02. Case discussion
03. Discussion on the given topic
04. Cephalometric tracings
   a. Down's Analysis
   b. Steiner's Analysis
   c. Tweed's Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S.

1. Adam's Clasp on Anterior teeth Gauge 0.7mm
2. Modified Adam's Clasp on upper arch Gauge 0.7mm
3. High Labial bow with Apron spring on upper arch
   (Gauge of Labial bow - 0.9mm, Apron spring - 0.3mm)
4. Coffin spring on upper arch Gauge 1mm

Appliance Construction in Acrylic

1. Upper & Lower Hawley's Appliance
2. Upper Hawley's with Anterior bite plane
3. Upper Habit breaking Appliance

4. Upper Hawley's with Posterior bite plane with `Z' Spring
5. Construction of Activator
6. Lower inclined plane/Catalan's Appliance
7. Upper Expansion plate with Expansion Screw

RECOMMENDED AND REFERENCE BOOKS

1. CONTEMPORARY ORTHODONTICS — WILLIAM R. PROFFIT
2. ORTHODONTICS FOR DENTAL STUDENTS — WHITE and GARDINER
3. HANDBOOK OF ORTHODONTICS — MOYERS
4. ORTHODONTICS - PRINCIPLES AND PRACTICE — GRABER
5. DESIGN, CONSTRUCTION AND USE OF REMOVABLE
6. ORTHODONTIC APPLIANCES — C. PHILIP ADAMS
7. CLINICAL ORTHODONTICS: VOL1 & 2 — SALZMANN

15. PAEDIATRIC & PREVENTIVE DENTISTRY

THEORY:

1. INTRODUCTION TO PEDODONTICS & PREVENTIVE DENTISTRY.
   - Definition, Scope, Objectives and Importance.
2. GROWTH & DEVELOPMENT:
   - Importance of study of growth and development in Pedodontics.
   - Prenatal and Postnatal factors in growth & development.
   - Theories of growth & development.
   - Development of maxilla and mandible and related age changes.
3. DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADOLESCENCE.
   - Study of variations and abnormalities.
4. DENTAL ANATOMY AND HISTOLOGY:
   - Development of teeth and associated structures.
   - Eruption and shedding of teeth.
   - Teething disorders and their management.
   - Chronology of eruption of teeth.
   - Differences between deciduous and permanent teeth.
   - Development of dentition from birth to adolescence.
   - Importance of first permanent molar.
5. DENTAL RADIOLOGY RELATED TO PEDODONTICS.
6. ORAL SURGICAL PROCEDURES IN CHILDREN.
   - Indications and contraindications of extractions of primary and permanent teeth in children.
   - Knowledge of Local and General Anesthesia.
   - Minor surgical procedures in children.
7. DENTAL CARIES:
   - Historical background.
   - Definition, aetiology & pathogenesis.
   - Caries pattern in primary, young permanent and permanent teeth in children.
   - Rampant caries, early childhood caries and extensive caries:
     * Definition, aetiology, Pathogenesis, Clinical features, Complications & Management
   - Role of diet and nutrition in Dental Caries.
   - Dietary modifications & Diet counseling.
   - Caries activity, tests, caries prediction, caries susceptibility & their clinical application.
8. GINGIVAL & PERIODONTAL DISEASES IN CHILDREN.
   - Normal gingiva & periodontium in children.
   - Definition, aetiology & Pathogenesis.
   - Prevention & Management of gingival & Periodontal diseases.
9. CHILD PSYCHOLOGY:
   - Definition.
   - Theories of child psychology.
   - Psychological development of children with age.
   - Principles of psychological growth & development while managing child patient.
   - Dental fear and its management.
   - Factors affecting child’s reaction to dental treatment.
10. BEHAVIOUR MANAGEMENT:
    - Definitions.
    - Types of behaviour encountered in the dental clinic.
    - Non-pharmacological & pharmacological methods of Behaviour Management.
11. PEDIATRIC OPERATIVE DENTISTRY:
    - Principles of Pediatric Operative Dentistry.
    - Modifications required for cavity preparation in primary and young permanent teeth.
    - Various Isolation Techniques.
    - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.

12. PEDIATRIC ENDODONTICS
    - Principles & Diagnosis.
    - Classification of Pulpal Pathology in primary, young permanent & permanent teeth.
    - Management of Pulpally involved primary, young permanent & permanent teeth.
        - Pulp capping – direct & indirect.
        - Pulpotomy
        - Pulpectomy
        - Apexogenesis
        - Apexification
    - Obturation Techniques & material used for primary, young permanent & Permanent teeth in children.
13. TRAUMATIC INJURIES IN CHILDREN:
    - Classifications & Importance.
    - Sequelae & reaction of teeth to trauma.
    - Management of Traumatized teeth.
14. PREVENTIVE & INTERCEPTIVE ORTHODONTICS:
    - Definitions.
    - Problems encountered during primary and mixed dentition phases & their management.
    - Serial extractions.
    - Space management.
15. ORAL HABITS IN CHILDREN:
    - Definition, Aetiology & Classification.
    - Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
    - Management of oral habits in children.
16. DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS:
    - Definition, Aetiology, Classification, Behavioural and Clinical features & Management of children with:
        - Physically handicapping conditions.
        - Mentally compromising conditions.
        - Medically compromising conditions.
        - Genetic disorders.
17. CONGENITAL ABNORMALITIES IN CHILDREN:
    - Definition, Classification, Clinical features & Management.
18. DENTAL EMERGENCIES IN CHILDREN & THEIR MANAGEMENT.
19. DENTAL MATERIALS USED IN PEDIATRIC DENTISTRY.
20. PREVENTIVE DENTISTRY:
    - Definition.
    - Principles & Scope.
    - Types of prevention.
    - Different preventive measures used in Pediatric Dentistry including pit and fissure sealants and caries vaccine.
21. DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES.
22. FLUORIDES:
    - Historical background.
    - Systemic & Topical fluorides.
    - Mechanism of action.
    - Toxicity & Management.
    - Defluoridation techniques.
23. CASE HISTORY RECORDING:
    - Outline of principles of examination, diagnosis & treatment planning.
24. SETTING UP OF PEDODONTIC CLINIC.
25. ETHICS.

B. PRACTICALS:

Following is the recommended clinical quota for under-graduate students in the subject of pediatric & preventive dentistry.

1. Restorations – Class I & II only : 45
2. Preventive measures e.g. Oral Prophylaxis – 20.
3. Fluoride applications – 10
4. Extractions – 25
5. Case History Recording & Treatment Planning – 10
6. Education & motivation of the patients using disclosing agents. Educating patients about oral hygiene measures like tooth brushing, flossing etc.

BOOKS RECOMMENDED & REFERENCE:

1. Pediatric Dentistry (Infancy through Adolescences) – Pinkham.
2. Kennedy's Pediatric Operative Dentistry – Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry – Stephen H. Wei.
4. Clinical Use of Fluorides – Stephen H. Wei.

5. Pediatric Oral & Maxillofacial Surgery – Kaban.
6. Pediatric Medical Emergencies – P. S. whatt.
7. Understanding of Dental Caries – Niki Foruk.
8. An Atlas of Glass Ionomer cements – G. J. Mount.
9. Clinical Pedodontics – Finn.
10. Textbook of Pediatric Dentistry – Braham Morris.
11. Primary Preventive Dentistry – Norman O. Harris.
12. Handbook of Clinical Pedodontics – Kenneth. D.
13. Preventive Dentistry – Forrester.
14. The Metabolism and Toxicity of Fluoride – Garry M. whitford.
15. Dentistry for the Child and Adolescence – Mc. Donald.
16. Pediatric Dentistry – Damle S. G.
17. Behaviour Management – Wright
18. Pediatric Dentistry – Mathewson.
19. Traumatic Injuries – andreason.
20. Occlusal guidance in Pediatric Dentistry – Nakata.
21. Pediatric Drug Therapy – Tomare
22. Contemporary Orhtodontics – Profitt..
23. Preventive Dentistry – Depaola.
24. Metabolism & Toxicity of Fluoride – whitford. G. M.
25. Endodontic Practice – Grossman.
26. Principles of Endodontics – Munford.
27. Endodontics – Ingle.
28. Pathways of Pulp – Cohen.
29. Management of Traumatized anterior Teeth – Hargreaves.

16. PUBLIC HEALTH DENTISTRY

GOAL:

To prevent and control oral diseases and promote oral health through organized community efforts

OBJECTIVES:

Knowledge:

At the conclusion of the course the student shall have a knowledge of the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy.

Skill and Attitude:

At the conclusion of the course the students shall have require at the skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health.

Communication abilities:

At the conclusions of the course the student should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease

Syllabus:

1. Introduction to Dentistry: Definition of Dentistry, History of dentistry, Scope, aims and objectives of Dentistry.
2. Public Health:
   - i. Health & Disease: - Concepts, Philosophy, Definition and Characteristics
   - ii. Public Health: - Definition & Concepts, History of public health
   - iii. General Epidemiology: - Definition, objectives, methods
   - iv. Environmental Health: - Concepts, principles, protection, sources, purification environmental sanitation of water disposal of waste sanitation, then role in mass disorder
   - v. Health Education: - Definition, concepts, principles, methods, and health education aids
   - vi. Public Health Administration: - Priority, establishment, manpower, private practice management, hospital management.
   - vii. Ethics and Jurisprudence: Professional liabilities, negligence, malpractice, consents, evidence, contracts, and methods of identification in forensic dentistry.
   - viii. Nutrition in oral diseases
   - ix. Behavioral science: Definition of sociology, anthropology and psychology and their in dental practice and community.
   - x. Health care delivery system: Center and state, oral health policy, primary health care, national programmes, health organizations.

Dental Public Health:

1. Definition and difference between community and clinical health.
2. Epidemiology of dental diseases-dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.
3. Survey procedures: Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.

4. Delivery of dental care: Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.
5. Payments of dental care: Methods of payments and dental insurance, government plans
6. Preventive Dentistry- definition, Levels, role of individual , community and profession, fluorides in dentistry, plaque control programmes.

Research Methodology and Dental Statistics

1. Health Information: - Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes
2. Research Methodology: -Definition, types of research, designing a written protocol
3. Bio-Statistics: - Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques-types, errors, bias, blind trails and calibration.

Practice Management

1. Place and locality
2. Premises & layout
3. Selection of equipments
4. Maintenance of records/accounts/audit.

Dentist Act 1948 with amendment.
Dental Council of India and State Dental Councils
Composition and responsibilities.
Indian Dental Association
Head Office, State, local and branches.

PRACTICALS/CLINICALS/FIELD PROGEAMME IN COMMUNITY DENTISTRY:
These exercises designed to help the student in IV year students:

1. Understand the community aspects of dentistry
2. To take up leadership role in solving community oral health programme

Exercises:

a) Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capita income
b) Incidence and prevalence of common oral diseases like dental caries, periodontal disease, oral cancer, fluorosis at national and international levels
c) Preparation of oral health education material posters, models, slides, lectures, play acting skits etc.
d) Oral health status assessment of the community using indices and WHO basic oral health survey methods
e) Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment of finances for dental practices-preparing project report.
f) Visit to primary health center-to acquaint with activities and primary health care delivery
g) Visit to water purification plant/public health laboratory/ center for treatment of western and sewage water
h) Visit to schools-to assess the oral health status of school children, emergency treatment and health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse programme etc.)
i) Visit to institution for the care of handicapped, physically, mentally, or medically compromised patients
j) Preventive dentistry: in the department application of pit and fissure sealants, fluoride gel application procedure, A. R. T., Comprehensive health for 5 pts at least 2 patients

The colleges are encouraged to involve in the N.S.S. programme for college students for carrying out social work in rural areas

SUGGESTED INTERNSHIP PROGRAMME IN COMMUNITY DENTISTRY:

I. AT THE COLLEGE:

Students are posted to the department to get training in dental practice management.

(a) Total oral health care approach- in order to prepare the new graduates in their approach to diagnosis, treatment planning, cost of treatment, prevention of treatment on schedule, recall maintenance of records etc. at least 10 patients (both children and adults of all types posting for at least one month).
(b) The practice of chair side preventive dentistry including oral health education

II. AT THE COMMUNITY ORAL HEALTH CARE CENTRE (ADOPTED BY THE DENTAL COLLEGE IN RURAL AREAS)

Graduates posted for at least on month to familiarize in:

(a) Survey methods, analysis and presentation of oral health assessment of school children and community independently using WHO basic oral health survey methods.
(b) Participation in rural oral health education programmes
(c) Stay in the village to understand the problems and life in rural areas

III. DESIRABLE: Learning use of computers-at least basic programme.

Examination Pattern

I. Index: Case History

b) Oral hygiene indices simplified- Green and Vermilion
c) Silness and Loe index for Plaque
d) Loe and Silness index for gingival
e) CPI
f) DMF: T and S, df:t and s
g) Deans fluoride index

II. Health Education
1. Make one - Audio visual aid
2. Make a health talk

III. Practical work
1. Pit and fissure sealant
2. Topical fluoride application

BOOKS RECOMMENDED & REFERENCE:

1. Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt, Edn. –1983, W. B. Saunders Company
2. Principles of Dental Public Health by James Morse Dunning, IVth Edition, 1986, Harward University Press.
3. Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by The C. V. Mosby Company 1981
4. Community Oral Health-A system approach by Patricia P. Cormier and Joyce I. Levy published by Appleton-Century-Crofts/New York, 1981
5. Community Dentistry-A problem oriented approach by P. C. Dental Hand book series Vol.8 by Stephen L. Silverman and Ames F. Tryon, Series editor-Alvin F. Gardner, PSG Publishing company Inc. Littleton Massachuseltts, 1980.
6. Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wrigth and sons Bristol, 1980
7. Oral Health Surveys- Basic Methods, 4th edition, 1997, published by W. H. O. Geneva available at the regional office New Delhi.
8. Preventive Medicine and Hygiene-By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.
9. Preventive Dentistry-by J. O. Forrest published by John Wright and sons Bristoli, 1980.
10. Preventive Dentistry by Murray, 1997.
11. Text Book of Preventive and Social Medicine by Park and park, 14th edition.
12. Community Dentistry by Dr. Soben Peter.
13. Introduction to Bio-statistics by B. K. Mahajan
14. Research methodology and Bio-statistics by
15. Introduction to Statistical Methods by Grewal

17. PERIODONTOLOGY

OBJECTIVES:

The student shall acquire the skill to perform dental scaling ,diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same.

The student shall develop attitude to impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. The student shall also develop an attitude to perform the treatment with full aseptic precautions; shall develop an attitude to prevent iatrogenic diseases; to conserve the tooth to the maximum possible time by maintaining periodontal health and to refer the patients who require specialist's care.

1. Introduction: Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics
2. Development of perio-dontal tissues, micro-structural anatomy and biology of periodontal tissues in detail Gingiva. Junctional epithelium in detail, Epithelial-Mesenchymal interaction,Periodontal, ligament Cementum, Alveolar bone.
3. Defensive mechanisms in the oral cavity: Role of-Epithelium,Gingival fluid, Saliva and other defensive mechanisms in the oral environment.

4.	Age changes in periodontal structures and their significance in Geriatric dentistry	Age changes in teeth and periodontal structures and their association with periodontal diseases	1
5.	Classification of periodontal diseases	Need for classification, Scientific basis of classification Classification of gingival and periodontal diseases as described in World Workshop1989 Gingivitis: Plaque associated,ANUG,steroid hormone influenced, Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc.	1

		Periodontitis: Adult periodontitis, Rapidly progressive periodontitis A&B, Juvenile periodontitis(localized, generalized, and post-juvenile), Prepubertal periodontitis, Refractory periodontitis	
6.	Gingival diseases	Localized and generalized gingivitis, Papillary, marginal and diffuse gingivitis Etiology, pathogenesis, clinical signs, symptoms and management of i) Plaque associated gingivitis ii) Systemically aggravated gingivitis(sex hormones, drugs and systemic diseases) iii) ANUG iv) Desquamative gingivitis-Gingivitis associated with lichen planus, pemphigoid, pemphigus, and other vesiculobullous lesions v) Allergic gingivitis vi) Infective gingivitis-Herpetic, bacterial and candidial vii) Pericoronitis viii) Gingival enlargement (classification and differential diagnosis)	6
7	Epidemiology of periodontal diseases	- Definition of index, incidence, prevalence,epidemiology,endemic, epidemic, and pandemic - Classification of indices(Irreversible and reversible) - Deficiencies of earlier indices used in Periodontics - Detailed understanding of Silness &Loe Plaque Index ,Loe&Silness Gingival Index, CPITN &CPI. - Prevalence of periodontal diseases in India and other countries. - Public health significance(All these topics are covered at length under community dentistry. Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination	2
8.	Extension of inflammation from gingiva	Mechanism of spread of inflammation from gingival area to deeper periodontal structures Factors that modify the spread	1
9.	Pocket	Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket	2
10.	Etiology	- Dental Plaque (Biofilm) - Definition, New concept of biofilm - Types, composition, bacterial colonization, growth,maturation &disclosing agents - Role of dental plaque in periodontal diseases - Plaque microorganisms in detail and bacteria associated with periodontal diseases - Plaque retentive factors - Materia alba - Food debris - Calculus - Definition - Types, composition, attachment, theories of formation - Role of calculus in disease Food Impaction - Definition - Types, Etiology - Hirschfelds' classification - Signs ,symptoms &sequelae of treatment Trauma from occlusion - Definition, Types - Histopathological changes - Role in periodontal disease - Measures of management in brief Habits - Their periodontal significance - Bruxism &parafunctional habits, tongue thrusting ,lip biting, occupational habits IATROGENIC FACTORS	5

		Conservative Dentistry - Restorations - Contact point, marginal ridge, surface roughness, overhanging restorations, interface between restoration and teeth Prosthodontics - Interrelationship - Bridges and other prosthesis, pontics(types) ,surface contour, relationships of margins to the periodontium, Gingival protection theory, muscle action theory& theory of access to oral hygiene. Orthodontics - Interrelationship, removable appliances &fixed appliances - Retention of plaque, bacterial changes Systemic diseases - Diabetes, sex hormones, nutrition(Vit.C &proteins) - AIDS & periodontium - Hemorrhagic diseases, Leukemia, clotting factor disorders,PMN disorders	
11.	Risk factors	Definition. Risk factors for periodontal diseases	1
12.	Host response	- Mechanism of initiation and progression of periodontal diseases - Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulins, complement system, immune mechanisms & cytokines in brief - Stages in gingivitis-Initial, early, established & advanced - Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis	3
13.	Periodontitis	- Etiology ,histopathology, clinical signs & symptoms, diagnosis and treatment of adult periodontitis - Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment - Furcation involvement, Glickmans' classification, prognosis and management - Rapidly progressive periodontitis - Juvenile periodontitis: Localized and generalized - Post-juvenile periodontitis - Periodontitis associated with systemic diseases - Refractory periodontitis	6
14.	Diagnosis	- Routine procedures, methods of probing, types of probes,(According to case history) - Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.	2
15.	Prognosis	- Definition, types, purpose and factors to be taken into consideration	1
16.	Treatment plan	- Factors to be considered	1
17.	Periodontal therapy	A. General principles of periodontal therapy. Phase I,II, III, IV therapy. Definition of periodontal regeneration, repair, new attachment and reattachment. B. Plaque control i. Mechanical tooth brushes, interdental cleaning aids, dentifrices ii. Chemical; classification and mechanism of action of each & pocket irrigation	3
18.	Pocket eradication procedures	- Scaling and root planing: - Indications - Aims & objectives - Healing following root planning - Hand instruments, sonic, ultrasonic &piezo-electric scalers - Curettage &present concepts - Definition - Indications - Aims &objectives - Procedures & healing response - Flap surgery - Definition - Types of flaps, Design of flaps, papilla preservation	5

		- Indications & contraindications - Armamentarium - Surgical procedure & healing response	
9.	Osseous Surgery	Osseous defects in periodontal disease - Definition - Classification - Surgery: resective, additive osseous surgery (osseous grafts with classification of grafts) - Healing responses - Other regenerative procedures; root conditioning - Guided tissue regeneration	2
20.	Mucogingival surgery &periodontal plastic surgeries	Definition Mucogingival problems: etiology, classification of gingival recession (P.D.Miller Jr. and Sullivan and Atkins) Indications & objectives Gingival extension procedures: lateral pedicle graft, frenectomy, frenotomy Crown lengthening procedures Periodontal microsurgery in brief	3
21.	Splints	- Periodontal splints - Purpose & classification - Principles of splinting	1
22.	Hypersensitivity	Causes, Theories & management	1
23.	Implants	Definition, types, scope &biomaterials used. Periodontal considerations: such as implant-bone interface, implant-gingiva interface, implant failure, peri-implantitis & management	1
24.	Maintenance phase (SPT)	- Aims, objectives, and principles - Importance - Procedures - Maintenance of implants	1
25.	Pharmaco-therapy	- Periodontal dressings - Antibiotics & anti-inflammatory drugs - Local drug delivery systems	2
26.	Periodontal management of medically compromised patients	Topics concerning periodontal management of medically compromised patients	1
27.	Inter-disciplinary care	- Pulpo-periodontal involvement - Routes of spread of infection - Simons' classification - Management	1
28.	Systemic effects of periodontal diseases in brief	Cardiovascular diseases, Low birth weight babies etc.	1
29.	Infection control protocol	Sterilization and various aseptic procedures	1
30.	Ethics		

TUTORIALS DURING CLINICAL POSTING;

1. Infection control
2. Periodontal instruments
3. Chair position and principles of instrumentation
4. Maintenance of instruments (sharpening)
5. Ultrasonic, Piezoelectric and sonic scaling – demonstration of technique
6. Diagnosis of periodontal disease and determination of prognosis
7. Radiographic interpretation and lab investigations
8. Motivation of patients- oral hygiene instructions

Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment. Student should perform scaling, root planning local drug delivery and SPT. Shall be given demonstration of all periodontal surgical procedures.

DEMONSTRATIONS:

1. History taking and clinical examination of the patients
2. Recording different indices
3. Methods of using various scaling and surgical instruments
4. Polishing the teeth
5. Bacterial smear taking
6. Demonstration to patients about different oral hygiene aids

7. Surgical procedures- gingivectomy, gingivoplasty, and flap operations
8. Follow up procedures, post operative care and supervision

REQUIREMENTS:

1. Diagnosis, treatment planning and discussion and total periodontal treatment – 25 cases
2. Dental scaling, oral hygiene instructions – 50 complete cases/ equivalent
3. Assistance in periodontal surgery – 5 cases
4. A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the head of the department.

Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

PRESCRIBED BOOK:

1. Glickman's Clinical Periodontology — Carranza

REFERENCE BOOKS

1. Essentials of Periodontology and periodontics- Torquil MacPhee
2. Contemporary periodontics- Cohen
3. Periodontal therapy- Goldman
4. Orbans' periodontics- Orban
5. Oral Health Survey- W.H.O.
6. Preventive Periodontics- Young and Stiffler
7. Public Health Dentistry- Slack
8. Advanced Periodontal Disease- John Prichard
9. Preventive Dentistry- Forrest
10. Clinical Periodontology- Jan Lindhe
11. Periodontics- Baer & Morris.

18. PROSTHODONTICS AND CROWN & BRIDGE

Complete Dentures

A. Applied Anatomy and Physiology.
   1. Introduction
   2. Biomechanics of the edentulous state.
   3. Residual ridge resorption.

B. Communicating with the patient
   1. Understanding the patients.
      - Mental attitude.
   2. Instructing the patient.

C. Diagnosis and treatment planning for patients-
   1. With some teeth remaining.
   2. With no teeth remaining.
   a) Systemic status.
   b) Local factor.
   c) The geriatric patient.
   d) Diagnostic procedures.

D. Articulators- discussion

E. Improving the patient's denture foundation and ridge relation -an overview.
   a) Pre-operative examination.
   b) Initial hard tissue & soft tissue procedure.
   c) Secondary hard & soft tissue procedure.
   d) Implant procedure.
   e) Congenital deformities.
   f) Postoperative procedure.

F. Principles of Retention, Support and Stability

G. Impressions - detail.
   a) Muscles of facial expression.
   b) Biologic considerations for maxillary and mandibular impression including anatomy landmark and their interpretation.
   c) Impression objectives.
   d) Impression materials.
   e) Impression techniques.
   f) Maxillary and mandibular impression procedures.
   i. Preliminary impressions.
   ii. Final impressions.
   g) Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation).

H. Record bases and occlusion rims- in detail.
   a) Materials & techniques.
   b) Useful guidelines and ideal parameters.
   c) Recording and transferring bases and occlusal rims.

I. Biological consideration in jaw relation & jaw movements - craniomandibular relations.
   a) Mandibular movements.
   b) Maxillo -mandibular relation including vertical and horizontal jaw relations.
   c) Concept of occlusion- discuss in brief.

J. Relating the patient to the articulator.
   a) Face bow types & uses– discuss in brief.
   b) Face bow transfer procedure - discuss in brief.

K. Recording maxillo mandibular relation.
   a) Vertical relations.
   b) Centric relation records.
   c) Eccentric relation records.
   d) Lateral relation records.

L. Tooth selection and arrangement.
   a) Anterior teeth.
   b) Posterior teeth.
   c) Esthetic and functional harmony.

M. Relating inclination of teeth to concept of occlusion- in brief.
   a) Neutrocentric concept.
   b) Balanced occlusal concept.

N. Trial dentures.

O. Laboratory procedures.
   a) Wax contouring.
   b) Investing of dentures.
   c) Preparing of mold.
   d) Preparing & packing acrylic resin.
   e) Processing of dentures.
   f) Recovery of dentures.
   g) Lab remount procedures.
   h) Recovering the complete denture from the cast.
   i) Finishing and polishing the complete denture.
   j) Plaster cast for clinical denture remount procedure.

P. Denture insertion.
   a) Insertion procedures.
   b) Clinical errors.
   c) Correcting occlusal disharmony.
   d) Selective grinding procedures.

R. Treating problems with associated denture use – discuss in brief (tabulation/flow-chart form).

S. Treating abused tissues - discuss in brief.

T. Relining and rebasing of dentures- discuss in brief.

V. Immediate complete dentures construction procedure- discuss in brief.

W. The single complete denture- discuss in brief.

X. Overdentures denture- discuss in brief.

Y. Dental implants in complete denture - discuss in brief.

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover –

1. Definition
2. Diagnosis (of the particular situation/patient selection/treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab /Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase
9. Oral Implantology
10. Ethics

Removable Flexible Dentures

1. Introduction
   - Terminologies and scope
2. Classification.
3. Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.
4. Components of a removable partial denture.
   - Major connectors,
   - minor connectors,
   - Rest and rest seats.
5. Components of a Removable Partial Denture.
   - Direct retainers,
   - Indirect retainers,
   - Tooth replacement.

6. Principles of Removable Partial Denture Design.
7. Survey and design – in brief.
   - Surveyors.
   - Surveying.
   - Designing.
8. Mouth preparation and master cast.
9. Impression materials and procedures for removable partial dentures.
10. Preliminary jaw relation and esthetic try-in for some anterior replacement teeth.
11. Laboratory procedures for framework construction-in brief.
12. Fitting the framework - in brief.
13. Try-in of the partial denture - in brief.
14. Completion of the partial denture - in brief.
15. Inserting the Removable Partial Denture - in brief.
16. Postinsertion observations.
17. Temporary Acrylic Partial Dentures.
18. Immediate Removable Partial Denture.
19. Removable Partial Dentures opposing Complete denture.

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover –

1. Definition
2. Diagnosis (of the particular situation /patient selection /treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab /Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase

Fixed Partial Dentures

Topics To Be Covered In Detail -

1. Introduction
2. Fundamentals of occlusion – in brief.
3. Articulators – in brief.
4. Treatment planning for single tooth restorations.
5. Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.
6. Fixed partial denture configurations.
7. Principles of tooth preparations.
8. Preparations for full veneer crowns – in detail.
9. Preparations for partial veneer crowns – in brief.
10. Provisional Restorations
11. Fluid Control and Soft Tissue Management
12. Impressions
13. Working Casts and Dies
14. Wax Patterns
15. Pontics and Edentulous Ridges
16. Esthetic Considerations
17. Finishing and Cementation

Topics To Be Covered In Brief -

1. Solder Joints and Other Connectors
2. All - Ceramic Restorations
3. Metal - Ceramic Restorations
4. Preparations of intracoronal restorations.
5. Preparations for extensively damaged teeth.
6. Preparations for periodontally weakened teeth
7. The Functionally Generated Path Technique
8. Investing and Casting
9. Resin - Bonded Fixed Partials Denture

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover –

1. Definition
2. Diagnosis(of the particular situation /patient selection /treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab /Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase

RECOMMENDED BOOKS:

1. Syllabus of Complete denture by - Charles M. Heartwell Jr. and Arthur O. Rahn.
2. Boucher's "Prosthodontic treatment for edentulous patients"
3. Essentials of complete denture prosthodontics by – Sheldon Winkler.
4. Maxillofacial prosthetics by – Willam R.Laney.
5. McCraken's Removable partial prosthodontics
6. Removable partial prosthdontics by – Ernest L. Miller and Joseph E. Grasso.

19. AESTHETIC DENTISTRY

Aesthetic Dentistry is gaining more popularity since last decade. It is better that undergraduate students should understand the philosophy and scientific knowledge of the esthetic dentistry.

1. Introduction and scope of esthetic dentistry
2. Anatomy & physiology of smile
3. Role of the colour in esthetic dentistry
4. Simple procedures (roundening of central incisors to enhance esthetic appearance)
5. Bleaching of teeth
6. Veneers with various materials
7. Prevedntive and interceptive esthetics
8. Ceramics
9. Simple gingival contouring to enhance the appearance
10. Simple clinical procedures for BDS students

Recommended books:

1. Esthetic guidelines for restorative dentistry; Scharer & others
2. Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)
3. Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

20. FORENSIC ODONTOLOGY (30 hrs of instruction)

Definition

Forensic is derived from the Latin word forum, which means 'court of law.' Odontology literally implies 'the study of teeth.' Forensic odontology, therefore, has been defined by the Fédération Dentaire International (FDI) as "that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence, and with the proper evaluation and presentation of dental findings."

Objectives of the undergraduate curriculum

At the end of the programme, the dental graduate should:

1. Have sound knowledge of the theoretical and practical aspects of forensic odontology.
2. Have an awareness of ethical obligations and legal responsibilities in routine practice and forensic casework.
3. Be competent to recognise forensic cases with dental applications when consulted by the police, forensic pathologists, lawyers and associated professionals.
4. Be competent in proper collection of dental evidence related to cases of identification, ethnic and sex differentiation, age estimation and bite marks.
5. Be able to assist in analysis, evaluation, and presentation of dental facts within the realm of law.

Curriculum for forensic odontology

1. Introduction to forensic dentistry
   - Definition and history
   - Recent developments and future trends
2. Overview of forensic medicine and toxicology
   - Cause of death and postmortem changes
   - Toxicological manifestations in teeth and oral tissues
3. Dental identification
   - Definition
   - Basis for dental identification
   - Postmortem procedures
   - Dental record compilation and interpretation
   - Comparison of data, and principles of report writing
   - Identification in disasters and handling incinerated remains
   - Postmortem changes to oral structures
4. Maintaining dental records
   - Basic aspects of good record-keeping
   - Different types of dental records
     - Dental charts
     - Dental radiographs
     - Study casts
     - Denture marking
     - Photographs

- Dental notations
- Relevance of dental records in forensic investigation

5. Age estimation
   - Age estimation in children and adolescents
     - Advantages of tooth calcification over 'eruption' in estimating age
     - Radiographic methods of Schour & Massler, Demirjian et al
   - Age estimation in adults
     - Histological methods – Gustafson's six variables and Johanson's modification, Bang & Ramm's dentine translucency
     - Radiographic method of Kvaal et al
   - Principles of report writing
6. Sex differentiation
   - Sexual dimorphism in tooth dimensions (Odontometrics)
7. Ethnic variations ('racial' differences) in tooth morphology
   - Description of human population groups
   - Genetic and environmental influences on tooth morphology
   - Description of metric and non-metric dental features used in ethnic differentiation
8. Bite mark procedures
   - Definition and classification
   - Basis for bite mark investigation
   - Bite mark appearance
   - Macroscopic and microscopic ageing of bite marks
   - Evidence collection from the victim and suspect of bite mark
   - Analysis and comparison
   - Principles of report writing
   - Animal bite investigation
9. Dental DNA methods
   - Importance of dental DNA evidence in forensic investigations
   - Types of DNA and dental DNA isolation procedures
   - DNA analysis in personal identification
   - Gene-linked sex dimorphism
   - Population genetics
10. Jurisprudence and ethics
    - Fundamentals of law and the constitution
    - Medical legislation and statutes (Dental and Medical Council Acts, etc)
    - Basics of civil law (including torts, contracts and consumer protection act)
    - Criminal and civil procedure code (including expert witness requirement)
    - Assessment and quantification of dental injuries in courts of law
    - Medical negligence and liability
    - Informed consent and confidentiality
    - Rights and duties of doctors and patients
    - Medical and dental ethics (as per Dentists' Act)

Theory sessions and practical exercises

Total hours for the course

- Didactic – 10-12 hours
- Practical – 20-25 hours

Detailed didactic sessions for the above components, either in the form of lectures or as structured student-teacher interactions, is essential. Specialists from multiple disciplines, particularly from legal and forensic sciences, can be encouraged to undertake teaching in their area of expertise.

An interactive, navigable and non-linear (INN) model may also be utilised for education.

Practical exercises (real-life casework and/or simulated cases) must complement didactic sessions to facilitate optimal student understanding of the subject. Mandatory practical training in dental identification methods, dental profiling (ethnic and sex differences, radiographic age estimation), and bite mark procedures, is of paramount importance. In addition, practical exercises/demonstrations in histological age estimation, comparative dental anatomy, DNA methods, medical autopsy, court visits, and other topics may be conducted depending on available expertise, equipment and feasibility.

Approach to teaching forensic odontology

Forensic odontology could be covered in two separate streams. The divisions include a preclinical stream and a clinical stream.

Preclinical stream

- Introduction to forensic odontology
- Sex differences in odontometrics
- Ethnic variations in tooth morphology
- Histological age estimation
- Dental DNA methods

- Bite marks procedures
- Overview of forensic medicine and toxicology

It could prove useful to undertake the preclinical stream in II or III year under Oral Biology/Oral Pathology since these aspects of forensic odontology require grounding in dental morphology, dental histology and basic sciences, which, students would have obtained in I and/or II BDS.

Clinical stream

- Dental identification
- Maintaining dental records
- Radiographic age estimation
- Medical jurisprudence and ethics

It would be suitable to undertake these topics in the IV or V year as part of Oral Medicine and Radiology, since students require reasonable clinical exposure and acumen to interpret dental records, perform dental postmortems and analyse dental radiographs for age estimation.

21. ORAL IMPLANTOLOGY (30 hrs of instruction)

INTRODUCTION TO ORAL IMPLANTOLOGY

Oral Implantology is now emerged as a new branch in dentistry world wide and it has been given a separate status in the universities abroad. In India day to day the practice of treating patients with implants are on rise. In this contest inclusion of this branch into under graduate curriculum has become very essential. The objective behind this is to impart basic knowledge of Oral Implantology to undergraduates and enable them to diagnose, plan the treatment and to carry out the needed pre surgical mouth preparations and treat or refer them to speciality centres. This teaching programme may be divided and carried out by the Dept. of Oral Surgery, Prosthodontics and Periodontics.

1. History of implants, their design & surface characteristics and osseo-integration
2. Scope of oral & maxillofacial implantology & terminologies
3. A brief introduction to various implant systems in practice
4. Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.
5. Soft tissue considerations in implant dentistry
6. Diagnosis & treatment planning in implant dentistry
   Case history taking/Examination/Medical evaluation/Orofacial evaluation/ Radiographic evaluation/ Diagnostic evaluation/ Diagnosis and treatment planning/ treatment alternatives/ Estimation of treatment costs/ patient education and motivation
7. Pre surgical preparation of patient
8. Implant installation & armamentarium for the Branemark system as a role model
9. First stage surgery – Mandible – Maxilla
10. Healing period & second stage surgery
11. Management of surgical complications & failures
12. General considerations in prosthodontic reconstruction & Bio mechanics
13. Prosthodontic components of the Branemark system as a role model
14. Impression procedures & Preparation of master cast
15. Jaw relation records and construction of suprastructure with special emphasis on occlusion for osseointegrated prosthesis
16. Management of prosthodontic complications & failures
17. Recall & maintenance phase.

Criteria for success of osseointegrated implant supported prosthesis

SUGGESTED BOOKS FOR READING

1. Contemporary Implant Dentistry - Carl .E. Misch
   Mosby 1993 First Edition.
2. Osseointegration and Occlusal Rehabilitation Hobo S., Ichida. E. and
   Garcia L.T.
   Quintessence Publishing Company, 1989 First Edition.

22. BEHAVIOURAL SCIENCES (20 hrs of instruction)

GOAL:

The aim of teaching behavioural sciences to undergraduate student is to impart such knowledge & skills that may enable him to apply principles of behaviour –

a) For all round development of his personality
b) In various therapeutic situations in dentistry.

The student should be able to develop skills of assessing psychological factors in each patient, explaining stress, learning simple counselling techniques, and improving patients compliance behaviour.

OBJECTIVES:

A) KNOWLEDGE & UNDERSTANDING:

At the end of the course, the student shall be able to:

1) Comprehend different aspects of normal behaviour like learning, memory, motivation, personality & intelligence.
2) Recognise difference between normal and abnormal behaviour.
3) Classify psychiatric disorders in dentistry.
4) Recognise clinical manifestations of dental phobia, dental anxiety, facial pain, orofacial manifestations of psychiatric disorders, and behavioural problems in children. Addictive disorders, psychological disorders in various dental departments.
5) Should have understanding of stress in dentistry and knowledge of simple counselling techniques.
6) Have some background knowledge of interpersonal, managerial and problem solving skills which are an integral part of modern dental practice.
7) Have knowledge of social context of dental care.

B) SKILLS

The student shall be able to:

1) Interview the patient and understand different methods of communication skills in dentist - patient relationship.
2) Improve patients compliance behaviour.
3) Develop better interpersonal, managerial and problem solving skills.
4) Diagnose and manage minor psychological problems while treating dental patients.

INTEGRATION:

The training in Behavioural sciences shall prepare the students to deliver preventive, promotive, curative and rehabilitative services to the care of the patients both in family and community and refer advanced cases to specialised psychiatric hospitals.

Training should be integrated with all the departments of Dentistry, Medicine, Pharmacology, Physiology and Biochemistry.

PSYCHOLOGY:

1. Definition & Need of Behavioural Science. Determinants of Behaviour. Hrs 1 Scope of Behavioural Science.
2. Sensory process & perception perceptual process- clinical applications.
3. Attention - Definition - factors that determine attention. Clinical application.
4. Memory - Memory process - Types of memory , Forgetting:
   Methods to improve memory, Clinical assessment of memory & clinical applications.
5. Definition - Laws of learning
   Type of learning. Classical conditioning, operant conditioning, cognitive learning, Insight learning, social learning, observational learning, principles of learning– Clinical application.
6. Intelligence- Definition: Nature of intelligencestability of intelligence
   Determinants of intelligence, clinical application
7. Thinking - Definition: Types of thinking, delusions, problem solving
8. Motivation - Definition: Motive, drive, needs classification of motives
9. Emotions - Definition differentiation from feelings – Role of hypothalamus, Cerebral cortex, adrenal glands ANS. Theories of emotion, Types of emotions.
   Personality. Assessment of personality: Questionnaires, personality inventory, rating scales, Interview projective techniques – Rorshach ink blot test , RAT, CAT

SOCIOLOGY:

Social class, social groups – family, types of family, types of marriages, communities and Nations and institutions.

REFERENCE BOOKS:

1. General psychology -- S.K. Mangal
2. General psychology -- Hans Raj, Bhatia
3. General psychology -- Munn
4. Behavioural Sciences in Medical practise -- Manju Mehta
5. Sciences basic to psychiatry -- Basanth Puri & Peter J Tyrer

23. ETHICS (20 hrs. of instruction)

Introduction:

There is a definite shift now from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the health care delivery to prepare themselves to deal with these problems. To accomplish this and

develop human values Council desires that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

Course content:

Introduction to ethics –

- what is ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life?
- Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, DCI Code of ethics.

Ethics of the individual –

The patient as a person.
Right to be respected
Truth and confidentiality
Autonomy of decision
Doctor Patient relationship

Profession Ethics –

Code of conduct
Contract and confidentiality
Charging of fees, fee splitting
Prescription of drugs
Over-investigating the patient
Malpractice and negligence

Research Ethics –

Animal and experimental research/humanness
Human experimentation
Human volunteer research-informed consent
Drug trials

Ethical workshop of cases
Gathering all scientific factors
Gathering all value factors
Identifying areas of value – conflict, setting of priorities
Working our criteria towards decisions

Recommended Reading:

Medical Ethics, Francis C.M., I Ed. 1993, Jaypee Brothers, New Delhi p. 189.

Annexure-A

DENTAL COUNCIL OF INDIA
Revised Internship Programme, 2011

CURRICULUM OF DENTAL INTERNSHIP PROGRAMME.

1. The duration of Internship shall be one year.
2. All parts of internship shall be done in a Dental College duly recognized/approved by the Dental Council of India for the purpose of imparting education and training to Dental graduates in the country.
3. The Internss shall be paid stipendiary allowance during the period of an Internship not extending beyond a period of one year.
4. The internship shall be compulsory and rotating as per the regulations prescribed for the purpose.
5. The degree- BDS shall be granted after completion of internship.

Determinants of Curriculum for internship for Dental Graduates:

The curricular contents of internship training shall be based on.

i) Dental health needs of the society.
ii) Financial, material and manpower resources available for the purpose.
iii) National Dental Health Policy.
iv) Socio-economic conditions of the people in general.
v) Existing Dental as also the primary health care concept, for the delivery of health services.
vi) Task analysis of what graduates in Dentistry in various practice settings, private and government service actually perform.
vii) Epidemiological studies conducted to find out prevalence of different dental health problems, taking into consideration the magnitude of dental problems, severity of dental problems and social disruption caused by these problems.

Objectives:

A. To facilitate reinforcement of learning and acquisition of additional knowledge:-
   a) Reinforcement of knowledge.
   b) Techniques & resources available to the individual and the community; Social and cultural setting.
   c) Training in a phased manner, from a shared to a full responsibility.

B. To facilitate the achievement of basic skills: attaining competence Vs. maintaining competence in:-
   i) History taking.
   ii) Clinical Examination.
   iii) Performance and interpretation of essential laboratory data.
   iv) Data analysis and inference.
   v) Communication skills aimed at imparting hope and optimism in the patient.
   vi) Attributes for developing working relationship in the Clinical setting and Community team work.

C To facilitate development of sound attitudes and habits:-
   i) Emphasis on individual and human beings, and not on disease/symptoms.
   ii) Provision of comprehensive care, rather than fragmentary treatment.
   iii) Continuing Dental Education and Learning of accepting the responsibility.

D To facilitate understanding of professional and ethical principles:-
   - Right and dignity of patients.
   - Consultation with other professionals and referral to seniors/institutions.
   - Obligations to peers, colleagues, patients, families and Community.
   - Provision of free professional services in an emergent situation.

E To initiate individual and group action, leading to disease prevention and dental health promotion, at the level of individuals families and the community.

Content (subject matter)

The compulsory rotating paid Dental Internship shall include training in Oral Medicine & Radiology; Oral & Maxillofacial Surgery; Prosthodontics; Periodontics; Conservative Dentistry; Pedodontics; Oral Pathology & Microbiology; Orthodontics and Community Dentistry.

General Guidelines:

1. It shall be task-oriented training. The interns should participate in various institutional and field programmes and be given due responsibility to perform the activities in all departments of the Dental Colleges and associated Institutions.
2. To facilitate achievement of basic skills and attitudes the following facilities should be provided to all dental graduates:
   - i) History taking, examination, diagnosis, charting and recording treatment plan of cases.
   - ii) Presentation of cases in a group of Seminar.
   - iii) Care and sterilization of instruments used.
   - iv) Performance and interpretation of essential laboratory tests and other relevant investigations.
   - v) Data analysis and inference.
   - vi) Proper use of antibiotics, anti-inflammatory and other drugs, as well as other therapeutic modalities.
   - vii) Education of patients, their relatives and community on all aspects of dental health care while working in the institution as also in the field.
   - viii) Communication aimed at inspiring hope, confidence and optimism.
   - ix) Legal rights of patients and obligations of dental graduate under forensic jurisprudence.

1. **Oral Medicine & Radiology:**

1. Standardized examination of patients	25 Cases
2. Exposure to clinical, pathological laboratory procedures and biopsies.	5 Cases
3. Effective training in taking of Radiographs:	2 Full mouth
(Intra-oral) I.O. (Extra oral) E.O.	1
Cephalogram	1
4. Effective management of cases in wards	2 Cases

2. **Oral and Maxillofacial surgery**

A. The Interness during their posting in oral surgery shall perform the following procedures:

1. Extractions	50
2. Surgical extractions	2
3. Impactions	2
4 Simple Intra Maxillary Fixation	1
5 Cysts enucleations	1
6. Incision and drainage	2
7. Alveoloplasties, Biopsies & Frenectomies, etc.	3

B. The Interness shall perform the following on Cancer Patients:
   1. Maintain file work.
   2. Do extractions for radiotherapy cases.
   3. Perform biopsies.
   4. Observe varied cases of oral cancers.

C. The interness shall have 15 days posting in emergency services of a dental/general hospital with extended responsibilities in emergency dental care in the wards. During this period they shall attend to all emergencies under the direct supervision of oral surgeon during any operation:

1. **Emergencies.**
   (i) Toothache; (ii) trigemminal neuralgia; (iii) Bleeding from mouth due to trauma, post extraction, bleeding disorder or haemophylia; (iv) Airway obstruction due to fracture mandible and maxilla; dislocation of mandible; syncope or vasovagal attacks; ludwig's angina; tooth fracture; post intermaxillary fixation after general Anaesthesia.
2. Work in I.C.U. with particular reference to resuscitation procedures.
3. Conduct tutorials on medico-legal aspects including reporting on actual cases coming to casualty. They should have visits to law courts.

3. **Prosthodontics**

The dental graduates during their internship posting in Prosthodontics shall make:-

1.	Complete denture (upper & lower)	2
2.	Removable Partial Denture	4
3.	Fixed Partial Denture	1
4.	Planned cast partial denture	1
5.	Miscellaneous-like reline/overdenture/repairs of Maxillofacial Prosthesis	1
6.	Learning use of Face bow and Semi anatomic articulator technique	
7.	Crowns	
8.	Introduction of Implants	1

4. **Periodontics**

A. The dental graduates shall perform the following procedures

1.	Prophylaxis	15 Cases
2.	Flap Operation	2 Cases
3.	Root Planning	1 Case
4.	Currettage	1 Case
5.	Gingivectomy	1 Case
6.	Perio-Endo cases	1 Case

B. During their one week posting in the community health centers, the internss shall educate the public in prevention of Periodontal diseases.

5. **Conservative Dentistry**

To facilitate reinforcement of learning and achievement of basic skills, the interns shall perform atleast the following procedures independently or under the guidance of supervisors:

1.	Restoration of extensively mutilated teeth	5 Cases
2.	Inlay and onlay preparations	1 Case
3.	Use of tooth coloured restorative materials	4 Cases
4.	Treatment of discoloured vital and non-vital teeth	1 Case
5.	Management of dento alveolar fracture	1 Case
6.	Management of pulpless, single-rooted teeth without periapical lesion.	4 Cases
7.	Management of acute dento alveolar Infections	2 Cases
8.	Management of pulpless, single-rooted teeth with periapical lesion.	1 Case
9.	Non-surgical management of traumatised teeth during formative period.	

6. **Pedodontics and Preventive Dentistry**

During their posting in Pedodontics the Dental graduates shall perform:

1.	Topical application of fluorides including varnish	5 Cases
2.	Restorative procedures of carious deciduous teeth in children.	10 Cases
3.	Pulpotomy	2 Cases
4.	Pulpectomy	2 Cases
5.	Fabrication and insertion of space maintainers	1 Case

6. Oral habit breaking appliances — 1 Case

7. **Oral Pathology and Microbiology**

The interns shall perform the following:

1. History-recording and clinical examination — 5 Cases
2. Blood, Urine and Sputum examination — 5 Cases
3. Exfoliative Cytology and smears study — 2 Cases
4. Biopsy- Laboratory Procedure & reporting — 1 Case

8. **Orthodontics**

A. The interns shall observe the following procedures during their posting in Orthodontics:

1. Detailed diagnostic procedures for 5 patients
2. Laboratory techniques including wire-bending for removable appliances, soldering and processing of myo-functional appliances.
3. Treatment planning options and decisions.
4. Making of bands, bonding procedures and wire insertions.
5. Use of extra oral anchorage and observation of force values.
6. Retainers.
7. Observe handling of patients with oral habits causing malocclusions.

The dental graduates shall do the following laboratory work:-

1. Wire bending for removable appliances and space maintainers including weldoing and heat treatment procedure. - 5 Cases
2. Soldering exercises, banding & bonding procedures - 2 Cases
3. Cold-cure and heat-cure acrylisation of simple Orthodontic appliances - 5 Cases

9. **Public Health Dentistry**

1. The internss shall conduct health education sessions for individuals and groups on oral health public health nutrition, behavioral sciences, environmental health, preventive dentistry and epidemiology.
2. They shall conduct a short term epidemiological survey in the community, or I n the alternate, participate in the planning and methodology.
3. They shall arrange effective demonstrations of:
   a) Preventive and interceptive procedures for prevalent dental diseases.
   b) Mouth-rinsing and other oral hygiene demonstrations — 5 Cases
   c) Tooth brushing techniques — 5 Cases
4. Conduction of oral health education programmes at
   A) School setting — 2
   B) Community setting — 2
   C) Adult education programmes — 2
5. Preparation of Health Education materials — 5
6. Exposure to team concept and National Health Care systems:
   a) Observation of functioning of health infrastructure.
   b) Observation of functioning of health casre team including multipurpose workers male and female, health educators and other workers.
   c) Observation of atleast one National Health Programme:-
   d) Observation of interlinkages of delivery of oral health care with Primary Health care.

   Mobile dental clinics, as and when available, should be provided for this teachings.

10 **Elective Posting**

The Interns shall be posted for 15 days in any of the dental departments of their choice mentioned in the foregoing.

Organisation of content:

The Curriculum during the 4 years of BDS training is subject based with more emphasis on learning practical skills. During one year internship the emphasis will be on competency-based, community oriented training. The practical skills to be mastered by the interns along with the minimum performance level are given under the course content of different departments of Dental Education. The supervisors should seding it that proper facilities are provided in all departments and attached institutions for their performance.

Specification of teaching activities:

Didactic lectures are delivered during the four years training in BDS. These shall be voided during the internship programme. Emphasis shall be on chair-side teaching, small group teaching and discussions tutorials, seminars, ward posting, laboratory posting, field visits and self learning.

Use of Resource Materials:

Overhead projectors, slide projectors, film projectors, charts, diagrams, photographs, posters, specimens, models and other audiovisual aids shall be provided in all the Dental Colleges and attached institutions and field area. If possible, television, video and tapes showing different procedures and techniques to be mastered by the interns should be provided.

Evaluation

1. **Formative Evaluation:**

   Day-to-day assessment of the internss during their internship posting should be done.The objective ius that asll the interns must acquire necessary minimum skills required for carrying out day-to-day professional work competently. This can be achieved by maintaining records and performance data book by all internss. This will not only provide a demonstrable evidence; of the processes of training but more importantly, of the interns own acquisition of competencies as rolated to performance. It shall form a part of formative evaluation and shall also constitute a component of final grading of interns.

2. **Summative Evaluation:**

   It shall be based on the observation of the supervious of different departments and the records and performance data book maintained by the interns. Grading shall be done accordingly.

11. **Rural Services**

In the rural services, the student will have to participate in-

1. Community Health Monitoring programmes and services which include Preventive, Diagnostic and corrective procedures
2. To create educational awareness about dental hygiene and diseases.
3. Conduction of Oral Health Education Programmes at –
   (a) School Setting - 5
   (b) community Setting - 5
   (c) Adult Education Programme - 5
4. compulsory setup of satellite clinics in remote areas - 1
5. Lectures to create awareness and education in public forums about the harmful effects of tobacco consumption and the predisposition to oral cancer – two Lectures per student.

Period of Postings

1	Oral Medicine & Radiology	-	1 month
2	Oral & Maxillofacial Surgery	-	1 ½ months
3	Prosthodontics	-	1 ½ months
4	Periodontics	-	1 month
5	Conservative Dentistry	-	1 month
6	Pedodontics	-	1 month
7	Oral Pathology and Microbiology	-	15 days

8	Orthodontics	-	1 month
9	Community Dentistry/ Rural Services	-	3 months
10	Elective	-	15 days

MAHARASTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS - FIRST B.D.S

Candidate will be examined in the following subjects:

1. **General human anatomy and embryology and histology**
2. **General human physiology and biochemistry**
3. **Dental materials**

Subject 1 : GENERAL HUMAN ANATOMY AND EMBRYOLOGY AND HISTOLOGY

Duration of the Syllabus :

1)	Lectures - (Minimum)	-	70 hours
2)	Demonstration & Dissection	-	130 hours
	Total		200 hours spread over a period of one academic year

Part A :-

1. Introduction.
2. Anatomical positions, terminology , planes of reference.
3. Basic Concepts of skin & its appendages, bones, muscles, joints, blood vessels, lymphatics & nerves.
4. Details of Anatomy & Osteology of Head & Neck.

   a) Osteology of skull , mandible and cervical vertebrae, Disarticulated maxilla, fetal skull

   b) Temporo-mandibular joint in detail.

   c) Muscles of facial expression, mastication, tongue, palate, pharynx, larynx and scalp.

   d) The Circulatory and Lymphatic systems of Head, Neck & Face.

   e) Study of the cranial nerves & spinal cord. In detail the extracranial courses of V, VII , IX , XI

(Cranial Part) and XII cranial nerves; upper cervical spinal nerves. T.S. of Spinal Cord showing ascending and descending tracts.

f) Salivary Glands.

g) Oral cavity.

h) Nasal cavity & paranasal air sinuses.

i) Pharynx , Larynx , Orbit

j) Thyroid Gland, Pitutary Gland

k) Deep fascia and triangles of neck.

l) Middle ear, tympanic membrane

m) The Brain, Brainstem – major tracts and nuclei. Cerebrum – sulci , gyri, functional areas.

n) Radiological Anatomy of Head and Neck.

5. A) Gross Anatomy of Thorax, Abdomen & Superior Extremity :

i) Typical Intercostal Space.

ii) Mechanism of respiration.

iii) Surface features of the heart & coronory vessels.

iv) The lungs - Surface features & broncho-pulmonary segment.

v) Lecture/Demonstration - Stomach, Duodenum, small intestine, Liver, Pancreas Spleen, Kidney, Ureter , Uterine tube, Ovary , testies, spermatic cord, vasectomy / tubectomy.

B) Gross anatomy of Bones, Muscles, Blood Supply, Lymphatic drainage & Nerve supply of superior extremity.

6. Embryology :

i) General Embryology

ii) Development of Head, Neck, Face & associated anamolies ,

Development of tooth

iii) Genetics - Chromosomes, Karyotyping, numerical structural abnormalities, sex-linked disorders

Part B :

Histology - A course of 30 lectures , demonstrations and practicals covering the following :

1. Epithelium including glands.
2. Connective tissue, Bone and Cartilage
3. Muscle
4. Nervous Tissue
5. Blood Vessels
6. Skin
7. Lymphoid Tissue - Lymph nodes, Spleen, Thymus, Tonsil
8. Oral Tissue - Lip, Tooth including developing tooth, Tongue, Salivary glands.
9. Gastro-intestinal Tract, Esophagus, Stomach, Duodenum, Jejunum, colon, Appendix, Liver, Pancreas.
10. Trachea, Lung
11. Kidney, Ureter, Urinary Bladder.
12. Reproductive System - Testies, Vas deferens, Ovary, Uterine tube, Uterus.
13. Endocrine Glands - Pitutary, Thyroid, Parathyroid, Supra-renal

Part C :

Dissection :

a) In detail of Head , Neck and Face - excluding eye , ear & brain.

b) Superior extremity

c) Demonstration of wet and dry specimens including brain.

Subject II : GENERAL HUMAN PHYSIOLOGY AND BIOCHEMISTRY

Minimum Lectures - 50 hours for Physiology
25 hours for Biochemistry

Practicals - 40 hours for Physiology
30 hours for Biochemistry

Total - 145 hours spread over for a period of one academic year.

1) Introduction to General Physiology :

The cell : Components of Cells and their functions, fundamentals of muscle, nerve physiology, action potential, physiology of muscle contraction, nerve impulse conduction.

2) Blood and Lymph

Composition and Function of Blood

Plasma Protein

R.B.C. - Morphology , formation and functions

W.B.C. - Types , Formation and Function

Blood Coagulation , Blood Groups , Blood Volume and methods of measurement and variations.

Platelets , Anaemia , E.S.R.

Lymph - Formation , Composition , Function.

Oedema.

Immunity - Basic Concepts

Haemoglobin : Basic Chemistry and fate of Haemoglobin.

3) Cardio Vascular System :

General organization of Cardio Vascular system and Haemodynamics

Conduction of Cardiac impulse

Cardiac Cycle

Heart sounds , Pulse

Normal Electro-cardiogram

Regulation - Nervous , Chemical & Hormonal Blood Pressure Regulation

Patho-physiology of shocks , Coronary circulation

Cardiac output

Structure and Physiology of Cardiac Muscle.

4) Respiratory System

General Organization of Respiratory System, Mechanics of Respiration.

Ventilation , Diffusion , Carriage of Respiratory gases

Nervous and Chemical Regulations

Asphyxia , Hypoxia , Cyanosis , Anoxia - Types and Physiological changes.

Artificial Respiration.

5) Digestive Systems

Movements of Digestive Tract including mastication and Deglutition.

Mechanism and control of digestive secretion , digestion and absorption.

Liver and Gall-bladder functions

Bile

Salivary glands and Salivary Secretion in detail.

6) Excretion

Structure and Functions of Kidney.

Formation of Urine - Filtration , Re-absorption and excretion.

Volume , Normal and abnormal constituents.

Physiology of micturation .

7) Skin

Structure and Functions

8) Temperature Regulation

Regulation of Normal body temperature

9) Endocrines

General Organization and regulation of secretions and function of -----

a) Anterior and Posterior pituitary

b) Thyroid

c) Adrenal cortex and medulla

d) Parathyroid , Calcium and Phosphate homeostasis

e) Insulin and Glucagon- Islets of Langerhans

10) Reproductive Systems

a) Male reproductive system - Spermatogenesis , Testosterone

b) Female Reproductive System - Menstruation ,

Preganancy (Hormonal Changes and Preganey Tests)

Family Planning, Physiological basis of Family Planning methods ovary - hormones action

11) Physiological Aspects about Nervous system

General Organization of Nervous system

General Concepts of :-

Receptors , sensation and Synapse

Reflexes and their clinical use : ascending and descending tracts.

Functions of spinal chord , Cerebellum , Basal Ganglia

Hypothalamus : Cerebral Cortrx , Thalamus , Cerebro-spinal Fluid

General concepts of higher functions

Autonomic Nervous System

12) Special Senses

Fundamental knowledge of vision , hearing , taste & smell (Morphology, Pathway, Refractory, errors, Retina, Functions of middle ear and internal ear)

PRACTICALS

Practicals course of 40 hours in Physiology extending over two academic terms and consisting of practical work done by students and of demonstrations as follows:

A) PRACTICALS :

1) Enumeration of Red Blood Cells.
2) Enumeration of White Blood Cells & Differential Count
3) Determination of haemoglobin
4) Determination of Blood groups
5) Determination of bleeding time and clotting time.

B) DEMONSTRATIONS

1) Determination of packed call volume and E.S.R.
2) Demonstration of deep and superficial reflexes
3) E.C.G
4) Lung volumes
5) Artificial respiration.

C) CLINICAL PHYSIOLOGY PRACTICAL

1) Clinical examination of Arterial Pulse.
2) Clinical examination of B.P.
3) Clinical Examination of C.V.S.
4) Clinical Examination of Respiratory System.

BIOCHEMISTRY

A course of 25 hours lectures in Bio-Chemistry comprising the following :

1) Elementary Chemistry of Carbohydrates, lipids and proteins.
2) Enzymes and biological oxidations, elementary considerations.
3) Simple foods and their nutritional value.
4) Vitamins - fat and water soluble vitamins.
5) Digestions - Salivary, gastric and intestinal.
6) Tissue Chemistry - Blood and bone.

7) Nutrition. :

General Metabolism, metabolism of proteins, fat and carbohydrates, vitamins sources, requirement and actions, Basic Principles of diatetics, Enzymes, PH regulation, Calcium , Fluride metabolism and mineralisation.

8) Urine :- Physical characteristics

9) Hormones - Biochemistry of Hormones.

A practical and demonstration course of (35) hours on the following

1) Test for mono, di and polysaccharides and preparation of Osazones.

2) Simple tests for fats and proteins.

1 Protein and Carbohydrate reactions.

2 Chemistry of bread, wheat flour and milk.

3 Chemistry of bile.

4 Spectra of Oxy Hb and carboxy Hb reduced Hb (Demonstration)

5 Urine Report.

6 Salivary digestion of starch.

7 Test for Vitamin A, Vitamin C, Hydrochloric acid, lactic acid.

Subject III : DENTAL MATERIAL

Lectures (Minimum)	40 Hours
Practical & Demonstrations	60 hours

Total

100 Hours.

1) Introduction, Aims and Scope of Dental Materials.

2) Structure & Behaviour of matters.

3) Important Physical properties applicable to Dental Material including their biological considerations.

4) Considerations of following metals & alloy used in Dentistry and the effect of their exposure in mouth

   a) Dental Amalgam
   b) Gold and Gold Foil
   c) Stainless Steel
   d) Chrome - Cobalt alloys
   e) Nickel - Chrome alloys
   f) Casting gold alloys and other alloys used in Dentistry

5) Gypsum Products :- Manufacturing, Chemical, Physical & Mechanical properties, uses & manipulation.

6) Impression Materials -- General requirements, Classification, composition, manipulation, properties and clinical application.

7) Synthetic resins used in Dentistry.

   a) Denture base materials
   b) Repair & reline material
   c) Soft liners & tissue conditioners
   d) Filled and unfilled Resins as Restorative materials.

8) Dental Waxes - Classification, varieties, Composition, Properties, manipulation & uses.

9) Dental Casting investments - Types, Composition, manipulation & properties.

10) Dental Casting procedures (in brief) - Preparation of die/model - Wax pattern, Sprueing, investing - Burnout procedures -Compensation of casting

shrinkage, furnaces and muffles and various casting machines. Defects in casting - finishing & polishing of castings.

11) Welding & Soldering - materials & procedure.

12) Abrasive & polishing agents used in dentistry. Mechanism of tooth cutting, burs & points.

13) Dental Cements - Classification, Composition, manipulation properties and uses. Cavity liners and varnishes, Resin cements.

14) Dental Porcelain - General consideration, classification, condensation, firing

procedure and glazing. Porcelain fused to metals (Metal Ceramics)

Aluminous porcelain & brief introduction about latest advances in porcelain.

15) Root canal filling materials.

16) Die and Models materials.

Electroforming & Electroplating (in brief)

17) Brief introduction to orthodontic materials.

18) Introduction to the materials used for Dental implant.

19) Brief introduction about the materials used for maxillofacial prostheses.

PRACTICALS

a) Demonstration of above materials, their identification.

b) Practicals to be conducted for manipulation & study of properties of impression materials. Denture base material & Dental Waxes, Gypsum products. Dental cements & Dental amalgam to inculcate the manipulating skill in students regarding efficient handling of these materials.

EXAMINATION (THEORY PAPER PATTERN)

i) Each paper shall be of three hours duration and each practical / clinical examination shall not exceed 5 hours duration.

ii) Not more than 30 candidates in clinical / practicals should be examined in one day.

iii) Written (Theory) paper shall have three parts :

A) Multiple Choice Questions (MCQ) for 20 marks - 20 marks questions shall be answered by students in a separate Answer sheet, within first 20 minutes. This answer sheets to be collected by invigilators immediately after 20 minutes completion.

B) 1) Short Answer Questions (SAQ) for 20 marks.

2) Long Answers questions (Essay type) for 20 marks to be answered only after collecting MCQ answer sheet in remining time of 2 hrs 40 min. Short answer question and Essay type questions will be included in Section I & Section II

SPECIFIC DIVISION OF WRITTEN PAPERS

Subject : 1 : General Human Anatomy , Histology , Embryology etc.

Max. Marks - 60

Section A) **:** MCQ 20 marks

i)Anatomy Syllabus	12 Marks
ii)Histology Syllabus	04 Marks
iii)Embryology Syllabus	04 Marks

Section B) **:** 20 Marks

i) SAQ (5 question x 2 marks) 10 Marks

ii) Essay Type Questions 10 Marks

Section C) **:** Division and Marks as Section B 20 Marks

Section B should include the syllabus of

Part A - Topics related to Head, Neck, Face, Gen. Anatomy, Brain

Section C should include the syllabus of

Part A & part B : Topics- Superior Extremity, Embryology, Genetics, Histology,

Thorax and abdomen.

Subject : 2 : General Human Physiology and Biochemistry

Max. Marks - 60

SECTIONA) : MCQ - 20 marks

i) Physiology Syllabus 12 Marks

ii) Biochemistry Syllabus 08 Marks

SECTION B) : Section : I (Physiology) - 24 marks

i) SAQ (6 questions x 2 marks) 12 Marks

ii) Essay type (One full or three short notes) 12 Marks

SECTION C) : (Biochemistry) : 16 Marks

i) SAQ (4 x 2 marks each) 08 Marks

ii) Essay type (One full or two short notes) 08 Marks

Subject 3 : Dental Materials Max. Marks - 60

SECTION A) MCQ :10 Questions on Prosthetic material 20 Marks

10 Questions on Conservative & Orthodontia material.

SECTION B) 20 Marks

(Should include all materials from syllabus which are used for Prosthodontics treatments)

i) SAQ (5 x 2 Marks each) 10 Marks

ii) Essay type 10 Marks

(One full question or 2 short notes)

SECTION C - 20 Marks

(Should include all materials from syllabus which are used for conservative Dentistry and Orthodontic Treatments)

i) SAQ (5 x 2 Marks each) 10 Marks

ii) Essay type (One full question & two short Notes) 10 Marks

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APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for First B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks allotted**	Minimum marks required for awarding distinction
1	General Human Anatomy including Embryology and History	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General Human Physiology and Biochemistry	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Dental Materials	i) Theory (Written) ii) Oral	60 20	- -		

		iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	80 20 100	40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
		Grand Total			600	450

APPENDIX - C

SCHEDULE FOR INTERNAL ASSESSMENT MARKS

To assess the overall progress of the students by evaluating the professional skills he/she has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20 marks each.

2.A) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each

test will have marks as under

		Theory	Practical / Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the

term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination to be conducted as per university Pattern)

2.B) For Final B.D.S. Subjects :- Four College test to be conducted theory as per above pattern in final year only. However, for Clinical Practical test -- 2 test to be conducted in third year teaching during clinical posting and 2 test to be conducted in IV year clinical posting.

3) The pattern of Internal Assessment Examination should be as under :

a) Theory . . . 50 Marks

b) Practical . . . 50 Marks

c) Exception : For community Dentistry the written Examination will be of 40 Marks & Oral will be of 10 Marks.

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in Proforma even in fraction like 35/50 will be shown as 3.5 out of 5 marks.

4) The marks obtained by the candidate in all four examinations, to be amalgamated even with fractions. The fraction, if any, is now to be converted into nearest higher round figure.

5) All the records of these examination theory paper/practical record except work will have to be maintained for one year by the Heads of Departments and will have to be produced to the University authority if required for verification.

6) a) The marks obtained by the students for First, Second internal assessment tests should be submitted in the prescribed proforma (Appendix -

D) to the controller of examination within 15 days of completion of second Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix - D , through the Dean / Principal of the college 20 days before of the commencement of the University Theory Examination by Hand delivery or Register post. The Marksheet should be signed by the candidates, teacher incharge/HOD & Dean/Principal.

7) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks.

8) For repeater and detainee students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule. The best out of two of internal assessment marks (Previous Assessment/New Assessment) to be submitted to the University for the computation of marks

9) In case candidate remains absent on valid ground where his presence elsewhere is justified or when he is unable to attend the Examination on health ground and when he has informed the HOD/Dean about the same before or during the Examination Schedule. Candidate should compensate for this absenty by attending fifth (Extra) Internal Assessment Test. Those students who wants to improve their performance, they ay attend this test.(Entire Syllabus will be included for this 5^{th} tests.)

SCHEME OF EXAMINATION FOR B.D.S

Examination are conducted to assess whether the candidate has acquired the necessary minimum skill and clear concepts of fundamentals essential to his day to day professional work. Examination shall be held twice in a year.

1. Maximum Marks for each subject shall be 200. Community and preventive Dentistry, Preclinical Prothodontics practical and Preclinical Conservative Dentistry practicals will be of 100 marks each.

2. It is essential to inculcate the habit of progressive learning everyday, there is a need to have frequent tests. Minimum of Four tests in each academic year i.e. two in each term, to be conducted by the college as per the schedule of Internal Assessment Examination mentioned in Appendix – C.

3 **Attendance**:

i) Minimum 75% attendance in Theory and 80% in Practical / clinical in each subject in each academic year.

ii) The Dean / Principal is authorized to relax condition (i) above, by granting exemption upto 10% for less attendance on valid ground.

iii) The counting of attendance shall be from the start of the term to the end of the term.

iv) The student, who fails in University examination or do not appear in that particular examination is required to have minimum attendance of 75% both in Theory & Practical / Clinical in the next academic term and also required to work upto the satisfaction of the head of the concerned department in that academic term prior to his appearance in University examination.

v) The student will have to attend minimum 70% Theory / Practical classes in these subjects which are thought in that academic year, but having no examination at the end of that academic year. However, when he appears for University Examination in that subject the student will have to satisfy condition (i) above.

4) The Duration of Examination: As specified in Direction No.22/2001, "Conduct of Examination" issued on 08/08/2001.

5) The Theory Paper Pattern: As specified in Direction No. 22/2001, "Conduct of Examination" (Theory paper pattern)" issued on 08/08/2001.

6) Notwithstanding any thing to contrary, in these rules, no person shall be admitted to
an examination under these rules, if he /she has already passed that examination or an equivalent examination of any other statutory university.

7) If a candidate securing 50% marks in theory and Practical/Clinical+Oral and Internal Assessment separately and having minimum 50% marks in that subject as and aggregate shall be provided an exemption in that subject.

8) The gracing the to pass the examination will be according to direction No. 22/2001" Conduct of Examination" issued on 08/08/2001

9) Any complaint regarding use of "Unfair means" by candidate, paper setter, moderator, invigilator, examiner for practicals / clinicals or paper valuer should reach the office of Controller of Examinations within 48 hours of such incidence in Witting with valid proof. Such complaints must be delt with seriousness, on top priority to maintain sanctity of examination by setting an enquiry and judgement shall be given within 30 days after the incidence reported. The person (s) connected with such episodes and if found guilty shall be debarred from University examination work for a period of minimum 3

years. A person if lodging false complaint will be liable for legal action as per the provision of University act.,

10) Valuation of Answer Books: Central spot valuation system shall be adopted. Approved and experience teachers shall be invited for this job. Strictness and most confidential status has to be maintained. Answer book shall be coded.

11) There shall be one external examiner and one internal examiner. Internal examiner will be from colleges / university area (Regional) to conduct practical / clinical examination in every subject. The examiner shall have minimum experience of 5 years as a approved teachers of the University in that subject with post graduate qualification in that subject.

12) The Dean of the college will be the in charge of the practical / clinical examination center where it is not possible for the dean to discharge this duty, he shall appoint Vice-Dean or senior most Professor to work as Center In-charge with prior intimation.

13) The University shall pay the appropriate remunerations to the center in charge and all others connected with the work of examination. The Dean shall inform the names of those persons before the commencement of University examination at that center.

14) The charges for the materials used for the smooth and proper conduction of University practical/clinical examination work shall be paid by the University on

submission of original receipts of the purchases and certificate from the Dean about such material requirement and consumption. Prior permission from the University shall be obtained by the Dean from University in regards to number of items, materials quantity and approximate cost of the material.

15 <u>List of Materials for Dental Material Practical - (Subhead) Manipulation :</u>

(Allotment by draw system)

1 Dental Plaster

2 Zinc Oxide - Eugenol impression paste

3 Alginate impression material

4 Zinc phosphate cement

5 Impression-

6 Silver alloy & mercury

7 Elastomeric impression material (optional)

8 Glass ionomer cement (optional)

9 Dental Casting investing (optional)

16. Oral (Grand Viva) :

: Maximum 20 Marks alloted for each subject in Oral to be conducted separately examiners and the marks to be submitted in a separate sheet as per the proforma supplied by University (Appendix - F.) Marks to be added to Practical Head.

a) General Human anatomy, Histology e.t.c. : 20 marks to be devided equally amongst the available examiners.

b) General Human Physiology and Biochemistry 20 Marks

i) Oral on physiology Syllabus 12 Marks

ii) Oral on Biochemistry syllabus 08 Marks

c) Dental Material - 20 Marks devided as 12 for Prosthodontic Material and 8 for conservative and Orthodontic material.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

Appendix E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination :_____Summer / Winter _____

Centre : _____

Subject : _____ Max. Marks 80

Sub. 1: General Human Anotomy & Histology etc

ROLL NO.	SPOTING (30 MARKS)				PRACTICAL VIVA-VOCE						TOTAL
	HISTOLOGY SLIDES	BONES	ORGANS	HISTOLOGY SLIDES (IDENTIFICATION WITH DIAGRAM AND LABELING)	BONES	SOFT PARTS	EMBRYOLOGY	RADIOLOGY	ORGANS	RECORDS	
	(10 Slides X 1)	(5 X 1)	(5X1)	(2 Slides X 5 = 10)	(10)	(10)	(05)	(05)	(10)	(10)	(80)

Sub. 2: General Human Physiology & Bio-chemistry

ROLL NO.	HAEMATOLOGY (30 MARKS)	BIOCHEMISTRY (20 MARKS)	CLINICAL PHYSIOLOGY (20 MARKS)	RECORDS BOOKS		TOTAL MARKS 80
				PSYSIOLOGY (5 MARKS)	BIOCHEMISTRY (5 MARKS)	

Sub. 3 : Dental Materials

ROLL NO.	SPOTING 10 X 4 (40 MARKS)	MANIPULATION OF ANY ONE MATERIAL			RECORD BOOK (JOURNAL)	TOTAL 80 MARKS
		RATIO (05)	MANIPULATION OR MIXING (20)	QUALITY OF FINAL PRODUCT (05)	(10)	

External Examiners : **Internal Examiners :**

Name: _____ Name : _____

Signature: _____ Signature : _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

First B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		In figures	**In words**

External Examiners : **Internal Examiners :**

Name: _____ Name: _____

Signature: _____ Signature: _____

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enroll. No.**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Sign. of Students**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date :_____ _____ _____

Signature of Subject Teacher Signature of Head of the Department

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS : FINAL BDS

Candidate will be examined in the following subjects :

1. Prosthodontics
2. Conservative Dentistry including Endodontics.
3. Pedodontics.
4. Oral and Maxillofacial Surgery.
5. Periodontics.
6. Orthodontics.
7. Oral Medicine and Radiology.

Subject 1 : PROSTHODONTICS AND CROWN AND BRIDGE

LECTURES: 50 Lectures.

Complete Denture Prosthodontics :

1. Introduction to Prosthodontics, Terminologies , Aims , Objectives and scope
2. Human Masticatory apparatus : General consideration.
3. Anatomical & Physiological Landmarks of the maxillary and Mandibular Foundations and their significance.
4. Patients education related to complete denture prosthesis.
5. History taking, examination, diagnosis and treatment planning of an edentulous patient.
6. Importance of Diet and Nutrition.
7. Surgical and Non surgical preparation of the patient.
8. Impressions for complete Denture:
   Definition, Objectives.
   Theories and Techniques of impression making.
9. Bordor moulding procedure with special attention to Posterior platal seal area.
   Various techniques for cast preparation.
10) Record Bases and occlusion rims :-
   materials and methods of preparation.
11) Jaw relation records – Methods and instrumentation.
   Orientation relation (Face bow record)
   Vertical Jaw Relation
   Horizontal Jaw Relations.
12) Mandibular Movements and different types of articulators.
13) Selection and arrangement of teeth- Anterior and posterior
   Concepts of occlusion, Balanced occlusion and factors responsible for the same.

14) Try in of waxed up Dentures.

Reproduction of gingival tissue morphology .

15) laboratory procedures ; Elasking , wax elimination, , packing, acrylisation, recovery of dentures.

16) Correction of processing errors – laboratory Remount procedure.

17) Trial insertion of Denture and Clinical Remount procedures.

18) Inserton of denture and instruction to a patient ; Recalls.

19) Repair of Broken denture; Relining & Rebasing of a denture.

20) Problems associated with the use of complete denture and their treatment.

21) Prosthetic Management of poor foundation cases (Atrophied Ridges)

22) Treatment of Abused oral tissues.

23) Recent advances.

B] <u>Removable partial Dentures.</u> :30 Lectures.

1. Introduction to partial denture, various terminologies used in partial denture.
2. Various components of fixed and removable partial denture and their comparison.
3. Classification of partially edentulous dental arches.
4. Dental cast surveyor and use of surveying procedure, path of insertion and removal.
5. Components of partial dentures; Their selection, requirements of design and indications. (principles of designing and stress control)
    a) The partial denture bases.
    b) The artificial teeth.
    c) The Direct Retainer.
    d) The major connector.
    e) The minor connector.
    f) The indirect retainer.
    g) The stress breaker.
    h) The precision attachments.
6. Examination, diagnosis , treatment planning, surveying of diagnostic cast.
7. Preparation of patient to receive partial denture : General preparation.
8. Tooth alteration procedure. Making final impression to get master cast. Various impression procedure and Reviews on materials used.
9. Definitive analysis of master cast, work authorization to Dental Technician.
10. Laboratory procedures related to casting for fabrication of partial denture framework (Audio Visual demonstration.)
11. Trying of cast partial framework in mouth, adjusting the occlusion. The functional impression : Altered cast technique.
12. Jaw Relation record, selection and arrangement of teeth & try-in of denture.
13. Acrylization of partial denture bases-
14. Insertion of Removable partial denture & instructions to patient .
15. Patients Complaints and their solution.
16. Factors influencing magnitude of stress transfer on abutment teeth.
17. Management of Kennedy Cl I & II Cases and Cl III & IV cases.
18. Perioprosthodintic relationship.

FIXED PROSTHODONTICS : Lectures :- 30.

1. Aims and objectives of fixed partial denture prosthesis, and effects of loss of natural tooth/ teeth.
2. Examination & Diagnosis for patient of fixed partial denture .
3. Treatment required prior to fixed denture prosthesis.
4. Oral anatomy, physiology and histology as related to fixed partial denture prosthesis
5. Terminologies related to fixed prosthodontics.
6. Types of fixed partial dentures.
7. Component parts of fixed partial denture - Retainer, Pontic & Connector
8. Abutment selection and Questionable abutment.
9. Individual abutment preparation to receive
    1. acrylic jacket crown
    2. Porcelain fused to Metal jacket crown
    3. Partial veneer.
    4. Metal veneer crowns.
10. Tissue management and gingival dilatation methods.
11. Impression procedures in fixed prosthodontics
12. Temporization procedures.
13. Die preparation and review of materials used for die preparation , Laboratory procedures for fabrication.
14. Try in of fixed partial denture.
15. Cementation of fixed partial denture,
16. Maintenance of fixed partial denture, instructions to patients , recall visits repair of F.P.D. Management of failures in fixed partial denture treatment.
17. Restoration of Endodontically treated tooth.
18. Introduction to adhesive bridges, laminates, All ceramic crowns.

Special Prosthesis : Lectures :- 20

Brief introduction & general consideration.

1. Maxillofacial prosthesis - Aims & objectives, various types , materials used for maxillofacial prosthesis. Obturators & splints.
2. Overdentures, Immediate denture, Intermediate/ Interim or denture Implant denture,
3. Prosthodontic consideration in geriatric patient.

Theory Hours :

1.	Complete Denture	:	50 Hours
2.	R.P.D.	:	30 Hours
3.	Fixed partical Denture	:	30 Hours
4.	Maxillofacial Prosthesis	:	20 Hours
	hand special		
	Total		130 Hours

130 Hours Spread over Ist to IVth BDS

Preclinical Hours : .... 360 Hrs.

Spread over Ist & II BDS.

Clinical Hours : .... 540 Hrs.

Spread over IIIrd & IV BDS.

Total Duration : .... 1000 Hrs.

EXAMINATION PATTERN

I. Theory (Maximum) ---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) Clinical for C.D. .... 60 Marks. (breakup as per proforma)

ii) Chairside Orals .... 15 Marks.

iii) Journal (work reacord) .... 05 Marks.

Total .... 80 Marks

B) i) Oral (Viva Voce) 20 Marks.

(A+B)= 100 Marks

III) Internal Assessment (Theory -20 + Practical – 20) = 40 Marks

Subject 2 : <u>CONSERVATIVE DENTISTRY INCLUDING ENDODONTICS</u> :

Theory Hours ... 70 Hrs. Spread over II,III & IV BDS

Preclinical Hrs .. 240 Hrs. Spread over II BDS.

Clinical Hours ... 360 Hrs. Spread over III rd & IV BDS.

Total Duration ... 670 Hrs.

LECTURES :

1. Definition and scope.
2. Oral Hygiene in relation to conservative dentistry.
3. Instruments-Nomenclature, design and formulae, care and Sterilization.
4. Examination, diagnosis and treatment planning.
5. Charting and recording of cases.
6. Histology of the tooth structure as related to the operative procedures.
7. Hypoplasias, Attrition, abrasion, erosion and their management.
8. Dental caries, etiology, Pathology, Clinical features, Classification diagnosis, prevention & control.
9. Cavities-classification and nomenclature.
10. Choice of filling materials.
11. Principles of cavity preparation, control of pain.
12. Prevention of damage to hard and soft tissue during operative procedures.
13. Methods employed for exclusion of saliva.
14. Bio-Mechanics of cavity design and restoration with filling materials. Pulp and tissue protection. Airotors - high speed equipment, air motor and micromotor Cavity preparation for various types of restorations including onlays inlays

and pinlays, Restorative procedures Matrices.

15. Drugs used in conservative dentistry.
16. Introduction to recent advances in restoration materials and procedures.
17. Fractured teeth and their management, effect of systemic diseases on dental tissues.
18. Sensitive dentine - its management.
19. Ceramics in Conservative Dentistry.
20. Perio-operative problems.
21. Biological aspects of restorative materials.
22. Role of conservative Dentistry in esthitics.
23. Current advances

ENDODONTICS :

1. Definition, aims, objects.
2. Rationale of endodontic therapy, morphology of root canal.
3. Diseases of the pulp and periapical tissue & endodontic entries.
4. Diagnostic aids in Endodontics.
5. Endodontic Instruments.
6. Care and sterilization on instruments for endodontics treatment of vital and non vital pulp. Tests for sterility of the root canal.
7. Drug used in root canal therapy.
8. Biomatarial preparation & obularation of Root canal various techniques and material used.

13. Geriatric endodantics.

10. Bleaching of teeth, Restoration of endodontically treated teeth.
11. Surgical treatment in Endodontics.
12. Emergencies in Endodontics, Endo-Perio Problems.
13. Recent advances.

EXAMINATION PATTERN :

I. Theory (Maximum)---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each .... 20 marks

II. A) CLINICALS

i) History taking ---------- 10 Marks

ii) Cavity preparation for silver Amalgam 25 Marks
modified class II MO or DO
or Class I with Buccal and lingual extention

iii) Base / Lining along with matrix Band adaptation 15 Marks

iv) Permanent filling Restoration with Silver Amalgam
& chair side Orals. 25 Marks.

iv) Record (Clinical Journal) 05 Marks.

Total 80 Marks.

B) i] Oral (Viva Voce) 20 Marks.

(A+B)= 100 Marks

III) Internal Assessment (Theory -20 + Practical – 20) = 40 Marks

Subject 3 : PEDODONTICS

Theory Hours ... 40 Hrs. Spread over III & IV BDS.

Clinical Hours ... 150 Hrs. Spread over III & IV BDS.

Total Duration ... 190 Hrs.

LECTURES :

1. Introduction, definition, scope, practice mangagement and importance of pedodontics.
2. Growth and development of Dental and oro- facial structure and normal occlusion. Developmental anomolies Genetics related to pedodontics.
3. Morphology of Dentitions and its applications :
   a) Allied Morphology and Histology of primary and young permanent teeth.
   b) Importance of first permanent molar.
4. Fundamental of Dental Health.
   a) Biological factors responsible for maintenance of dental and Oral Health.
   b) Contributory Local factors affecting oral health plaque & Saliva etc.
5. Child psychology and management of child patient.
   a. Physical development of child
   b. Milestone of child development & behavioral pattern as narrated in various theories.
   c. Fear & anxiety related to pedodontics.
6. Preventic, intercepative and early corrective orthdontics for children.
7. Examination, diagnosis and treatment planning.
8. Preventive dentistry, fluorides, fissure sealants diet counselling etc.Endemic flurosis.
9. Endodontics in pediatric dentistry.
10. Clinical aspects of pediatric dentistry as related to
    Setting of pedodontic clinic.
    Teeth disorders.
    Development Anomalies
    Dental caries in children
    Restorative Dentistry
    Pulp Therapy and Endodontics
    Space Maintainers & Myofunctional appliances .
    Treatment of traumatized teeth.
    Management of problems of the primary and mixed dentition period,
    Gingival disorders in children.
    Stomatological conditions in children

Management of handicapped children

Mouth habits and their managements.

Epidemology- Definition and general principal

11. Current advances.

CLINICALS

Case history diagnosis & treatment planning of 10 cases.

EXAMINATION PATTERN :

I. Theory (maximum)---------- 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) Case History & Diagnosis	...	35 Marks
ii) Chair side Orals	...	25 Marks.
iii) Treatment Planning	...	10 Marks.
iv) Journal	...	10 Marks.
Total ----------		80 Marks.
B) Oral (Viva Voce)		20 Marks.
A + B =		100 Marks

III. Int. Assessment (Theory 20 + Practical 20) ------- 40 Marks

Subject 4 : ORAL & MAXILLOFACIAL SURGERY.

Theory Hours :

1. Anaesthesia (Local & general) ... 10 Hours
2. Exodontia ... 10 Hours
3. Oral & Maxillofacial Surgery ... 40 Hours

---

60 Hours

Spread over III & IV BDS.

Clinical Hours : .... 220 Hours

Total Duration : .... 280 Hours

LECTURES :

Local Anaesthesia :

1. Introduction, Theories of Local Anaesthesia.
2. Properties of an Ideal Local anaesthetic drug.
3. Classification & Properties of common local anaesthetic drugs in use.
4. Choice of anaesthesia, Local and general anesthesia.
5. Indications and contra-indications, advantages and disadvantages of local anaesthesia.
6. Components of a standard local anaesthetic solution.
7. Mechanism of action of local anaesthesia.
8. Pre-anaesthetic medication.
9. Technique of infiltration anaesthesia, Nerve block Anaesthesia. Signs and Symptoms of anaesthesia.
10. Complications associated with local anaesthesia and their management.

General Anaesthesia :

1. Properties of general anaesthetic drugs commonly used.
2. Pre-anaesthetic preparation of a patient and pre-medication.
3. Evaluation of a patient for general anaesthesia.
4. Short anaesthesia in Oral surgery, Endotracheal Anaesthesia, Intravenous anaesthesia.
5. Signs and Symptoms of general anaesthesia.
6. Complications arising during the administration of general naesthesia and their management.

Exodontia :

1. Objectives.

2. Indications and contra-indication for tooth extraction.
3. Pre-operative assessment.
4. Forcep extraction. (Intra-alveolar extraction.)
5. "Surgical extraction" (Trans-alveolar extraction).
6. Extraction under general anaesthesia in the dental chair.
7. Complications of tooth extraction and their management.

Oral & Maxillofacial Surgery :

1. Introduction of oral and maxillofacial surgery.
2. Diagnosis in Oral Surgery.
   a) History taking
   b) Clinical examination.
   c) Special Investigations.
3. importance of general conditions of the patient in relation to Oral surgery.
4. Instruments used in Oral Surgery.
5. Basic principles of surgery. Sterilization & Asepsis, Suturing techniques.
6. Use of antibiotics in oral surgery.
7. Diagnosis, pre-operative assessment and treatment of impacted teeth.
8. Surgical procedure in relation to endodontic therapy (Apicectomy).
9. Pre-prosthetic surgery including oral implantology
10. Oro-facial infections, their diagnosis and treatment.
11. Inflammatory diseases of jaw bone and their management..
12. Diagnosis and management of Cysts of Oral Cavity.
13. Fractures of facial skeleton, Diagnosis and management.
14. Diagnosis and treatment of benign & malignant neoplastic lesions of the oral cavity (odontogenic & non-odontogenic).
15. Precancerous lesions of oral cavity, diagnosis and management.
16. Surgical Orthodontics - broad outlines.
17. Diseases of Maxillary sinus. with special reference to Oro-antral fistula.
18. Management of haemorrhage and shock in Oral Surgery.
19. Diseases of salivary glands, Diagnosis and Treatment.

20. Diseases of temperomandibular joint & its management.
21. Neurological disorders, Trigeminal Neuralgia & facial palsy.
22. Cleft lip & cleft palate.
23. Emergencies in oral surgery and its management.
24. Recent advances

EXAMINATION PATTERN :

I. THEORY (Maximum)---------- 60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i) History Taking X-ray Interpretation,
Instruments & Drugs ... 20 Marks

ii) Local Anaesthesia Technique ... 15 Marks.

iii) Exodontia Technique ... 25 Marks.

iv) Post Operative instructions,
Management & Chairside orals ... 15 Marks.

v) Journal ... 05 Marks.

Total 80 Marks.

B) Oral (Viva Voce) .. 20 Marks.

A + B = 100 Marks

III. Int. Assessment (Theory 20 + Prct. 20) ... 40 Marks

Subject 5 : <u>PERIODONTICS</u>.

Theory Hours : ..... 60 Hours.

Clinical Hrs. : ..... 220 Hours.

Total Duration : ... 280 Hours. Spread over III & Final BDS

LECTURES :

1. Introduction - Scope and applicability of the subject.
Historical background of periodontology.
2. Maintenance of Health Role and scope of oral physiotherapy measures, patient education programme and perodic check.
3. Etiopathogenesis Classification of gingival and periodontal discares. Defence machanism of oral cavity.
4. Gingival enlargement.
5. Infective muco-gingival conditions-specific and non-specific.

6. Degenerative conditions-Viz disquanative gignivities and Junvenile periodontics (Gingivosis and Periodontosis.)
7. Atrophic conditions affecting gingival and periodontal tissues including aging.Periodontal problems in growing children.
8. Local and systematic factors in the causation of gingival and periodontal lesions.
9. Periodontitis and its sequelae.
10. Malocclusion, Malalignment and traumatic occlusion, Bruxsim and Tempero mandibular joint disturbances, occlusal equilibration.
11. Diagnosis and diagnostic aids including roentgenography and its uses and limitations.
12. Prognosis.
13. Morphological defects of the muco-gingival structures influencing periodontium and their treatment.
14. Treatment of all gingival and periodontal disturbances treatment planning phase and rationale. And periodontal charting Different available therapeutic procedures.
    Healing Mechanism.
15. Role of Nutrition in etiology and treatment of periodontal diseases.
16. Drugs & materials used in periodontics.
17. Instrumentation.
18. Splints.
19. Preventive periodontics.
20. Concept of focal infection.
21. Oral hygiene practices in India.
22. Inter disciplinary care & recent advances, Implants,
23. Systemic effects of periodontal diseases in brief.
24. Recent advances in perirodontics .

EXAMINATION PATTERN :

I.**THEORY** (Maximum)----------60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) CLINICALS

i)	Case History	. 20 Marks
ii)	Instrumentation & Scaling	... 40 Marks.
iii)	Post Operative instructions and chairside orals.	... 15 Marks.
iv)	Journal	... 05 Marks.
	Total ----------	80 Marks.
B)	Oral (Viva Voce) .	20 Marks.
	A + B =	100 Marks.

III. **Internal Assessment** (Theory 20 + Practical 20) ..... 40 Marks.

Subject 6 : ORTHODONTICS.

Theory Hours : ..... 40 Hours.

Practicals & Clinical Hrs. : ..... 150 Hours.

Total Duration : ... 190 Hours. Spread over III & Final BDS

LECTURES :

Stress in lectures should be on the Preventive and Interceptive principles of Orthodontics.

1. Definition, Aims, objects and scope of Orthodontics.
2. Growth and Development of jaws, teeth, face and skull.
3. Genetics as applied to Orthodontics.
4. Normal occlusion and its characteristics. Factors responsible for establishment and maintenance of normal occlusion.
5. Malocculsion-types, different classifications & differential diagnosis.
6. Aetiology of malocclusion.
7. History taking and examination of patient and case analysis and differential diagnosis including photographic analysis, cephalometrics and analysis and treatment planning and prognosis.
8. a) Preventive and interceptive treatment aids of malocclusion.
   b) Space management in orthodontics.
   c) Treatment of Cl I, Cl II, Cl III malocclusions
9. Appliances used in Orthodontic treatment - Adequate knowledge of removable and fixed appliances, Mechanical appliances and functional appliances
10. Biological and biomechanical aspects of Orthodontics treatment.
11. Retention after treatment and relapse.
12. Materials used in Orthodontics.
13. Habit breaking appliances.
14. Surgical Orthodontics.
15. Current advances.

EXAMINATION PATTERN :

I.THEORY (Maximum)---------- 60 MARKS.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. A) PRACTICALS / CLINICALS

i) Wire bending and Preparation of an appliance in wax	...	40 Marks.
ii) Model Analysis (any two indices with brief treatment plan)	...	15 Marks.
iii) Identification of appliances, cephalometric landmarks.	...	20 Marks.
iv) Journal	...	05 Marks.
	Total	80 Marks.
B) Oral (Viva Voce)		... 20 Marks.
A + B =		100 Marks.

III. Internal Assessment (Theory 20 + Prctical. 20) ...40 Marks.

Subject 7 : <u>ORAL MEDICINE, DIAGNOSIS & RADIOLOGY.</u>

Theory Hours : ..... 40 Hours.

Clinical Hrs. : ..... 90 Hours.

Total Duration : ... 130 Hours. Spread over III & IV BDS

LECTURES :

Oral Medicine and Diagnosis :

1. Scope and importance of the subject.
2. Acute infections of oral & perioral structures.
3. Ulcerative & Vesicullobullous lesions of oral cavity.
4. Red and White lesions affecting oralmucosa.
5. Pigmentation of oral-tissues.
6. Diseases of tongue.
7. Diagnosis and differential diagnosis of Caries, Pulpitis & Periodontitis & regressive changes of dentition.
8. Metabolic, allergic and Endocrine disturbances and their oral manifestations.
9. Nutritional deficiencies and their significance in dentistry.
10. Blood dyserasias and their management.
11. Oral sepsis and its effect on general system.
12. Dermatological disorders & their oral manifestations.
13. Disorder of Tempero-mandibular joints.
14. Diseases of Jaw-bone.
15. Diseases of Maxillary-Sinus.
16. Oral Pre-malignant lesions.
17. Benign & malignant neoplasms of oral cavity.
18. Cervico-facial lymphadenopathy.
19. Diseases of salivary glands.
20. Oro-Facial pain.
21. Cysts of the oral cavity.
22. Management of Cardiac patient in dentistry.
23. Methods of diagnosis including special investigations.
24. Immunological concepts of oral lesions, HIV Infection, Hepatitis & other viral infections.
25. Forensic odontology.
26. Recent advances.

RADIOLOGY

1. Physics of radiation Production and properties of X-rays and radiation biology.
2. Principles of X-ray production & fluoroscopy factors affecting procedure radiographs, Intensifying screens and grids and dark room procedures.
3. Technique of intra oral and extra-oral Radiography and normal anatomical land marks.
4. Radiological interpretation of abnormal dental and jaw conditions. & manifestation of systemic disease in jaw.
5. Elements of Radiation treatment in oral and facial conditions and their sequelae.
6. Contrast radiography and recent advances in dental Radiology including Radioactive traces.
7. Recent advances in imaging.

EXAMINATION PATTERN :

I. THEORY(Maximum) 60 Marks.

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II.A) CLINICALS

i) Case History, clinical examination, Diagnosis,treatment planning of a case and chairside orals ... 25 Marks.

ii) Taking an IOPA and processing with Interpretation ... 25 Marks.

iii) Interpretation of five clinical slides/or Radiographs. .... 25 Marks.

iv) Journal ... 05 Marks.

Total ---------- 80 Marks.

B) Oral (Viva Voce) ... 20 Marks.

A + B = 100 Marks.

III) Internal Assessment (Theory -20 , Practical – 20) = 40 Marks

APPENDIX-C

SCHEME OF INTERNAL ASSESSMENT

To assess the overall progress of the students by evaluating the professional skills he/she has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

Maximum marks allotted for internal assessment for each subject head in theory and practical/clinical will be 20 % of the total marks.

In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under:

For final B.D.S. subjects :- Four college tests tube conducted in theory in final B.D.S. only. However for clinical & Practical test – 2 tests to be conducted in 3rd B.D.S. as a post ending test and 2 tests to be conducted in final BDS as a post ending test during clinical posting as under.-

FIRST TERM.

a. First internal (for the syllabus completed from the start of term till commencement of the examination) Unit Test.

b. Second Internal : Should include entire syllabus completed in first term (TERMINAL EXAMINATION)

SECOND TERM

c. Third internal : Should including the topics covered only in the second term till the commencement of the examination (Unit Test)

d. Fourth Internal should include entire syllabus prescribed by the university (PRELIMINARY EXAMINATION)

e. The pattern of Internal Assessment will be as under:

1. THEORY

Written .... 40 Marks.

(Section A : 20 MCQ ... 10 Marks, Section B : 10 SAQ ... 20 Marks, Section C : Two LAQ ... 10 Marks,)

Oral .... 10 Marks.

Total -------- 50 Marks.

2. PRACTICAL/CLINICAL ..... 50 Marks.

The marks for each test will be brought down to ... 5 Marks.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

APPENDIX-E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination : Final B.D.S. Summer / Winter 200___

Centre : _____

1) SUBJECT : PROSTHODONTIC, CROWN AND BRIDGE Max. Marks 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Checking of Special Tray/or Record Bases (To Be kept ready by the Student) (10)	Border Moulding Procedure or Establishing Vertical Jaw Relation (25)	Final Impression or Recording Centric Jaw Relation (25)	History and Examinations T/P and Chair Side Orals Related to Clinical Work (15)	Clinical Work Record (Journel) (5)	Total (80)

2) SUBJECT : CONSERVATIVE DENTISTRY INCLUDING ENDOTONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	History taking Examinations and Treatment Planning (10)	Cavity Preparation for Silver Arnolgum Modified Class II MO. or DO or Class one Cavity with Buccal or Lingual Extentions (25)	Base/Lining alwong with Materix Band adapation (15)	Registration with Dental Amalgum and Chair side orals related with exercises (25)	Clinical Work Record (5)	Total (80)

3) SUBJECT : PEDODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case Exam. of a Child History taking and Diagnesis (35)	Chair Side Orals (25)	Treatment Planning (10)	Record (Journal) (10)	Total (80)

4) SUBJECT : ORAL MAXILLOFACIAL SURGERY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. X-ray Enterpretation Instruments and Drugs. (20)	Local Anaesthesia Technique (15)	Exodontia Technique (25)	Post Operative Instructions, Management and Chair Side Orals (15)	Journal (5)	Total (80)

5) SUBJECT : PERIODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. Treatment Planning (20)	Scalling and Polishing and Instrumentation (40)	Post Operative Instructions and Chair Side Orals (15)	Journal (5)	Total (80)

6) SUBJECT : ORTHODONTICS Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Wire Bending and preparation of an appliance in Wax (40)	Model Analysis (Any tow indices with Brief Treatment Plan) (15)	Identification of Appliances Cephalomteric Landmarks (20)	Journal (5)	Total (80)

7) SUBJECT : ORAL MEDICINES (ORAL DIAGNOSIS) RADIOLOGY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Clinical Case History Exam. Treatment Planning and Chair side Oral (25)	Taking IOPA and Processing with Interpretation (25)	Interpretation of Five Clinical Slides or Radiographs (25)	Journal (5)	Total (80)

NAME AND SIGNATURE OF EXAMINERS

1) External Examiner : _____ _____

2) Enternel Examiner :_____ _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Final B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name: _____

Signature: _____

APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for Final B.D.S Examination

Sr.No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	Prosthodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	Conservative Dentistry including Endodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Pedodontics	i) Theory (Written) ii) Oral	60 20	- -		

		iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	80 20 100	40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Oral and Maxillofacial Surgery	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
5	Pedodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		

6	Orthodontics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
7	Oral Medicine and Radiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
				Grand Total	1400	1050

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

Signature of Subject Teacher) (Signature of Head of the Department)

Duration of the Courses:

The undergraduate dental training programme leading to BDS degree shall be of 4 (four) Academic years with 240 teaching days in each academic year, plus one year paid rotating internship in a dental college. Every candidate will be required, after passing the final BDS examination, to be undergo one year paid rotating internship in a dental college. The detailed curriculum of Dental Internship Dental Programme is annexed as Annexure-A

The Internship shall be compulsory and BDS Degree shall be granted after completion of one year paid internship.

During this period, the student shall be required to have engaged in full time study at a dental college recognized or approved by the Dental Council of India.

Migration:

Migration from one dental college to other is not a right of a student. However, migration of students from one dental college to another dental college in India may be considered by the Dental council of India. Only in exceptional cases on extreme compassionate ground*, provided following criteria are fulfilled. Routine migrations on other ground shall not be allowed.

Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought, are recognised by the Dental Council of India.

The applicant candidate should have passed first professional BDS examination.

The applicant candidate submits his application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the first professional Bachelor of Dental Surgery (BDS) examination.

The applicant candidate must submit an affidavit stating that he/she will pursue 240 days of prescribed study before appearing at IInd professional Bachelor of Dental Surgery (BDS) examination at the transferee dental college, which should be duly certified by the Registrar of the concerned University in which he/she is seeking transfer. The transfer will be applicable only after receipt of the affidavit.

Note 1:

(i) Migration is permitted only in the beginning of IInd year BDS Course in recognized Institution.

All applications for migration shall be referred to Dental Council of India by college authorities. No Institution / University shall allow migrations directly without the prior approval of the Council.

Council reserved the right, not to entertain any application which is not under the prescribed compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

Note 2: *compassionate ground criteria:

Death of supporting guardian.

Disturbed conditions as declared by Government in the Dental College area.

III. Attendance requirement, Progress and Conduct

75% in theory and 75% in practical / clinical in each year.

In case of a subject in which there is no examination at the end of the academic year / semester, the percentage of attendance shall not be less than 70%.

However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (i) above.

IV. Subjects of Study:

First Year

General Human Anatomy including Embryology and Histology

General Human Physiology and Biochemistry, Nutrition and Dietics

Dental Anatomy, Embryology and Oral Histology

Dental Materials

Pre-clinical Prosthodontics and Crown & Bridge

Second Year

General Pathology & Microbiology

General and Dental Pharmacology and Therapeutics

Dental Materials

Pre clinical Conservative Dentistry

Pre clinical Prosthodontics and Crown & Bridge

Oral Pathology & Oral Microbiology

Third Year

General Medicine

General Surgery

Oral Pathology and Oral Microbiology

Conservative Dentistry and Endodontics

Oral & Maxillofacial Surgery

Oral Medicine and Radiology

Orthodontics & Dentofacial Orthopaedics

viii)Paediatric & Preventive Dentistry

Periodontology

Prosthodontics and Crown & Bridge

Fourth Year

Public Health Dentistry

Periodontology

Orthodontics & Dentofacial orthopaedics

Oral Medicine & Radiology

Oral & Maxillofacial Surgery

Conservative Dentistry and Endodontics

Prosthodontics and Crown & Bridge

Paediatric & Preventive Dentistry

OR

Part I

Public Health Dentistry

Periodontology

Orthodontics & Dentofacial orthopaedics

Oral Medicine & Radiology

Part II

Oral & Maxillofacial Surgery

Conservative Dentistry and Endodontics

Prosthodontics and Crown & Bridge

Paediatric & Preventive Dentistry

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY

(BDS COURSE)

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology Biochemistry	120 70	60 60		180 130
Dental Materials	80	240		320
Dental Anatomy Embryology, Oral Histology	105	250		355
Dental Pharmacology & Therapeutics	70	20		90
General Pathology Microbiology	55 65	55 50		110 115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Microbiology	145	130		275
Oral Medicine and Radiology	65		170	235
Paediatric and Preventive Dentistry	65		170	235
Orthodontics and Dental orthopaedics	50		170	220
Periodontology	80		170	250
Oral Maxillofacial Surgery	70		270	340
Conservative Dentistry and Endodontics	135	200	370	705
Prosthodontics and Crown and Bridge	135	300	370	805
Public Health Dentistry	60		200	260
Total	**1590**	**1540**	**1989**	**5200**

Note : *There should be a minimum of 240 teaching days each academic year consisting of 8 working hours including one hour of lunch break.*

Internship – 240X8 hours-1920 clinical hours

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY

(BDS COURSE)

I. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Materials	20	40		60
Dental Anatomy Embryology, Oral Histology	105	250		355
Pre clinical Prosthodontics and crown and bridge	-	100		100
Total	**415**	**685**		**1100**

II. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General & Dental Pharmacology & Therapeutics	70	20		90
General Pathology	55	55		110
Microbiology	65	50		115
Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre clinical Prosthodontics and crown & Bridge	25	200		225
Pre Clinical Conservative Dentistry	25	200		225
Total	**325**	**775**		**1100**

III. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120		80	200
Oral Medicine and Radiology	20		70	90
Paediatric and Preventive Dentistry	20		70	90
Orthodontics and dentofacial orthopaedics	20		70	90
Periodontology	30		70	100
Oral & Maxillofacial Surgery	20		70	90
Conservative Dentistry & Endodontics	30		70	100
Prosthodontics and Crown & Bridge	30		70	100
Total	**410**		**750**	**1160**

IV. B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Prosthodontics	80		300	380
Oral Medicine & Radiology	45		100	145
Periodontics	50		100	150
Public Health Dentistry	60		200	260
Conservative Dentistry	80		300	380
Oral Surgery	50		200	250
Orthodontics	30		100	130
Pedodontics	45		100	145
Total	**440**		**1400**	**1840**

HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS

GOAL

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures. So that relevant anatomical and scientific foundations are laid down for the clinical years of the BDS course.

B) OBJECTIVES :

a) KNOWLEDGE AND UNDERSTANDING :

At the end of the 1st year BDS Course in Anatomical Sciences the undergraduate student is Expected to :

Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.

Know the anatomical basis of disease and injury.

Know the microscopic structure of the various tissues, a pre requisite for understanding of the disease processes.

Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.

Have an idea about the basis of abnormal development critical stages of development, effect of teratogens, genetic mutations and environmental hazards.

Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.

Know the anatomy of cardio-pulmonary resuscitation.

b) SKILLS

To locate various structures of the body and to mark the topography of the living anatomy.

To identify various tissues under microscope.

To identify the features in radiographs and modern imaging techniques.

To detect various congenital abnormalities.

C) INTEGRATION :

By emphasizing on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences and clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

This insight is gained in a variety of ways :

Lecturers and small group teaching

Demonstrations

Dissection of the human cadaver

Study of dissected specimens

Osteology

Surface anatomy on living individual

Study of radiographs and other modern imaging techniques

Study of Histology slides

Study of embryology models.

Audio visual aids.

Throughout the course, particular emphasis is placed on the functional correlation, clinical application and on integration with teaching in other bio dental disciplines.

D) AN OUTLINE OF THE COURSE CONTENT :

General anatomy : Introduction of anatomical terms and brief outline of various systems of the body.

Regional anatomy of head and neck with osteology of bones of head and neck with emphasis on topics of dental importance.

General disposition of thoracic, abdominal and pelvic organs.

The regional Anatoly of the sites of intramuscular and intra vascular injections and lumbar puncture

General embryology and systemic embryology with respect to development of head and neck.

6. Histology of basic tissues and of the organs of gastrointestinal, respiratory endocrine, excretory systems and gonads

7. Medical genetics.

E) FURTHER DETAILS OF THE COURSE:

I. INTRODUCTION TO :

Anatomical terms

Skin, superficial fascia and deep fascia

Cardiovascular system, portal system collateral circulation and arteries.

Lymphatic system, regional lymph nodes

Osteology - including ossification and growth of bones

Myology - Including types of muscle tissue and innervation

Syndesmology - including classification of Joints

Nervous system

II. HEAD & NECK :

01. Scalp, face and temple, lacrimal apparatus 02. Neck - Deep fascia of neck, posterior triangle suboccipital triangle, anterior triangle, anterior median region of the neck deep structure in the neck. 03. Cranial cavity - Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland. 04. Cranial nerves - III, IV, V, VI, VII, IX,, XII in detail. 05. Orbital Cavity - Muscles of the eye ball, supports of the eye, ball, nerves and vessels in the orbit. 06. Parotid gland. 07. Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo - palatine fossa. 08. Submandibular region. 09. Walls of the nasal cavity, paranasal air sinuses. 10. Palate. 11. Oral cavity, Tongue 12. Pharynx (palatine tonsil and the auditory tube) Larynx. OSTEOLOGY - foetal skull, adult skull, individual bones of the skull , hyoid bone and cervical vertebrae.

III. THORAX : Demonstration on a dissected specimen of

Thoracic wall

Heart Chambers

Coronary arteries

Pericardium

5, Lungs - surfaces ; pleural cavity

6. Diaphragm

IV. ABDOMEN : Demonstration on a dissected specimen of

Peritoneal cavity

Organs in the abdomonial and pelvic cavity

V. CLINICAL PROCEDURE :

a) Intramuscular injections : Demonstration on a dissected specimen and on a living person of the following sites of injection.

Deltoid muscles and its relation to the axillary nerve and radial nerve.

Gluteal region and the relation of the sciatic nerve.

Vastus lateralis muscle.

Intravenous injections and venesection : Demonstration of veins in the dissected specimen and on a living person.

1. Median cubital vein 2. Cephalic Vein 3. Basilic vein 4. Long saphenous vein

Arterial pulsations : Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.

1. Superficial temporal 2. Facial 3. carotid 4. Axillary 5. Brachial 6. Radial 7. Ulnan Femoral
9. Popliteal 10. Dorsalispedis

d) Lumbar puncture: Demonstration on a dissected specimen of the spinal cord cauda equine and epidural space and the inter vertebral space between L4 & L5

VI. EMBRYOLOGY

Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation and fate, Pharyngeal arches, pouches and clefts, Development of face, tongue, palate, thyroid gland, pituitary gland, salivary glands and anomalies in their development, Tooth development in brief.

VII. HISTOLOGY :

The Cell :

Basic Tissues - Epithelium, connective tissue including cartilage and bone, Muscle Tissues, nervous tissue : Peripheral Nerve, optic nerve, sensory ganglion, motor ganglion, skin.

Classification of Glands

Salivary glands (serous, mucous and mixed gland), Blood vessels, Lymphoid tissue Tooth, lip, tongue, hard palate, oesphagus, stomach, duodenum, ileum, colon, vermiform appendix Liver, Pancreas, Lung, Trachea, Epiglottis, Thyroid gland, para thyroid gland, supra renal gland and pituitary gland, kidney, ureter, Urninary bladder, Ovary and testis.

VIII. MEDICAL GENETICS :

Mitosis, meiosis, Chromoscomes, gene structure, Mendelism, modes of inheritance

RECOMMENDED BOOKS :

SNELL (Richrad S.) Clinical Anatomy for Medical students Ed. 5, Little Brown & Company Boston.

RJ. LAST's Anatomy : McMinn, 9th edition.

ROMNANES (G.J.) Cunningham Manual of Practical Anatomy : Head & Neck & Brain Ed. Vol. III, Oxford Medical Publication.

WHEATER, BURKITT & DANIELS, Functuional Histology, Ed. 2, Churchill Livingstone.

SADLER, LANGMAN'S, Medical Embryology, Ed. 6.

JAMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.

WILLIAMS, Gray's Anatomy, Ed. 38., Churchill Livingstone.

EMERY, Medical Genetics.

Text book of Human Histology with Colour Atlas - Inderbir Singh, 5th Edition

10. B.D. Chaurasiya's Hand Book of General Anatomy - B. D. Chaurasiya – 3rd Edition

11. Human Embryology - Inderbir Singh, C P Pal – 8th Edition

B D Chaurasiya's Human Anatomy Regional & Applied - B.D. Chaurasiya- 5th Edition Vol. I, II, III

Anand's Human Anatomy Complete book for Dental Students (A text book of human Anatomy) - Mahindra Kr. Anand - 1st Edition

Text book of Anatomy with Colour Atlas - Inderbir Singh 4th Edition, Vol. I, II, III

2. HUMAN PHYSIOLOGY

A) GOAL

The broad goal of the teaching undergraduate students in Human Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

OBJECTIVE :

a) KNOWLEDGE :

At the end of the course, the student will be able to :

1. Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.

Assess the relative contribution of each organ systems towards the maintenance of the milieu interior.

List the physiological principles underlying the pathogenesis and treatment of disease.

b) SKILLS :

At the end of the course, the student shall be above to :

Conduct experiments designed for the study of physiological phenomena.

Interpret experimental and investigative data.

Distinguish between normal and abnormal data derived as a result of tests which he / she has performed and observed in the laboratory.

c) INTEGRATION :

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

B) COURSE CONTENT THEORY

1. GENERAL PHYSIOLOGY

Homeostasis: Basic concept, Feed back mechanisms.

Structure of cell membrane, transport across cell membrane.

Membrane potential.

2. BLOOD

Composition & functions of blood

Specific gravity, packed cell volume, factors affecting & methods of determination.

Plasma proteins : Types concentration, functions & variations.

Erythrocyte - Morphology, functions & variations. Erythropoietin & factors affecting erythropoiesis.

ESR - Methods of estimation, factors affecting, variations & significance.

Haemoglobin - Normal concentration, method of determination & variation in concentration. Blood Indices - MCV, MCH,MCHC - definition, normal values, variation.

Anaemia - Definition. classification, life span of RBCs destruction of RBCs, formation & fate of bile pigments, Jaundice - types.

Leucocytes : classification, number percentage, distribution morphology, properties, functions & variation. role of lymphocytes in immunity, leucopoiesis life span & fate of leucocytes.

Thromobocytes - Morphology, number, variations, function & thrombopoiesis.

Haemostatsis - Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.

Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action. Bleeding disorders.

Blood groups : ABO & Rh system method of determination, importance, indications & dangers of blood transfusion, blood substitutes.

Blood volume : Normal values variations.

Body fluids : distribution of total body water, intracellular & extra cellular compartments, major anions & cations in intra and extra cellular fluid.

Tissue fluids & lymph : Formation of tissue fluid, composition, circulation and functions of lymph. Oedema - causes.

Functions of reticulo endotrelial system.

3. MUSCLE AND NERVE

classification of nerves, structure of skeletal muscle - Molecular mechanism of muscle contraction, neuromuscular transmission. Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.

4. DIGESTIVE SYSTEM :

Introduction to digestion : General structure of G.I. tract, Innervation

Salivary glands : Structure of salivary glands, composition, regulation of secretion and functions of saliva.

Stomach : composition and functions of gastric juice, mechanism and regulation of gastric secretion.

Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.

Liver : structure, composition of bile, functions of bile, regulation of

secretion Gall bladder : structure, functions

Small intestine - Composition, functions & Regulation of secretion of intestinal

juice. Large Intestine - Functions

Motor functions of GIT : Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

5. EXTRETORY SYSTEM :

Structure & functions of kidney, functional unit of kidney & functions of different

parts. Juxta glomerular apparatus, renal blood flow.

Formation of Urine : Glomerular filteration rate - definition, determination, normal values, factors influencing G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion Secretion of urea, hydrogen & other substances.

Mechanism of concentration & dilution of urine.

Role of kidney in the regulation of pH of the blood.

Micturition : anatomy & innervation of Urinary bladder, mechanism of miturition & abonrmalities

BODY TEMPERATURE & FUNCTIONS of SKIN

ENDOCRINOLOGY

General endocrinology - Enumeration of endocrine glands & hormones - General functions of endocrine system, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of harmonous.

Hormones of anterior pituitary & their actions, hypothamic regulation of anterior pituitary function. Disorders of secretion of anterior pituitary hormones.

Posterior pituitary : Functions, regulation & disorders of secretion.

Thyroid : Histology, synthesis, secretion & transport of hormones, actions of hormones regulation of secretion & disorders, Thyroid function tests.

Adrenal cortex & Medulla - synthesis, secretion, action, metabolism, regulation of secretion of hormones & disorders.

Other hormones - Angiotensin A.N.F.

8. REPRODUCTION

Sex differentiation, Physiological anatomy of male and female sex organs,

Female reproductive system: Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones tests for ovulation, fertilization, implantation, material changes during pregnancy, pregnancy tests & parturition.

Lactation, composition of milk factors controlling lactation, milk ejection, reflex,

Male reproductive system : spermatogenesis, semen and contraception.

9. CARDIO VASCULAR SYSTEM

Functional anatomy and innervation of heart properties of cardiac

muscle. Origin & propagation of cardiac impulse and heart block.

Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.

Cardiac cycle - Phases, Pressure changes in atria,, ventricles &

aorta. Volume changes in ventricles. Jugular venous pulse, arterial

pulse. Heart sounds : Mention of murmurs

Heart rate : Normal value, variation & regulation

Cardiac output : Definition, normal values, one method of determination, variation factors affecting heart rate and stroke volume.

Arterial blood pressure : Definition, normal values & variations, determinants, regulation & measurement of blood pressure.

coronary circulation.

Cardio vascular homeostasis - Exercise & Posture.

10. RESPIRATORY SYSTEM

Physiology of Respiration: External & internal respiration

Functional anatomy of respiratory passage & lungs.

Respiratory movements : Muscles of respiration, mechanism of inflation & deflation of lungs

Intra pleural & intra pulmonary pressures & their changes during the phases of respiration. Mechanics of breathing - surfactant, compliance & work of breathing.

Spirometry : Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.

Pulmonary ventilation - alveolar ventilation & dead space - ventilation

Composition of inspired air, alveolar air and expired air.

Exchange of gases : Diffusing capacity, factors affecting it

Transport of Oxygen & carbon dioxide in the blood

Regulation of respiration - Neural & chemical

Hypoxia cyanosis, dyspnoea, periodic breathing

Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM

Organization of central nervous system

Neuronal organization at spinal cord level

Synapse receptors, reflexes, sensations and tracts

Physiology of pain

Functions of cerebellum thalamus, hypothalamus and cerebral cortex

Formation and functions of CSF

Autonomic nervous system

12. SPECIAL SENSES

Fundamental knowledge of vision, hearing taste and smell

PRACTICALS

The following list of practical is minimum and essential. all the practical have been categorized as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorized as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURE

Enumeration of Red Blood Cells

Enumeration of White Blood Cells

Differential leucocyte counts

Determination of Haemoglobin

Determination of blood group

Determination of bleeding time and clotting time

Examination of pulse

Recording of blood pressure.

DEMONSTRSTION

Determination of packed cell volume and erythrocyte sedimentation rate

Determination of specific gravity of blood

Determination of erythrocyte fragility

Determination of vital capacity and timed vital capacity

Skeletal muscle experiments

study of laboratory appliance in experimental physiology. Frog's gastocneminus sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of work done.

Electrocardiography : Demonstration of recording of normal Electro cardiogram

Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS

Guyton ; Text book of Physiology, 9th edition

Ganong ; Review of medical Physiology, 19th edition

Vander, Human Physiology, 5th edition

Choudhari ; Concise Medical Physiology, 2nd edition

Chaterjee : Human Physiology, 10th edition

A.K. Jain : Human Physiology for BDS students, 1st edition.

BOOKS FOR REFERENCE

Berne & Levey ; Physiology, 2nd edition

Vest-Best & Taylor's Physiological basis of Medical Practise, 11th edition

EXPERIMENTAL PHYSIOLOGY ;

Rannade ; Practical Physiology, 4th edition

Ghai; a text book of practical physiology

Hutchison's ; Clinical Methods, 20th edition

BIOCHEMISTRY

AIMS AND SCOPE OF THE COURSE IN BIOCHEMISTRY

The major aim is to provide a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental / medical practice. The contents should be organized to build on the already existing information available to the students in the pre university stage and reorienting. A mere rehash should be avoided.

The chemistry portion should strive towards providing information on the functional groups, hydrophobic and hydrophilic moieties and weak valence forces that organize macromolecules. Details on structure need not be emphasized.

Discussion on metabolic processes should put emphasis on the overall change, interdependence and molecular turnover. While details of the steps may be given, the student should not be expected to memories them,. An introduction to biochemical genetics and molecular biology is a must but details should be avoided. The exposure to antivitamins, antimetabolites and enzyme inhibitors at this stage, will provide a basis for the future study of medical subjects. An overview of metabolic regulation is to be taught by covering hormonal action, second messengers and regulation of enzyme activities. Medical aspects of biochemistry should avoid describing innumerable functional tests, most of which are not in vogue. Cataloguing genetic disorders under each head of metabolism is unnecessary. A few examples which correlate genotype change to functional changes should be adequate.

At the end of the course of the students would be able to acquire a useful core of information which can be retained for a long time. Typical acid tests can be used to determine what is to be taught or what is to be learnt. A few examples are given below.

Need not know the structure of cholesterol. Should kbnow why it cannot be carried free in plasma

Mutarotation should not be taught. Student should know why amylase will not hydrolyse cellulose.

Need not know the details of alpha - helix and beta - pleats in proteins should know why haemoglobin is globular and keratin is fibrous.

Need not know mechanism of oxidative phosphorylation.

Should know more than 90% of ATP is formed by this process

5. Need not know details of the conversion of pepsinogen to pepsin

Should know hydrochloric acid cannot break a peptide bond at room

temperature. 6. Need not remember the steps of glycogenesis.

should know that excess intake of carbohudrate will not increase glycogen level in liver or muscle.

7. Need not know about urea or cretinine clearance tests.

Should know the basis of increase of urea and cretinine in blood in renal insufficiency.

8. Need not know the structure of insulin

should know why insulin level in circulation is normal in most cases of maturity onset diabetes.

9. Need not know the structural details of ATP.

Should know why about 10 g of ATP in the body at any given time meets all the energy needs. 10. Need not know the mechanism of action of prolyhydroxylase

should know why the gum bleeds in scurvy.

11. Need not know the structure of vitamin K.

Should know the basis of internal bleeding arising due to its deficiency.

12. Need not remember the structure of HMGCoA.

should know why it does not lead to increased cholesterol synthesis in starvaticn.

BIOCHEMISTRY & NUTRITION

1. CHEMISTRY OF BIOORGANIC MOLECULES

Carbohydrates : Definition, Biological importance and classification. Monosaccharides - Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structure of starch and glycogen.

Lipids : Definition, biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups. Cholesterol. Bile salts. Micelle. Bimolecular leaflet.

Proteins : Biological importance. Aminoacids : Classification. Introduction to peptides. Proteins : simpe and conjugated ; globular and fibrous. Charge properties. Buffer action. Introduction to protein conformation : Denaturation.

Nucleic acids : Building units, Nucleotides. Outline structure of DNA and RNA.

High energy compounds : ATP, Phosphorylamidines, Thiolesters, Enol phosphates.

2. MACRONUTERIENTS AND DIGESTION

Energy needs : Basal metabolic rate. dietary carbohydrates, fibres. Dietary lipids, essential fatty acids. Nitrogen balance. Essential amono acids. Protein quality and requirement (methods for evaluation of protein quality to be excluded). Protein calorie malnutrition. Balanced diet.

Enzymatic hydrolysis of dietary carbohydrates. Mechanism of uptake of monosaccharides.

Digestion and absorption of triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.

3. MICRONUTRIENTS :

Vitamins : Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water- soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation. Introduction to antivitamins and hypervitaminosis.

Minerals : Classification, daily requirement. Calcium and phosphate: sources, uptake, excretion, function, serum calcium regulation. Iron : Sources uptake and transport.

Heme and nonheme iron functions deficiency. Iodine; Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride : function, deficiency and excess indications of role of other minerals.

4. ENERGY METABOLISM

Overview : Outline of glycolysis pyruvate oxidation and citric acid cycle. Beta oxidation of fatty acids. Electron transport chain and oxidative phosphyorylation. Ketone body formation and utilization. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism. Protein utilization for energy. Glucogenic and ketogenic amino acids. Integration of metabolism.

5. SPECIAL ASPECTS OF METABOLISM

Importance of pentose phosphate pathway. Formation of glucuronic acid. Outlines of cholesterol synthesis and breakdown. Ammonia metabolism. Urea formation phosphocretine formation. Transmethylation. amines. Introduction to other functions of amino acids including one carbon transfer. Detoxication : Typical reactions. Examples of toxic compounds. Oxygen toxicity.

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS

Introduction to nucleotides formation and degradation. DNA as genetic material. Introduction to replication and transcription. Forms and function of RNA. Gnetic code and mutation. Outline of translation process. Antimetabolies and antibiotics interfering in replication. transcription and translation. Introduction to cancer, viruses and oncogenes.

7. ENZYME AND METABOLIC RELATION

Enzymes : definition, classification, specificity and active site. Cofactros. Effect of pH temperature and substrate concentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction / repression.

Overview of hormones, Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action steroid hormones, epinephrine, glucagons and insulin in brief. Acid base regulation. Electrolyte balance.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

Connective tissue : Collagen and elastin. Glycosaminoglycans. Bone structure. Structure of membranes. Membrane associated processes in brief. Exocytosis and endocytosis.

Introduction to cytoskeleton. Myofibril and muscle contraction in brief.

Hemoglobin : Functions. Introduction to heme synthesis and degradation. Plasma protein classification and separation. Functions of albumin. A brief account of immunoglobulins.

Plasma lipoproteins : Formation; function and turnover.

9. MEDICAL BIOCHEMISTRY

Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism : Biochemical evaluation. Hyperlipoproteinemias and atherosclerosis, Approaches to treatment. Jaundice : classification and evaluation. Liver function tests : Plasma protein pattern, serum enzymes level. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance evaluation. Gout Examples of genetic disorders including lysosomal storage disorders glycogen storage disorders, glucose 6 - phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). serum enzymes in diagnosis.

PRACTICAL : Contact hours 50

1. Quantitative analysis of carbohydrates	4
2. Color reactions of proteins and amino acids	4
3. Identification of nonprotein nitrogen substance	4
4. Normal constituents of urine	4
5. Abnormal constituents of urine	4
6. Analysis of saliva including amylase	2
7. Analysis of milk Quantitative estimations	2
8. Titrable acidity and ammonia in urine	2
9. Free and total acidity in gastric juice	2
10. Blood glucose estimation	2
11. Serum total protein estimation	2
12. Urine creatinine estimation Demonstration	2
13. Paper electrophoresis charts / clinical data evaluation	2
14. Glucose tolerance test profile	2

15. Serum lipid profiles 1
16. Profiles of hypothyrodisim and hyperthyrodisim 1
17. Profiles of hyper and hypoparathyrodism 1
18. Profiles of liver function 1
19. Urea, uric acid creatinine profile in kidney disorders 1
20. Blood gas profile in acidosis / alkalosis 1

RECOMMENDED BOOKS

"Essential of Biochemistry" as a Text Book for Ist year BDS Course – Pankaja Naik

Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman

Nutritional Biochemistry 1995, S. Ramakrishnan and S. V. Rao

Lecture notes in Biochemistry 1984, J. K. Kandlish

Reference Books :

Test book of Biochemistry with clinical correlations 1997, T. N. Devlin

Harpers Biochemistry, 1996., R. K. Murray et.al

Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C. Elliot.

DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

INTRODUCTION

Dental Anatomy including Embryology and Oral Histology - a composite of basic Dental Sciences and their clinical applications.

SKILLS

The student should acquire basic skills in :

Carving of crowns of permanent teeth in wax.

Microscopic study of Oral tissues.

Identification of Deciduous & Permanent teeth

Age estimation by patterns of teeth eruption from plaster casts of different age groups.

OBJECTIVES :

After a course on Dental Anatomy including Embryology and Oral Histology,

1. The student is expected to appreciate the normal development, morphology, structure and functions of oral tissues and variations in different pathological / non pathological states

The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.

3. The students must know the basic knowledge of various research methodologies.

I. TOOTH MORPHOLOGY

1. Introduction to tooth morphology :

- Human dentition, types of teeth & functions, Palmer s & Binomial notation systems, tooth surfaces, their junctions - line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrasures - clinical significance.

2. Morphology of permanent teeth :

- Description of individual teeth, alongwith their endodontic anatomy and including a note on their chronology of development differences between similar class of teeth and identification of individual teeth.
- Variations and Anomalies commonly seen in individual teeth

3. Morphology of Deciduous teeth :

- Generalized differences between Deciduous & Permanent teeth
- Description of individual deciduous teeth, including their chronology of development endodontic anatomy, differences between similar class of teeth & identification of individual teeth

4. Occlusion :

- Definition, factors influencing occlusion - basal bone, arch, individual teeth, external and internal forces and sequence of eruption.
- Inclination of individual teeth - compensatory curves.
- Centric relation and centric occlusion - protrusive, retrusive and lateral occlusion.
- Clinical significance of normal occlusion.
- Introduction to and classification of Malocclusion.

II. ORAL EMBRYOLOGY :

Brief review of development of face, jaws, lip, palate & tongue, with applied aspects.

Development of teeth :

- Epithelial mesenchymal interaction, detailed study of different stages of development of crown, root & supporting tissues of tooth & detailed study of formation of calcified tissues.
- Applied aspects of disorders in development of teeth.

3. Eruption of deciduous and permanent teeth.

- Mechanisms in tooth eruption, different theories & histology of eruption, formation of dentogingival junction, role of gubernacular cord in eruption of permanent teeth.
- Clinical or applied aspects of disorders of eruption.

4. Shedding of teeth.

- Factors & Mechanisms of shedding of deciduous teeth.
- Complications of shedding.

III ORAL HISTOLOGY

1. Detailed microscopic study of Enamel, Dentine, Cementum and Pulp tissue. Age changes and Applied aspects (clinical and forensic significance) of histological consideration Fluoride applications, transparent dentine; dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine ; Pulp calcifications & Hypercementosis.

2. Detailed microscopic study of Periodontal ligament and alveolar bone, age changes, histological changes in periodontal ligament and bone in normal and orthodontic tooth movement, applied aspects of alveolar bone resorption.

Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinization, clinical parts of gingiva, Dentogingval and Mucocutaneous junctions and lingual papillae. Age changes and clinical considerations.

Salivary Glands :

- Detailed microscopic study of acini and ductal system.
- Age changes and clinical considerations.

5. T.M. Joint :

- Review of basic anatomical aspects and microscopic study and clinical considerations.

6. Maxillary sinus :

- Microscopic study, anatomical variations, functions and clinical relevance of maxillary sinus in dental practice.

7. Processing of Hard and soft tissues for microscopic study :

- Ground sections, decalcified sections and routine staining procedures

8. Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY

1. Saliva :

- Composition of saliva - variations, formation of saliva and mechanisms of secretion, salivary reflexes, brief review of secretomotor pathway, functions, role of saliva in dental caries and applied aspects of hyper and hypo salivation.

2. Mastication :

- Masticatory force and its measurement - need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflexes and neural control of mastication.

3. Deglutition :

- Review of the steps in deglutition, swallowing in infants, neural control of deglutition and dysphagia.

4. Calcium Phosphorous and fluoride metabolism :

- Source, requirements, absorption, distribution, functions and excretion, clinical considerations, hypo & hypercalcemia & hyper & hypo phosphatemia & fluorosis.

5. Theories of Mineralization :

- Definition, mechanisms, theories & their drawbacks.
- Applied aspects of physiology of mineralization, pathological considerations - calculus formation.

6. Physiology of Taste :

- Innervations of taste buds and taste pathway, physiologic basis of taste sensation, age changes and applied aspects - taste disorders.

7. Physiology of speech

- Review of basic anatomy of larynx and vocal cords.
- Voice production, resonators, production of vowels and different consonants - Role of palate, teeth and tongue.
- Effects of dental prosthesis and appliances on speech and basic speech disorders.

RECOMMENDED TEXT BOOKS :

Orban.s Oral Histology & Embryology - S. N. Bhaskar.
Oral Development & Histology - James & Avery
Wheeler.s Dental Anatomy, Physiology & Occlusion - Major M, Ash
Dental Anatomy - its relevance to dentistry - Woelfel & Scheid
Applied Physiology of the mouth - Lavelle
Physiology & Biochemistry of the mouth - Jenkins

4. GENERAL PATHOLOGY

AIM :

At the end of the course the student should be competent to :

Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

OBJECTIVES :

Enabling the student

To demonstrate and apply basic facts, concepts and theories in the field of Pathology.

To recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes.

3. To integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of pathology.

To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.

To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE COUNTENT

A. General Pathology

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ntroduction to Pathology

Terminologies

The cell in health

The normal cell structure

The cellular functions

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tiology and Pathogenesis of Disease

Cell Injury

Types - congenital

Acquired

Mainly Acquired causes of disease

(Hypoxic injury, chemical injury, physical injury, immunological injury)

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egenerations

Amyloidosis

Fatty change

Cloudy swelling

Hyaline change, mucoid degernation

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ell death & Necrosis

Apoptasis

Def, causes, features and types of necrosis

Gangrene - Dry, wet, gas

Pathological Calcification

(Dystrophic and metastatic)

Inflammation

- Definition, causes types, and features Acute inflammation

a. The vascular response

The cellular response

Chemical Mediators

The inflammatory cells

Fate

Chronic inflammation

Granulomations inflammation

Healing

- Regeneration
- Repair

Mechanism

Healing by primary intention

Healing by secondary intention

Fracture healing

Factors influencing healing process

Complications

Tuberculosis

- Epidemiology
- Pathogenesis (Formation of tubercle)
- Pathological features of Primary and secondary TB - Complications and Fate

Syphilis

- Epidemiology
- Types and stages of syphilis
- Pathological features
- Diagnostic criterias
- Oral lesions

Typhoid

- Epidemiology
- Pathogenesis
- Pathological features
- Diagnostic crtiterias.

- Thrombosis
  - Definition, Pathophysiology
  - Formation, complications & Fate of a thrombus.
- Embolism
  - Definition
  - Types
  - Effects
- Ischaemia and infraction
  - Definition, etiology, types
  - Infraction of various organs.
- Derangements of body fluids
  - Oedema - Pathogenesis
    - Different types
- Disorders of circulation
  - Hyperaemia
  - Shock
- Nutritional Disorders
  - Common Vitamin Deficiencies
- Immunological mechanisms in disease
  - Humoral & cellular immunity
  - Hypersensitivity & autommunity
- AIDS and Hepatitis
- Hypertension
  - Definition, classification
  - Pathophysilogy
  - Effects in various organs.
- Diabetes Mellitus
  - Def, Classification, Pathogenesis, Pathology in different organs.l
- Adaptive disorders of growth
  - Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia
- General Aspects of neoplesia

Definition, terminology, classification

Differences between benign and malignant neoplasms

The neoplastic cell

Metastasis

Etiology and pathogenesis of neoplasia, Carcinogenesis

Tumour biology.

Oncogenes and anti oncogenes

Diagnosis

Precancerous lesions

j Common specific tumours, Sq papilloma & Ca, Basal cell Ca, Adenoma & Adenoca, Fibroma & Fibrosarcoma, Lipoma and

liposarcoma B. Systematic Pathology -

Anaemias

Iron Deficiency anaemia, Megaloblastic Anaemia

Leukaemias

Acute and chronic leukaemias, Diagnosis and clinical features

Diseases of Lymph nodes

Hodgkin s disease, Non Hodgkins lymphoma, Metastatic carcinoma

Diseases of Oral cavity

Lichen planus, stomatitis, Leukoplakia, Sq cell ca, Dental caries, Dentigerious cyst, Ameloblastoma

Disease of salivary glands

Normal structure, siaiadenitis, Tumours.

Common diseases of Bones

Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma,

Osteocalstoma, Giant cell Tumours, Ewing s sarcoma, fibrous dysplasia,

Aneurysmal bone cyst.

Diseases of Cardiovascular system

Cardiac failure

Congenital heart disease - ASD, VSD,

PDA Fallot s Tetrology

Infective Endocarditis

Atherosclerosis

Ischaemic heart Disease

Haemorrhagic Disorders

Coagulation cascade

Coagulation disorders

Platelet function

Platelet disorders

Practicals

Urine - Abnormal constitutients

Sugar, albumin, Ketone bodies

Urine - Abnormal constituents

Blood, bile salts, bile pigments

Haemoglobin (Hb) estimation

Total WBC count

Differential WBC count

Packed cell volume (PCV,) rythrocyte sedimentation Rate (ESR)

Bleeding time & Clotting time

Histopathology

Tissue Processing

Staining

Histopathology slides

Acute appendicitis, Granulation tissue, fatty liver.

Histopathology slides.

CVC lung, CVC liver, kidney amyloidosis

11. Histopathology slides

tuberculosis, Actionomycosis,

Rhinosporidiosis 12. Histopathology slides

Papilloma, Basal cell Ca, Sq cell

Ca 13. Histopathology slides

Osteosarcoma, osteoclastoma,

fibrosarcoma 14. Histopathology slides

Malignant melanoma, Ameloblastoma

Adenoma 15. Histopathology slides

Mixed parotid tumour, metastatic

carcinoma in lymph node

List of Textbooks

Robins - Pathologic Basis of Disease Cotran, Kumar, Robbins

Anderson.s Pathology Vol 1 & 2 Editors - Ivan Damjanov & James Linder

Wintrobe.s clinical Haematolog Lee, Bithell, forester, Athens, Lukens

MICROBIOLOGY

AIM:

To introduce the students to the exciting world of microbes. To make the students aware of various branches of microbiology, importance, significance and contribution of each branch to mankind and other fields of medicine. The objectives of teaching microbiology can be achieved by various teaching techniques such as :

Lecturers

Lecture Demonstrations

Practical exercises

Audio visual aids

Small group discussions with regular feed back from the students.

OBJECTIVE :

A. KNOWLEDGE AND UNDERSTANDING

At the end of the Microbiology course the student is expected to:

Understand the basics of various branches of microbiology and able to apply the knowledge relevantly

Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.

Understand and practice various methods of sterilization and disinfection in dental clinics.

Have a sound understanding of various infectious diseases and lesions in the Oral Cavity.

A. SKILLS

Student should have acquired the skill to diagnose, differentiate various oral lesions.

Should be above to select, collect and transport clinical specimens to the laboratory.

Should be able to carry out proper aseptic procedures in the dental clinic

A brief syllabus of Microbiology is given as follows ;

A. GENERAL MICROBIOLOGY

Histology, Introduction, Scope, Aims and Objectives

Morphology and Physiology of Bacteria

Detail account of Sterilization and Disinfection

Brief account of Culture media and Culture techniques

Basic knowledge of selection, collection, transport, processing of clinical specimens and identification of bacteria.

6. Bacterial Genetics and Drug Resistance in bacteria

B. IMMUNOLOGY

Infection - Definition, Classification, Source, mode of transmission and types of infectious disease.

Immunity

Structure and functions of Immune system

The complement system

Antigen

Immunoglobulins : Antibodies - General structure and the role played in defense mechanism of the body.

Immune response

Antigen - Antibody reactions - with reference to clinical utility

Immuno deficiency disorders - a brief knowledge of various types of immuno deficiency disorders - A sound knowledge of immuno deficiency disorders relevant to dentistry.

Hypersensitivity reactions

Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structure

Immunology of Transplantation and Malignancy

Immunehaematology

C. SYSTEMATIC BACTERIOLOGY :

Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus - brief account of each coccus - detailed account of mode of spread, laboratory diagnosis, chemo therapy and prevention - Detailed account of cariogenic streptococci

Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis , Chemotherapy and Active immunization.

Mycobacteria - Tuberculosis and Leprosy

Clostridium - Gas gangrene, food poisoning and tetanus.

Non - sporing Anaerobes - in, brief about classification and morphology, in detail about dental pathogens - mechanism of disease production and prevention.

Spirochaetes - Treponema Pallidum - detailed account of Oral Lesions of syphilis,

Borrelia vincentii

7. Actinomycetes.

D. VIROLOGY

Introduction

General properties, cultivation, host - virus interaction with special reference to interferon 3, Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general

4. A few viruses of relevance to dentistry

- Herpes Virus
- Hepatitis B Virus - brief about other types
- Human Immunodeficiency virus (HIV)
- Mumps Virus
- Brief - Measles and Rubella Virus

5. Bacteriophage - Structure and Significance

E. MYCOLOGY

Brief Introduction

candidosis - in detail

Briefly on oral lesions of systemic mycoses.

F. PARASITOLOGY:

Brief introduction - protozoans and helminths

Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

RECOMMENDED BOOKS FOR REGULAR READING

Text book of Microbilogy - A. Ananthanarayan & C.K. Jayaram Paniker

Medical Microbiology - David Greenwood etal

BOOKS FOR FURTHER READING / REFERENCE

Microbiology - Prescott, etal

Microbiology - Bernard D. Davis, etal

Clinical & Pathogenic Microbiology - Barbara J. Howard, etal

Mechanisms of Microbial diseases - Moselio Schaechter, etal

Immunology an Introduction - Tizard

Immunology 3rd edition - Evan Roitt, etal

5.GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

GOAL :

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and Profession.

OBJECTIVES :

At the end of the course the student shall be able to :

Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular

List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason.

Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy safety for individual and mass therapy needs.

Indicate special care in prescribing, common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients.

Integrate the rational drug therapy in clinical pharmacology

Indicate the principles underlying the concepts of "Essential Drugs".

SKILLS :

At the end of the course the student shall be able to:

Prescribe drugs for common dental and medical ailments

To appreciate adverse reactions and drug interactions of commonly used drugs.

Observe experiments designed for study of effects of drugs

Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

INTEGRATION : practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments.

LECTURE:

GERNERAL PHARMACOLOGY :

General principles of pharmacology ; sources and nature of drugs dosage forms; prescription writing; pharmacokinetics (absorption, distribution, metabolism and excretion of drugs), mode of action of drugs, combined effect of drugs, receptor mechanism of drug action, factors modifying drug response, adverse drug reactions; drug interactions, Implications of General Principles in clinical dentistry.

CNS drugs; General anaesthetics, Hypnotics, analgescis psychotropic drugs, anti-epileptics, muscle relaxants, local anaesthetics, implications of these drugs in clinical dentistry.

Autonomic drugs ; sympathomimetics, antiadrenergic drugs parasympothomimetics and parasympatholytics, Implications of Autonomic drugs in clinical dentistry.

Cardiovascular drugs ; cardiac stimulants ; antihypertensive drugs, vasopressor agents, treatment of shock, Antianginal agents and diuretics, Implications of these drugs in clinical dentistry.

Autocoids :

Histamine, antihistamines, prostaglandins, leukotriens and bronchodilators, Implications of Autocoids in Clinical dentistry.

Drugs acting on blood : coagulants and anticoagulants, hematinics, Implications of these drugs in clinical dentistry.

G.I.T. Drugs, Purgatives, anti-diarrhoeal, antacids, anti-emetics, implications of these drugs in clinical dentistry.

Endocrines; Emphasis on treatment of diabetes and glucocorticoids, thyroid and antithyroid agents, drugs affecting calcium balance and anabolic steroids, Implications of these drugs in clinical dentistry.

Chemotherapy : Antimicrobial agents (against bacteria, anaerobic infections, fungi, virus and broad spectrum). Infection management in dentistry. Pharmacotherapy of Tuberculosis, leprosy and chemotherapy of malignancy in general. Implications of chemotherapy in clinical dentistry.

Vitamins : Water soluble vitamins, Vit. D, Vit.K. and Vit E, Implications of Vitamins in clinical dentistry.

Pharmacotherapy of emergencies in dental office and emergency drugs tray Implications of Pharmacotherapy in clinical dentistry.

Chealating agents - BAL, EDTA and desferrioxamine,

II DENTAL PHARMACOLOGY

Anti - septics, astringents, obtundents, mummifying agents, bleaching agents, styptics, disclosing agents, dentifrices, mouth washes, caries and fluorides.

Pharmacotherapy of common oral conditions in dentistry

Practicals and Demonstrations:

To familiarize the student with the methodology: prescription writing and dispensing. Rationale of drug combinations of marked drugs.

LIST OF BOOKS RECOMMENDED FOR READING AND REFERENCE

R.S. Satoskar, Kale Bhandarkars Pharmacology and Pharmacolherapentics, 10th Edition, Bombay Popular Prakashan 1991.

Bertam G Katzung, Basic and Clinical pharmacology 6th ed. Appleton & Lange 1997.

Lauerence D.R. Clinical Pharmacology 8th ed. Churchill Livingstone 1997.

Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmacotherapeutics part I & part ii, 13th Popular prakashan Bombay 1993.

Tripathi K.D. Essentials of Medical Pharmacology 4th ed Jaypee Brothers 1999.

6. DENTAL MATERIALS

The science of Dental Material has undergone tremendous changes over the years. Continued research has led to new material systems and changing concepts in the dental field. Interlinked with various specialized branched of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as a basic sciences in itself with its own values and principles.

INTRODUCTION

AIMS :

Aim of the course is to present basic chemical and physical properties of Dental materials as they are related to its manipulation to give a sound educational background so that the practice of the dentistry emerged from art to empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufactures.

OBJECTIVES :

To understand the evolution and development of science of dental material

To explain purpose of course in dental materials to personnel concerned with the profession of the dentistry. Knowledge of physical and chemical properties. Knowledge of biomechanical requirements of particular restorative procedure. An intelligent compromise of the conflicting as well as co-ordinating factors into the desired Ernest. Laying down standards or specifications of various materials to guide to manufactures as well as to help professionals. Search for newer and better materials which may answer our requirements with greater satisfaction. To understand and evaluate the claims made by manufactures of dental materials.

NEED FOR THE COURSE

The profession has to rise from an art ot a science, the need for the dentist to possess adequate knowledge of materials to exercises his best through knowledge of properties of different of types of materials. The growing concern of health hazards due to mercury toxicity,

inhalation of certain vapour or dust materials, irritations and allergic reaction to skin due to contact of materials. Materials causing irritation of oral tissues, pH of restorative materials causing inflammation and necrosis of pulp which is a cause for the dentist to posses wider knowledge of physical, chemical and biological properties of materials being used. For the protection for the patient and his own protection certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically accept.

SCOPE

The dental materials is employed in mechanical procedures including restorative dentistry such as Prosthodontics, endodontics, periodontal, Orthodontics and restorative materials. There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry.

Branches such as minor surgery and periodontics require less use of materials but the physical and chemical characters of materials are important in these field.

The toxic and tissue reaction of dental materials and their durability in the oral cavity where the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acid an alkalinity of fluids shown pH varies from 4 to 8.5. The load on 1 sq. mm of tooth or restorative materials can reach to a level as high a many kilograms. Thus the biological properties of dental materials cannot be separated from their physical and chemical properties.

2) STRUCTURE OF MATTER AND PRINCIPLES OF ADHESION

Change of state, inter atomic primary bonds, inter atomic secondary bonds, inter atomic bond distance and bonding energy, thermal energy, crystalline structure, non crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.

3) IMPORTANT PHYSICAL PROPERTIES ALLICABLE TO DENTAL MATERIALS

Physical properties are based on laws of mechnics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena, Hue, value chroma and translucency physical proerties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity and coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain proportional limit, elastic limit yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility and malleability, hardness, abrasion resistance, relaxation, rheology, Thixotropic, creep, static creep, dynamic creep, flow, color, three dimensional colour - hue values, chroma, Munsell system, metamersim, fluorescence, physical properties of tooth stress during mastication.

4) BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of material from perspective of biological compatibility. eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally be inhaled or ingested during handling. Hazards associated with materials : pH effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, Thermal changes, Galvanism, toxic effect of materials. Biological evaluation for systematic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.

5) GYPSUM & GYPSUM PRODUCTS

Gypsum - its origin chemical formula, products manufactured from gypsum.

Dental plaster, Dental stone, Die stone, high strength, high expansion stone.

Application and manufacturing procedure of each, macroscopic and microscopic structure of each. Supplied as and commercial names.

Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.

Setting time : working time and setting time, Measurement of setting time and factors controlling setting time.

Setting expansion, Hygroscopic setting expansion - factors affecting each

Strength : wet strength, dry strength, factors affecting strength, tensile

strength Slurry - need and use.

Care of cast.

ADA classification of gypsum products

Description of impression plaster and dental investment

Manipulation including recent methods or advanced

methods. Disinfection : infection control, liquids, sprays,

radiation Method of use of disinfectants

Storage of material - shelf life

6) IMPRESSION MATERIALS USED IN DENTISTRY

Impression plaster, Impression compound, Zinc oxide eugenol impression paste and bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether, visible light cure polyether urethane dimethacrylate, Historical background and development of each impression material,

Definition of impression, Purpose of making impression, Ideal properties required and application of material, classification as per ADA specification, general & individual impression material.

Application and their uses in different disciplines, Marketed as and their commercial names,

Mode of supply and mode of application bulk / wash impression. Composition, chemistry of setting, Control of setting time, Type of impression trays required, Adhesion to tray manipulation, instruments and equipments required. Techniques of impression, storage of impression, (Compatibility with cast and die material). Any recent advancements in material and mixing devices. Study of properties : Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating Biological properties : tissue reaction, Shelf life & storage of material, Infection control-disinfection, Advantages & disadvantages of each material.

7) SYNTHETIC RESINS USED IN DENTISTRY

Historical, background and development of material, Denture base materials and their classification and requirement

Classification of resins

Dental resins - requirements of dental resins, applications, polymerization, polymerization mechanism stages in addition polymerization, inhibition of polymerisation, co polymerization, molecular weight, crosslinking, plastixizers, Physical properties of polymers, polymer structures types of resins.

ACRYLIC RESINS :

Mole of polymerization : Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerization reaction of each. Technical considerations : Methods of manipulation for each type of resin. Physical properties of denture base resin.

Miscellaneous resins & techniques. Repair resins, Relining and rebasing. Short term and long - term soft - liners, temporary crown and bridge resins, Resin impression trays, Tray materials, Resin teeth materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.

RESTORATIVE RESINS

Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation mechanisms : Chemically activated. Light activated, Dual cure : Degree of conversion, Polymerisation shrinkage

Classification of Composites : Application, co,position and proerties of each Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility - microleakage, pulpal reaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically

activated, light activated, dual cure Polymerisation, finishing and polishing of restoration,

Repoair of composites Direct bonding Bonding: Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure. Extended application for composites : Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlays system - Indirect & direct, Core build up, Orthodontics applications.

8) METAL AND ALLOYS :

Structure and behaviour of metals, Solidification of metals, mechanism of crystallization amorphous & crystalline. Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams : Electric alloys, Physical properties, Peritectic alloys, Solid state reaction other binary systems : Metallography & Heat treatment. Tarnish and corrosion. Definition : cause of corrosion, protection agaist corrosion., Corrosion of dental restorations, clinical significance of galvanic current. Dental Amalgam.

History :

Definition of dental amalgam, application, Alloy classification, manufacture of alloy

powder composition - available as.

Amalgamation : setting reaction & resulting structure, properties, Microleakage

Dimensional stability, Strength, Creep, Clinical performance

Manipulation : Selection of alloy proportioning, mechanism of trituration, condensation, carving & finishing. Effect of dimensional changes, Marginal deterioration., Repair of amalgam, mercury toxicity, mercury hygiene.

DIRECT FILLING GOLD:

Properties of pure gold, mode of adhension of gold for restoration forms of direct filling gold for using as restorative material

Classification : gold Foil, electrolytic precipitate, powdered gold.

Manipulation : Removal of surface impurities and compaction of direct filling

gold. Physical properties of compacted gold, Clinical performance.

DENTAL CASTING ALLOYS :

Historical background, desirable properties of casting alloys.

Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process CAD-CAM process for metal & ceramic inlays - without need of impression of teeth or casting procedure, pure titanium, most bio compatible metal which are difficult to cast can be made into crowns with the aid of CAD -CAM technology. Another method of making classification of casting alloys : By function & description.

Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB)

Alloys for crown & bridge, metal seramic & removable partial denture. Composition, function constituents and application, each alloy both noble and base metal. Properties of alloys: Melting range; mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion.

Casting shrinkage and compensation of casting shrinkage. Biocompatibility - Handling hazards & precautions of base metal alloys; casting investments used. Heat treatment : Softening & hardening heat treatment. Recycling of metals, Titanium alloys & their application, properties & advantages. Technical considerations in casting. Heat source, furnaces.

9) DENTAL WAXES INCLUDING INLAY CASTING WAX

Introduction and importance of waxes : Sources of natural waxes and their chemical nature.

Classification of Waxes :

Properties : melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax : Inlay wax : Mode of supply : Classification & composition, Ideal requirements : properties of inlay wax : Flow, thermal properties Wax distoration & its causes.

Manipulation of inlay wax : instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled wax baths.

Other waxes : Applications, mode of supply & properties.

Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax,

Impression wax for corrective impressions, Bite registration wax.

10) DENTAL CASTING INVESTMENTS

Definition, requirements, classification

Gypsum bonded - classification, Phosphate bonded, silica bonded

Mode of Supply : Composition, application, setting mechanism, setting time & factors controlling.

Expansions : setting expansion, Hygroscopic Setting expansion, & thermal expansion : factors affecting. Properties : Strength porosity, and fineness & storage. Technical consideration :

For casting procedure Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defect in casting.

11) SOLDERING, BRAZING AND WELDING

Need of joining dental appliances, Terms & Definition

Solders : Definition, ideal requirement types of solders - Soft & hard and their fusion temperature, application. Mode of supply of solders, composition and selection, properties.

Tarnish & corrosion resistance mechanical properties, microstructure of soldered joint. Fluxes & Anti fluxed : Definition, function, Types, commonly used fluxes & their selection Technique of soldering & Brazing : Free hand soldering and investment, steps and procedure. Welding : Definition, application, requirements, procedure, weld decay - causes and how to avoid it. Laser welding.

WROUGHT BASE METAL ALLOYS

Applications and different alloys used mainly for orthodontics purpose

Stainless steel

Cobalt chromium nickel

Nickel titanium

Beta titanium

Properties required for orthodontic wires, working range, springiness, stiffness, resilence, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility

Stainless steels : Description, type, composition & properties of each type. Sensitisation & stabilization, Mechanical properties - strength, tensile, yield strength, KHN. Braided & twisted wires their need, Solders for stainless steel, Fluxes, welding

1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, Physical properties

Nickel - Titanium alloys, shape, memory & super elastic

Titanium alloys, application, composition, properties, welding, Corrosion resistance.

12) DENTAL CEMENTS

Definition & Ideal requirements:

Cement : Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionormer, zinc oxide eugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate, Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta Percha.

Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhension, biomechanics of caries inhibition.

Agents for pulpal protection., Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

13) DENTAL CERAMICS

Historical background & General applications.

Dental ceramic : definition, classification, application, mode of supply, manufacturing procedure, methods of strengthening. Properties of fused ceramic : Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, esthetic properties, biocompatability, technical considerations.

Metal Ceramic (PFM) : Alloys - types and composition of alloys. Ceramic - Type and composition.

Metal Ceramic Bond : Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restotations. Recent advances - all porcelain restorations, Manganese core, injection moulded castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays and CAD - CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

14) ABRASION & POLISHING AGENTS

Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives : Finishing, polishing & cleaning. Types of abrasives : Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, Tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide.

ABRASIVE ACTION :

Desirable characteristics of an abrasive, Rate of abrasion, size of particle, pressure and speed Grading of abrasive & polishing agents. Binder, polishing materials & procedures used. Technical consideration - Material and procedure used for abrasion and polishin Electrolytic polishing and burnishing

15) DIE AND COUNTER DIE MATERIALS INCLUDING ELECROFORMING AND ELECTROPOLISHING

types - Gypsum products, Electroforming, Epoxy resin, amalgam

DENTAL IMPLANTS : Evolution of dental implants, types and materials

MECHANICS OF CUTTING : Burns and points

At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use.

RECOMMENDED BOOKS

Philips Science of Dental Materials : 10th edn. - Kenneth J. Anusavice

Restorative Dental Materials - 10 edn. Robert G. Craig

Notes on Dental Materials - E.C. combe

PRE CLINICAL CONSERVATIVE DENTISTRY LABORATORY EXERCISES.

Identification and study of handcutting instrument chisles, gingival margin trimmers, excavators and hatchet.

Identification and use of rotary cutting instruments in contra angle hand pieces burs (Micromotor)

Preparation class I and extended class I and class II and MOD s and class V amounting to 10 exercises in plaster models.

4. 10 exercises in mounted extracted teeth of following class I, 4 in number class I extended cavities 2, class II 4 in number and Class V 2 in number. Cavity preparation base application matrix and wedge placement restoration with amalgam.

Exercises on phantom head models which included cavity preparation base and varnish application matrix and wedge placement followed by amalgam restoration.

Class I	5
Class I with extension	2
Class II	10
Class H mods	2
Class V and III forglass ionmers	4
Class V for amalgam	2

Polishing of above restorations

Demonstration of class III and class V cavity preparation. For composites on extracted tooth completing the restoration.

Polishing and finishing of the restoration of composites.

Identification and manipulation of varnish bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers, Zinc Oxide, Euginol cements.

Identification and manipulation of various matrics, tooth separators and matrials like composites and modified glassionomer cements.

Cast Restoration

Preparation of Class II inlay cavity

Fabrication of wax pattern

sprue for inner attachment investing

Investing of wax pattern

Finishing and cementing of class II inlay in extracted tooth

Endodontics

Identification of basic endodontics instruments

Cornal access cavity preparation on extracted. Upper central incisiors.

Determination of working length

Biomechanical Preparation of root canal space of central incisor

Obfuration of root canal spaces. Absens of cornal access cavity

Closure of acess cavity

8 ORAL PATHOLOGY & ORAL MICROBIOLOGY

OBJECTIVES :

At the end of Oral pathology and Oral Microbiology course, the student should be able to comprehend -

The different types of pathological processes, that involve the oral cavity.

The manifestation of common diseases, their diagnosis and correlation with clinical pathological processes.

An understanding of the oral manifestations of systemic disease should help in correlating with the systemic physical signs and laboratory findings.

The student should understand the underlying biological principles governing treatment of oral disease.

The principles of certain basic aspects of Forensic Odontology.

SKILLS:

Microscopic study of common lesions affecting oral tissues through mocroscopic slides & projection slides.

Study of the disease process by surgical specimen

Study of teeth anomalies / polymorphisms through tooth specimens & plaster casts.

Microscopic study of plaque pathogens.

Study of haematological preparations (blood films) of anaemias & leukemias.

Basic exercises in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

INTRODUCTION:

- A birds eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systemic disease to be brought out. Interrelationship between General Medicine & General Surgery & Oral pathology to be emphasized.

Developmental disturbances of teeth, Jaws and soft tissues of oral & paraoral region :

- Introduction to developmental disturbances - Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.

- Developmental disturbances of teeth - Etiopathogenesis, clinical features, radiological features & histopathological features as appropriate.
  The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies to be emphasized
- Forensic Odontology
- Developmental disturbances of jaws - size & shape of the jaws.
- Developmental disturbances of oral & paraoral soft tissues - lip & palate - clefts, tongue, gingiva, mouth, salivary glands & face.

Dental caries

- Etiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequelae.

Pulp & Periapical Pathology & Osteomyelitis

- Etiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & perapical lesions osteomyelitis.
- Sequelae of periapical abscess - summary of space infections, systemic complications & significance.

Periodontal Diseases :

- Etiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropritate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.

Microbial infections of oral soft tissues :

- Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathology and laboratory diagnosis of common bacterial, viral & fungal infections namely :-
  Bacterial : Tuberculosis, Syphilis, ANUG & its complications - Cancrum Oris.
  Viral : Herpes Simplex, Varicella zoster, Measles, Mumps & HIV
  infection. Fungal : Candidal infection, Apthous Ulcers.

Common non - inflammatory diseases involving the jaws :

- Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of : Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta Paget s disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan s syndrome & down s syndrome.

Diseases of TM joint :

- Ankylosis, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction syndrome.

Cysts of the Oral & Paraoral region :

- Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.

Tumours of the Oral Cavity

- Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. Etiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :

Odontogenic - all lesions.

Non - odontogenic

Benigh Epithelial : Papilloma, Keratoacanthoma & Naevi.

Benign Mesenchymal - Fibroma, Aggressive fibrous lesions, Lipoma Haemangioma, Lymphangioma Neurofibroma Schwannoma, Chondroma, Osteoma & Tori

- Malignant Epithelial - Basal Cell Carcinoma, Verrucous Carcinoma, Squamous Cell carcinoma & Malignant Melanoma.

- Malignant Mesenchymal- Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma Kaposi s sarcoma, Lymphomas, Ewing s sarcoma & Other Reticuloendothelial tumours.

c) Salivary

- Benign Epithelial neoplasms - Pleomorphic Adenoma, Warthin s tumour, & Oncocytoma

- Malignant Epithelial neoplasms - Adenoid Cystic Carcinoma Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.

d) Tumours of Disputed Origin - e) Metastatic Congenital Epulis & Granular Cell Myoblastoma. Tumors metastasizing to & from oral cavity & the routes of metastasis.

Traumatic, Reactive & Regressive lesions Oral Cavity :

- Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.
- Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, pulp calcifications & Resorption of teeth.

- Radiation effects of oral cavity, summary of physical & Chemical injuries including allergic reaction of the oral cavity.
- Healing or Oral wounds & complications - Dry socket.

Non neoplastic Salivary Gland Diseases :

- Sialolithiasis, Sialosis, sialadenitis, Xerostomia & ptyalism.

Systemic Diseases involving Oral Cavity ;

- Brief review & Oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of Oral cavity.

Mucocutaneous Lesions :

- Etiopathogenesis, clinical features & histopathology of the following common lesions. Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & white sponge nevus.

Diseases of the Nerves :

- Facial neuralgias - Trigeminal & Glossopharyngeal. VII nerve paralysis,
- causalgia Psychogenic facial pain & Burning mouth syndrome

Pigmentation of Oral & Paraoral region & Discolouration of teeth :

- Causes & clinical manifestations

Disease of Maxillary Sinus :

- Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum

a) ORAL PRECANCER - CANCER ; Epidemiology, aetiology, clinical and histopatholotgical features, TNM classification. Recent advances in dagnosis, management and prevention.

b) Biopsy : Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral disease.

Principles of Basic forensic Odontology (Pre-clinical Forensic Odontology):

- Introduction, definition, aims & scope.
- Sex and ethnic (racial) differences in tooth morphology and histological age estimation
- Determination of sex & blood groups from buccal mucosa / saliva.
- Dental DNA methods
- Bite marks, rugae patterns & lip prints. Dental
- importance of poisons and corrosives,
- Overview of forensic medicine and toxicology

RECOMMENDED BOOKS

1. A Text Book of Oral Pathology - shafer, Hine & Levy
2. Oral Pathology - Clinical Pathologic correlations - Regezi & Sciubba
3. Oral Pathology - Soames & southam
4. Oral Pathology in the Tropics - Prabhu, Wilson, Johnson & Daftary

GENERAL MEDICINE

GUIDELINES :

Special emphasis should be given throughout on the importance of various disease as applicable to dentistry.

Special precautions / contraindication of anaesthesia and various dental procedures in different systemic diseases.

Oral manifestations of systemic diseases.

Medical emergencies in dental practice.

A dental student should be taught in such a manner he / she is able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body - disease of the heart, lungs, kidneys, blood etc. He should be capable of handling medical emergencies encountered in dental practice.

THEORY SYLLABUS

CORE TOPICS (Must Know)	COLLATERAL TOPICS (Desirable to know)
1. Aims of medicine Definition of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis	
2. Infections Enteric fever, AIDS, herpes simplex, herpes zoster, syphilis diphtheria	Infectious mononucleosis mumps, measles, rubella, malaria.
3. G.I.T. Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.	Diarrhea Dysentery Amoebiasis Malabsorhtion
4. CVS Acute rheumatic fever rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.	
5. RS Pneumonia, COPD, Pulmonary TB, Bronchial Asthma	Lung Abscess Pleural effusion Pneumothorax Bronchiectasis Lung cancers
6. Hematology Anemias, bleeding & clotting, disorders, leukemias lymphomas, agranulocytosis, splenomegaly, oral manifestations of hematologic disorders,	

generalized. Lymphadenopathy	
7. Renal system Acute nephritis Nephrotic syndrome	Renal failure
8. Nutrition Avitaminosis	Balanced diet PEM Avitaminosis
9. CNS Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine.	- Meningitis - Examination of comatose patient - Examination of cranial nerves
10. Endocrines Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.	Addison s disease, Cushing s syndrome
11. Critical care Syncope, cardiac arrest, CPR, Shock	Ac LVF ARDS

CLINICAL TRAINING :

The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, oral cavity) and be able to examine CVS, RS and abdomen and facial nerve.

10. GENERAL SURGERY

AIMS :

To acquaint the student with various diseases, which may require surgical expertise and to train the student to analyze the history and be able to do a through physical examination of the patient. The diseases as related to head and neck region are to be given due importance, at the same time other relevant surgical problems are also to be addressed. At the end of one year of study the student should have a good theoretical knowledge of various ailments, and be practically trained to differentiate benign and malignant diseases and be able to decided which patient requires further evaluation.

HISTORY OF SURGERY

The development of surgery as a speciality over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialities in the practice of modern surgery.

GENERAL PRINCIPLES OF SURGERY

Introduction to various aspects of surgical principles as related to orodental diseases.

Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.

WOUND

Their classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.

INFLAMMATION

Of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.

INFECTIONS :

Acute and chronic abscess skin infections, cellulites, carbuncle and erysepelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincents angina, cancrum oris, Pyaemia, toxaemia and septicaemia.

TRANSMISSABLE VIRAL INFECTIONS :

HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.

SHOCK AND HAEMORRHAGE :

Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage - different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complications of blood and their products. Hemophilias, their transmission, clinical features and management especially in relation to minor dental procedures.

TUMOURS, ULCERS, CYSTS, SINUS AND FISTULAE :

Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, sinus and fistulae.

DISEASES OF LYMPHATIC SYSTEM:

Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.

DISEASES OF THE ORAL CAVITY

Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.

DISEASES OF LARYNX, NASOPHARYNX:

Infections and tumours affecting these sites. Indications, procedure and complications of tracheostmy.

NERVOUS SYSTEM :

Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment.

Detailed description of afflictions of facial nerve and its management. Trigeminal neuralgia, its presentation and treatment.

FRACTURES :

General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.

PRINCIPLES OF OPERATIVE SURGERY:

Principles as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilization, principles of anesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

ANOMOLIES OF DEVELOPMENT OF FACE :

Surgical anatomy and development of face. Cleft lip and cleft palate - principles of management.

DISEASES OF THYROID AND PARATHYROID :

Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid - classification, clinical features and management.

SWELLING OF THE JAW :

Differential diagnosis and management of different types of swellings of the jaw.

BIOPSY :

Different types of biopsies routinely used in surgical practice.

Skills to be developed by the end of teaching is to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy etc.

11. CONSERVATIVE DENTISTRY AND ENDODONTICS :

OBJECTIVES :

Knowledge and understanding

Skills and

Attitudes

A. Knowledge and understanding :

The graduate should acquire the following knowledge during the period of training.

To diagnose and treat simple restorative work for teeth.

To gain knowledge about aesthetic restorative material and to translate the same to patients needs.

To gain the knowledge about endodontic treatment on the basis of scientific foundations.

To carry out simple endodontic treatment.

To carry out simple luexation of tooth and its treatment and to provide emergency endodontic treatment.

SKILLS :

He should attain following skills necessary for practice of dentistry.

To use medium and high speed hand pieces to carry out restorative work.

Poses the skills to use and familiarize endodontics instruments and materials needed for carrying out simple endodontic treatment.

To achieve the skills to translate patients esthetic needs along with function.

ATTITUDES :

Maintain a high standard of professional ethics and conduct and apply theses in all aspects of professional life.

Willingness to participate in CDE programme to update the knowledge and professional skill from time to time.

To help and participate in the implementation of the national oral health policy.

He should be able to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene should be emphasise which will help to maintain the restorative work and prevent future damage.

INTRODUCTION :

Definition aims objectives of Conservative Dentistry scope and future of Conservative Dentistry.

Nomenclature of Dentition :

Tooth numbering systems A.D.A. Zsigmondy palmer and F.D.I. systems.

Principles of Cavity Preparation :

Steps and nomenclature of cavity preparation classification of cavities, nomenclature of floors angles of cavities.

Dental caries :

Aetiology classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries.

Treatment Planning For Operative Dentistry :

Detailed clinical examination, radiographic examination. tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet.

Gnathological Concepts of Restoration.

Physiology of occlusion, normal occlusion, Ideal occlusion, mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.

Aramamentarium For Cavity Preparation :

General classification of operative instruments, Hand cutting instruments design formula and sharpening of instruments. Rotary cutting instruments dental bur, mechanism of cutting, evaluation of hand piece and speed current concepts of rotary cutting procedures. Sterilization and maintenance of instruments. Basic instrument tray set up.

Control of Operating Filed

Light source sterilization field of operation control of moisture, rubber dam in detail, cotton rolls and anti sialogagues.

Amalgam Restoration :

Indication contraindication, physical and mechanical properties, clinical behaviour, cavity preparation for Class I, II, V and III. Step wise procedure for cavity preparation and restoration. Failure of amalgam restoration.

Pulp protection :

Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass inomer cements.

Anterior Restorations :

Selection of cases, selection of material, step wise procedures for using restorations, silicate (theory only) glass inomers, composites, including sand witch restorations and bevels of the same with a note on status of the dentine bonding agents.

Direct filling Gold restoration :

Types of direct filling gold indications and limitations of cohesive gold. Annealing of gold foil cavity preparation and condensation of gold foils.

Preventive Measures In Restorative Practice :

Plaque Control, Pitand fissure sealants dietary measures restorative procedure and periodontal health. Contact and contour of teeth and restorations matrices tooth separation and wedges.

Temporisation or Interim Restoration.

Pin Amalgam Restoration Indication Contra Indication :

Advantages disadvantages of each types of pin methods of placement use of auto matrix. Failure of pin amalgam restoration.

Management of Deep Carious Lesions Indirect And Direct Pulp Capping.

Non carious destructions Tooth Structures Diagnosis and Clinical Management.

Hyper Sensitive Dentine And Its Management.

Cast Restorations

Indications, contra indications, advantages and disadvantages and materials used for same class II and class I cavity preparation for inlays fabrication of wax pattern spurring inverting and casting procedures and casting defects.

Die Materials And Preparation of Dies

Gingival Tissue Management For Cast Restoration And Impression Procedures.

Recent Cavity Modification Amalgam Restoration.

Differences between amalgam and Inlay Cavity preparation with note on all the types of Bewels used for Cast Restoration.

Control of Pain During Operative Procedures.

Treatment Planning for Operative Dentistry Detailed Clinical Examination Radiographic Examination.

Vitality Tests, Diagnosis And Treatment Planning And Preparation Of Case Sheet.

Applied Dental Materials :

Biological Considerations.

Evaluation, clinical application and adverse effects of the following materials. Dental cements, Zinc oxide euginol cements zinc phosphate cements, polycarboxylates glass ionomer cements, silicate cement calcium hydroxides varnishes.

Dental amalgam, technical considerations mercury toxicity mercury hygiene.

Composite, Dentine bonding agents, chemical and light curing composites.

Rubber base Imp. Materials.

Nobel metal alloys & non noble metal alloys.

Investment and die materials

Inlay casting waxes.

Dental porcelain

Aesthetic Dentistry

Endodontics : introduction definition scope and future of endodontics.

Clinical Diagnostic methods

Emergency endodontics procedures

Pulpal diseases causes, types and treatment.

Periapical diseases: acute periapical abscess, acute periodontal abscess phoeix abscess, chronic alveolar abscess granuloma cysts condensing osteits, external resorption.

Vital pulp therapy : indirect and direct pulp capping pulpotony different types and medicaments used.

Apexogenisis and apexification or problems of open apex.

Rationale of endodntic treatment case selection indication and contraindications for root canal treatments.

Principles of root canal treatment mouth preparation root canal instruments, hand instruments, power driven instruments, standardization color coding principle of using endodotic instruments. Sterilisation of root canal instruments and materials rubber dam application.

Anatomy of the pulp cavity : root canals apical foramen. Anomalies of pulp cavities access cavity preparation of anterior and premolar teeth.

Preparation of root canal space. Determination of working length, cleaning and shaping of root canals, irrigating solution chemical aids to instrumentation.

Disinfection of root canal space intracanal medicaments, poly antibiotic paste roos mans paste, mummifying agents. Out line of root canal treatment, bacteriological examinations, culture methods.

Problems during cleaning and shaping of root canal spaces. Perforation and its management. Broken instruments and its management, management of single and double curved root canals.

Methods of cleaning and shaping like step back crown down and conventional methods.

Obturation of the root canal system. Requirements of an ideal root canal filling material obturation methods using guttaa percha healing after endodontic treatment. Failures in endodontics.

Root canal sealers. Ideal properties classification. Manipulation of root canal sealers.

Post endodontic restoration fabrication and components of post core preparation.

Smear layer and its importance in endodontics and conservative treatment.

Discoloured teeth and its management. Bleaching agents, vital and non vital bleaching methods.

traumatized teeth classification of fractured teeth. Management of fractured tooth and root. Luxated teeth and its management.

endodotic surgeries indication contraindications, pre operative preparation. Pre medication surgical instruments and techniques apicectomy, retrograde filling, post

operative sequale trephination hemisection, radiscetomy techniques of tooth reimplantation (both intentional and accidental) endodontic implants.

root resorption.

emergency endodontic procedures.

lasers in conservative endodontics (introduction only) practice management.

professional association dentist act 1948 and its amendment 1993.

duties towards the govt. Like payments of professional tax, income tax.

financial management of practice.

dental material and basic equipment management.

Ethics.

ORAL & MAXILLOFACIAL SURGERY

AIMS :

To produce a graduate who is competent in performing extraction of teeth under both local and general anaesthesia, prevent and manage related complications, acquire a reasonable knowledge and understanding of the various diseases, injuries, infections occurring in the Oral & Maxillofacial region and offer solutions to such of those common conditions and has an exposure in to the in patient management of maxillofacial problems.

OBJECTIVES :

a) Knowledge & Understanding :

At the end of the course and the clinical training the graduate is expected to -

Able to apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.

Able to diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.

Knowledge of range of surgical treatments.

Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment.

Understand the principles of in patient management.

Understanding of the management of major oral surgical procedures and principles involved in patient management.

Should know ethical issues and communication ability.

Skills :

A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.

Should be competent in the extraction of teeth under both local and general anesthesia.

Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures and biopsy etc.

Ability to assess, prevent and manage various complications during and after surgery.

Able to provide primary care and manage medical emergencies in the dental office.

Understanding of the management of major oral surgical problems and principles involved in inpatient management.

DETAILED SYLLABUS

Introduction, definition, scope, aims and objectives.

Diagnosis in oral surgery :

History taking

Clinical examination

Investigations

Principles of infection control and cross-infection control with particular reference to HIV / AIDS and Hepatitis.

Principles of Oral Surgery -

Asepsis: Definition, measures to prevent introduction of infection during surgery.

Preparation of the patient

Measures to be taken by operator

Sterilization of instruments - various methods of sterilization etc.

Surgery set up.

Painless Surgery:

Pre-anaesthetic considerations. Pre-medication: Purpose, drugs used

Anaesthetic considerations -

a) Local b) Local with IV sedations

Use of general anaesthetic

Access:

Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions.

Bone removal : Methods of bone removal

Use of Burs : Advantages & precautions

Bone cutting instruments : Principles of using chisel & osteotome.

Extra - oral : Skin incisions - principles, various extra oral incision to expose facial skeleton.

Submandibular

pre auricular

Incision to expose maxilla & orbit

Bicoronal incision

Control of haemorrhage during surgery

Normal Haemostasis

Local measures available to control bleeding Hypotensive anaesthesia etc.

Drainage & Debridement

Purpose of drainage in surgical wounds Types of drains used

Debridement : Purpose, soft tissue & bone debridement

Closure of wounds

Suturing : Principles, suture material, classification, body response to various materials etc.

post operative care

Post operative instructions

Physiology of cold and heat

Control of pain - analgesics

Control of infection - antibiotics

Control of swelling - anti-inflammatory drugs

Long term post operative follow up - significance.

Exodontia : General considerations

Ideal Extraction.

Indications for extraction of teeth

Extractions in medically compromised patients. Methods of extraction -

Fo rceps or intra-alveolar or closed method

Principles, types of movement, force etc.

Trans-alveolar, Surgical or open method, indications, surgical procedure

Dental elevators : uses, classification, principles in the use of elevators, commonly used elevators.

Complications of Exodontia -

Complications during Exodontia

Common to both maxilla and mandible.

Post-operative complications

Prevention and management of

complications 6. Impacted teeth:

Incidence, definition, aetiology.

Impacted mandibular third molar.

Classification, reasons for removal,

Assessment - both clinical & radiological

Surgical procedures for removal

Complications during and after removal

Prevention and management

Maxilary third molar,

Indications for removal, classification,

surgical procedure for removal

Impacted maxillary canine

Reasons for canine impaction

Localisation, Indications for removal

Methods of management, labial and palatal approach,

Surgical exposure, transplantation, removal etc.

Pre- prosthetic surgery

Definition, classification of procedures

Corrective procedures : Alveoloplasty

Reduction of maxillary tuberosities,

Frenoctemies and removal of tori

Ridge extension or Sulcus extension procedures

Indications and various surgical procedures

Ridge augmentation and reconstruction

Indications, use of bone grafts, Hydroxyapatite

Implants - concept of osseo integration

Knowledge of various types of implants

and surgical procedure to place implants

8. Disease of the maxillary sinus

Surgical anatomy of the sinus

Sinusitis both acute and chronic

Surgical approach of sinus - Caldwell - Luc

procedure Removal of root from the sinus

Oro-antral fistula - aetiology, clinical features and various

surgical methods for closure

9. Disorders of T.M. joint

Applied surgical anatomy of the joint

Dislocation - types, aetiology, clinical features and management

ankylosis - Definition, aetiology, clinical features and management

Myo-facial pain dysfunction syndrome, aetiology, clinical features

management Non surgical and surgical

Internal derangement of the joint

Arthritis of T.M. Joint 10.

Infections of the oral cavity

Introduction, factors responsible for infection, course of odontogenic

Infections, spread of odontogenic infections through various facial spaces

Dento - alveolar abscess - aetiology, clinical features and management

Osteomyelitis of the jaws - definition, aetiology, pre-disposing factors

Classification, clinical features and management

Ludwigs angina - definition, aetiology, clinical features, management and complications

Benign cystic lesions of the jaws Definition

- classification, pathogenesis

Diagnosis, Clinical features, radiological, aspiration biopsy, use of constrast media and histopathology

Management - Types of surgical procedure, rationale of the techniques indications, procedures, complications etc.

Tumours of the Oral cavity

General considerations

Non odontogenetic benign tumours occurring in oral cavity - fibroma, papilloma, lipoma, ossifying fibroma mynoma etc.

Ameloblastoma - clinical features, radiological appearance and methods of management

Carcinoma of the oral cavity

Biopsy - types

TNM classification

outline of management of squamous

Cell carcinoma : Surgery, radiation and chemotherapy

Role of dental surgeons in the prevention and early detection of oral cancer 13. Fractures of the jaws -

General considerations, types of fractures, aetiology, clinical features and general principles of management

Mandibular fractures - Applied anatomy,

classification Diagnosis - clinical and radiological

Management - Reduction closed and open

Fixation and immobilization methods

Outline of rigid and semi-rigid internal fixation

Fractures of the condyle - aetiology, classification, clinical features, principles of management

Fractures of the middle third of the face

Definition of the mid face, applied surgical anatomy, classification,

clinical features and outline of management

Alveolar fracture - methods of management

Fractures of the Zygomatic complex

Classification, clinical features, indications for treatment, various methods of reduction and fixation

Complications of fractures - delayed union, non-union and malunion 14. Salivery gland diseases -

Diagnosis of salivary gland diseases.

Sialography, contrast media, procedure.

Infections of the salivary glands

Sialolithiasis - sub mandibular duct and gland and parotid

duct. Clinical features, management

Salivary fistulae

Common tumours of salivery glands like Pleomorphic adenoma

including minor salivary glands

15. Jaw deformities -

Basic forms - Prognathism, Retrognathism and open bite

Reasons for correction.

Outline of surgical methods carried out on mandible and maxilla 16. Neurological disorders -

Trigeminal neuralgia - definition, aetiology, clinical features and methods of management including surgical

Facial paralysis - Aetiology, clinical features.

Nerve injuries - Classification, neurorhaphy etc.

17. Cleft Lip and Palate -

    Aetiology of the clefts, incidence, classification, role of dental surgeon in the management of cleft patients, Outline of the closure procedures.

18. Medical Emergencies in dental practice -

    Primary care of medical emergencies in dental practice particularly -

    (a) Cardio vascular (b) Respiratory (c) Endocrine

    (d) Anaphylactic reaction (e) Epilepsy (f) Epilepsy

19. Emergency drugs & Intra muscular I.V. Injections -

    Applied anatomy, Ideal Location for giving these injection, techniques etc.

Oral Implantology

Ethics

LOCAL ANAESTHESIA :

Introduction, concept of L.A., classification of local anaesthetic agents, ideal requirements, mode of action, types of local anaesthesia, complications.

Use of Vaso constrictors in local anaesthetic solution -

Advantages, contra-indications, various vaso constrictors used.

Anaesthesia of the mandible -

Pterygomandibular space - boundaries, contents

etc. Interior Dental Nerve Block - various techniques

Complications

Mental foramen nerve block

Anaesthesia of Maxilla-Intra

- Orbital nerve block

Anaesthesia of Maxilla -

Intra - orbital nerve block.

Posterior superior alveolar nerve block

Maxillary nerve block - techniques.

GENERAL ANAESTHESIA -

Concept of general anaesthesia

Indications of general anaesthesia in dentistry

Pre-anaesthetic evaluation of the patient

Pre-anaesthetic medication - advantages, drugs used

Commonly used anaesthetic agents

Complication during and after G.A.

I.V. sedation with Diazepam and Medozolam

Indications, mode of action, technique etc.

Cardiopulmonary resuscitation

Use of oxygen and emergency drugs.

Tracheostomy.

RECOMMENDED BOOKS :

Impacted teeth : Alling John F & etal

Principles of oral and maxillofacial surgery ; Vol.1,2 & 3 peterson LJ & etal

Text book of oral and maxillofacial surgery ; Srinivasan B.

Handbook of medical emergencies in the dental office, Malamed SF.

Killeys Fractures of the mandible ; Banks P.

Killeys fractures of the middle 3rd of the facial skeleton; Banks P.

The maxillary sinus and its dental implications ; McGovanda

Killey and kays outline of oral surgery - part -1 ; Seward GR & etal

Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM

Oral & maxillofacial surgery, Vol 2; Laskin DM

Extraction of teeth; Howe, GL

Minor Oral Surgery ; Howe. GL

Contemporary oral and maxillofacial surgery; Peterson I.J. &EA

Oral and maxillofacial infections ; Topazian RG & Goldberg MH

ORAL MEDICINE AND RADIOLOGY

AIMS :

To train the students to diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.

To train the students about the importance, role, use and techniques radiographs / digital radiograph and other imaging methods in diagnosis.

The principles of the clinical and radiographic aspects of Forensic Odontology.

The syllabus in ORAL MEDICINE & RADIOLOGY is divided into two main parts

(I) Diagnosis, Diagnostic methods and Oral Medicine (II) Oral Radiology, Again the part One is subdivided into three sections. (A) Diagnostic methods (B) Diagnosis and differential diagnosis (C) Oral Medicine & Therapeutics.

COURSE CONTENT

Emphasis should be laid on oral manifestations of systemic diseases and ill-effects oral sepsis on general health.

To avoid confusion regarding which lesion and to what extend the student should learn and know, this elaborate syllabus is prepared. As certain lesions come under more than one group, there is repetition.

Part - I ORAL MEDICINE AND DIAGNOSTIC AIDS

SECTION (A) - DIAGNOSTIC METHODS

Definition and importance of Diagnosis and various types of diagnosis.

Method of clinical examinations.

General Physical examination by inspection.

Oro-facial region by inspection, palpation and other means.

To train the students about the importance, role, use of saliva and techniques diagnosis of saliva as part of oral disease

Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growth pigmented lesions, white and red patches.

Examination of lymph nodes

Forensic examination - Procedures for post-mortem dental examination; maintaining dental records and their use in dental practice and post-mortem identification; jurisprudence and ethics.

Investigations

Biopsy and exfoliative cytology

Hematological, Mecrobiological and other tests and investigations necessary for diagnosis and prognosis.

SECTION (B) - DIAGNOSIS, DIFFERENTIAL DIGNOSIS

While learning the following chapters, emphasis shall be given only on diagnostic aspects including differential diagnosis

Teeth : Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth

Diseases of bone and Osteodystrophies : Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenisis imperfecta. Marfans syndrome,

osteopetrosis. Inflamation - Injury, infection and spread of infection fascial space infections osteoradionecrosis.

metabolic disorders - Histiocytosis

Endocrine - Acro - megaly and hyperparathyroidism

Miscellaneous - Paget s disease, Mono and polyostotic fibrous dysplasia, Cherubism.

Temparomandibular joint : Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.

Common cysts and Tumours:

CYSRS: Cysts of soft tissue : Mucocele and Ranula

Cysts of bone : Odontogenic and nonodontogenic

TUMORS :

Soft Tissue:

Epithelial: Papilloma, Carcinoma, Melanoma

Connective tissue : Fibroma, Lipoma, Fibrosarcoma

Vascular : Haemangioma, Lymphangioma

Nerve Tissue : Neurofibroma, Traumatic Nueroma, Neurofibromatosis

Salivary Glands ; Pleomorphic adenoma, Adenocarcinoma, Warthin s Tumour, Adenoid Cystic carcinoma.

Hard Tissue :

Non Odontogenic : Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chandrosacroma, Central giant cell rumor, and Central haemangioma

Odontogenic : Enameloma, Ameloblastoma, Calcifying Epithlial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysphasia and odontomas

Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyofenic granuloma

Granulomatous diseases : Tuberculosis, Sarcoidosis, Midline lethal granuloma crohn s Disease and Histiocytosis X

Miscellaneous Disorders : Burkitt lymphoma, sturge - Weber syndrome, CREST syndrome, rendu-osler-weber disease.

SECTION (C) : ORAL MEDICINE AND THERAPEUTICS.

The following chapters shall be studied in detail including the eiology, pathogenerals, clinical features, investigations, differential diagnosis, management and prevention.

Infections of oral and paraoral structures:

Bacterial : Streptococcal, tuberculosis, syphills, vincents, leprosy, actinomycosis, diphtheria and tetanus

Fungal : Candida albicans

Virus : Herpes simplex, herpes zoster, ramsay hunt syndrome measles, herpangina mumps, infectious mononucleosis, AIDS and hepatitis B

Important common mucosal lesions :

White lesions : Chemical burns, leukodema, leukoplakia, Fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, licherplanus, discoid lupus erythematosis

Veiculo-bullous lesions : Herpes simplex herpes zoster herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoid erythema multiforme.

Ulcers : Acute and chronic ulcers

Pigmented lesions : Exogenous and endogenous

Red lesions : Eruthroplakia, Stomatitis venenata and medicamentosa, erosive, lesions and denture sore mouth Cervico-

facial lymphadenopathy

Facial Pain :

(i) Organic pain : plain arising from the diseases of orofacial tissues like teeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.

(ii) Pain arising due to C.N.S. diseases:

Pain due to intracranial and extracranial involvement of cranial nerves (Multiple sclerosis, cerebrovascular disease trotter's syndrome etc.)

Neuralgic pain due to unknown causes : Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain.

Referred pain : Pain arising from distant tissues like heart, spine etc.,

Altered sensations : Cacogeusia halitosis.

Tongue in local and systemic disorders : (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotal tongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)

Oral manifestations of :

Metabolic disorders :

Porphyria

Haemochromatosis

Histocytosis X diseases

Endocrine disorders:

Pituitary : Gigantism, acromegaly, hypopituatism

Adrenal cortex : Addison's disease (Hypofunction)

Cushing's syndrome (Hyperfunction)

Parathyroid glands : Hyperparathyroidism.

Thyroid gland : (Hypothyroidism) Cretinism, myxedema

Pancreas : diabetes

Nutritional deficiency : vitamins : riboflavin, nicotinic acid, folic acid vitamin B12, vitamin C (Scurvy)

Blood disorders :

Red blood cell diseases

Deficiency anemias : (Iron deficiency, plummer - Vinson syndrome, pernicious anemia)

Haemolytic anemias : (Thalassemia, sickle cell anemia, erythroblastosis fetails)

Aplastic anemia

Polycythemia

White blood cell diseases

Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and lukemias

Haemorrhagic disorders :

Thrombocytopenia, purpura, hemophilia, chrismas disease and von willebrand's disease

Disease of salivary glands :

Development disturbances : Aplasia, atresia and aberration

Functional disturbances : Xerostomia, ptyalism

Inflammatory conditions : Nonspecific sialadenitis, mumps, sarcoidosis heerdfort's syndrome (Uveoparotid fever), Necrotising sialometaplasia

Cysts and tumors : Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma

Miscellaneous : sialolithiasis, sjogren's syndrome, mikuliez's disease and sialosis

Dermatological diseases with oral manifestations :

Ectodermal dysplasia (b) Hyperkerotosis palmarplantaris with periodontopathy (c) Scleroderma (d) Lichen planus including ginspan's syndrome (e) Luplus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

Immunological diseases with oral manifestations

Leukemia (b) Lymphomas (c) Multiple mycloma (d) AIDS clinical manifestations, opportunistic infections, neoplasms (e) Thrombcytopenia (f) Lupus erythematosus (g) Scleroderma (h) dermatomyositis (I) Submucous firbrosis (j) Rhemtoid arthritis (k) Recurrent oral ulcerations including behcet s syndrome and reiter s syndrome

Allergy : Local allergic reactions anaphylaxis, serum sickness (local and systemic allergic manifestations to food drugs and chemicals)

Foci of oral infection and their ill effects on general health

Management of dental problems in medically compromised persons :

Physiological changes : Puberty, Pregnancy and menopause

The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.

Precancerous lesions and conditions

Nerve and muscle diseases :

Nerves : (a) Neuropraxia (b) Neurotemesis (c) Neuritis (d) Facial nerve paralysis including Bell s palsy, Heerfordt s syndrome, Melkerson Rosenthel syndrome and ramsay hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey syndrome

Muscles : (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus

Forensic Odontology:

Medicolegal aspects of orofacial injuries

Identification of bite marks

Determination of age and sex

Identification of cadavers by dental appliances, Restorations and tissue remanants viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astringents, mouth washes, styptics, demelucents, local surface anaesthetic, sialogogues, antisialogogues and drugs used in the treatment of malignancy.

Part - II BEHAVIOURAL SCIENCES AND ETHICS.

Part - III ORAL RADIOLOGY

Scope of the subject and history of origin

Physics of radiation : (a) Nature and types of radiations (b) source of radiations (c) Production of X-rays (d) Properties of X-rays (e) Compton effect (f) Photoelectric effect Radiation measuring units

Biological effects of radiation

Radiation safety and protection measures

Principles of image production

Radiographic techniques:

Intra-Oral : (a) Periapical radiographs (Bisecting and parallel techniques) (b) Bite wing radiographs (c) Occlsal radiographs

Extra - Oral : (a) Laternal projections of skull and jaw bones and paranasal sinuses Cephalograms (d) Orthopantomograph (e) Projections of temperomandibular joint and condyle of mandible (f) Projections for Zygomatic arches

Specilised techniques : (a) Sialography (b) Xeroradiography (c) Tomography

Factors in production of good radiographs :

K.V.P. and MA of X-ray machine (b) Filters (c) Collimations (d) Intensifying screens (e) Grids (f) X-ray films (g) Exposure time (h) Techniques (i) Dark room (j) Developer and fixer solutions (k) Film processing

Radiographic normal anatomical landmarks

Faculty radiographs and artefacts in radiographs

Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues

Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy

Cantrast radiography and basic knowledge of radio-active isotopes

Radiography in Forensic Odontology - Radiographic age estimation and post-mortem radiographic methods.

PRACTICALS / CLINICALS

Student is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of the orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted on saliva diagnostic procedures. Training also shall be imparted in various radiographic procedures and interpretation of radiographs.

In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of University examination.

The following is the minimum of prescribed work for recording

(a) Recording of detailed case histories of interesting cases 10

(b) Intra-oral radiographs (Periapical, bitewing, occlusal) 25

(c) Saliva diagnostic check as routine procedure.

BOOKS RECOMMENDED:

a) Oral Diagnosis, Oral Medicine & Oral Pathology

Burkit - Oral Medicine _ J.B. Lippincott Company

Coleman - Principles of Oral Diagnosis - Mosby Year Book

Jones - Oral Manifestations of Systemic Diseases - W.B. Saunders Company

Mitchell - Oral Diagnosis & Oral Medicine

Kerr - Oral Diagnosis

Miller - Oral Diagnosis & Treatment

Hutchinson - Clinical Methods

Oral Pathology - Shafers

Sonis. S.T., Fazio. R.C. and Fang. L. - Principles and practice of Oral Medicine

b) Oral Radiology

White & Goaz - Oral Radiology - Mosby year Book

Weahrman - Dental Radiology - C.V. Mosby Company

Stafne - Oral Roentgenographic Diagnosis - W. B. Saunders Co., c) Forensic Odontology

Derek H. Clark - Practical Forensic Odontology - Butterworth - Heinemann (1992)

C. Michael Bowers, Gary Bell - Manual of forensic Odontology - Forensic Pr (1995)

ORTHODONTICS & DENTAL ORTHOPAEDICS

COURSE OBJECTIVE :

Undergraduate programme in orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above objectives.

Introduction, Definition, Historical Background, aims and Objectives of Orthodontics and Need for Orthodontics care

Growth and Development : In General a. Definition

Growth spurts and Differential growth

Factors influencing growth and Development

Methods of measuring growth

Growth theories (Genetic, Sicher.s, Scott.s, Moss.s, Petrovics, Multifactorial)

Genetic and epigenetic factors in growth

Cephalocaudal gradient in growth

Morphologic Development of Craniofacial structures

Methods of bone growth

Prenatal growth of craniofacial structures

Postnatal growth and development of : cranial base, maxilla, mandible, dental arches and occlusion.

Functional Development of Dental Arches and Occlusion

Factors influencing functional development of dental arches and occlusion

Forces of Occlusion

Wolfs law of transformation of bone

Trajectories of forces

Clinical Application of Growth and development

Malocclusion - In General

Concept of normal occlusion

Definition of malocclusion

Description of different types of dental, skeletal and functional malocclusion.

Classification of Malocclusion

Principle, description, advantages and disadvantages of classification of malocclusion by Angle.s simon.s, Licher.s and Ackerman and Proffitt.s

Normal and Abnormal Function of Stomatognathic system

Etiology of Malocclusion

Definition, importance, classification, local and general etiological factors.

Etiology of following different types of malocclusion:

Midline diastema

Spacing

Crowding

Cross - Bite: Anterior / Posterior

Class III Malocclusion

Class II Malocclusion

7)Deep Bite

8) Open Bite

Diagnosis And Diagnostic Aids

a. Definition, Importance and classification of diagnostic aids

b. Importance of case history and clinical examination in orthodontics

c. Study Models: - Importance and uses - Preparation and preservation of study models d. Importance of intraoral X-rays in orthodontics

e. Panoramic radiographs:- Principles, Advantages, disadvantages and uses f. Cephalometrics: Its advantages, disadvantages

1. Definition

2. Description and use of cephalostat

3. Description and uses of anatomical landmarks lines and angels used in cephalometric analysis

4. Analysis - Steiners, Downs, Tweeds, Ricketts-E- line

g. Electromyography and its uses in orthodontics

h. Wrist X-rays and its importance in orthodontics

General Principles in Orthodontic Treatment Planning Of Dental And Skeletal Malocclusions

Anchorage In Orthodontics - Definition, Classification, Types and Stability Of Anchorage

Biomechanical Principles In Orthodontics Tooth movement a.

Different types of tooth movements

b. Tissue response to orthodontic force application

c. Age factor in orthodontic tooth movement

Preventive Orthodontics a.

Definition

b. Different procedures undertaken in preventive orthodontics and their limitations.

Interceptive Orthodontics a.

Definition

b. Different procedures undertaken in interceptive orthodontics

c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.

d. Role of muscle exercises as an interceptive procedure

Corrective Orthodontics

a. Definition, factors to be considered during treatment planning.

b. Model analysis: Ponts, Ashley Howes, Bolton, Careys, Moyers Mixed Dentition Analysis

c. Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions

Extractions in Orthodontics - indications and selection of teeth for extraction.

Orthodontic Appliances: General

Requisites for orthodontics appliances

Classification, indications of Removable and Functional Appliances

Methods of force application

Materials used in construction of various orthodontic appliances - uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.

e. Preliminary knowledge of acid etching and direct bonding,

Ethics

REMOVABLE ORTHODONTIC APPLIANCES

Components of removable appliances

Different types of clasps and their uses

Different types of labial bows and their uses

Different types of springs and their uses

Expansion appliances in orthodontics:

Principles

Indications for arch expansion

Description of expansion appliances and different types of expansion devices and their uses.

Rapid maxillary expansion

FIXED ORTHODONTIC APPLIANCES

Definition, Indications & Contraindications

Component parts and their uses

Basic principles of different techniques: Edgewise, Begg s, straight wire.

EXTRAORAL APPLIANCES

Headgears

chincup

reverse pull headgears

MYOFUNCTIONAL APPLIANCES

Definition and principles

Muscle exercise and their uses in orthodontics

Functional appliances:

Activator, Oral screens, Frankels function regulator, bionatar twin blocks, lip bumper

Inclined planes - upper and lower

Orthodontic Management of Cleft Lip And Palate

Principles of Surgical orthodontics

Brief Knowledge of correction of :

a. Mandibular Prognathism and Retrognathism

b. Maxillary Prognathism and Retrognathism c.

Anterior open bite and deep bite

d. Cross bite

Principle, Differential diagnosis and methods of Treatment of : 1.

Midline diastema

2. Cross bite

3. Open bite

4. Deep bite

5. Spacing

6. Crowding

7. Class II -Division 1, Division 2

8. Class III Malocclusion - True and Psuedo Class III

Retention And Relapse

Definition, Need for retention, causes of relapse, Methods of retention, Different types of retention devices, Duration of retention, Theories of retention.

CLINICALS AND PRACTICALS IN ORTHODONTICS

PRACTICAL TRAINING DURING II YEAR B.D.S.

I. Basic wire bending exercises gauge 22 or 0.7 mm

Straightening of wires (4 Nos.)

Bending of a equilateral triangle

Bending of a rectangle

Bending of a square

Bending of a circle

Bending of U.V.

II. Construction of Clasps (Both sides upper / lower) Gauge 22 or 0.7 mm

¾ clasp (C-clasp)

Full clasp (Jackson s Crib)

Adam s Clasp

Triangular clasp

Construction of Springs (on upper bother sides) Gauge 24 or 0.5mm

Finger Spring

Single Cantelever Spring

Double Cantelever Spring (Z-spring)

T-Springs on premolars

IV. Construction of Canine retractors Gauge 23 or 0.6mm

U-Loop Canine retractor

(Both sides on upper & lower)

Helical canine retractor

(Both sides on upper & lower)

3. Buccal canine retractor

-self supported buccal canine

retractor with

Sleeve - 5mm wire or 24 gauge

Sleeve - 19 gauge needle on any one side.

4. Palatal canine retractor on upper both sides Gauge 23 or 0.6mm

Labial Bow

Gauge 22 or 0.7 mm

One on both upper and lower

CLINICAL TRAINING DURING III YEAR B.D.S.

NO. EXERCISE

Making upper Alignate impression

Making lower Alignate impression

Study moral preparation

Model Analysis

Ponts analysis

Ashley Howes Analysis

Careys Analysis

Boltons Analysis

Moyers Mixed Dentition Analysis

CLINICAL TRAINING DURING FINAL YEAR B.D.S.

No. EXERCISE

Case History taking

Case discussion

Discussion on the given topic

Cephalometric tracings

Down's Analysis

Steiner's Analysis

Tweed's Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S

Adam's Clasp on Anterior teeth Gauge 0.7 mm

Modified Adam's Clasp on upper arch Gauge 0.7 mm

High Labial bow with Apron spring on upper arch

(Gauge of Labial bow - 0.9 mm, Apron spring - 0.3

mm) 4. Coffin spring on upper arch Gauge 1 mm

Appliance construction in Acrylic

Upper and Lower Hawley's Appliance

Upper Hawley's with Anterior bite plane

Upper Habit breaking Appliance

Upper Hawley's with Posterior bite plane with 'Z' Spring

Construction of Activator

Lower inclined plane / Catalan's Appliance

Upper Expansion plate with Expansion screw

RECOMMENDED AND REFERENCE BOOKS

1. CONTEMPORARY ORTHODOTICS — WILLIAM R. PROFIT
2. ORTHODONTICS FOR DENTAL STUDENTS — WHITE AND GARDINER
3. HANDBOOK OF ORTHODONTICS — MOYERS

ORTHODONTICS - PRINCIPLES AND PRACTICE GRABER

DESIGN, CONSTRUCTION AND USE OF REMOVABLE

6. ORTHODONTIC APPLIANCES — C. PHILIP ADAMS
7. CLINICAL ORTHODONTICS: VOL 1 & 2 — SALZMANN

15. PAEDIATRIC & PREVENTIVE DENTISTRY

THEORY :

INTRODUCTION TO PEDODONTICS & PREVENTIVE DENTISTRY

Definition, Scope, Objectives and Importance.

GROWTH & DEVELOPMENT

Importance of study of growth and development in pedodontics

Prenatal and Postnatal factors in growth & development

Theories of growth & development

Development of maxilla and mandible and related age changes

DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADELOSCENCE

Study of variations and abnormalities

DENTAL ANATOMY AND HISTOLOGY

Development of teeth and associated structures.

Eruption and shedding of teeth

Teething disorders and their management

Chronology of eruption of teeth

Differences between deciduous and permanent teeth

Development of dentition from birth to adolescence.

Importance of first permanent molar.

DENTAL RADIOLOGY RELATED TO PEDODONTICS

ORAL SURGICAL PROCEDURES IN CHILDREN

Indication and contraindications of extractions of primary and permanent teeth in children

Knowledge of Local and General Anesthesia

Minor surgical procedures in children

DENTAL CARIES:

Historical background

Definition, aetiology and pathogenesis

Caries pattern in primary, young permanent and permanent teeth in children

Rampant caries, early childhood caries and extensive caries

Definition, aetiology, pathogenesis, Clinical features, Complications & Management

Role of diet and nutrition in Dental Caries

Dietary modifications and diet counseling

Caries activity, tests, caries prediction, caries susceptibility & their clinical application.

GINGIVAL & PERIODONTAL DISEASES IN CHILDREN

Normal gingiva & periodontium in children

Definition, aetiology and Pathogenesis

Prevention & Management of gingival & Periodontal diseases

CHILD PSYCHOLOGY

Definition

Theories of child psychology

Psychological development of children with age

Principles of psychological growth & development while managing child patient.

Dental fear and its management

Factors affecting child s reaction to dental treatment

BEHAVIOUR MANAGEMENT

Definitions.

Types of behaviour encountered in the dental clinic

Non - pharmacological & pharmacological methods of Behaviour Management.

PEDIATRIC OPERATIVE DENTISTRY:

Principles of Pediatric Operative Dentistry

Modifications required for cavity preparation in primary and young permanent teeth

Various Isolation Techniques

Restorations of decayed primary, young permanent and permanent teeth in children using various restrorative materials like Glass Ionomer, Composites and Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.

PEDIATRIC ENDODONTICS

Principles & Diagnosis.

Classification of Pulpal Pathology in primary, young permanent & permanent teeth

Management of Pulpally involved primary, young permanent & permanent teeth

- Pulp capping - direct & indirect
- Pulpotomy
- Pulpectomy
- Apexogenesis
- Apexification

Obturation Techniques & material used for primary, young permanent & permanent teeth in children

TRAUMATIC INJURIES IN CHILDREN

Classifications & Importance

Sequelae & reaction of teeth of trauma

Management of Traumatized teeth.

PREVENTIVE & INTERCEPTIVE ORTHODONTICS:

Definitions.

Problems encountered during primary and mixed dentition phases and their management

Serial extractions.

Space management

ORAL HABITS IN CHILDREN

Definition, Aetiology & Classification.

Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits

Management of oral habits in children

DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS :

-Definition, Aetiology, Classification, Behavioural and Clinical features & Management of children with :

- Physically handicapping conditions:
- Mentally Compromising conditions:
- Medically compromising conditions
- Genetic disorders

CONGENITAL ABNORMALITIES IN CHILDREN:

Definition, Classification, Clinical features & Management

DENTAL IMERGENCIES IN CHILDREN & THEIR MANAGEMENT

DENTAL MATERIAL USED IN PEDIATRIC DENTISTRY

PREVENTIVE DENTISTRY :

Definition

Principles & Scope

Types of prevention

Different preventive measures in Pediatric Dentistry including pit and fissure sealants and caries vaccine.

DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES.

FLUORIDES :

Historical background

Systemic & Topical fluorides

Mechanism of action.

Toxicity & Management

Defluoridation techniques.

CASE HISTORY RECORDING :

Outline of principles of examination, diagnosis & treatment planning.

SETTING UP OF PEDODONTIC CLINIC

ETHICS

PRACTICALS:

Following is the recommended clinical quota for under graduate students in the subject of pediatric & preventive dentistry.

Restorations - Class I & II only : 45

Preventive measures e.g. Oral Prophylaxis - 20

Fluoride applications - 10

Extractions - 25

Case History Recording & Treatment Planning - 10

Education & motivation of the patients using disclosing agents. Educating patients about oral hygiene measures like tooth brushing, flossing etc.

BOOKS RECOMMENDED & REFERENCE:

Pediatric Dentistry (Infancy through Adolescences) - Pinkham.

2. Kennedy s Pediatric Operative Dentistry– Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry– Stephen H. Wei.

Clinical use of Fluorides - Stephen H. Wei

Pediatric Oral & Maxillofacial Surgery - Kaban

Pediatric Medical Emergencies - P.S. Whatt

Understanding of Dental Caries - Niki Foruk

An Atlas of Glass Ionomer cements - G. J. Mount

Clinical Pedodontics - Finn

Textbook of Pediatric Dentistry - Braham Morris

Primary Preventive Dentistry - Norman O. Harris

Handbook of Clinical Pedodontics - Kenneth D.

Preventive Dentistry - Forrester.

The Metobolism and Toxicity of Fluoride - Garry M. Whitford

Dentistry for the Child and Adolescence - Mc Donald.

Pediatric Dentistry - Damle S.G.

Behaviour Management - Wright

18 Pediatric Dentistry _ Mathewson

Traumatic Injuries - andreason

Occlusal guidance in Pediatric Dentistry - Nakata

Pediatric Drug Therapy - Tomare

Contemporary Orthodontics - Profitt.

Preventive Dentistry - Depaola

Metabolism & Toxicity of Fluoride - whitford G.M.

Endodontic Practice - Grossman

Principles of Endodontics - Munford

Endodontics - Ingle

Pathways of Pulp - Cohen

Management of Traumatized anterior Teeth - Hargreaves.

PUBLIC HEALTH DENTISTRY

GOAL :

To prevent and control oral diseases and promote oral health through organized community efforts.

OBJECTIVES :

Knowledge :

At the conclusion of the course the student shall have a knowledge of the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics if dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy.

Skill & Attitude :

At the conclusion of the course the student shall have require at the skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health.

Communication abilities :

At the conclusions of the course the student should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease.

Syllabus :

Introduction to Dentistry : Definition of Dentistry, History of dentistry, Scope, aims and objective dentistry.

Public Health :

Health & Disease : Concepts, Philosophy, Definition and Characteristics.

Public Health : Definition & Concepts, History of Public Health

General Epidemiology : Definition, objectives, methods

Environmental Health - Concepts, principles, protection, sources, purification environmental sanitation of water disposal of waste sanitation, then role in mass disorder.

Health Education : Definition, concepts, principles, methods, and health education aids.

Public health administration : Priority, establishment, manpower, private practice management, hospital management.

Ethics and Jurisprudence : Professional liabilities, negligence, malpractice, consents, evidence, contracts and methods of identification in forensic dentistry.

Nutrition in oral diseases

Behavioural science : Definition of sociology, anthropology and psychology and their in dental practice and community.

Health care delivery system : Centre and state, oral health policy, primary health care, national programmes health organizations.

Dental Public Health

Definition and difference between community and clinical health

Epidemiology of dental diseases dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.

Survey procedures : Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.

Delivery of dental care : Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.

Payments of dental care : Methods of payments and dental insurance, government plans.

Preventive Dentistry - definition, Levels, role of individual, Community and profession, fluorides in dentistry, plaque control programmes.

Research Methodology and Dental Statistics

Health Information : Basic Knowledge of Computers, MS Office, Window 2000, Statistical Programmes

Research Methodology : Definition, types of research, designing a written protocol

Bio-Statistics : Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques types, errors, bias, blind trails and calibration.

Practice Management

Place and locality

Premises & Layout

Selection of equipments

Maintenance of records / accounts / audit Dentist Act 1948 with amendment

Dental Council of India and State Dental Councils

Composition and responsibilities

Indian Dental Association

Head Office, State, Local and branches.

PRACTICALS / CLINICALS / FIELD PROGRAMME IN COMMUNITY DENTISTRY

These exercises designed to help the student in IV year students:

Understand the community aspects of dentistry.

To take up leadership role in solving community oral health programme.

Exercises :

Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capita income

Incidence and prevalence of common oral diseases like dental caries, periodontal disease, oral cancer, fluorosis at national and international levels.

Preparation of oral health education material posters, models, slides, lecturers, play acting skits etc.

Oral health status assessment of the community using indices and WHO basic oral health survey methods

Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment of finance for dental practices-preparing project report.

Visit to primary health centre-to acquaint with activities and primary health care delivery

Visit to water purification plant / public health laboratory / centre for treatment of western and sewage water.

Visit to schools-to assess the oral health status of school children, emergency treatment and health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse programme etc.)

Visit to institution for the care of handicapped, physically, mentally or medically compromised patients

Preventive dentistry : in the department application of pit and fissure sealants, fluoride gel application procedure, A.R.T., Comprehensive health for 5 pts at least 2 patients.

The colleges are encouraged to involve in the N.S.S. programme for college students for carrying out social work in rural areas.

SUGGESTED INTERNSHIP PROGRAMME IN COMMUNITY DENTISTRY

AT THE COLLEGE

Students are posted t the department to get training in dental practice management

Total oral health care approach - in order to prepare the new graduates in their approach to diagnosis, treatment planning, cost of treatment, prevention of treatment on schedule, recall maintenance of records etc. at least 10 patients (both children and adults of all types posting for at least one month).

The practice of chair side preventive dentistry including oral health education

AT THE COMMUNITY ORAL HEALTH CARE CENTRE (ADOPTED BY THE DENTAL COLLEGE IN RURAL AREAS)

Graduates posted for at least on month to familiarize in :

Survey methods, analysis and presentation of oral health assessment of school children and community independently using WHO basic oral health survey methods.

Participation in rural oral health education programmes

Stay in the village to understand the problems and life in rural areas.

III. DESIRABLE : Learning use of computers at least basic programme

Examination Pattern

Index : Case History

Oral hygiene indices simplified - Green and vermilion

Silness and Loe index for Plaque

Loe and Silness index for gingival

CPI

DMF : T & S, df:t and s

Deans fluoride index

Health Education

Make on - Audio visual aid

Make a health talk

Practical work

Pit and fissure sealant

Topical fluoride application

BOOKS RECOMMENDED & REFERENCE :

Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt, Edn. - 1983, W.B. Saunders Company

Principles of Dental public health by James Morse Dunning. IVth Edition, 1986, Harward University Press.

Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by the C. V. Mosby Company 1981

Community Oral Health - A system approach by Patricia P. Cormier and Jouce I. Levy published by Appleton Century -Crofts / New York - 1981

Community Dentistry - A problem oriented approach by P.C. Dental Hand book series Vol 8 by Stephen L. Silverman and Ames F. Tryon, Series editor Alvin F. Gardner, PSG publishing company Inc. Littleton Massachuseltts, 1980

Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wrigth and sons Bristol, 1980

Oral Health Surveys - Basic methods, 4th edition, 1997, published by W.H.O. Geneva available at the regional office, New Delhi.

Preventive Medicine and Hygiene - By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.

Preventive Dentistry - by J.O. Forrest published by John Wright and sons Bristoli, 1980

Preventive Dentistry by Murray, 1997

Text Book of Preventive and Social Medicine by Park and Park, 14th Edition.

Community Dentistry by Dr. Soben Peter

Introduction to Bio-statistics by B.K. Mahajan

Research Methodology and Bio-statistics by

Introduction to statistical Methods by Garewal.

PERIODONTOLOGY

OBJECTIVES :

The student shall acquire the skill to perform dental scaling, diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same.

The student shall develop attitude to impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. The student shall also develop an attitude to perform the treatment with full aseptic precautions; shall develop an

attitude to prevent iatrogenic diseases; to conserve the tooth to the maximum possible time by maintaining periodontal health and to refer the patients who require specialist s care

Introduction : Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics

Development of perio-dental tissues, micro structural anatomy and biology of periodontal tissues in detail Gingiva . Junctional epithelium in detail, Epithelial Mesenchymal Interaction, Periodontal, ligament Cementum, Alveolar bone.

Defensive mechanisms in the oral cavity : Role of Epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment

4.	Age changes in periodontal structures and their significance in Geriatric dentistry	Age changes in teeth and periodontal structures and 1 their association with periodontal diseases
5.	Classification of periodontal diseases	Need for classification, scientific basis of 1 classification Classification of gingival and periodontal disease as described in world workshop 1989 Gingivitis : Plaque associated, ANUG, steroid hormone influenced Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc. Periodontitis : Adult periodontitis, Rapidly progressive periodontitis A & B, Juvenile periodontitis (localized, generalized, and post juvenile), Prepubertal periodontitis Refractory periodontits
6	Gingival diseases	Localized and generalized gingivitis, papillary, 6 marginal and diffuse gingivitis Etiology, Pathogenesis, clinical signs, symptoms and management of i) Plaque associated gingivitis ii) Systemically aggravated gingivitis (sex hormones, drugs and systemic diseases) iii) ANUG iv) Desquamative gingivitis-Gingivitis associated with lichen planus, pemphigoid, pemphigus and other vesiculobullous lesions v) Allergic gingivitis vi) Infective gingivitis-Herpetic, bacterial and candidial vii) Pericoronitis viii) Gingival enlargement (classification and differential diagnosis)
7	Epidemiology of periodontal diseases	- Definition of index, indidence, prevalence, epidemiology, endemic, epidemic and pandemic - classification of indices (Irreversible and reversible) - Deficiencies of earlier indices used in Perodontics

		- Detailed understanding of Silness & Loe Plaque Index, Loe & Silness Gingival Index, CPITN & CPI - Prevalence of periodontal diseases in India and other countries - Public health significance (all these topics are covered at length under community dentistry. Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination.
8	Extension of inflammation from gingiva	Mechanism of spread of inflammation from gingival area to deeper periodontal structures factors that modify the spread
9.	Pocket	Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket.
10.	Etiology	- Dental plaque (Biofilm) - Definition, New concept of biofilm - Types composition, bacterial colonization, growth, maturation and disclosing agents - Role of dental plaque in periodontal diseases - Plaque microorganism in detail and bacteria associated with periodontal diseases - Plaque retentive factors - Materia alba - Food debris - Calculus - Definition - Types, composition, attachment, theories of formation - Role of calculus in disease Food impaction - Definition - Types, Etiology - Hirschfelds classification - Signs, symptoms & sequelae of treatment Trauma from Occlusion - Definition, Types - Histopathological changes - Role in periodontal disease - Measures of management in brief Habits - Their periodontal significance - Bruxism & parafunctional habits, tongue thrusting, lip biting, occupational habits. IATROGENIC FACTORS Conservative Dentistry - Restorations - Contact point, marginal ridge, surface roughness, overhanging restorations, interface between restoration and teeth Prosthodontics - Interrelationship - Bridges and other prosthesis pontics (types) surface contour, relationships of margins to

		the perodontium, Gingival protection theory, muscle action theory and theory of access to oral hygiene. Orthodontics - Interrelationship, removable appliances & fixed appliances - Retention of plaque, bacterial changes Systemic diseases - Diabetes, sex hormones, nutrition (Vit.C & proteins) - AIDS & periodontium - Hemorrhagic disease, Leukemia, clotting factor disorders, PMN disorders
11.	Risk factors	- Definition, Risk factors for periodontal diseases 1
12.	Host response	- Mechanism of initiation and progression of3 periodontal diseases - Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulin, complement system, immune mechanisms & cytokines in brief - Stages in gingivitis - initial, early , established and advanced - Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis
13.	Periodontitis	- Etiology, histopathology, clinical signs & 6 symptoms, dignosis and treatment of adult periodontitis - Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment - Furcation involvement, Glickman s classification, prognosis and management - Rapidly progressive periodontitis - Juvenile periodontitis : Localised and generalized - Post juvenile periodontitis - Periodontitis associated with systemic diseases - Refractory periodontitis
14.	Diagnosis	- Routine procedures, methods of probing, types of probes (According case history) - Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.
15.	Prognosis	- Definition, types, purpose and factors to be taken into consideration
16.	Treatment plan	- Factors to be considered
17.	Periodontal Therapy	A. General principles of periodontal therapy. Phase I, II, III, IV therapy Definition of periodontal regeneration, repair, new attachment and reattachment B. Plaque control i. Mechanical tooth brushes, interdental cleaning aids, dentifrices

		ii. Chemical ; classification and mechanism of action of each & Pocket irrigation
18.	Pocket eradication procedures	- Scaling & root planning - indications - Aims & objectives - Healing following root planning - Hand instruments, sonic, ultrasonic & peizo electric scalers - curettage & present concepts - definition - indications - Aims & objectives - procedures & healing response - Flap surgery - Definition - Types of flaps, Design of flaps, papilla preservation - Indications & contraindications - Armamentarium - Surgical procedure & healing response
19.	Osseous Surgery	Osseous defects in periodontal disease - Definition - Classification - Surgery : resective, addictive osseous surgery (osseous grafts with classification of grafts) - Healing responses - Other regenerative procedures ; root conditioning - Guided tissue regeneration
20.	Mucogingival surgery & periodontal plastic surgeries	Definition Muscogingival problems : etiology, classification of gingival recession (P.D. Miller Jr. and Sulivan and atkins) Indications & objectives Gingival extension procedures : laternal predicle graft, frenectomy, frenotomy Crown lengthening procedures Periodontal microsurgery in brief
21.	Splints	- Periodontal splints - Purpose & Classification - Principles & splinting
22.	Hypersensitivity	Causes, Theories & Management
23.	Implants	Definition, types, scope & biomaterials uses Periodontal consideration : Such as implant-bone interface, implant - gingival interface, implant failure, peri implantitis & management
24.	Maintenance phase (SPT)	- Aims, objective and principles - Importance - Procedures - Maintenance of implants
25.	Pharmaco - therapy	- Periodontal dressings - antibiotics & anti-inflammatory drugs - Local drug delivery systems
26.	Periodontal management of medically	Topics concerning periodontal management of

	Compromised patients	medically compromised patients
27.	Inter-disciplinary care	- Pulpo-periodontal involvement - Routes of spread of infection - Simons classification - Management
28.	Systemic effects of periodontal diseases in brief	- Cardiovascular diseases Low birth weight babies etc.
29.	Infection control protocol	Sterilization and various aseptic procedures
30.	Ethics	

TUTORIALS DURING CLINICAL POSTING ;

Infection control

Periodontal instruments

Chair position and principles of instrumentation

Maintenance of instruments (sharpening)

Ultrasonic, Peizoelectric and sonic scaling - demonstration of technique

Diagnosis of periodontal disease and determination of prognosis

Radiographic interpretation and lab investigations

Motivation of patients - oral hygiene instructions

Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment. Student should perform scaling, root planning local drug delivery and SPT. Shall be given demonstration of all periodontal surgical procedures.

DEMONSTRATIONS :

History taking and clinical examination of the patients

Recording different indices

Methods of using various scaling and surgical instruments

Polishing the teeth

Bacterial smear taking

Demonstration to patients about different oral hygiene aids

Surgical procedures - gingivectomy, gingivoplasty and flap operations

Follow up procedures, post operative care and supervision

REQUIREMENTS:

Diagnosis, treatment planning and discussion and total periodontal treatment - 25 cases

Dental scaling, oral hygiene instructions - 50 complete cases / equivalent

Assistance in periodontal surgery - 5 cases

A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the heal of the department.

Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

PRESCRIBED BOOK :

Glickman.s Clinical Periodontology - Carranza

REFERENCE BOOKS

Essentials of Periodontology and periodontics - Torquil MacPhee

Contemporary periodontics - Cohen

Periodontal therapy - Goldman

Orbans periodontics - Orban

Oral Health Survey - W.H.O.

Preventive Periodontics - Young and Stiffler

Public Health Dentistry - Slack

Advanced Periodontal Disease - John Prichard

Preventive Dentistry - Forrest

Clinical Periodontology - Jan Lindhe

Periodontics - Baer & Morris.

18. PROSTHODONTICS AND CROWN & BRIDGE

Complete Dentures

Applied Anatomy and Physiology

Introduction

Biomechanics of the edentulous state

Residual ridge resorption

Communicating with patient

Understanding the patients.

- Mental Attitude

Instructing the patient

C.Diagnosis and treatment planning for patients

With some teeth remaining

With no teeth remaining

Systemic status

Local factor

The geriatric patients

d) Diagnostic procedures

Articulators - discussion

Improving the patient s denture foundation and ridge relation - an overview.

Pre-operative examination

Initial hard tissue & soft tissue procedures

Secondary hard and soft tissue procedure

Implant procedure

Congenital deformities

Postoperative procedure.

Principles of Retention, Support and Stability

Impressions - detail

Muscles of facial expression

Biological considerations for maxillary and mandibular impression including anatomy landmark and their interpretation.

Impression objectives

Impression materials

Impression techniques

Maxillary and mandibular impression procedures.

Preliminary impressions

final Impressions

Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation)

Record bases and occlusion rims - in detail

Materials & techniques

useful guidelines and ideal parameters

recording and transferring bases and occlusal rims

Biological consideration in jaw relation & jaw movements - craniomandibular relations.

Mandibular movements

Maxillo - mandibular relation including vertical and horizontal jaw relations.

Concept of occlusion - discuss in brief

Relating the patient to the articulator

Face bow types and uses - discuss in brief

Face bow transfer procedure - discuss in brief

Recording maxillo mandibular relation

Vertical relations

Centric relation records

- Eccentric relation records.
- Lateral relation records

Tooth selection and arrangement

- Anterior teeth
- Posterior teeth
- Esthetic and functional harmony

Relating inclination of teeth to concept of occlusion - in brief

- Neutrocentric concept
- Balanced occlusal concept

Trial dentures

Laboratory procedures

- Wax contouring
- Investing of dentures
- Preparing of mold
- Preparing & Packing acrylic resin
- Processing of dentures
- Recovery of dentures
- Lab remount procedures
- Recovering the complete denture from the cast
- Finishing and polishing the complete denture
- Plaster cast for clinical denture remount procedure

Denture insertion

- Insertion procedures
- Clinical errors
- Correcting occlusal disharmony
- Selective grinding procedures.

Treating problems with associated denture use - discuss in brief (tabulation / flow chart form)

Treating abused tissues - discuss in brief

Relining and rebasing of dentures - discuss in brief

Immediate complete dentures construction procedure - discuss in brief

The single complete denture - discuss in brief

Overdentures denture - discuss in brief

Dental implants in complete denture - discuss in brief.

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indication, contrindications

Maintenance phase

Oral Implantology

Ethics

Removable Flexible Dentures

Introduction

- Terminologies and scope

Classification

Examination, Diagnosis & Treatment planning and evaluation of diagnostic data

Components of a removable parital

- Major connectors,
- Minor connectors
- Rest and rest seats

Components of a Removable Partial Denture

- Direct retainers
- Indirect retainers
- Tooth replacement

Principles of Removable Partial Denture Design

Survey and design - in brief

- Surveyors
- Surveying
- Designing

Mouth preparation and masters cast

Impression materials and procedures for removable partial dentures

Preliminary jaw relation and esthetic try in for some anterior replacement teeth

Laboratory procedures for framework construction - in brief.

Fitting the framework - in brief.

Try - in of the partial denture - in brief

Completion of the partial denture - in brief

Inserting the Removable Partial Denture - in brief

Postinsertion observations.

Temporary Acrylic Partial Dentures.

Immediate Removable Partial Denture.

Removable Partial Dentures opposing Complete denture.

Note: It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / Classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indications, contradictions

Maintenance Phase

Fixed Partial Dentures

Topics To Be Covered In Detail

Introduction

Fundamentals of occlusion - in brief.

Articulators - in brief

Treatment planning for single tooth restorations.

Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.

Fixed partial denture configurations.

Principles of tooth preparations.

Preparations for full veneer crowns - in detail.

Preparations for partial veneer crowns - in brief

Provisional Restorations

Fluid Control and Soft Tissue Management

Impressions

Working Casts and Dies

Wax patterns

Pontics and Edentulous Ridges

Esthetic Considerations

Finishing and Cementation

Topics To Be Covered In Brief -

Solder Joints and Other Connectors

All - Ceramic Restorations

Metal - Ceramic Restorations

Preparations of intracoronal restorations.

Preparations for extensively damaged teeth.

Preparations for periodontally weakened teeth

The Functionally Generated Path Technique

Investing and Casting

Resin - Bonded Fixed Partials Denture

Note : It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation / patient selection / treatment planning)

Types / Classification

Materials

Methodology - Lab / Clinical

Advantages & disadvantages

Indications, contradictions

Maintenance Phase

RECOMMENDED BOOKS :

Syllabus of Complete denture by - Charles M. Heartwell Jr. and Arthur O. Rahn.

Boucher's "Prosthodontic treatment for edentulous patients"

Essentials of complete denture prosthodontics by - Sheldon Winkler.

Maxillofacial prosthetics by - Willam R. Laney.

McCraken's Removable partial Prosthodontics

Removable partial prosthodontics by - Ernest L. Miller and Joseph E. Grasso.

AESTHETIC DENTISTRY

Aesthetic Dentistry is gaining more popularity since last decade. It is better that undergraduate students should understand the philosophy and scientific knowledge of the esthetic dentistry.

Introduction and scope of esthetic dentistry

Anatomy & physiology of smile

Role of the colour in esthetic dentistry

Simple procedures (roundering of central incisors to enhance esthetics appearance)

Bleaching of teeth

Veneers with various materials

Preventive and interceptive esthetics

Ceramics

Simple gingival contouring to enhance the appearance

Simple clinical procedures for BDS students

Recommended books:

Esthetic guidelines for restorative dentistry; Scharer & others

Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)

Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

FORENSIC ODONTOLOGY (30 HRS OF INSTRUCTION)

Definition

Forensic is derived from the Latin word forum, which means court if law, Odontology literally implies the study of teeth. Forensic odontology, therefore, has been defined by the Federation Dentaire International (FDI) as "that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence, and with the proper evaluation and presentation of dental findings."

Objectives of the undergraduate curriculum

At the end of the programme, the dental graduate should:

- Have sound knowledge of the theorectial and practical aspects of forensic odontology.
- Have an awareness of ethical obligations and legal responsibilities in routine practice and forensic casework.
- Be competent to recognize forensic cases with dental applications when consulted by the police, forensic pathologists, lawyers and associated professionals.
- Be competent in proper collection of dental evidence related to cases of identification, ethnic and sex differentiaton, age estimation and bite marks.

Be able to assist in analysis, evaluation, and presentation of dental facts within the realm of law.

Curriculum for forensic odontology

Introduction to forensic dentistry

- Definition and history
- Recent developments and future trends

Overview of forensic medicine and toxicology

- Cause of death and postmortem changes
- Toxicological manifestations in teeth and oral tissues

Dental identification

- Definition
- Basis for dental identification
- Postmortem procedures
- Dental record compilation and interpretation
- Comparison of data, and principles of report writing
- Identification in disasters and handling incinerated remains
- Postmortem changes to oral structures

Maintaining dental records

- Basic aspects of good record - keeping
- Different types of dental records
    - Dental charts
    - Dental radiographs
    - Study casts
    - Denture marking
    - Photographs
- Dental notations
- Relevance of dental records in forensic investigation

Age estimation

- Age estimation in children and adolescents
    - Advantages of tooth calcification over eruption in estimating age
    - Radiographic methods of Schour & Massler, Demirjian et al
- Age estimation in adults
    - Histological methods - Gustafson's six variables and Johanson's modification,

Bang & Ramms dentine translucency

- Radiographic method of Kvaal et al
- Principles of report writing

Sex differentiation

- Sexual dimorphism in tooth dimensions (Odontometrics)

Ethnic variations (racial differences) in tooth morphology

- Description of human population groups
- Genetic and environmental influences on tooth morphology
- Description of metric and non-metric dental features used in ethnic differentiation

Bite mark procedures

- Definition and classification
- Basis for bite mark investigation
- Bite mark appearance
- Macroscopic and microscopic ageing of bite marks
- Evidence collection from the victim and suspect of bite mark
- Analysis and comparison
- Principles of report writing
- Animal bite investigation

Dental DNA methods

- Importance of dental DNA evidence in forensic investigations
- Types of DNA and dental DNA isolation procedures
- DNA analysis in personal identification
- Gene-linked sex dimorphism
- Population genetics

Jurisprudence and ethics

- Fundamentals of law and the constitution
- Medical legislation and statutes (Dental and /medical Council Acts, etc)
- Basics of civil law (including torts, contracts and consumer protection act)
- Criminal and civil procedure code (including expert witness requirement)
- Assessment and quantification of dental injuries in courts of law
- Medical negligence and liability
- Informed consent and confidentiality
- Rights and duties of doctors and patients
- Medical and dental ethics (as per Dentists Act)

Theory session and practical exercises

Total hours for the course

- Didactic - 10-12 hours
- Practical - 20-25 hours

Detailed didactic sessions for the above components, either in the form of lectures or as structured student - teacher interactions, is essential. Specialists from multiple disciplines, particularly from legal and forensic sciences, can be encouraged to undertake teaching in their area of expertise.

An interactive, navigable and non-linear (INN) model may also be utilized for education. Practical exercises (real-life casework and / or simulated cases) must complement didactic sessions to facilitate optimal student understanding of the subject. Mandatory practical training in dental identification methods, dental profiling (ethnic and sex differences, radiographic age estimation), and bite mark procedures, is of paramount importance. In addition, practical exercises / demonstrations in histological age estimation, comparative dental anatomy, DNA methods, medical autopsy, court visits, and other topics may be conducted depending on available expertise, equipment and feasibility.

Approach to teaching forensic odontology

Forensic odontology could be covered in two separate streams. The divisions include a preclinical stream and a clinical stream.

Preclinical stream

- introduction to forensic odontology
- Sex differences in odontometrics
- Ethnic variations in tooth morphology
- Histological age estimation
- Dental DNA methods
- Bite marks procedures
- Overview of forensic medicine and toxicology

It could prove useful to undertake the preclinical stream in II or III year under Oral Biology / Oral Pathology since these aspects of forensic odontology require grounding in dental morphology, dental histology and basic sciences,which, students would have obtained in I and / or II BDS.

Clinical stream

- Dental identification
- Maintaining dental records
- Radiographic age estimation

- Medical jurisprudence and ethics

It would be suitable to undertake these topics in the IV or V year as part of Oral Medicine and Radiology, since students require reasonable clinical exposure and acumen to interpret dental records, perform dental postmortems and analyse dental radiographs for age estimation.

ORAL IMPLANTOLOGY (30 hrs of instruction)

INTRODUCTION TO ORAL IMPLANTOLOGY

Oral Implantology is now emerged as a new branch in dentistry world wide and it has been given a separate status in the universities abroad. In India day to day the practice of treating patients with implants are on rise. In this contest inclusion of this branch into under graduate curriculum has become very essential. The objective behind this is to impart basic knowledge of Oral Implantology to undergraduates and enable them to diagnose, plan the treatment and to carry out the needed pre surgical mouth preparations and treat or refer them to speciality centres. This teaching programme may be divided and carried out by the Dept. of Oral Surgery, Prosthodontics and Periodontics.

- History of implants, their design & surface characteristics and osseo-integration
- Scope of oral & maxillofacial implantology & terminologies
- A brief introduction to various implant systems in practice
- Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.
- Soft tissue considerations in implant dentistry
- Diagnosis & treatment planning in implant dentistry
  - Case history taking / Examination / Medical evaluation / Orofacial evaluation / Radiographic evaluation / Diagnostic evaluation / Diagnosis and treatment planning / treatment alternatives / Estimation of treatment costs / patient education and motivation
- Pre surgical preparation of patient
- Implant installation & armamentarium for the Branemark system as a role model
- First stage surgery - Mandible - Maxilla
- Healing period & second stage surgery
- Management of surgical complications & failures
- General considerations in prosthodontic reconstruction & Bio mechanics
- Prosthodontic components of the Branemark system as a role model
- Impression procedures & Preparation of master cast
- Jaw relation records and construction of suprastructure with special emphasis on occlusion for osseointegrated prosthesis
- Management of prosthodontic complications & failures

17. Recall & maintenance phase.

Criteria for success of osseointegrated implant supported prosthesis

SUGGESTED BOOKS FOR READING

1. Contemporary Implant Dentistry - Carl .E. Misch
   Mosby 1993 First Edition.
2. Osseointegration and Occlusal Rehabilitation Hobo S., Ichida. E. and Garcia L. T.
   Ouintessence Publishing Company, 1989 First Edition.

BEHAVIOURAL SCIENCES (20 hrs of instruction)

GOAL:

The aim of teaching behavioural sciences to undergraduate student is to impart such knowledge & skills that may enable him to apply principles of behaviour -

For all round development of his personality

In various Therapeutic situations in dentistry.

The student should be able to develop skills of assessing psychological factors in each patient, explaining stress, learning simple counseling techniques, and improving patients compliance behaviour.

OBJECTIVES:

KNOWLEDGE & UNDERSTANDING:

At the end of the course, the student shall be able to:

Comprehend different aspects of normal behaviour like learning, memory, motivation, personality & intelligence.

Recognise difference between normal and abnormal behaviour.

Classify psychiatric disorders in dentistry.

Recognise clinical manifestations of dental phobia, dental anxiety, facial pain orofacial manifestations of psychiatric disorders, and behavioural problems in children. Addictive disorders, psychological disorders in various dental departments.

Should have understanding of stress in dentistry and knowledge of simple counseling techniques.

Have some background knowledge of interpersonal, managerial and problem solving skills which are an integral part of modern dental practice.

Have knowledge of social context of dental care.

SKILLS

The student shall be able to:

Interview the patient and understand different methods of communication skills in dentist - patient relationship.

Improve patients compliance behaviour.

Develop better interpersonal, managerial and problem solving skills.

Diagnose and manage minor psychological problems while treating dental patients.

INTEGRATION:

The training in Behavioural sciences shall prepare the students to deliver preventive, promotive, curative and rehabilitative services to the care of the patients both in family and community and refer advanced cases to specialized psychiatric hospitals.

Training should be integrated with all the departments of Dentistry, Medicine, Pharmacology, Physiology and Biochemistry.

PSYCHOLOGY:

1) Definition & Need of Behaioural Science. Determinants of Behaviour. Hrs 1

Scope of Behavioural Science.

Sensory process & perception perceptual process - clinical applications.

Attention - Definition - factors that determine attention. Clinical application.

Memory - Memory process - Types of memory, Forgetting:

Methods to improve memory, Clinical assessment of memory & clinical applications.

Definition - Laws of learning

Type of learning. Classical conditioning, operant conditioning, cognitive learning, Insight learning, social learning, observational learning, principles of learning - Clinical application.

Intelligence - Definition: Nature of intelligence stability of intelligence

Determinants of intelligence, clinical application

Thinking - Definition: Types of thinking, delusions, problem solving 8)

Motivation - Definition: Motive, drive, needs classification of motives

Emotions - Definition differentiation from feelings - Role of hypothalamus, Cerebral cortex, adrenal glands ANS. Theories of emotion, Types of emotions.

Personality. Assessment of personality: Questionaries, personality inventory, rating scales, Interview projective techniques - Rorshach ink blot test, RAT, CAT

SOCIOLOGY:

Social class, social groups - family, types of family, types of marriages, communities and Nations and institutions.

REFERENCE BOOKS:

General psychology - S. K. Mangal

General psychology - Hans Raj, Bhatia

General psychology - Munn

Behavioural Sciences in Medical practice - Manju Mehta

Sciences basic to psychiatry - Basanth Puri & Peter J Tyrer

ETHICS (20 hrs. of instruction)

Introduction:

There is a definite shift now from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the healthcare delivery to prepare themselves to deal with these problems. To accomplish this and develop human values Council desires that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

Course content:

Introduction to ethics -

- what is ethics?
- What are values and norms?
- How to form a value system in ones personal and professional life?
- Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, DCI code of ethics.

Ethics of the individual -

- The patient as a person
- Right to be respected
- Truth and confidentiality
- Autonomy of decision
- Doctor Patient relationship

Profession Ethics -

Code of conduct

Contract and confidentiality

Charging of fees, fee splitting

Prescription of drugs

Over - investigating the patient

Malpractice and

negligence Research Ethics -

Animal and experimental research / humanness

Human experimentation

Human volunteer research - informed consent

Drug trials

Ethical workshop of cases

Gathering all scientific

factors Gathering all value

Identifying areas of value - conflict, setting of

priorities Working our criteria towards decisions

Recommended Reading:

Medical Ethics, Francis C.M., I Ed. 1993, Jaypee Brothers, New Delhi p. 189

Maj Gen (Retd.) P. N. AWASTHI, Secy.

Following name has recommended by Board of Studies & Faculty of Dentistry

1. Oral & Maxillofacial Pathology - 2nd edition, 2004 by Neville, Damm, Allen, Bonequot , Publication – Elsevier
2. Oral Medicine & Radiology : Oral Radiology - White and Pharogh
3. Essentials of Medical Microbiology & Dental Students - 4th edition–Bhatia R. B. & Ichhpujani R.L.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS SECOND B.D.S.

Candidate will be examine in the following subjects :

1. **General Pathology, Microbiology and Parasitology**
2. **General and Dental Pharmacology**
3. **Oral and Dental Anatomy, Physiology, Histology & Embryology**
4. **Preclinical Prosthodontics (Practicals)**
5. **Preclinical Conservative Dentistry (Practicals)**

Subject 1: General Pathology, Microbiology and Parasitology

A. General Pathology

Lectures -	45 Hours
Practicals and demonstration	60 Hours
Total Duration	105 Hours (Minimum)

I. Introduction to Pathology, definition, branches, scope of Pathology, scientific study of disease and some techniques used in the same.

2. Degenerative processes and disturbances of metabolism. Cloudy swelling," Fatty changes, Amyloidosis, Hyaline degeneration, Pigmentation, Calcification

Necrosis, Gangrene.

Circulatory Disturbances.

Hyperaemia, Venous congestion, Ischaemia, Infarction, Hemorrhage, Thrombosis, Embolism, Oedema, Shock.

3. Inflammation, Response of soft and hard tissues to injuries.

Acute inflammation

Chronic inflammation

Repair with special emphasis of repair of bones, wounds and the effect of modern treatment on repair.

Hypersensitivity and Allergy

4. Common Bacterial infection i.e. Pyogenic, Enteric fever, Tuberculosis, Syphilis, Leprosy, Actinomycosis.

5. AIDS

6. Common diseases of bone like osteomylitis

Effects of Chemical, Physical agents including ionising radiation especially on bones and teeth.

7. Disturbances of nutrition with special reference to Indian conditional Metabolic disorders e.g. Rickets, Scurvy, Diabetes Mellitus etc.

8. Growth and its disorder.

Metaplasia, Atrophy, Hypertrophy

Elementary knowledge of malformation and maldevelopment

Tumour

Classification

Characters of malignant and Benign Tumour

Carcinogenesis

Methods of spread

Diagnostic methods in cancer

9. Anaemias i.e. Irondeficiency, Megaloblastic, Haemolytic, Bleeding disorder and their laboratory investigations, leukaemia.

B. Microbiology

Lectures	30 hours
Practicals	60 hours
Total Duration	90 hours (Minimum)

1. Introduction with reference to Medical and Dental microbiology including public health and preventive aspects of infections.
2. Methods and Principles of sterilization-physical and chemical.
3. Pyaemia, Septicemia.& Toxaemia.
4. Immunity and Immunising agents.
5. Auto-immunity-emphasis on practical application.

6. Morphology, Laboratory diagnosis, Physiology, Characteristics, Pathogenesis and classification of micro organisms particularly the followings.

a) Gram positive and negative cocci and bacilli in dental and general infections.

b) Spirochetal oral infections.

c) Normal oral microbial flora.

d) Organism causing specific infections such as meningitis, diphtheria, tetanus, gas gangrene, Tuberculosis, syphilis,

e) Organisms related to Dental caries.

7. Methods of taking swabs and smears from various oral regions and their staining.

8. Elementary knowledge of virology and mycology with examples of Orofacial lesions.

9. Common parasites and parasitic diseases such as amoebiasis, Malaria, Helminthic infections such as Tapeworm, Hookworm Roundworm

10. AIDS, Hepatitis, Biosefty and waste disposal.

PRACTICALS & DEMONSTRATIONS

Lecture Demonstration and practicals in Clinical Pathology comprising of Anemias and their laboratory investigations, Blood transfusion and cross matching, Bleeding disorders and their investigations.

Laboratory investigations commonly required by Dental Surgeons

a) Hemoglobinometry and Hemocytometry, Total leucocytes count.
b) Iron deficiency anemia, Megaloblastic.
c) Preparation of Blood Smears and staining them or differential count.
d) Demonstration of Bleeding time, Clotting time.
e) Leukaemia, Acute and chronic.
f) Blood groups and blood transfusion. Exam. of Urine.
g) Microscope, its various parts, Micrometry, care of microscope.
h) Gram's staining and Ziehl- Neeilsen's staining.
i) Histopathology, practicals and specimans, demonstrations.

EXAMINATIONS PATTERN

I : Theory (Written) paper shall be of three hours duration.

Theory paper shall have three parts A, B & C.

Section A: MCQ.

Multiple choice questions of 20 marks.

20 questions shall include 10 questions of General pathology and 10 General Microbiology.

Section B: General Patholgy

Q.No.1 : Short answer question. (SAQ)

Five short questions carrying two marks each 10 marks.

Q..No.2: One Long answer question or 2 short notes (5 x 2) 10 marks

Section C: Microbiology

Q.No.3: Short answer question. (SAQ)

Five short questions carrying two marks each 10 marks.-------- 10 Marks

Q.No.4 One long answer question or 2 short notes (5 x 2)- ---------- 10 marks

II: Practicals	MAXIMUM : 80 Marks
Clinical pathology	20 Marks
Histopathology(2 slides X 5)	10 Marks
Microbiology Staining (any One)	20 Marks
Spotting (10 spot X 2)	20 Marks
Journal (Micro & Patho)	10 Marks
Oral (Marks to be added to Practical)	20 Marks
III : Internal Assessment Theory+Practical	20 Marks each

Subject 2 : General & Dental Pharmacology

Duration of syllabus	40 Hrs (Minimum)
1) General Pharmacology	- Scope
	- Nature & Sources
	- Dosage form & routes of administration
	- Prescription writing
	- Pharmacokinetics
	- Mode of Action
	- Factors modifying drug action
	- Adverse drug reaction
	- Drug Interaction
2) CNS	- General Anaesethetics
	- Hypnosedatives
	- Analgesics
	- Psychotropics
	- Antiepileptics
	- Analaptics
	- Local Anaesthetics
3) ANS	- Sympathomimetic
	- Anti adrenergic drug
	- Parasympathomimetics
	- Parasympatholytics
	- Histamine
	- Antihistamincs
4)CVS	- Cardiac stimulent(Glycosides)
	- Anti anginal drugs
	- Anti hypertensive drugs
	- Vesopressors & Treatment of shock
5) Drug acting on blood	- Coagulents
	- Anti coagulents

- Haematinics..

6) G.I.T.Drugs
- Purgatives
- Anti diorrheals
- Antacids
- Anti emetics

7)Endocrines
- Treatment of diabetics
- Adrenal Carticosteroids

8) Chemo therapy
- Sulfonamides & cotrimoxazole
- Penicillins
- Cephalosporins
- Aminoglycosides
- Broad spectrum antibiotics
- Other antibiotics
- Fluroquinolones
- Chemotheraphy of tuberocolosis leprosy, malignancy, Maleria & Amoebiasis Antihelmanthic
- Antiviral

9) Vitamins & Anti oxidants

10) Misc. drugs
- Diuretics

Heavy Metal antagonists

Dental Pharmacology & Thearapeutics

Antiseptics

Astringents

Obtundant, Mummifying agents

Bleeching agents

Dentifrices & Mouthwashes

11) Respiratory system : Cough & Bronchial asthma

PRACTICALS .20 HOURS DURATION. (MINIMUM)

1) Prescription Writing and weights, measures, instruments

2) Antiseptic Mouthwash

3) Obtundant Preparation

4) Gum Paint

5) Tooth Powder

6) Tooth Paste

7) Lotion

8) Display of Trade Market Combination

-Mention
-Therapeatic action
-Toxic actions
-Contraindications
-Indications

} Only for training and not for University Examination

9) Criticism & Correction of Prescription on basis of drug interaction.

10) Drugs of Choice.

EXAMINATION PATTERN :

Theory (Written) Paper: Maximum 60 Marks Duration : 3Hours

Section -A- MCQ (20 Question) 20 Marks

Section - B

Q .1 Short Answer Question (SAQ) 10 Marks

Q.2. One Long question/ 2 Short Notes (2 x 5) 10 Marks

Section -C

Q.3 Short Answer Question (SAQ) 10 Marks

Q. 4 One Long Question /2 Short Notes (2x5) 10 Marks

ORALS:

GRAND ORAL FOR 20 MARKS, to be added to Practical. It is conducted separately by examiners and submitted in a separate sheet as per the proforma supplied by University (Appendix -F)

PRACTICAL: Maximum 80 marks.

Distributions is as under:

a) Pharmacy Practical	- 25 marks
b) Correction of wrong prescription	- 25 marks
c) Drug of choice & Dose (5 Drugs x 4)	- 20 marks.
d) Journals /Record book	- 10 marks.

Subject : 3 ORAL AND DENTAL ANATOMY, PHYSIOLOGY,

HISTOLOGY & EMBRYOLOGY

A Course of 150 Hrs. lectures and Practicals including demonstrations and tooth carving to be covered in two academic years.

A. Lectures: 45 Hours {Minimum)

1. Development including mineralization, histology, applied anatomy age changes, functions and stress on clinical significance from the view point of histology and embryology etc. of the following:

a) Structures of teeth (ENAMEL. DENTINE. CEMENTUM. & PULP)

b) Periodential ligament.

c) Jaws .

d) T. M. Joint.

f) Face

g) Oral mucosa

h) Salivary glands.

2) Active and passive eruption of teeth and shedding of Primary teeth.

3) Preparation of hard-soft tissue sections for histological Examination.

4) Applied Anatomy of: -

a) Blood and nerve supply with lymphtic drainage of Oral Tissues.

b) Muscles of Mastication and Facial. expression.

5) Detail Morphology. Chronology. Occlusion (including its controlling factors) of primary & permanent dentitions. Differences between primary and permanent dentitions.

6) Physiology of mastication, deglutition, speech and sensation with their relevance to oral structures.

7) Composition & Physiology of Saliva and their influencing factors.

8) Chemical composition and Physical properties of enamel dentine, cementum & bone.

9) Broad outline of bio-chemistry of oral tissues.

B) Examination (Theory Pattern)

Written -Theory -Paper shall be of 3 hours duration of maximum 60 marks.

Section A: MCQ --- 20 Marks.

20 questions shall be answered by students in a seperate answer sheet within first 20 minutes. This answer sheet to be collected by invigillator immediately after 20 minutes completion.

Section B & C : 20 Marks each.

Q.No.1	S.A.Q. 5 SAQ x 2 Marks each	-10Marks
Q.No.2	L.A.Q. 1 Essay type Or 2 Short Notes	-10 Marks

Section B should cover syllabus of topics No. 1,2,3, & 4

Section C should include the rest of the syllabus.

C. PRACTICALS

I) Demonstration of Various methods of Histological preparation of

a) Oral soft tissues

b) Ground decalcified Sections of teeth and Jaws

2) Brief introduction to Microscope and Microscopy

3) Microscopic study (Histological and Histochemical) of normal oral and dental tissues and their drawing in Journals. .

4) Identification of teeth

5) Determination of Age

6) Carving of permanent teeth including drawing in Journals.

7) Elective presentation of a specific topics.

Subject 4 : PRECLINICAL PROSTHODONTICS (PRACTICALS)

Duration of syllabus: First and Second Year B.D.S.

(360 Hours in Two Years period)

Practical Exercises:

A) Fabrication of complete Denture Prosthesis using edentulous Models (Cast)

1) Introduction, Aims, Objective and Scope.

2) Masticatory apparatus- Applied anatomy of the components

3) Anatomical landmarks and Physiological considerations of the Edentulous maxillary and mandibular arches.

4) Preliminary impression, (Demonstration only) and cast preparatio.

5) Construction of special trays in shellac base and self cured acrylic resin.

a) Close-fit type b) Tray with full spacer and tissue stop.

6) Final impression & Master cast preparation by box-in technique (only Demonstration)

7) Preparation of Record bases..

a) Temporary denture bases (shellac/ selfaired acrylic resin)

b) Occlusion Rims of standard dimensions.

8) Brief introduction and Demonstration of J aw Relation recording

9) Brief introductions of articulators- Detail about Mean value articulator.

10) Transfer of Jaw Relation record on articulator.

11) Brief information about the selection of teeth.

12) Arrangement of teeth -Anteriors and posterior.

13) Reproducing gingival tissue morphology (Waxing and carving)

14) Laboratory Procedures:

i) Flasking -Various techniques in brief

ii) Wax elimination from mould (Dewaxing)

iii) Preparation and packing the mould with Denture base resin.

iv) Acrylization -Brief introduction about curing cycles

v) Deflasking -Denture recovery from flask.

vi) Laboratory Remount Procedure and selective grinding.

vii) Face bow preservation Record (optional)

viii) Finishing and polishing of Dentures

ix) Making Remount cast for Clinical remount procedure.

15) Teeth arrangement in Prognathic and Retrognathic ridge relations.

16) Repair to a broken complete denture.

B) Fabrication of Removable partial Dentures:

1. Brief introduction to partial Dentures.
2. Comparison between Removable and fixed partial dentures.
3. Classification (introduction) and rules governing the classification.
4. Making one tooth (Anterior) partial denture in acrylic resin.
5. Making (posterior) removable partial denture with 'C′ clasp adaptation.
6. Surveying procedure (Demonstration only)
7. Brief introduction of various components of partial Denture.
8. Designing partial denture framework on partially edentulous cast (Drawing as Diagnostic model and in journal)
9. Brief introduction to various laboratory steps in fabrication of cast partial denture framework by using audio-visual aids.

C) Fixed partial Denture Prosthesis :

1. Brief introduction to crown and Bridge prosthesis
2. Principles of tooth reduction (Preparing abutment) to receive
    a) Full crown for anteriors and posterior teeth .
    b) partial veneer crown for anteriors and posterior teeth
    c) Dowel crown/post and core crown (Demonstration only)

3. Casting procedure to fabricate 3 unit bridge (Demonstrition only) with special consideration to making of dyes and working models.
4. Brief introduction of pontic designs.

D) Special Prosthesis :

1. Making of cap spints & gunning splint (only Demonstrations.)
2. Fabrication of obturators (only demonstration)
3. Introduction (with models/charts/photographs) of various maxillofacial prosthesis & Dental Implant.

EXAMINATION PATTERN :

I) Internal assessment. 20 Marks

a) First test of 5 Marks -- Making of special tray/Occlusion rims

b) Second test of 5 Marks -- Arrangement of teeth

c) Third test of 5 Marks -- Designing a removable partial denture for (cast partial framework) given model (Drawing on Cast and Lab. prescription slip)

d) Fourth test of 5 Marks -- Preparation of tooth to receive Full/P.V. Crown with wax pattern

First two tests to be conducted in first Year B.D.S. and third & fourth test to be con- ducted in Second Year B.D.S. Marks of First two tests must be submitted to university along with the marks of other First year subjects.

II Practical Examination: 80 Marks

To be conducted at the end of Second Year B.D.S. along with university practical programme of other subjects. Break-up is as under:

Exercise I a) Teeth arrangement for complete denture .25 Marks } Duration
b) Waxing and carving (Gingival tissue morphology)..15 Marks } 3 Hrs.

Exercise II c) Abutment preparation to receive crown .20 Marks. } Duration
d) Wax pattern for that preparation ..10 Marks. } 2 Hrs.

e) Journals/Record of the-two Year work ..10 Marks.

Subject 5: PRECLINICAL CONSERVATIVE DENTISTRY (PRACTICALS)

Duration of Syllabus: Second Year B.D.S. (240 Hrs minimum)

Syllabus :

Practical Exercises :

A. Exercises to improve the dexterity:

i) Preparation of plaster models of teeth

ii) Finishing and polishing of plaster models

iii) Marking of cavity as per Black's classification on these plaster models for Dental Amalgum fillings and inlays.

iv) Preparation of cavities for Amalgum fillings and Inlays on plaster model

v) Restoration of the prepared cavities with modelling wax.

B. Exercises for cavity preparation of Dental Amalgum Restoration on natural/ivorine

1) Mounting of the Natural/Ivorine teeth on phantom head.

2) Preparation of Cl. I/Cl.I Comp./Cl.II/Cl. V /M.O./D. cavities of posterior teeth with special amphesis on Cl. II cavities.

3) Cavity lining on all the prepared cavities

4) Restoration &.polishing of all teeth restored with dental amalgam.

C. Exercises for anterior teeth restoration.

1) Preparation of CI. III/Cl. IV cavities in anterior teeth.

2} Preparation of wax pattern for the same with inlay wax.

DEMONSTRATIONS ONLY

1. Casting procedures
2. Restoration of fractured anterior teeth with compositer resins.
3. Opening of root canal for anterior/ opsterior teeth.

EXAMINATION PATTERN

I. Internal assessment. 20 Marks.

a) First Test of 5 Marks. ..Cavity Preparation & filling on plaster models

b) Second Test of 5 Marks . .Cavity preparation class II on ivorine/Extracted (Natural) tooth & filling in Amalgum.

c) Third Test of 5 Marks ...Restoration of prepared cavity by using /GIC/ Composite resin or any other suitable material.

d) Fourth test of 5 Marks ...Class I inlay preparation of wax pattern on ivorine/extracted tooth.

First two test in First Term & Last two test in second term to be conducted. The marks in proforma to be submitted along with other subjects. .

II. Practical Examination. 80 Marks

To be conducted along with university practical examination of other subjects. Break-up is as under.

Exercise . I : 2 Hours duretion.

i) Class II cavity preparation on ivorine/Extracted tooth (for Amalgum fillings)	20 Marks
ii) Lining	05 Marks
iii) Filling of the cavity with amalgum and carving	15 Marks

Exercise. II : 1 Hours duretion.

i) Class I Inlay cavity preparation on ivorine/ natural tooth	20 Marks
ii) Wax pattern for inlay	10 Marks
iii) Records/ Journals	10 Marks

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

Appendix E

Format of the Practical / Clinical Examination Marks
Maharashtra University of Health Sciences, Nashik

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover though the Dean of the college to the Controller of Examination, MUHS, Nashik

Name of Examination :_____Summer / Winter _____

Centre : _____

Subject : PHARMAOLOGY

Roll No.	Pharmacy Practical	Correction of wrong Prescription	Drug of Choice & Dose 5 Drug	Journal	Total
	25	25	20	10	80

Subject : GENERAL PATHOLOGY AND MICROBIOLOGY

Roll No.	Clinical Pathology	Histopathology (2 Slices x 5 Marks)	Microbiology Staining	Spotting 10 x 2 Marks	Journal	Total
	20	10	20	20	10	80

Subject : ORAL DENTAL ANATOMY, HISTOLOGY ETC.

Roll No.	Slides (6 Spots 5 Marks	Spotting & Specimen (4 Spots x 5 Marks	Carving of tooth	Journal	Total
	30	20	20	20	80

Subject : PRE-CLINICAL PROSTHODONTICS PRACTICAL

Roll No.	Teeth Arrangement	Waxing & Carving	Abutment Preparation For Crown	Wax Pattern	Journal	Total
	25	15	20	10	10	80

Subject : PRECLINICAL CONSERVATIVE DENTISTRY

Roll No	Caviti Amalgam Preparation	Lining	Filling	Inlay	Wax pattern	Journal	Total
	20	10	15	20	5	10	80

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name : _____

Signature : _____

(Common to All)

Appendix C

SCHEDULE FOR INTERNAL ASSESSMENI MARKS

To assess the overall progress of the students by evaluating the professional skills he has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20% of the total marks.

2) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under

.

		Theory	Practical/Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5 Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination).

3) The pattern of Internal Assessment Examination should be as under :

Theory : Written. .. 50 Marks

Practical .. 50 Marks
Including Oral

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in proforma even in fraction like 35/50 will be shown as 3.5 out of ;5 marks.

4) The marks obtained by the candidate even with fractions. The fraction, if any, is now to be converted into nearest high round figure when the fraction is 0.5 or more.

5) All the records of this examination will have to be maintained by the Heads o Departments and will have to verification.

6) All records of this examination shall be preserved up to the commencement of next university examination of that batch by head of Department in consoltation with the Dean.

7) a) The marks obtained by candidate should be submitted in controller of examination Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix -D, by HOD, through the Dean / Principal of the college before 20 days of the commencement of the University Theory Examination by Hand delivery or Register post.

8) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks. The internal assessment marks of this examination to be submitted to University Authority

9) For repeater students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule.

10) In case candidate remains absent only on valid ground where his presence elsewhere is justified or when he is unable to attend the examination on health ground and when he informed the H.OD and Dean about his inability to attend such examination before or during the examination schedule, the Dean in consultation with heads of Department of concerned subject shall conduct re-

examination for the student within 20 days or before commencement of next internal assessment test of University Examination.

The marks should be submitted for these students separately, if required.

11) The marks obtained by candidate as internal assessment will not be taken into account for passing the subject head, but will be added to the aggregate of that subject Head.

12) The internal assessment Tests for Preclinical Prosthodontic Practicals and

Preclinical Conservative Dentistry Practical will be conducted as per the details mention in syllabus of these subjects under the title of examination. (Please refer Page No. 9,12)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

First B.D.S. Summer / Winter 200- Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name: _____

Signature: _____

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

Signature of Subject Teacher Signature of Head of the Department

APPENDIX B

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Scheme of Examination for Second B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	General Pathology and Microbiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General and Dental Pharmacology & Therapeutics	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150

		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
3	Human Oral Anatomy (Including Embryology and Histology)	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Pre-clinical Prosthodontics Practicals	i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50	100	75
5	Pre-Clinical Conservative Practicals	i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50	100	75
				Grand Total	800	600

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS : THIRD B.D.S.

Candidate will be examined in the following subjects:

1) **General Medicine**
2) **General Surgery**
3) **Oral Pathology & Microbiology.**
4) **Preventive and Community Dentistry.**

Subject 1 : GENERAL MEDICINE

Lectures - 40 Hours.
Clinicals - 90 Hours.
Total Duration 130 Hours.

LECTURES :

1. Aims of Medicine.
2. Definition of diagnosis, prognosis and treatment.
3. History taking and physical examination of a medical case.
4. Medical emergencies in dental practice, Anaphylactic shock, Hemophillia, Syncope etc. Cardiac arrest etc.
5. G.I. Disorders:
   Stomatitis, Glossitis, Gastritis, Diarrhoea, Amoebiasis, Ascites, Malabsorption syndrome, Peptic ulcer.
6. Liver.- Jaundice, Viral hepatitis, Cirrhosis of liver. Tender hepatomegaly.
7. Cardiovascular System:
   Congenital heart diseases, classification, Rheumatic heart diseases, subacute bacterial endocarditis. Congestive heart failures, left ventricular failure. Hypertension. Coronary artery disease.
8. Respiratory System:
   Pneumonia, Bronchitis, Emphysema, Lung Abscess. Eosinophilia, Pulmonary Embolism, Pulmonary Tuberculosis, Respiratory failure, Chronic obstructive Pulmonary diseases.

9. Renal Diseases :

Nephritis, Nephrotic Syndrome.

10. Hematology:

Anaemia, Coagulation defects, Bleeding disorders. Agranulocytosis, Leukaemia Oral manifestations of Hematological disorders, Lymphadenopathy and splenomegaly.

11. Central Nervous System:

Meningitis, Facial Palsy, Facial pain, Epilepsy, Headache, Vertigo, Nervousness, Anxieties & Depression.

12. Nutritional and Metabolic disorders :

Balanced diet, Normal daily requirements.

Protein Calorie Malnutrition.

Avitaminosis., Diabetes Mellitus.

Calcium homeostasis, Flouride & Phosphorous metabolism.

13. Endocrine Disorders:

Thyroid-Hypo and hyper, Pituitary - Hypo and hyper, Parathyroid - Hypo & Hyper, Adrenal - Hypo & Hyper.

14. Infection:

Enteric fever, Mumps, Leprosy, Diphtheria, Syphilis, Gonorrhoaea, Herpes, AIDS., Hepatitis, Maleria fever.

15. Miscellaneous : Allergy, Anaphylaxis, Drug reactions, Drug interactions, Poisoning.

Evaluation of a case for general anaesthesia. Case history and Examination of patient. Diagnosis, Prognosis & Treatment planning.

16. Recent advances in general medicine.

I . Theory ..... 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each .... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

60 Marks.

II. CLINICALS

A) Practical

Maximum . ..... 80 Marks.

i] Long Case ..... 35 Marks.

ii] Short Case ..... 20 Marks.

iii] X-Rays & Drugs ..... 20 Marks.

iv] Journal ..... 05 Marks.

Total 80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.

A+B = 100 Marks.

III. Internal Assessment (Theory 20 + Practical 20) .....40 marks

Subject 2 :GENERAL SURGERY

Lectures - 40 Hours.

Clinicals - 90 Hours.

Total Duration 130 Hours.

LECTURES :

1. Introduction to surgery, especially related to Oro-dental surgery, classification of diseases.
2. Inflammation of soft-tissue & hard tissue-Causes, Varieties, sequelae and treatment.
3. Infection-Acute and Chronic, Abscess, Carbuncles, Sinus, Fistula, Ulceration, Gangrene, Cellulitis, Erysipelas, Septicaemia, Pyaemia, Toxaemia, Cancrum Oris, Tuberculosis, Syphilis, Gonorrhoea, Actinomycosis, Anthrax, Tetanus.
4. Wounds-complications, Treatment, Repairs, Suturing technique, Asepsis and antiseptic measures and procedure with particular reference to the Oral cavity. Haemorrhage and its treatment, Haemophillia, Syncope, Shock, Collapse, Head injury and its management.
5. Cysts and new growths- Their general consideration with special reference to those occurring in the Oral Cavity.
6. Diseases of the Lymphatic glands, especially of the neck.
7. Outline of diseases of the mouth, lips, tongue, palate, tonsils and salivary glands.
8. Infections and diseases of the Larynx, Tracheostomy.
9. Nervous system, Facial palsy, Trigeminal Neuralgia.
10. Principles of surgical treatment, diathermy and radition Therapy.
11. Fracture-General principles of treatment, and healing.
12. Cleft lip and cleft palate.
13. Thyroid and parathyroid.
14. Swellings of jaws.

15. Burns:-outline & treatment in brief.
16. Diseases of arteries & Veins.
17. Blood grouping & transfusion.
18. Methods of administration of general anaesthesia, Precautions, Management, Resuscitation in Dentistry.
19. Operation theatre techniques.
20. Recent advances in general surgery.

EAMINATION PATTERN :

I. Theory ----------max 60 Marks

Theory (written) paper shall be of three hours duration.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each .. .. 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. CLINICALS

A) Clinical/Practical

i] Long Case	.....	35 Marks.
ii] Short Case	.....	20 Marks.
iii] X-Rays, Instruments	...	20 Marks.
iv] Journal	.....	05 Marks.
Total	-------	80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.

A+B = 100 Marks

13. **Internal Assessment (Theory 20 +Practical 20) ....**40 Marks.

Subject 3 : ORAL PATHOLOGY AND MICROBIOLOGY.

Lectures .. 50 Hours.

Practical .... 90 Hours.

Total Duration . .140 Hours.

LECTURES :

1. Aims & Objectives.
2. Developmental disturbances of dental, oral and paraoral structures, including hereditary disorders.
3. Dental caries.
4. Pulpal and periapical pathosis and their sequelae.
5. Environmental lesions of the oral and para-oral structures.
6. Defense mechanism of oral tissues and healing following injuries.
7. Diseases of periodontal ligament, gingiva and cementum.
8. Effects of nutritional disturbances and normal disorders on the oral and para-oral structures.
9. Infections & Diseases of oral mucosa.
10. Bone disorders affecting jaws.
11. Traumatic injuries of teeth, Gums & soft tissues, their sequelae and healing.
12. Cysts of oral cavity.
13. Pre-cancerous lesions-etiology and pathology.
14. Neoplasms of Oral Cavity.
15. Diseases of salivary and lymph glands.
16. Diseases of Tempero-Mandibular joint.
17. Diseases of nerves, skin, blood and their implications to oral tissues.
18. Concept of immunology as related to oral lesions. HIV Infection, Hepatitis.
19. Effects of radiation on oral and para-oral tissues.
20. Outline of forensic odontology.
21. Oral Microbiology - Oral Flora, Diagnostic procedures in oral microbiology & Histopathology.
22. Recent advances.

PRACTICAL:

1. Identifications of hard and soft tissue specimens.
2. Identification of Histopathological & Microbiological slides.
3. Biopsy and exfoliative cytology techniques.

I. Theory ----------Max 60 Marks.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each.... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each ..... 20 marks.

II. PRACTICAL

A) i] Spotting of 8 slides .... 40 Marks.
ii] Spotting of 6 specimens ... 30 Marks.
iii] Journals ... 10 Marks,
Total --------- 80 Marks.

B) i] Oral (Viva Voce) ... 20 Marks.
A+B = 100 Marks.

III. Internal Assessment (Theory 20+Practical 20) ------ 40 Marks.

Subject 4 : Preventive and Community Dentistry.

Lectures - 30 Hours. (Spread over Two Terms)
Field Programs - 100 Hours.
Total Duration - 130 Hours.

LECTURES :

1. History of Dentistry.
2. Biostatistics:
   Introduction and General Principles of Biostatistics, Statistical procedures.
3. Psychology:
   Introduction, Psychological development from birth to adolescence, Management of Child in the dental office, parent counseling in respect of dental health and Hygiene of the child.

4. Public Health:

Concept and philosophy of Health administration in India National health programmes, General Epidemiology, Health Education, Environmental Health (Norms for portability, purification) Fluorine-contents of water and implications of its deviation. Water treatment to ensure its proper concentration.

5. Preventive Dentistry:

Prevention, levels of prevention, various measures in the prevention of Dental and Oral diseases at individual and community level. Nutrition and Dental Health.

6. Public Health Dentistry:

Introduction, definition, objectives, function of public health dentist, procedural steps in dental public health, indices for dental diseases, surveying and evaluation. epidemiology of dental caries, periodontal diseases, oral cancer, Utilization of dental manpower, payment for dental care, public dental Health programme. School dental health programme. Dental health services at state and center. Private practice administration, ethics, Jurisprudence, Dental Council and Dental Association. Parameters used in clinical and population studies for dental Health. Dentist and consumer protection Act.

7. Social Sciences:

As applied to health, social structure concepts, groups, social institutions, urban and rural societies, their concepts of health. Application of sociology in health programs, social environment. Cultural Anthropology, objective, different aspects of Folk medicine and popular medicine, Cultural pattern and complexes, taboos as related to health.

8. Epidermology of Dental & Oral diseases.

Defination of indices , Classification of indices , commonly used indices for dental caries & periodental diseases.

9. Recent advances and other oral diseases.

FIELD PROGRAMME :

1. In rural areas to conduct survey of Dental diseases. Provide Dental Health Education, emergency treatment.
2. School-Health programme, Dental Care for school children and preventive programme. Topical fluoride application and oral hygiene demonstrations.

EXAMINATION PATTERN :

I. Theory (written) paper shall be of three hours duration max 60 Marks.

Theory paper shall have three parts A,B, & C.

Section A : MCQ - Total 20 Marks.

20 multiple choice questions carrying one mark each... 20 marks.

Section B : SAQ - Total 20 marks.

Ten short questions carrying two marks each ..... 20 marks.

Section C : LAQ - Total 20 Marks.

Two long answer question carrying ten marks each .... 20 marks

II. ORAL (VIVA VOCE) .... 20 Marks.

III. Int. Assessment in Theory 20 Marks.

Total 100 marks.

APPENDIX - C

SCHEDULE FOR INTERNAL ASSESSMENT MARKS

To assess the overall progress of the students by evaluating the professional skills he has developed and the knowledge he has got it is necessary to assess the students periodically. The marks to be allotted should be real estimate of the students achievement of skills and subject knowledge without any prejudice.

1) Maximum marks allotted for internal assessment for each subject head i.e. Theory and Practical / Clinical will be 20 marks each.

2.A) In all four college tests shall be conducted in one academic year i.e. two tests in each term. Each test will have marks as under

		Theory	Practical / Clinical
First Term -	First Internal Assessment Test	5 Marks	5 Marks
	Second Internal Assessment Test	5 Marks	5 Marks
Second Term -	Third Internal Assessment Test	5 Marks	5 Marks
	Fourth Internal Assessment Test	5 Marks	5 Marks
	Total :	20 Marks	20 Marks

a) First Internal Assessment Test should be conducted for the syllabus completed from the start of the term till the commencement of this examination. (Unit Test)

b) Second Internal Assessment Test should include entire syllabus completed in first term (Terminal Examination)

c) Third Internal Assessment Test should include the topics covered only in the second term till the commencement of this examination. (Unit Test)

d) Fourth Internal Assessment Test should include entire syllabus prescribed by the University (Preliminary Examination).

2.B) For Final B.D.S. Subjects :- Four College test to be conducted theory as per above pattern in final year only. However, for Clinical Practical test -- 2 test to be conducted in third year teaching during clinical posting and 2 test to be conducted in IV year clinical posting.

3) The pattern of Internal Assessment Examination should be as under :

a) Theory . . . 50 Marks

b) Practical . . . 50 Marks

c) Exception : For community Dentistry the written Examination will be of 40 Marks & Oral will be of 10 Marks.

Marks obtained by the candidate out of 50 to be divided by 10 and to be entered in Performa even in fraction like 35/50 will be shown as 3.5 out of 5 marks.

4) The marks obtained by the candidate in all four examinations, to be amalgamated even with fractions. The fraction, if any, is now to be converted into nearest higher round figure.

5) All the records of these examination P/T will have to be maintained till the start of next University Examination by the Heads of Departments and will have to be produced to the University authority if required for verification.

6) a) The marks obtained by the students for First, Second internal assessment tests should be submitted in the prescribed proforma (Appendix - D) to the controller of examination immediately after 15 days of completion of second Internal Assessment Examination.

b) The marks of all four internal assessment tests shall be submitted to the controller of examination in the proforma as shown in Appendix - D , through the Dean / Principal of the college before 20 days of the commencement of the University Theory Examination by Hand delivery or Register post. The Mark sheet should be signed by the candidates, teacher in charge/HOD & Dean/Principal.

7) In case the candidate fails in University Examination, he should be assessed afresh for internal assessment marks.

8) For repeater and detainee students, only two examinations in that term will be conducted. Each test will be of 10 marks each. Thus college authority should submit marks out of 20 by applying the same schedule. The best out of two of internal assessment marks (Previous Assessment/New Assessment) to be submitted to the University for the computation of marks

9) In case candidate remains absent on valid ground where his presence elsewhere is justified or when he is unable to attend the Examination on health ground and when he has informed the HOD/Dean about the same before or during the Examination Schedule. Candidate should compenset for this absenty by attending fifth (Extra) Internal Assessment Test. Those students who wants to improve their performance, they ay attend this test.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCE, NASHIK

Scheme of Practical & /or Clinical examination

University Practical/Clinical Examination ... 80 Marks

The Practical/Clinical examination shall be conducted at the centres where adquate facilities are available to conduct such examinations and the centre/college is approved/recognised by Dental Council of India.

Not more than 30 students to be examined per day. The marks should be submitted in the proforma (Appendix - E & F) supplied by the University Authority. This proforma should be signed by the examiners. Over writing or scratching will not be permitted. Any corrections made, must have the counter-signature of external examiners .The sealed envelop containing this proforma shall be submitted on the same day to the Dean for onward transmission to the Controller of examinations, Maharashtra University of Health Sciences, Nashik. No examiner or any other person connected with the work of

practical examination is permitted to carry any paper or violate the rules of examination. The person found guilty will be debarred from such Confidential work for a minimum period of 5 Consecutive University examinations or the actions as suggested by the relevant Committee to investigate such matters.

APPENDIX-E

FORMAT OF THE PRACTICAL / CLINICAL EXAMINATION MARKS

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

Chart showing marks obtained by the candidates in practical / clinical examination, to be submitted by the examiner in sealed cover through the Dean of the college to the Controller of Examination ,MUHS , Nashik

Name of Examination : Third B.D.S. Summer / Winter 200___

Centre : _____

1) SUBJECT : GENRAL MEDICINE Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Long Case (35Marks)	Short Case (20 Marks)	X-rays & Drugs (20 Marks)	Journal (5 Marks)	Total (80Marks)

2) SUBJECT : GENRAL SURGERY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Long Case (35Marks)	Short Case (20 Marks)	Xrays, Instrumentation (20 Marks)	Journal (5 Marks)	Total (80Marks)

3) SUBJECT : PATHOLOGY & MICROBIOLOGY Max. Marks:- 80

NOTE :- SCRATCHING OR OVERWRITING IN MARKS ARE NOT ALLOWED

Roll No.	Spotting of 8 Slides (8 X 5 = 40 Marks)	Spotting of 6 Specimens (6 X 5 = 30 Marks)	Journal (10 Marks)	Total (80Marks)

External Examiners :

Name: _____

Signature: _____

Internal Examiners :

Name : _____

Signature : _____

(Common to All)

APPENDIX - F

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

Third B.D.S. Summer / Winter 200___ Examination

Subject : _____

Name ofthe Centre: _____

Date of Practical Conduction: _____

_____

(No Straching or overwriting please) correction if any to be signed by External & Internal Examiners both.

: ORAL EXAMINATION MARKS :

Roll No.	**Enrollment No.**	**Marks alloted out of 20 (Max)**	
		in figures	**in words**

External Examiners : **Internal Examiners :**

Name: _____ Name: _____

Signature: _____ Signature: _____

APPENDIX B
MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK
Scheme of Examination for Third B.D.S Examination

Sr. No.	**Subject**	**Subheads**	**Maximum marks** allotted	Minimum marks required to pass in each sub head	**Maximum marks** allotted	Minimum marks required for awarding distinction
1	General Medicine	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
2	General Surgery	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		

3	Oral Pathology & Microbiology	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	200	150
		i) Practical/Clinical ii) IA Practical/Clinical iii) Practical/Clinical +Internal Assessment (Practical/Clinical)	80 20 100	40 - 50		
4	Preventive and Community Dentistry	i) Theory (Written) ii) Oral iii) Theory + Oral iv) Internal Assessment (Theory) iv) Theory + Oral + Internal Assessment (Theory)	60 20 80 20 100	- - 40 - 50	100	75
		Grand Total			700	525

Appendix – D

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCS, NASHIK

INTERNAL ASSESSMENT MARKS FOR ….B.D.S. SUMMER/WINTER EXAMINATION, YEAR

Subject: _____ Subhead – Theory / Practical

College: _____

Sr. No.	**Enrollment No**	**Roll No.**	**Name of the Student**	**Internal Assessment Test**				Aggregate Total Out of 20	**Net total** (after rounding the fraction, if any) Marks obtained out of 20	**In Words** (Out of Twenty)	**Signature of Student**
				First Max 5	Second Max 5	Third Max 5	Fourth Max 5				

Certificate that the marks entered in above proforma are as obtained by the candidates. The department will produce the necessary documents for verificat University Authority if required.

Date : _____ _____ _____

(Signature of Subject Teacher) (Signature of Head of the Department