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 : <u>PEDODONTICS</u>

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

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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 : <u>ORTHODONTICS</u>.

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

Hodgkins 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, Ewings sarcoma, fibrous dysplasia,

Aneurysmal bone cyst.

Diseases of Cardiovascular system

Cardiac failure

Congenital heart disease - ASD, VSD,

PDA Fallots 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 Kaposis sarcoma, Lymphomas, Ewings sarcoma & Other Reticuloendothelial tumours.

c) Salivary

- Benign Epithelial neoplasms - Pleomorphic Adenoma, Warthins 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 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

Wolf.s 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 - 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

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: 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

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 (Jacksons Crib)

Adams 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 Howe.s Analysis

Carey.s Analysis

Bolton.s Analysis

Moyer.s 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.

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

CONSERVATIVE DENTISTRY AND ENDODONTICS

Paper-I: Conservative Dentistry

1. Introduction to Operative Dentistry
2. Examination, diagnosis and treatment plan
3. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
4. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, and Caries Vaccine, prevention of dental caries and management – recent methods.
5. Biomaterials-Review of material Science and BioMechanics
6. Fundamental concepts of Enamel and Dentin adhesion
7. Fundamentals in Tooth preparation
8. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
9. Dental burs and other modalities of tooth reparation- recent developments (air brasions, lasers etc.)
10. Infection control procedures in conservative dentistry, isolation equipments etc.
11. Direct concepts in tooth preparation and Restorations with amalgam - restorative techniques, failures and management.
12. Direct concepts in tooth preparation and Restorations with composite, GIC - restorative techniques, failures and management
13. Biologic response of pulp to various restorative materials and operative procedures.
14. Direct and indirect composite restorations.
15. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication
16. Gingival tissue management.
17. Impression procedures used for indirect restorations.
18. 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.
19. Direct gold restorations.
20. Restoration of Badly broken tooth.
21. Recent advances in restorative materials.
22. Esthetics including smile design
23. Management of non-carious lesions.
24. Management of discolored tooth
25. Minimal intervention dentistry.
26. Hypersensitivity-theories, causes and management.
27. Lasers in Conservative Dentistry.

28. CAD-CAM in restorative dentistry.
29. Digital imaging and its applications in restorative dentistry.
30. Clinical Photography.
31. 3D Printing in Conservative Dentistry and Endodontics

Paper-II: Endodontics

1. Anatomy and Morphology of tooth and their root canal systems
2. Structure and function of Pulp Dentin Complex
3. Microbial and Non Microbial etiology of Endodontic Diseases
4. Rationale of endodontics.
5. Dental innervations and pain of pulpal origin
6. Pulp and periapical pathology.
7. Pathobiology of periapex.
8. Pulp and periapical pathology.
9. Pathobiology of periapex.
10. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
11. Imaging devices and techniques: Analog Radiology, Digital Radiology, MRI and Ultrasound, CBCT in endodontic practice.
12. Imaging Interpretation
13. Case selection and treatment planning.
14. Endodontic microbiology.
15. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
16. Preparation for treatment
17. Management of pain , fear and anxiety in Endodontic patients
18. Vital Pulp therapies
19. Access cavity preparation – objectives and principles
20. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.
21. Working length determination of root canal system with recent developments.
22. cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
23. Root canal irrigants and latest developments
24. Intra canal medicaments and recent advancements
25. Obturation of root canal system - materials, techniques and recent advances.

26. Endodontic therapy in teeth with anatomical variations
27. Endodontic emergencies and management
28. Traumatic injuries and management – endodontic treatment for young permanent teeth.
29. Endoperio interrelationship and management.
30. Multidisciplinary approach to endodontic situations.
31. Procedural errors in endodontics and their management.
32. Endodontic failures and retreatment.
33. Management of medically complex patients
34. Pharmacology in Endodontics including Drug interactions and laboratory tests
35. Resorptions and its management.
36. Management of teeth of Immature apex
37. Rhinosinusitis and Endodontic disease
38. Non Odontogenic toothache and chronic head and neck pain
39. Endodontic and Microsurgeries, recent developments in technique and devices and wound healing
40. Magnification in endodontics(Dental Loupes and Microscopes) .
41. Single visit endodontics, current concepts and controversies.
42. Outcomes and achieving success in long term endodontic therapy
43. Contemporary restoration of Endodontically treated teeth
44. Lasers in Endodontics.
45. Endodontic therapy in Paediatric
46. Endodontic therapy in Geriatric patients
47. Interrelationships of Endodontics and Orthodontics in treatment planning
48. Tooth discolourations and its Management
49. Regenerative Endodontics
50. Recent Advancements in endodontics- Minimally Invasive Endodontics, Guided Endodontics etc..

Scheme of Examination

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

SYLLABUS OF PART – I

SUBJECT - ORAL AND MAXILLOFACIAL SURGERY

Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, General and oral Pathology and Microbiology and Pharmacology

Applied Anatomy:

- Surgical 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 in maxillofacial injuries.
- Muscles of head and neck
- Arterial supply, venous drainage and lymphatics of head and neck
- Congenital abnormalities of head and neck
- Surgical anatomy of the cranial nerves
- Anatomy of the tongue and it's applied aspects
- Surgical anatomy of the temporal and infra-temporal regions
- Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea oesophagus
- Tooth eruption, morphology, and occlusion
- Surgical anatomy of the nose.
- The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
- Autonomous nervous system of head and neck
- Functional anatomy of mastication, deglutition, speech, respiration and circulation
- Development of face, Paranasal sinuses and associated structures and their anomalies
- TMJ: surgical anatomy and function

Physiology:

Nervous System

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

Blood

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

Digestive System

- Saliva – 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

Cardio Vascular System

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

Endocrinology

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

Nutrition

- General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining hemostasis 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

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:

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:

Hemostasis

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

Shock:

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

Chromosomal Abnormalities:

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

Hypersensitivity:

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

- Infection and infective granulomas

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

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.

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

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:

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

ORAL & 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

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- 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 consciousness (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 the teeth**
- **Surgical Endodontics:** Indications and contraindications, diagnosis, procedures of periradicular surgery,Resection of the roots in periapical procedures,Retrograde fillings
- **Preprosthetic Surgery:** Requirements, types (alvoloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)Advanced preprosthetic surgical procedures,
- **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,Medication related osteonecrosis of jaws,Fungal infections involving jaws
- **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.Classification of nerve injuries,Management protocall in nerve injury,Physiology of nerve regeneration
- **Implantology**: Definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure. Principles of Basic Implantology, Maxillary sinus lift procedures, Concept of tilted implants Zygomatic implants, Cad cam planning in oral Implantology, Bone augmentation procedures Maxillofacial implants for rehabilitation of facial deformities and defects
-
- **Anesthesia**

  Local Anesthesia**:**

  Classification of local anesthetic drugs, mode of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management Advances in local anaesthesia Computer assisted drug delivery system
  Preoperative evaluation and investigations in maxillofacial surgery
  Medical emergencies in maxillofacial surgical practice.

  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
  Perioperative and posteoperative monitoring for maxillofacial surgery patient
  Operating room protocalls
  Drugs for General anaesthesia

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.
- Ophthalmic 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
- Residual deformities of maxillofacial region.

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 and Imaging of salivary gland tumors
- Parotidectomy

b) Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint

disorders

- Various anomalies of condyle
- Hemifacial microsomia and condylar elongation
- 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
- Role of Arthrocentosis & Arthroscopy in TMD

c) Oncology

- Biopsy Types of biopsy Immunohistochemistry,Sentinal Node and its significance
- 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
- Chemotherapy for squamous cell carcinoma
- Sarcomas of head neck face region
- Lateral neck swellings
- Hard & Soft tissue flaps in reconstruction
- Recent diagnostic aids in oral malignancy
- Rehabilitation & Quality of life of pts with oral oncology
- Access surgeries & Osteotomies for maxillofacial region

d) Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery and preparation of splints
- Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis
- Surgery first approach in orthognathic surgery
- Management of patients with facial asymmetry
- Protocol of Management of Obstructive Sleep apnea

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
- Reactive lesions of the maxillofacial region
- Vascular anomalies of maxillofacial region ,Digital subtraction

angiography
- Embolization for maxillofacial pathology
- Recent advance in the management of the jaw pathology

f) Laser surgery

- Principles of laser, Types of lasers, Advantages & Disadvantages
- The application of laser technology in surgical treatment of lesions

g) Cryosurgery & Piezosurgery

- Principles, applications of cryosurgery in surgical management
- Principles ,application of piezosurgery in maxillofacial region

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 Nasoendoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management
- Cleft hypoplastic maxilla
- Cleft rhinoplasty
- Role of speech therapy
- Alveolar bone grafting
- Rare Facial clefts

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
- Non surgical modalities of facial rejunevation
- Role of fillers in facial aesthetics
- Ear Reconstruction
- Surgery for follicle of hair
- Aesthetic rhinoplasty

j) Advances in Maxillofacial

Tissue engineering in maxillofacial surgery
Stem cell research and regeneration
Computer assisted maxillofacial surgery
Robotics in maxillofacial region
Recent advances in imaging in maxillofacial region

K) 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
- Modern management of Craniosynostosis
- Syndromes & Sequence of craniofacial region
-

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*.

A. 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.

Break up the marks is desirable as per the decision of all four examiners for equal opportunity in every steps to score the marks to the candidates

2.Case presentation and discussion: 100 Marks

(a) One long case - 60 Marks
(b) Two short cases - 40 Marks (20 marks each)

B. 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.

Minimum time of viva for each candidate should not be less than 45 to 60 minutes.

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. Topic of pedagogy should be other than the dissertation topic of candidate.

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

ORAL MEDICINE & RADIOLOGY

Introduction:

The subject of Oral Medicine and Radiology is unique in that it combines Oral Medicine and Radiology and sits at the interface between dentistry and medicine.

Oral Medicine deals in a specialist clinical area of care for treating head and neck medical diseases. Oral Medicine involves diagnosis and nonsurgical management of diseases of the orofacial complex and systemic and behavioral disorders that impact oral health. It includes and helps develop the skill for of pre-oncology evaluation and preparation of the affected patient besides early detection and treatment of potentially malignant disorders and anti-tobacco counselling

Oral and Maxillofacial Radiology deals with the acquisition and interpretation of radiographic imaging studies performed for diagnosis of treatment guidance for conditions affecting the maxillofacial region. It includes a thorough knowledge on techniques and interpretation for conventional as well as advanced maxillofacial imaging like Cone Beam Computed Tomography.

Forensic Odontology and Maxillofacial Radiology is adequately covered in the syllabus making the student competent for person identification, age estimation and other forensic requirements.

MDS-Part II

COURSE CONTENTS:

A. Oral and Maxillofacial Radiology:

Study includes Seminars/lectures/Demonstrations

The educational programme provides;

- Experience of the diagnostic imaging investigations required to become technically competent in practical clinical work and to master the underlying the theoretical principles.
- The opportunity to develop relevant skills in OPG, CBCT, CT, MRI, Ultrasound and Nuclear Medicine relevant to Dental and Maxillofacial Radiology and to provide specialist opinion
- Experience of practice of clinical governance and audit (specialist and multidisciplinary) through evidence based medicine, which is the basis of radiology practice.

1. **History of radiology, structure of x – ray tube, production of x – ray, property of x – rays**.
   - Brief History of Radiology, Dental Radiography and its PioneersNature, structure and properties of matter, radioactivity, magnetism, ionizing radiation, radiofrequency radiation and ultrasound and how they interact with matter.
   - Construction, function and operation of Medical and Dental Imaging equipment.
   - Operating factors of imaging equipment, effects on indices of image quality and their inter-relationships.
   - Principles of Quality Assurance and Audit in Medical and Dental Imaging
   - Image Artifacts in Medical and Dental Imaging

2. Biological effects of radiation

- Hazards and risks to patients, staff and public from Medical Imaging

3. Radiation protection and ICRP guidelines

4. Accessories and Films and recording media,

5. Processing of image in radiology- conventional and digital

6. Design of x –ray department, dark room and use of automatic processing units

- AERB legislation and guidelines for Medical and Dental Imaging including room layout, and various licensing procedures.

7. **Faults of dental radiographs and concept of Ideal Radiograph**

8. Quality assurance and audit in dental radiology

9. Intra- Oral Imaging Techniques

10. Projection Geometry & Localization by radiographic techniques

11. Extra – oral-imaging techniques

12. OPG and other radiologic techniques

13. Advanced imaging techniques like CBCT, CT Scan, MRI, Ultrasound, Fluoroscopy.

14. Radiographic consideration of

- Dental Caries
- Periapical Lesions, Infections and Inflammatory Lesions affecting the Jaws
- Periodontal diseases
- Dental Anomalies
- Systemic Diseases affecting the Jaws
- TMJ Disorders
- Disorders of Maxillary Sinus
- Trauma and Fractures involving the dental structures and maxillofacial region
- Aberrant calcifications in the Maxillofacial region
- Disease of the bone Manifested in the Jaws
  - Fibrosseous Lesions
  - Other Bony Lesions
  - Cysts, Benign Tumors and Malignant Lesions affecting the Jaws

15. **Basic Anatomy of sectional imaging with case interpretations of CT/ CBCT/ MRI**

- Applied radiographic anatomy of maxillofacial skeleton including;
  - TMJ
  - Paranasal Sinuses
  - Skull base
  - Cranial Nerves (V, VII, IX, X and XII)
  - Temporal Bone
  - Salivary Glands

- Thyroid Gland
- Cervical Lymph Nodes
- Soft Tissue Spaces

16. **Radio nucleotide techniques**

17. Contrast radiography in salivary gland, TMJ, and other radiolucent Pathologies

18. Radiograph differential diagnosis of radiolucent, radio opaque and mixed Lesions.

19. Art of radiographic report, writing and descriptors preferred in reports

- Typical and Atypical presentations of commonly occurring dento-alveolar lesions
- Principles of differential diagnosis of maxillofacial bone lesions and soft tissue conditions
- Tumour staging
- Typical and atypical presentations of maxillofacial lesions, differential diagnosis and differentiate uncommon conditions mimicking common diagnosis
- Co-relate with clinical presentations and diagnosis (Case Interpretation)
- Effect and importance of radiographic diagnosis on the management and treatment selection
- Current literature and guidelines on dento-alveolar investigations.

20. **Digital radiology and its various types of advantages**

21. Application of Maxillofacial Radiology in Implant Planning

- Pre and Post Implant Placement
- Radiographic evaluation of Implant site
- Use and applications of various Implant planning software

22**. Forensic Maxillofacial Radiology**

B. <u>Oral Medicine, therapeutics and laboratory investigations:</u>

Study includes seminars / lectures / discussion

The educational programme provides that;

- The student will be able to Elicit, identify, record and interpret an accurate history from patient of any age within the scope of Oral Medicine
- Perform appropriate Clinical examination
- Select and prescribe appropriate and relevant investigations- laboratory and imaging
- Appropriately interpret and apply in subsequent care for patient
- Competent in pre- radiation preparation and evaluation of patients

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** (odontogenic and non-odontogenic)
   - Manifestations and pathophysiology
   - Imaging studies and other investigations
   - Therapeutic Options- (drugs, psychological therapies, Contemporary and Alternative Medicines (CAM), operative interventions)

- Neurological Dysfunction (altered cranial nerve function related or unrelated to other neurological abnormalities)
  - Localized Cranial Nerve Disease
  - Iatrogenic Cranial Nerve Disease
  - Diseases with extra-oral manifestations that present with cranial nerve disorders
- Imaging studies and other investigations to study altered cranial nerve function

6. **Psychosomatic aspects of oral diseases**
7. **Management of medically compromised patients including medical emergencies in the dental chair**
   - Medically compromised patients; (acutely unwell adult and pediatric patients including simple faint, post-operative bleeding, hyperventilation, angina, myocardial infarction, acute asthma, anaphylaxis, diabetic emergencies, seizures, adrenal insufficiency etc.)
   - Physiology and/or Pathology related to medical emergencies
   - Pharmacology and adverse effect of drugs used in the management of medical emergencies
   - Handling of medical emergencies- drugs and equipment
8. Oral Soft Tissue Infections:
   - Normal Oral Flora
   - Diagnosis and Management with Medical Treatment and Monitoring of patients with Viral, Bacterial, Fungal and other Infections of the oral soft tissues. (Ulcerative and Vesiculobullous Lesions affecting the Oral Cavity).
   - Diagnosis and management of primary or reactivated infections of the oral soft tissues
   - Diagnosis and management of infections in immunocompromised patients.

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

- Structure and function of Healthy Salivary Glands and Saliva
- Importance of Saliva as a diagnostic tool
- Diagnosis and Management of disorders of Major and Minor Salivary Glands;
  - Localized Salivary Gland Disorders
  - Iatrogenic Salivary Gland Disorders
  - Diseases with extra-oral manifestations that present with salivary gland disorders
- Diagnostic criteria for dry mouth
- Imaging modalities and laboratory investigations for salivary gland diseases
- Therapeutic and operative interventions

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. Potentially Malignant Disorders **and Malignant lesions of oro facial region**

- Diagnosis, Investigations, Biopsy and Medical Treatment of Potentially Malignant Disorders
- Diagnosis, grading, biopsy, treatment planning and pre and post - radiation prophylaxis and care.
- Therapeutic Radiation

20. **Allergy and other miscellaneous conditions**

21. Pigmented Lesions of the Oral Cavity

22. Normal Breath Analysis, Breath as Diagnostic Tool and Halitosis

23. Therapeutics in oral medicine –clinical pharmacology

- Definitive management of localized benign disease and/or establish diagnosis including suspected oral soft tissue malignancy
- Principles of safe, effective, quality-assured evidence based patient care
- Choice of therapy and drugs;

i. Mode of action

ii. Mode of delivery- (topical, intralesional, systemic)

iii. Indications and contraindications

iv. Adverse effects

v. Drug interactions

vi. Monitoring during therapy

- Hypersensitivity reactions

- Operative Interventions

i. Different operative techniques - (laser and cryotherapy)

ii Biopsy techniques-

ii. Key features of local/short acting/general anesthesia

24. **Forensic Odontology**

25. Computers in oral diagnosis and imaging

26. Evidence based oral care in treatment planning

27. Molecular Biology

Essential Knowledge:

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology techniques and Interpretation, Diagnosis of Oro – acial disorders

Scheme of Examination

A.Theory

Part – I	Basic sciences paper	100 Marks
Part – II	Paper –I Paper-II, aper-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

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 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.

(1) Schedule of Examinations:-

University shall conduct MDS Examinations PART-I at the end of 1st Year and PART-II examination at

the end of Third year of MDS course as per the time schedule as prescribed by the University from time to time. The University shall not conduct more than two examinations in a year.

A) Scheme for Theory Examinations:-

PART – I

One paper shall be of 100 marks and duration of each paper shall be 03 hours. Pattern of question paper shall be as given below.

Sr. No	Nature of Question	Division of Marks	Total Marks
1	Write Answer of the following questions (a) (b) (c) (d) (e) (f) (g) (h) (i) (j)	10 x 10	100
	Total		100

PART – II

Three papers shall be of 100 marks and duration of each paper shall be 03 hours. Pattern of question paper shall be as given below.

Paper I & II

Sr. No	Nature of Question	Division of Marks	Total Marks
1	Write Long essay questions (a) (b)	02 x 25	50
2	Write Short essay (a) (b) (c) (d) (e)	05 x 10	50
	Total		100

Paper III

Sr. No	Nature of Question	Division of Marks	Total Marks
1	Essay (any two out the three) (a) (b) (c)	02 x 50	100
	Total		100

B) Scheme for Practical Examinations:-

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 practical/clinical examination in all the specialties shall be conducted for six candidates in two days.

Distribution of Marks at University Examinations:-

DISTRIBUTION OF PRACTICAL MARKS

Sr. No.	Head of Examination	Total Marks
1	Practical and Clinical Examination	200
	Viva Voce	
2	A. Viva Voce Examination 80 marks	
	B. Pedagogy Exercise 20 Marks	100
	Total	300

I) Viva Voce Examination:-

All examiners will conduct viva-voce jointly 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:-

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

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.

SYLLABUS OF PART – I

SUBJECT: ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS:

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, 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 .
- TMJ – Development & its anatomy

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
- Bleeding disorders in orthodontics: Hemophilia.
- Saliva
- Tooth structure and PDL
- Sleep physiology and sleep disorder
- Pain Pathways

- Deglutition and Stages
- Swallowing Patterns

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 (P04)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 and new wires in orthodontics
- 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.
- Bite registration materials
- Thermoplastic resins
- Magnets
- Soldering and Welding

Genetics:

- Cell structure, DNA, RNA, protein synthesis, cell division
- Chromosomal abnormalities
- Principles of orofacial genetics
- Genetics in malocclusion
- 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.
- Genetics and syndromes

Applied Pharmacology:

- NSAID's, Prostaglandin, Biphosphanate, Anti-Sialogogues
- Allergies
- Drugs for accelerated orthodontics

Research Methodology and bio statistics:

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

Pathology:

- Pain
- Inflammation
- Necrosis.
- Osteoporosis
- Wound Healing
- Fracture Healing
- Infection Control in Orthodontics / Sterilization
- Role of local and general factors in the etiology of malocclusion
- Developmental defects of the orofacial structures.

Physical Anthropology:

- Evolutionary development of dentition
- Evolutionary development of jaws

ORTHODONTICS & DENTOFACIAL ORTHOPEDICS

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.Professional honesty and integrity are to be fostered
2. Treatment care is to be delivered irrespective of the social status, cast, creed and religion of the patients.
3. Willingness to share the knowledge and clinical experience with professional colleagues
4. 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
5. Respect patients' rights and privileges, including patients right to information and right to seek a second opinion
6. 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:

For second year M.D.S course students need to study following topics and also learn clinical knowledge by studying different types of malocclusions and various treatment modalities to treat them successfully

List of the Topics :

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.
h. CBCT-Cone-beam Computed Tomography Systems .

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.
i. Orthodontic Office design
j. Office sterilization procedures in pandemic situation
k. Orthodontic office ethics

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

Orthodontic treatment techniques

a. History
b. Fixed orthodontics
c. Removable orthodontics
d. Lingual mechano therapy
e. Clear aligner

f. Review of contemporary 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:

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
k. Recent Advances in Wires

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

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)

A. 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 OF PART – I

SUBJECT: PEDIATRIC DENTISTRY

Applied Anatomy

Development of oral cavity

Development of maxillary and mandible jaws

Development of palate

Development of tooth

Development of primary and permanent teeth

Development of muscle of mastication

Development of muscles of facial expression

Development of spaces associated with head, neck and face region

Development of course of arteries and nerves and lymphatic drainage supplying to head neck and face regions

Development of tempro-mandibular joint, movement and its application to development of harmonious balanced occlusion

Development of tongue

Development of salivary glands

Theories of teeth eruption

Developmental anomalies in teeth and supporting structure

Physiology and Biochemistry

Fluid and electrolyte balance in children

Blood & its constituent

Function of blood, blood grouping

Blood diseases in children

Vital parameters in children

Endocrine system

Mastication and Deglutition

Pain pathways and its management

Saliva- composition, function and its role in maintaining equilibrium of oral cavity

Pathology

Inflammation

Necrosis and gangrene

Allergy and hypersensitivity reaction

Benign and malignant neoplasm in children

Pathology of oral soft tissue and hard tissue

Pathology of dental caries and periodontal diseases

Attrition, abrasion and erosion of teeth

Oral manifestation of systemic diseases

Developmental and inflammatory cysts

Shock

Infectious diseases in children

Repair and regeneration of pulpo-dentinal complex

Immunity- type and immunoglobulins

Mechanism of repair of initial caries (white spot lesion)

Microbiology

Normal oral flora of oral cavity of children

Role of micro-organisum in dental caries and periodontal diseases

Methods of Sterilization, disinfections and asepsis

Hospital waste management

Microflora related to others oral infections

Pharmacology

Drugs used for general anesthesia, sedation and conscious sedation in children

Local anesthesia in pediatric patients

Analgesics, antipyretics and antibiotics in children

Vitamin A, B complex, C, D and E,

Trace element in prevention of dental caries

Fluoride therapy (local and systemic for preventing dental caries)

Dentifrices

Research Methodology and Bio Statistics:

Statistics

Biostatistics as applied to dentistry and research

Sampling and sampling technique

Application of various probability tests

Data analysis and interpretation

Reliability, Sensitivity and specificity diagnosis test and measurement

Epidemiology of oral diseases

Different types of epidemiological studies

Research strategies

Designing of experimental study

Errors measurement in experiment

Growth & Development

Growth and development – prenatal development of cranium, face, jaws, teeth and supporting structures

Cephalometric evaluation of growth

Dimensional changes in dental arches

Development of occlusion (primary and permanent dentition)

Dental Plaque

Development of plaque

Oral microflora of plaque

Definition, composition, initiation, pathogenesis, biochemistry,

Different Plaque hypothesis

Acquired pellicle- its role in oral ecosystem

Genetics

Cell Biology, DNA, RNA, protein synthesis, cell division

Chromosomal abnormalities

Principals of oral facial genetics

Genetics of dental caries and periodontal diseases

Genetics risks and bioethenic

Modes of inheritance, hereditary traits in families

PEDIATRIC DENTISTRY

PAPER-I: CLINICAL PAEDODONTICS

1. CONSCIOUS SEDATION, DEEP SEDATION & GENERAL ANESTHESIA IN PEDIATRICDENTISTRY

- Indications and Contraindications
- Pre-treatment Documentation and Assessment
- Techniques of conscious sedation, deep sedation & general anesthesia
- Monitoring of the Patient
- Recovery and Discharge
- Other Drugs
- Synergic & Antagonistic Actions of Various Drugs Used in Children
- Local anaesthesia

2. GINGIVAL & PERIODONTAL DISEASES IN CHILDREN

- Normal Gingiva & Periodontium in children.
- Gingival & Periodontal diseases – Etiology, Classification, Risk factors, Pathogenesis, Systemic effects, Prevention & Management
- Maintenance of oral hygiene in infant and children

3. PEDIATRIC OPERATIVE DENTISTRY

- Principles of operative dentistry
- Restorative materialsused inpast and present; along with recent advances in tooth-coloured materials.
- Modifications required for cavity preparation in primary and young permanent teeth
- Various isolation techniques
- Restoration of carious primary, young permanent and permanent teeth in childrenusing various restorative materials
- Atraumatic Restorative Treatment
- Various crowns used in pediatric dentistry- (Stainless steel, Zirconia crowns,Pedo-strip crowns, Polycarbonate & Resin Crowns / Veneers, fibre post systems etc)

4. PEDIATRIC ENDODONTICS

- Diagnosis of pulpal diseases and their management
- Endodontic treatment for primary teeth- Pulp capping, Pulpotomy, Pulpectomy
- Endodontic treatment for young permanent teeth and permanent teeth -

Pulp capping, Pulpotomy, Pulpectomy, Apexogenesis, Apexification, Regenerative endodontic therapy

- Controversies & recent concepts in pediatric endodontics
- Recent advances in diagnostic aids for assessment of pulpal vitality
- Endodontic instruments (Hand and Rotary) for Primary, young permanent and permanent teeth
- Endodontic irrigants
- Irrigation devices
- Sonic and ultrasonic agitation
- Root canal filling materials for primary teeth
- Recent advances in pediatric endodontics

5. TRAUMATIC INJURIES IN CHILDREN

- Traumatic dental injury- Prevalence, Causes and Predisposing factors, classification, history and examination
- Sequelae & reaction of teeth to trauma
- Traumatic injuries to anterior teeth and its management
- Management of jaw fractures in children
- Sports related dental injuries and its management.

6. INTERCEPTIVE ORTHODONTICS

- Concepts of occlusion and esthetics: Structure and function of all anatomiccomponents of occlusion, mechanics of articulations, recording of masticatoryfunction, diagnosis of Occlusal dysfunction, TMJ anatomy, related neuromuscular physiology and pathology.
- Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
- Fixed and removable orthodontic appliances: Basic principles, contemporary appliances: Design & Fabrication
- Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques)
- 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

- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Space Management:
  - Etiology, Diagnosis of space problems, Space analysis, Biomechanics
  - Objectives, Classification, Requisites
  - Indications and Contraindications
  - Advantages and Disadvantages
  - Space Maintainers and Space Regainers
  - Planned extraction in interceptive orthodontics

7. ORAL HABITS IN CHILDREN

- Definition, Etiology& Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various others oralhabits in children affecting oro-facial structure
- Management of oral habits in children

8. DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS

- Definition, Etiology, Classification, Clinical features and behavioural aspects of specially abled children(physically, mentally and medically handicapped child)
- Dental considerations of special children
- Management of infant/children with cleft lip and palate (feeding plate , naso-alveolar moulding, Speech rehabilitation)
- Oral manifestations of Systemic Conditions in Children & their Management
- Acquired immunodeficiency syndrome (AIDS)
- Management of children with genetic disorders

9. MINOR ORAL SURGICAL PROCEDURES IN CHILDREN

- Exodontia
- Minor oral surgical procedures in children for-
  - Frenal abnormalities,
  - Odontogenic infections
  - Cystic lesions in children
  - Odontogenic and non-odontogenic tumors
  - Abnormalities of oral structures
  - Others infections in children

10. DENTAL RADIOLOGY AS RELATED TO PEDIATRIC DENTISTRY

- Oral examination, diagnosis and treatment planning- case history taking

- Principles of Radiographic Examination
- Conventional Intraoral Radiographic Techniques
- Digital Radiography
- Extraoral Radiography

11. PEDIATRIC ORAL PATHOLOGICAL CONDITIONS IN CHILDREN

- Developmental Disturbances of Teeth and Surrounding Structures

12. **CONGENITAL ABNORMALITIES IN CHILDREN**

- Definition, Classification, Clinical features and Management

13. MEDICAL EMERGENCIES IN CHILDREN

- Vital Signs
- Basic Life Support
- Various medical emergencies and
- Management

14. PROSTHETIC MANAGEMENT IN PEDIATRIC DENTISTRY

15. ADVANCES IN PEDIATRIC DENTISTRY

16. DENTAL MATERIALS USED IN PEDIATRIC DENTISTRY

17. SETTING UP OF PEDODONTIC & PREVENTIVE DENTISTRY CLINIC

18. LASERS IN PEDIATRIC DENTISTRY

PAPER-II:
PREVENTIVE AND COMMUNITY DENTISTRY AS APPLIED TO PEDIATRIC DENTISTRY

1. CHILD PSYCHOLOGY

- Introduction to paediatric dentistry
- Fear, anxiety, apprehension & its management
- Theories of child psychology
- Social and emotional development of child

2. BEHAVIOR MANAGEMENT

- Definitions,Fundamentals of Behaviour Management
- Behaviour Patterns of the Child

- Behaviour Modification/ Guidance Techniques-
- Non- pharmacological and pharmacological behaviour management methods

3. CHILD ABUSE & DENTAL NEGLECT

4. PREVENTIVE PEDODONTICS

- Chair side preventive measures for dental diseases
- Epidemiology of dental caries in India
- Saliva and oral health
- Pit and fissure sealants
- Non-restorative management of dental caries- Silver diamine fluoride
- Caries Vaccine
- Oral hygiene measures
- Dental Health education
- Diet and Dental Caries
- Diet Counselling

5. CARIOLOGY

- Historical background
- Dental Caries- Definition, etiology and classification
- Caries pattern in primary, young permanent and permanent teeth
- Pathogenesis of dental caries
- Caries risk assessment
- Caries activity tests
- Sugar studies
- Diagnosis of dental caries
- Early childhood caries-Definition, Etiology, Pathogenesis, Clinical features, Complications and its management
- Rampant caries
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counselling
- Subjective & objective methods of Caries detection with emphasis on Caries prediction, Caries susceptibility & their clinical Applications

6. 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 and Preventive Dentistry

7. EPIDEMIOLOGY

- Concepts
- Methods of recording & evaluation of various oral diseases
- Various national & global trends of epidemiology of oral diseases

8. FLUORIDE IN DENTISTRY

Historical background of fluoride
Availability and Physiology and mechanism of fluoride
Systemic fluorides
Topical fluorides
Forms of fluoride
Fluoride toxicityand Management
Fluoride analytical methods
Defluoridation

9. VACCINATION SCHEDULE

10. PROBIOTICS

11. INFECTION CONTROL IN PEDIATRIC DENTISTRY

12. MEDICO-LEGAL CONSIDERATIONS

13. COUNSELLING IN PEDIATRIC DENTISTRY

14. PRINCIPLES OF BIO-STATISTICS & RESEARCH METHODOLOGY & UNDERSTANDING OF COMPUTERS ANDPHOTOGRAPHY

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

Any topic from Paper I and paper II can be

MUHS EXAM

SCHEME 1 OF EXAMINATION

MDS Part II

Paper I / Paper II	**Total marks 75**
Questions	**Marks**
Long answer	**40 marks**
Question 1	20 marks
Question 2	20 marks
Short answer	**35 marks**
Question 1	7 marks
Question 2	7 marks
Question 3	7 marks
Question 4	7 marks
Question 5	7 marks
PAPER III	
ESSAY	**75 marks**
Question 1	
OR	
Question 2	

MUHS EXAM

SCHEME 2 OF EXAMINATION

MDS Part II

Paper I / Paper II	**Total marks 100**
Questions	**Marks**
Long answer	**50 marks**
Question 1	25 marks
Question 2	25 marks
Short answer	**50 marks**
Question 1	10 marks
Question 2	10 marks
Question 3	10 marks
Question 4	10 marks
Question 5	10 marks
PAPER III	
ESSAY	**100 marks**
Attempt any 2 questions	
Question 1	50 marks
Question 2	50 marks
Question 3	

SCHEME 3 OF EXAMINATION

MDS Part II

Paper I / Paper II	**Total marks 100**
Questions	**Marks**
Long answer	**60 marks**
Question 1	20 marks
Question 2	20 marks
Question 3	20 marks
Short answer	**40 marks**
Question 1	8 marks
Question 2	8 marks
Question 3	8 marks
Question 4	8 marks
Question 5	8 marks

PAPER III

ESSAY	**100 marks**
Attempt any 2 questions	
Question 1	50 marks
Question 2	50 marks
Question 3	

SYLLABUS OF PART – I

SUBJECT: PERIODONTICS

Applied Anatomy:

- **Evolution and Development of the Periodontium**

a. Evolution of Tooth and Related Structures

b. Parts of Periodontium

c. Development of Cementum

d. Development of Alveolar Bone

e. Development of Periodontal Ligament

f. Development of Gingiva

g. Molecular Components of Periodontal development

- **Micro and Macro structural anatomy and biology of the periodontal tissues**

a. Gingiva

Macro – parts of gingiva, sulcus, GCF
Micro – epithelium, connective tissue: cells, fibers, ECM

b. Alveolar Bone, Periodontal ligament, cementum

- **Age Changes in the Periodontal Tissues**

a. Effects of Aging on Periodontium

b. Effects of Aging on the Progression of Periodontal disease

c. Effects of Aging on Response to Treatment of Periodontal Tissues

- **Anatomy of the Periodontium**

a. Macroscopic and microscopic anatomy

b. Blood supply of the Periodontium

c. Lymphatic system of the Periodontium

d. Nerves of the Periodontium

- **Temporomandibular Joint, Maxillae and Mandible**

a. Structure of Joint- Articular Surfaces, Ligaments, Articular Disc

b. Relations of Temporomandibular Joint

c. Blood Supply

d. Nerve Supply

e. Movements

- **Nerves of Periodontics**

a. Trigeminal nerve: Origin, Motor and sensory Root, Branches and Type of Nerve

b. Maxillary Nerve: Origin, Branches, Supply

c. Mandibular Nerve: Origin, Branches, Supply

d. Applied Anatomy

- **Tongue:**

a. Structure: parts of tongue, papillae of tongue

b. Muscles of tongue

c. Histology of tongue,

d. Development,

e. Blood and nerve supply

- **Hard and Soft Palate**

a. Clinical Anatomy:

b. Hard Palate - Structure: Margins and Surfaces

i) Vessels and Nerves: Arteries, Veins, Nerves and Lymphatics

c. Soft palate - Structure: Margins and Surfaces

i) Muscles of Soft Palate

ii) Vessels and Nerves: Arteries, Veins, Nerves and Lymphatics

iii) Action of muscles of Soft palate

d. Development of Palate

e. Clinical Significance and Applied Aspects

- **Pharynx, Larynx and Tonsils**

a. Pharynx: Structure and parts of pharynx, Waldeyer's Lymphatic Ring

b. Larynx:

i) Structure: Cartilages and Muscles

ii) Movements

iii) Clinical significance: Mechanism of Speech

c. Tonsils: Structure, Vessels and Nerve Supply, Development

- **Muscles of Mastication**

a. Classification: Main and Accessory Muscles of Mastication

b. Main Muscles of Mastication: Origin, Insertion, Nerve Supply and Blood Supply

c. Action of Muscles of Mastication

d. Clinical Significance and Applied Aspects

- **Salivary Glands**

a. Classification of Salivary Glands

b. Anatomy of Salivary Glands

c. Development of Salivary Gland

d. Saliva

e. Clinical Significance and Applied Aspects

- **Paranasal Air Sinuses:**

a. Classification, Development

b. Maxillary sinus: anatomy, embryology, functional importance, clinical evaluation, applied aspects

- **Nervous System, Cranial Nerves**

- **Mandible:**

a. Anatomy

b. Attachment and relations

c. Foramina and relations to nerves and vessels

d. Ossification

e. Age changes

Maxilla:

a. Anatomy

b. Attachment and relations

c. Normal features

d. Ossification

e. Age changes

- **Facial Muscles**

    a. Classification and types

    b. Nerve supply

    c. Muscles producing common facial expression

    d. Clinical aspects

- **Lymphatic System**

    a. Components of Lymphatic system

    b. Functions of Lymphatic system

    c. Lymphatic drainage of Head and Neck

    d. Clinical Aspects

- **Physiology:**

    1. Blood: composition, cells, functions, disorders

    2. Anemia- types, polycythemia

    3. Respiratory system – Acknowledge of the respiratory disease which are a cause of periodontal diseases (periodontal Medicine)

    4. Cardiovascular system

        a. Cardiac cycle, cardiac output, venous return

        b. Blood pressure

        c. Normal ECG

        d. Shock

    5. Endocrinology – thyroid, pancreas, adrenaline, growth hormones, sex hormones and hormonal influences on Periodontium

    6. Gastrointestinal system

        a. Salivary secretion – composition, function & regulation

    7. Nervous System

        a. Pain pathways

        b. Local anesthesia: Classification, composition, mechanism, complications

c. Tongue – Taste buds, primary taste sensation & pathways for sensation

8. Cell: Structure, function, injury, transport of substances
9. Food and Nutrition
10. Mastication and deglutition
11. Immunity: Types, Cells
12. Allergy and hypersensitivity reactions
13. Haemostasis- mechanism, clotting factors, coagulation, disorders, haemostatic agents
14. Anticoagulant and anti-platelet agents
15. Salivary glands: secretions and mechanism of salivary secretion
16. Calcium and phosphate metabolism, formation of bone and teeth, regulation of vitamin D
17. Liver- physiology and functions
18. Thyroid
    a. Synthesis and secretion of thyroid hormones
    b. Regulation of thyroid hormones
    c. Physiology and functions
19. Tongue
    a. Taste buds
    b. Pathway for taste
    c. Taste sensations and chemical constituents
    d. Taste transduction
    e. Applied physiology: Abnormalities of taste sensation
20. Diabetes Mellitus
    a. Classification
    b. Complication
    c. Pathogenesis
    d. 2 way relation between diabetes mellitus and periodontitis

Biochemistry:

1.Carbohydrates: classification, functions, metabolism

2. Proteins: functions, metabolism
3. Lipids: classification, functions, metabolism

4. Vitamins: classification, functions, dietary sources, deficiency

5. Diet and nutrition and Periodontium

a. Macro and micro-nutrients and its effect on periodontium

6. Biochemical tests and their significance

7.Calcium and Phosphorus

8. Connective Tissue:

a. Collagen-function

b. Structure

c. Biosynthesis and abnormalities

9. Diet and Nutrition

a. Definition of diet and nutrition

b. Balanced diet

c. Components of food and their deficiency diseases

d. Nutrient value of food

e. Food pyramid

10.PCR and its Application

a. Principle

b. Steps

c. Advantages and limitations

11.ELISA and its Application

a. Principle

b.Methods

c.Type

d.Application

12.Basal Metabolic Rate

a. Definition

b. Measurement

c. Normal values of BMR

d. Factors affecting BMR

Pathology:

1.Cell structure and metabolism

2.Inflammation- details of cellular events, chemical mediators: promoters and suppressors

3.Repair, regeneration, necrosis and degeneration

4.Immunity system, organs, cells and their functions

5.Hypersensitivity reactions

6.Circulatory disturbances – edema, haemorrhage, shock, thrombosis, embolism, infarction

and hypertension

7.Disturbances of nutrition, vitamin physiology and deficiencies

8.Diabetes mellitus, classification, etiology, pathogenesis, risk factors, clinical features, complications, diagnosis

9.Cellular growth and differentiation, regulation

10. Lab investigations

11.Neoplasia, Metastasis

a. Nomenclature and classification of tumors

b. Etiology and pathogenesis

c. Pathologic diagnosis of cancer

12.Healing

a. Regeneration

b. Repair

c. Wound healing

d. Healing after periodontal surgeries

13.Blood Disorders

a. Hemorrhagic diathesis due to vascular disorders

b. Hemorrhagic diathesis due to platelet disorders

c. Hemorrhagic diathesis due to fibrolytic defects

d.Disseminated intravascular coagulation (DIC)

e.Coagulation disorders

f. Investigations of haemostatic function

Microbiology:

1.General bacteriology: morphology, staining techniques, bacterial anatomy, growth and multiplication of bacteria, bacterial nutrition

2.Sterilization and disinfection, sterilizing agents, testing of disinfectants

3.Culture media,

a.Types of culture media

b.Culture methods

4. Immunology:

a.Types of immunity

b.Antigens and antibodies

c.Antigen-antibody reactions

d.Complement system

e.Structure

f.Functions of immune system

5.Infection:

a. Classification

b.Sources of infection

c.Methods of transmission

d.Predisposing factors for microbial pathogenicity

e.Types of infectious diseases

6.Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and periodontal microbiology

7.Virology

a.General properties of viruses

b.Classification and nomenclature

c. Cultivation methods

d.Viral infections, pathogenesis of viral infections, host response to viral infections

e. Herpes, Hepatitis, virus, HIV virus

8.Mycology

a. Candidiasis

9.Applied microbiology

10.Healthcare associated infections

11. Recent advances in Diagnostic microbiology

12. Antibiotic sensitive testing

Bio medical waste 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 – opioid and non -opioid

b.Local anesthetics

c.Haematinics and coagulants, Anticoagulants

d.Vitamin D and Calcium preparations

e.Antidiabetic drugs

f.Steroids

g.Antibiotics

h.Antihypertensive

i.Immunosuppressive drugs and their effects on oral tissues

j. Antiepilectic drugs

3.Brief pharmacology, dental use and adverse effects of

a.General anaesthetics

b.Antipsychotics

c.Antidepressants

d.Anxiolytic drugs

e.Sedatives

f.Antiepileptics

g.Antihypertensives

h.Anti anginal drugs

i.Diuretics

j.Hormones

k.Pre-anesthetic medication

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

f.Anticalculus Agents

g.Dentifrices

7.Fluoride pharmacology

8.Vaccine

Research Methodology and 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 , Z-test, ANOVA)
6. Null hypothesis
7. Presentation of data, measures of dispersion
8. Research methodology - introduction, purpose, categories, scientific methods,

hypothesis formulations, writing protocol

9. Correlation, regression
10. Index- requirement, classification, Gingival and Periodontal Indices
11. Clinical trials
12. Epidemiology- aims and principles, tools of measurement, methods, uses

Survey procedures, types of survey, uses, steps in surveying

PERIODONTOLOGY

CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY

1 **Classification of periodontal diseases & conditions affectingperiodontium.**

- **a)** Gingivaldiseases
- **b)** Periodontitis
- **c)** Necrotizing periodontaldiseases
- **d)** Abscesses ofperiodontium
- **e)** Periodontitis associated with endodonticlesions
- **f)** Developmental or acquired deformities &conditions

2 **Fundamentals in the methods of periodontal diseaseepidemiology.**

- **a)** Need forepidemiology
- **b)** Epidemiologic studydesigns
- **c)** Causes/ etiology
- **d)** Diagnosis

3 **Defence mechanisms ofgingiva.**

- **a)** Sulcularfluid
- **b)** Leukocytes in the dentogingivalarea
- **c)** Saliva

4 **Periodontalmicrobiology.**

- **a)** Oral cavity from a microbe'sperspective
- **b)** Bacteria and their biofilm mode ofliving
- **c)** Characteristics of biofilm bacteria (life in “slimecity”)
- **d)** Bacterial transmission andtranslocation
- **e)** Nonbacterial inhabitants of the oralcavity
- **f)** Microbiologic specificity of periodontaldiseases
- **g)** Transition from health todisease
- **h)** Virulence factors ofperiodontopathogens
- **i)** Future advances in periodontal microbiology

5 **Basic concepts of inflammation andimmunity.**

- **a)** Inflammation
- **b)** Acute inflammation is self-limited
- **c)** Unresolved chronic inflammation in periodontaldiseases
- **d)** Systemiclink
- **e)** Therapeutic actions of resolutionmediators

6 **Microbial interactions with the host in periodontaldiseases.**

- **a)** Microbiologic aspects of the microbial –hostinteraction
- **b)** Immunologic aspects of the microbial interaction with thehost
- **c)** Microbiology and immunology in gingivalhealth
- **d)** Microbiology and immunology in periodontaldisease

7 **Pathogenesis of plaque associated periodontaldiseases.**

- **a)** Histopathology of periodontaldisease
- **b)** Inflammatory responses in theperiodontium
- **c)** Linking pathogenesis to clinical signs ofdisease
- **d)** Resolution of inflammation
- **e)** Immune responses in periodontalpathogenesis
- **f)** Concept of hostsusceptibility

8 **Dental calculus.**

- a) Supragingival&subgingivalcalculus
- b) Clinical appearance, prevalence anddistribution
- c) Calculus formation andstructure
- d) Attachment to tooth surfaces andimplants
- e) Calculuscomposition
- f) Clinicalimplications
- g) Materia alba, food debris, dentalstains
- h) Role of iatrogenic and other localfactors

9 **Genetic factors associated with periodontaldisease.**

- a) Introduction anddefinitions
- b) Evidence for the role of genetics inperiodontitis
- c) Heritability of aggressive periodontitis (early onsetperiodontitis)
- d) Heritability of chronic periodontitis (adultperiodontitis)
- e) The twinmodel
- f) Human genes andpolymorphisms
- g) Genetics in relation to disease ingeneral
- h) A major disease gene associated withperiodontitis
- i) Modifying disease genes in relation toperiodontitis
- j) Cytokine genepolymorphisms
- k) IL-1 genepolymorphisms
- l) TNF-a genepolymorphisms
- m) IL-10 genepolymorphisms
- n) FCYR genepolymorphisms

10 **Influence of systemic conditions on theperiodontium.**

- a) Endocrine disorders and hormonalchanges

b) Hematologic disorders and immunedeficiencies

c) Cardiovasculardiseases

d) Geneticdisorders

e) Stress and psychosomaticdisorders

f) Nutritionalinfluences

g) Medications

h) Other systemicconditions

11 **Role of environmental factors in the etiology of periodontaldisease.**

12 **Stress and periodontal diseases.**

13 **Occlusion and periodontal disease.**

a) Adaptive capacity of the periodontium to occlusalforces

b) Trauma fromocclusion

c) Stages of tissue response to increased occlusalforces

d) Effects of insufficient occlusalforce

e) Reversibility of traumaticlesions

f) Effects of excessive occlusal forces on dentalpulp

g) Relationship between plaque induced periodontal diseases and trauma from occlusion

h) Pathologic toothmigration

14 **Smoking and tobacco in the etiology of periodontaldiseases.**

a) The smoking epidemic

b) Effects of smoking on the prevalence and severity of periodontaldiseases

c) Effects of smoking on the etiology and pathogenesis of periodontaldisease

d) Effects of smoking on the response to periodontaltherapy

e) Effects of smoking cessation on periodontal treatmentoutcomes

15 **AIDS andperiodontium.**

a) Epidemiology &demographics

b) Classification &staging

c) Pathogenesis

d) Oral and periodontal manifestations of human immunodeficiencyvirus

e) Infection

f) Dental treatmentcomplications

g) Gingival and periodontaldiseases

h) Periodontal treatmentprotocol

16 **Periodontalmedicine.**

a) Pathobiology of periodontitis
b) Focal infection theoryrevisited
c) Evidence –based clinicalpractice
d) Subgingival environment as a reservoir ofbacteria
e) Periodontal disease andmortality
f) Periodontal disease and coronary heart disease/atherosclerosis
g) Periodontal disease andstroke
h) Periodontal disease and diabetesmellitus
i) Periodontal disease and pregnancyoutcome
j) Periodontal disease and chronic obstructive pulmonarydisease
k) Periodontal disease and acute respiratoryinfection
l) Periodontal medicine and clinicalpractice

17 **Gingivalinflammation.**

a) Stage I gingival inflammation: the initiallesion
b) Stage II gingival inflammation: the earlylesion
c) Stage III gingival inflammation: the establishedlesion
d) Stage IV gingival inflammation: the advancedlesion
e) Clinical features ofgingivitis
f) Course andduration

18 **Gingivalenlargement.**

a) Inflammatoryenlargement.
b) Drug-induced gingivalenlargement
c) Idiopathic gingivalenlargement
d) Enlargements associated with systemicdiseases
e) Neoplasticenlargements
f) Falseenlargements

19 **Acute gingivalinfections.**

a) Necrotizing ulcerativegingivitis
b) Primary herpeticgingivostomatitis
c) Pericoronitis

20 **Desquamative gingivitis and oral mucous membranediseases.**

a) Chronic desquamativegingivitis
b) Diagnosis of desquamative gingivitis: a systematicapproach
c) Diseases that can manifest as desquamativegingivitis
d) Drug-relatederuptions
e) Miscellaneous conditions that mimic desquamativegingivitis

21 **Gingival diseases in thechildhood.**

a) Periodontium of the primarydentition
b) Periodontal changes associated with normaldevelopment
c) Gingival diseases ofchildhood
d) Periodontal diseases ofchildhood
e) Gingival manifestation of systemic disease inchildren
f) Oral mucosa in childhooddiseases
g) Therapeutic considerations for pediatricpatients

22 **Periodontalpocket.**

a) Classification
b) Clinicalfeatures
c) Pathogenesis
d) Histopathology
e) Periodontal diseaseactivity
f) Site specificity
g) Pulp changes associated with periodontalpockets
h) Relationship of attachment loss and bone loss to pocketdepth
i) Area between base of pocket and alveolarbone
j) Relationship of pocket tobone
k) Periodontalabscess
l) Lateral periodontalcyst

23 **Bone loss and patterns of bonedestruction.**

a) Bone destruction caused by the extension of gingivalinflammation
b) Bone destruction caused by trauma fromocclusion
c) Bone destruction caused by systemicdisorders
d) Factors determining bone morphology in periodontaldisease
e) Bone destruction patterns in periodontaldisease

24 **Masticatory systemdisorders.**

a) Temporomandibularjoint
b) Muscles and nerves of the masticatorysystem
c) Centricrelation
d) Biomechanics of the masticatorysystem
e) Dysfunction anddeterioration
f) Orofacialpain
g) Comprehensiveevaluation
h) Diagnostic decisionmaking

25 **Chronicperiodontitis.**

a) Clinicalfeatures
b) Risk factors fordisease
c) Pathogenesis

26 **Aggressiveperiodontitis.**

a) Overview
b) Historicalbackground
c) Classification and clinicalcharacteristics
d) Epidemiology
e) Pathobiology and riskfactors
f) Therapeutic considerations in aggressive periodontitispatients

27 **Necrotising ulcerativeperiodontitis.**

a) Clinicalfeatures
b) Microscopicfindings
c) Patients with HIV/AIDS
d) Etiology of necrotizing ulceriveperiodontitis
e) Malnutrition

28 **Clinicaldiagnosis.**

a) Overall appraisal of thepatient
b) Health history, dental history, photographicdocumentation
c) Clinicalexamination
d) Tactile periodontalexamination
e) Periodontalcharting
f) Examination of the teeth andimplants
g) Radiographicexamination
h) Laboratory aids to clinical diagnosis

i) Periodontaldiagnosis

j) Assessment of biofilm control and patienteducation

29 **Radiographic and other aids in the diagnosis of periodontaldiseases.**

a) Normal interdentalbone

b) Radiographictechniques

c) Bone destruction in periodontal disease

d) Radiographic appearance of periodontaldisease

e) Digital intraoralradiography

f) Advanced diagnostictechniques

30 **Interdisciplinaryapproaches.**

a) **Orthodonticconsiderations**

- Benefits of orthodontictherapy
- Pre-orthodontic osseoussurgery
- Orthodontic treatment of osseousdefects
- Orthodontic treatment of gingivaldiscrepancies
- Implant interactions inorthodontics

b) **Endodonticconsiderations**

- Factors initiating pulpal and apicaldiseases
- Classification of pulpal and apicaldiseases
- Biologic effects of pulpal infection on periodontaltissues
- Biologic effects of periodontal infection on the dentalpulp
- Effects of endodontic pathosis on development of retrogradeperi-implantitis
- Interactions between extra-radicular infection and theperiodontium
- Differential diagnosis of pulpal and periodontalinfection

31 **Riskassessment.**

a. Definitions

b. Risk factors for periodontaldisease

c. Risk determinants/background characteristics for periodontaldisease

d. Risk indicators for periodontaldiseases

e. Risk markers/predictors for periodontaldisease

f. Clinical risk assessment for periodontaldisease

32 **Determination ofprognosis.**

a. Definitions
b. Types ofprognosis
c. Factors in determination ofprognosis
d. Prognosis of specific periodontaldiseases
e. Determination and reassessment ofprognosis
f. Relationship between diagnosis &prognosis

33 **Treatmentplan.**

a. Overall treatmentplan
b. Sequence oftherapy
c. Explaining the treatment plan to thepatient

34 **Rationale for periodontaltreatment.**

a. Factors that affecthealing
b. Healing after periodontaltherapy
c. Periodontalreconstruction

35 **Levels of clinical significance.**

a. Tangible versus intangiblebenefits
b. Size of treatmenteffect
c. Defining four levels of clinicalsignificance

36 **Generalprinciplesofanti-infectivetherapywithspecialemphasisoninfectioncontrol in periodontalpractice.**

a. Definitions
b. Systemic administration ofantibiotics
c. Serial and combination antibiotictherapy
d. Local deliveryagents
e. Local delivery of antimicrobial agents &peri-implantmucositis/implantitis

37 **Oralmalodor.**

a. Semantics and classification
b. Epidemiology
c. Etiology
d. Fundamentals of malodor detection
e. Diagnosis ofmalodor
f. Treatment of oralmalodor

38 **Bruxism and itstreatment**

39 **Periodontalinstrumentation.**

a. Classification of periodontalinstruments
b. Principles of periodontalinstrumentation
c. Principles of scaling & rootplaning
d. Sharpening of periodontalinstruments.

40 **Plaquecontrol.**

a. Thetoothbrush
b. Poweredtoothbrushes
c. Dentifrices
c) Toothbrushingmethods
d) Interdental cleaningaids
e) Gingival massage
f) Oral irrigationdevices
g) Cariescontrol
h) Chemical plaque biofilm control with oralrinses
i) Disclosingagents
j) Frequency of plaque biofilm removal
k) Patient motivation andeducation

41 **Periodontal management of HIV infectedpatients.**

a. Periodontal treatmentprotocol
b. Oralcandidiasis
d) Oral hairyleukoplakia
e) Kaposi'ssarcoma
f) Bacillaryangiomatosis
g) Non-specific oral ulcerations and recurrentaphthae
h) Periodontal disease in HIV positiveindividual

42 **Occlusal evaluation and therapy in the management of periodontaldisease.**

a) Terminology
b) Occlusal function anddysfunction
c) Biologic basis of occlusalfunction
d) Pathogenesis
e) Parafunction
f) Clinical evaluation procedures
g) Interpretation & treatmentplanning
h) Occlusaltherapy

43 **Role of orthodontics as an adjunct to periodontaltherapy.**

a) Benefits of orthodontictherapy
b) Pre-orthodontic osseoussurgery
c) Orthodontic treatment of osseousdefects
d) Orthodontic treatment of gingivaldiscrepancies
e) Implant interactions inorthodontics

44 **Special emphasis on precautions and treatment for medically compromised patients.**

45 **Periodontalsplints.**

46 **Dentinalhypersensitivity.**

47 **Periodontal surgicalphase.**

a) General principles of periodontalsurgery
b) Outpatient surgery
c) Hospital periodontalsurgery
d) Surgicalinstruments

48 **Surgical anatomy of periodontium and relatedstructures.**

a) Mandible
b) Maxilla
c) Exostoses
d) Muscles
e) Anatomic spaces

49 **Gingivalcurettage.**

a) Rationale
b) Indications
c) Procedure
d) Healing after scaling andcurettage
e) Clinical appearance after scaling and curettage

50 **Gingivectomytechnique.**

a) Indications &contraindications
b) Sugicalgingivectomy
c) Healing after surgicalgingivectomy
d) Gingivectomy by electrosurgery
e) Hearing after gingivectomy by electrosurgery
f) Laser gingivectomy
g) Gingivecomy by chemosurgery

51 **Treatment of gingivalenlargements.**

a) Treatment of chronic inflammatoryenlargement

b) Treatment of periodontal and gingivalabcesses

c) Treatment of drug associated gingivalenlargement

d) Treatment of leukemic gingivalenlargement

e) Treatment of gingival enlargement inpregnancy

f) Treatment of gingival enlargement inpuberty

g) Recurrence of gingival nlargement

52 **Periodontalflap.**

a) Classification offlaps

b) Design of theflap

c) Incisions

d) Elevation of theflap

e) Suturingtechniques

f) Healing after flapsurgery

53 **Flap technique for pockettherapy.**

a) Modified WidmanFlap

b) Undisplacedflap

c) Apically displacedflap

d) Flaps for reconstructivesurgeries

e) Distal molarsurgeries

54 **Osseous surgery (Resective andRegenerative).**

a) Resective

- Selection of treatmenttechnique
- Rationale
- Normal alveolar bonemorphology
- Terminology
- Factors in selection of resective osseoussurgery
- Examination and treatmentplanning
- Methods of resective osseoussurgery
- Osseous resectiontechnique
- Flap placement andclosure
- Postoperativemaintenance
- Specific osseous reshapingsituations

b) Regenerative

- Assessment of new attachment & periodontalreconstruction
- Reconstructive surgicaltechniques

- Factors that influence therapeuticsuccess
- Future directions for periodontalregeneration

55 **Furcation: Involvement & treatment.**

a) Etiologicfactors

b) Diagnosis and classification of furcationdefects

c) Local anatomicfactors

d) Anatomy of the bonylesions

e) Indices of furcationinvolvement

f) Treatment

g) Nonsurgicaltherapy

f) Surgicaltherapy

g) Prognosis

56 **Periodontic plastic and estheticsurgery.**

a) Terminology

b) Objectives

c) Cause of marginal tissuerecession

d) Factors that affect surgicaloutcome

e) Techniques to increase attachedgingiva

f) Techniques to deepen thevestibule

g) Techniques to remove thefrenum

h) Techniques to improveaesthetics

i) Tissue engineering

j) Criteria for selection oftechniques

57 **Host modulation.**

a) Systemically administeredagents

b) Locally administeredagents

c) Host modulation & comprehensive periodontal management

d) Sub-antimicrobial doseDoxycycline

e) Emerging host modulatorytherapies

f) Host modulation factors in systemicdisorders

58 **The periodontic- endodonticcontinuum.**

a) Rationale fortherapy

b) Sequence oftreatment

c) Control of activedisease

d) Preprostheticsurgery

e) Biologicconsiderations

f) Esthetic tissue management

g) Occlusal considerations in restorativetherapy

h) Special restorativeconsiderations

59 **Periodontalmicrosurgery.**

a) Philosophy of periodontalmicrosurgery
b) Advantages of microsurgery
c) Magnification systems
d) Microsurgicalsutures
e) Esthetic periodontalmicrosurgery
f) Microsurgicalknots

60 **Lasers in periodontal and peri-implanttherapy.**

a) Laser physics and biologicinteractions
b) Laser applications inperiodontics
c) Lasers in the management of periodontitis
d) Lasers in the management ofperi-implantitis
e) Complications and risks of lasertherapy

61 **Leukocyte- and platelet-richfibrin.**

a) Introduction
b) General characteristics of l-PRFmembranes
c) Extraoral applications ofl-PRF
d) L-PRF in the treatment of periodontal bonydefects
e) L-PRF for ridgepreservation
f) L-PRF and sinus floorelevation
g) L-PRF and implantsurgery
h) L-PRF for periodontal mucogingivalsurgery
i) L-PRF and medication-related osteonecrosis of thejawbone
j) Initial observations on thePRF-block

62 **Periodontal maintenancephase.**

a) Supportive periodontaltreatment

- Rationale for supportive periodontaltreatment
- Maintenanceprogram
- Classification of post treatment patients and riskassessment
- Referral of patients to theperiodontist
- Tests for diseaseactivity
- Maintenance for dental implantpatient

a) **Results of periodontaltreatment**

- Prevention and treatment of gingivitis
- Prevention and treatment of loss ofattachment
- Tooth mortality

63 **Future directions and controversial questions in periodontaltherapy.**

a) Future directions for infectioncontrol
b) Research directions in regenerativetherapy
c) Future directions in anti-inflammatorytherapy
d) Future directions in measurement of periodontaldiseases

64 **Oralimplantology.**

a) Introduction and historicalreview
b) Biological, clinical and surgical aspects of dentalimplants
c) Biomaterials
d) Peri-implant anatomy, biology, andfunction
e) Implant geometry(macrodesign)
f) Implant surface characteristics(microdesign)
g) Hard tissueinterface
h) Soft tissueinterface
i) Clinical comparison of teeth andimplants
j) Clinical evaluation of the implantpatient
k) Case types andindications
l) Pretreatmentevaluation
m) Risk factors andcontraindications
n) Post treatmentevaluation
o) Diagnosis and treatmentplanning
p) Standardprojections
q) Cross-sectionalimaging
r) Interactive “simulation” softwareprograms
s) Patientevaluation
t) Clinical selection of diagnosticimaging

65 **Implantsurgery.**

a) **Basic implant surgicalprocedures**

- General principles of implantsurgery
- Two-stage “submerged” implantplacement
- One-stage “non-submerged” implantplacement

b) **Localized bone augmentation and implant sitedevelopment**

- Guided boneregeneration
- Localized ridge augmentation
- Alveolar ridge preservation/management ofextractions

c) **Advanced implant surgicalprocedures**

- Maxillary sinus elevation and boneaugmentation
- Supracrestal/vertical boneaugmentation
- Growth factors in boneaugmentation

d) **Esthetic management of difficult cases (minimally invasiveapproach)**

- Surgical strategy for predictableaesthetics
- Immediate implant placement for predictability andaesthetics
- Surgical management of difficult cases (minimally invasiveapproach)

e) **Dental implantmicrosurgery**

f) **Piezoelectric bonesurgery**

- Clinical characteristics of ultrasoniccutting
- Clinical applications & advanced clinicalapplications
- Digitally assisted implantsurgery

66 **Prosthetic aspects of dentalimplants.**

a) Impression makingtechniques
b) Implantconsiderations
c) Abutment/prosthesis considerations for singleunits
d) Management of partially edentulous implant treatment in the aestheticzone
e) Fully edentulous: prostheticconsiderations

67 **Implant-related complications andfailures.**

- Definitions of implant survival and success
- Types and prevalence of implantcomplications
- Types of dentalimplants
- Surgicalcomplications
- Biologiccomplications
- Complications related to augmentationprocedures
- Complications related to placement and loadingprotocols

- Prosthetic or mechanicalcomplications
- Aesthetic and phoneticcomplications

68 **Diagnosis and treatment of peri-implantcomplications.**

- Incidence
- Etiology
- Technical implantfailures
- Diagnosis of peri-implant tissuebreakdown
- Removal of failedimplants
- Initial phase of peri-implantitistreatment
- Surgical techniques for treatment ofperi-implantitis
- Maintenance
- Special emphasis on plaque control measures in implantpatients
- Maintenancephase.

69 **Management of medical emergencies in periodontalpractice.**

70 **Evidence based decision making in clinicalpractice.**

Scheme of Examination

A) Theory

Part – I	Basic sciences paper	100 Marks
Part – II	Paper –I Paper-II, aper-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 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, 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

Part-II 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 marks	
b) I short case	25 marks	
c) Periodontal surgery	1. Anesthesia	10
	2. Incision	20
	3.Post Surgery Evaluation	25
	4. Sutures 10	
	5. Pick up (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.

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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 AND CROWN & BRIDGE

1. NON-SURGICAL AND SURGICAL METHODSOFPROSTHODONTICSANDIMPLANTOLOGY

A) Complete Denture Prosthesis

1 Definitions

2 Terminologies, G.P.T., Boucher's clinical dental terminology

3 The Cranio Mandibular system and its functions,

4 Reasons for loss of teeth,

5 Consequences of loss of teeth

6 Treatment modality with various restorations and replacements

7 **Edentulous Predicament**,

i Biomechanics of the edentulous state,

iiSupportmechanism for the natural dentition and complete dentures,

iii Biological considerations,

iv Functional and Para functional considerations,

v Esthetic, behavioral and adaptive responses,

vi Temporomandibular jointschanges.

8 **Effects of aging of edentulous patients**

i. Aging populationdistributionedentulism in old age

ii. 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 ldage

9 **Sequelae caused by wearing complete denture**

i. Mucosal reactions,

ii. Altered taste perception,

iii Burning mouth syndrome,

iv Gagging,

v. Residual ridge (reduction) resorption,

vi. Denture stomatitis,

vii Flabby ridge,

viiiDenture irritation hyperplasia,

ix Traumatic Ulcers,

x Oral cancer in denture wearers,

xi Nutritional deficiencies,

xii Masticatory ability and performance,

xiii Nutritional status and

xiv Masticatoryfunctions.

10 **Temporomandibulardisorders in edentulous patients** –

i. Epidemiology,

ii Etiology and

iii Management,

iv Pharmacotherapy,

v Physical andBio-behavioralmodalities

11 **Nutrition Care for the denture wearing patient** –

i. Impact of dental status onfood intake

ii. Gastrointestinal functions

iii. Nutritional needs and status of older adults

iv. Calcium and bone health

v. Vitamin and herbal supplementation

vi. Dietary counseling

vii. Risk factor for malnutrition in patients with dentures

viii. When teeth areextracted

12 **Preparing patient for complete denture patients** –

i. Diagnosis and treatment planning for edentulous and partially edentulous patients

- Familiarity with patients
- Principles of perception
- Health questionnaires
- Identification data
- Problem identification
- Prognosis and treatment identification data
- Problem identification,

Ii 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 attitude
- Psychological changes
- Adaptability
- Geriatric changes
- Intra oral changes
- Intra oral health (mucus membrane, alveolar ridges, palate and vestibular sulcus and dental health)

13 Data collection and recording (visual observation, radiography, palpation, measurement of sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts).

14 Specific observations

i. Existing dentures
ii. Soft tissue health
iii. Hard tissue health – teeth, bone

15 Biomechanical considerations

i. Jaw relations
ii. Border tissues
iii. Saliva
iv. Muscular development (muscle tone, neuromuscular co-ordination, tongue, cheek and lips).

16 Interpreting diagnostic findings and treatment planning

17 Immediate Denture

a) Advantages
b) Disadvantages
c) Contraindications
d) Diagnosis, treatment planning
e) Prognosis
f) Explanation to the patient
g) Oral examinations
h) Examination of existing prosthesis
i) Tooth modification
j) Prognosis
k) Referrals/adjunctive care
l) Oral prophylaxis and other treatmentneeds.

18 First visit-

a) Preliminary impressions and diagnostic casts,
b) Management of loose teeth
c) Custom trays
d) Final impressions and master casts
e) Two tray or sectional custom impression tray
f) Location of posterior limit and jaw relation records
g) Setting of the posterior denture teeth / verifying jaw relations and the patient try in.

19 Laboratory phase

a) Setting of anterior teeth
b) Wax contouring
c) Flasking and boil out
d) Processing and finishing

20 Surgical templates

a) Surgery and immediate denture insertion
b) Post operative care and patient instructions, subsequent service for the patient on the immediate denture.

21 Over dentures (tooth supported complete dentures)

a) Indications and treatment planning
b) Advantages and disadvantages
c) Selection of abutment teeth
d) Loss of abutment teeth
e) Tooth supported complete dentures
f) Non-coping abutments
g) Abutment with copings
h) Abutments with attachments
i) Submerged vital roots
j) Preparations of the retainedteeth.

22 Single Dentures:

a) Single Mandibular denture to oppose natural maxillary teeth,
b) Single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis
c) Partially edentulous Mandibular arch with removable partial dentures
d) Opposing existing complete dentures
e) Preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and preventing mentaltrauma.

23 Pre prosthetic surgery

24 Non surgical methods

i. Rest for the denture supporting tissues

ii. Occlusal correction of the old prosthesis

iii. Good nutrition

iv. Conditioning of the patientsmusculature

A **Surgical methods** –

- Correction of conditions, that preclude optimal prosthetic function

  i. Hyperplastic ridge

  ii. Epulis fissuratum

  iii. Papillomatosis

  iv. Frenular attachments

  v. Pendulous maxillary tuberosities

  vi. Ridge augmentation

  vii. Maxillary and mandibular oral implants

  viii. Corrections of congenital deformities

  ix. Discrepancies in jaw size

  x. Relief of pressure on the mental foramen

  xi. Enlargement of denture bearing areas

  xii. Vestibuloplasty

  xiii. Ridge augmentation

  xiv. Replacement of tooth roots with Osseo integrated dentureimplants.

- **Implant supported Prosthesis for partially edentulous patients** –Science of 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

  i. Introduction and Historical Review

  ii. Biological, clinical and surgical aspects of oral implants o Diagnosis and treatment planning

  iii. Radiological interpretation for selection of fixtures

  iv. Splints for guidance fort surgical placement of fixtures.

v. Surgical andIntra oral plastic surgery, if any Guided bone and Tissue regeneration consideration for implants fixture.

vi. Implant supported prosthesis for complete edentulism and partial edentulism o Occlusion for implant supported prosthesis.

vii. Peri-implant tissue and Management of peri-implantitis

viii. Maintenance and after care.

ix. Management of failed restoration.

x. Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

25 **Art of communication in the management of the edentulous predicament**

i. Communication–scope

ii. A model of communication, why communication is important? What are the elements of effective communication? Special significance of doctor / patient communication

iii. Doctor behavior

iv. The iatro sedative (doctor & act of making calm) recognizing and acknowledging the problem

v. Exploring and identifying the problem

vi. Interpreting and explaining the problem

vii. Offering a solution to the problem for mobilizing their resources to operate in a most efficient way

viii. Recognizing and acknowledging the problem

ix. Interpreting and explaining the problem

x. Offering a solution to the problem.

26 Materials prescribed in the management of edentulous patients –

i. Denture base materials

ii. General requirements of biomaterials for edentulous patients

iii. Requirement of an ideal denture base

iv. Chemical composition of denture base resins

v. Materials used in the fabrication of prosthetic denture teeth

vi. Requirement of prosthetic denture teeth

vii. Denture lining materials and tissue conditioners

viii. Cast metal alloys as denture bases – base metal alloys.

27 **Articulators – Evolution of concepts**

i. Classification

ii. Selection

iii. Limitations

iv. Precision

v. Accuracy and sensitivity

vi. Functions of the articulator and their uses

vii. Recent advancements including virtual articulator

28 **Fabrication of complete dentures**

i. Complete denture impressions–muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives of preservation, support, stability, aesthetics, and retention.

ii. Impression materials and techniques – need of 2 impressions the preliminary impression and final impressions. 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

iii. 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,

iv. Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating lines.

v. 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.

29 **Mandibular movements, Maxillo mandibular relations and concepts of occlusion –**

i. Gnathology,

ii. 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.

iii. Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator

iv. Recording of Mandibular movements – influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular

regulation of Mandibular motion, the envelope of motion, rest position.

v. Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion,

vi. Recording methods – mechanical, physiological,

vii. 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.

30 **Selecting and arranging artificial teeth and occlusion for the edentulous patient –**

i. Anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing the position of teeth – horizontal & vertical relations.

ii. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.

31 **The Try in** –

i. Verifying vertical dimension

ii. Centric relation

iii. Establishment ofposterior palatal seal

iv. Creating a facial and functional harmony with anterior teeth

v. Harmony of spaces of individual teeth position

vi. Harmony with sex

vii. Personality and age of the patient

viii. Co-relating aesthetics and incisal guidance.

32 **Speech considerations with complete dentures & speech production** –

i. Structural and functional demands,

ii. Neuropsychological background,

iii. Speech production and the roll of teeth and other oral structures

– Bilabial soundslabiodental(s) sounds

– Linguodental sounds

– Linguoalveolarsound

– Articulatoriccharacteristics

– Acoustic characteristics

– Auditory characteristics

– Linguopalatal and linguoalveolar sounds

– Speech analysis and prosthetic considerations.

33 **Waxing contouring and processing the dentures their fit and insertion and after care** –

i. Laboratory procedure–

- Wax contouring
- Flasking andprocessing
- Laboratory remount procedures
- Selective grinding
- Finishing and polishing.

ii. 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.

iii. 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.

B **Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics**

Scope, definition and terminology

- Classification of partially edentulous arches - requirementsofanacceptablemethodofclassification,
- Kennedy'sclassification
- Applegate's rules for applying the Kennedy classification

Components of RPD–

i) **Major connector**–mandibular andmaxillary

ii) **Minor connectors**- design

- Functions & form and location of major and minor connectors
- Tissue stops
- Finishing lines
- Reaction of tissue to metalliccoverage

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 restseat.

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 ofretainers.

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 – indirectretention

vi) Teeth and denture bases – types,

- Materials,
- Advantages and dis-advantages,
- Indications and contraindications and clinical use.

vii) **Principles of removable partial Denture design** –

- Bio mechanical considerations,
- 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.

a. Education of patient

b. Diagnosis and treatmentplanning

c. Design, treatment sequencing and mouthpreparation

d. **Surveying** –

- Description of dental surveyor
- Purposes of surveying
- Aims and objectives in surveying of diagnostic cast and master cast
- Final path of insertion
- Factors that determine path of insertion and removal
- Recording relationofcasttosurveyor
- Measuringamountofretentivearea
- Blockingof master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.

e. 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 ofmaterials

f. 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
- Periodontalsurgery.

g. Preparation of Abutment teeth –Classification of abutment teeth

- Sequence of abutment preparations on sound enamel or existing restorations
- Conservative restorations using crowns
- Splinting abutment teeth
- Utilization
- Temporary crowns to be used asabutment.

h. 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 impressiontrays

i. Support for the Distal Extension Denture Base –Distal extension

- Removable partial denture
- Factors influencing the support of distal extension base
- Methods of obtaining functional support for the distal extensionbase.

j. 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
- 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 thedenture.

k. 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

l. Relining and Rebasing the removable partial denture **–Relining tooth supported dentures bases**

- Relining distal extension denture bases
- Methods of reestablishing occlusion on a relined partialdenture.

m. **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 bysoldering.

n. Removable partial denture considerations in maxillofacial prosthetics

- Maxillofacial prosthetics
- Intra oral prosthesis
- Designconsiderations
- 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.

o. **Management of failed restorations and work authorization details.**

C **FIXED PROSTHODONTICS**

a) Scope,

b) Definitions and terminology,

c) Classification and principles,

d) Design,

e) Mechanical and biological considerations of components –

i. Retainers

ii. Connectors

iii. Pontics

iv. Work authorization

f)Diagnosis and treatment planning

Patients history and interview

Patients desires and expectations and needs

Systemic and emotional health

g)Clinical examinations –

i. Head and neck, oral – teeth

ii. Occlusal and periodontal

iii. Preparation of diagnostic cast

iv. Radiographic interpretation

v. Aesthetics

vi. Endodontics considerations

vii. Abutment selection – bone support, root proximities and inclinations, selection of abutments for cantilever,pier

h) Management of Carious teeth –

i. Caries in aged population

ii. Caries control, removal caries

iii. Protection of pulp

iv. Reconstruction measure for compromised teeth –

v. Retentive pins,

vi. Horizontal slots,

vii. Retentive grooves,

viii. Prevention of caries,

ix. Diet,

x. Prevention of root caries and vaccine forcaries

i) 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 –

i. Fixed Prosthodontics with periodontially compromised dentitions,

ii. Placement of marginrestorations

j) Biomechanical principles of tooth preparation –

Individual tooth preparations –

Complete metal Crowns – P.F.C.,

All porcelain –

i. Cerestore crowns,
ii. Dicor crowns,
iii. Incera**a**m etc.
iv. Porcelain jacket crowns;
v. Partial 3/4, 7/8,
vi. Telescopic, pin– ledge, laminates, inlays, onlays.
vii. Preparations for restoration of teeth–
Amalgam,
Glass Ionomer and composite resins.
Resin bond retainers,
viii. Gingival marginal preparations –
Design,
Material selection,
ix. Biological and mechanical considerations –
x. Intra coronal retainer and precision attachments
xi. Custom made andprefabricated

k) Isolation and fluid control –

i. Rubber dam application(s),
ii. Tissue dilation–soft tissue management for cast restoration,
iii. Impression materials and techniques,
iv. Provisional restorations,
v. Interocclusal records,
vi. Laboratory support for fixed Prosthodontics,
vii. Occlusion,
viii. Occlusal equilibration, articulators,
ix. Recording and transferring of occlusal relations,
x. Cementing ofrestorations

l) Resins, Gold and gold alloys, glass Ionomer,restorations.

m) Restoration of endodontically treated teeth,

Stomatognathic Dysfunction and management

n) Management of failedrestorations

o) Osseo integrated/ supported fixed Prosthodontics –
Osseo integrated/ supported and tooth supported fixed Prosthodontics

p) CAD – CAM Prosthodontics

D **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.

I. **Cancer Chemotherapy:** Oral Manifestations

- Complications
- Management

II. **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.

E **OCCLUSION**

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

- Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmo 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 mandib 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
- Spaced anterior teeth
- Cross bite problems
- Crowded, irregular, or interlocking anterior bite.
- Using Cephalometric for occlusal analysis, solving severe arch mal-relationship proble transcranial radiography, postoperative care of occlusal therapy.

F **ESTHETICS**

Scope, definitions

Morpho psychology and esthetics, structural esthetic rules –

Facial components

Dental components

Gingival components

Physical components.

Esthetics and its relationship tofunction –

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.

- Infection control, cross infection barrier – clinical &lab ; hospital & lab waste management

TMJ – Temporomandibular joint dysfunction

Scope

Definitions

Terminology

a) Temporomandibular joint and its function,
b) Orofacial pain,
c) Pin from the temporomandibular joint region,
d) Temporomandibular joint dysfunction,
e) Temporomandibular joint sounds,
f) Temporomandibular joint disorders,
g) Anatomy related,
h) Trauma, disc displacement,
i) Osteoarthrosis/Osteoarthritis,
j) Hyper mobility and dislocation,
k) Infectious arthritis,
l) Inflammatory diseases,
m) Eagle's syndrome (Styloid – stylohyoid syndrome),
n) Synovial chondromatosis,
o) Osteochondrosis disease,
p) Ostonecrosis,
q) Nerve entrapment process,
r) Growth changes,
s) Tumors
t) Radiographic imaging

u) Etiology, diagnosis and cranio mandibular pain,

v) Differential diagnosis and managementoforofacialpain–

i. Painfromteeth,pulp,

ii. Dentin,musclepain,

iii. TMJpain
Psychologic,
Physiologic –

- Endogenous control
- Acupuncture analgesia
- Placebo effects on analgesia
- Trigeminal neuralgia
- Temporal arteritis

Occlusal splint therapy

i. Construction and fitting of occlusal splints

ii. Management of occlusal splints,

iii. Therapeutic effects of occlusal splints

iv. Occlusal splints and general muscles performance

v. TMJ joint uploading and anterior repositioning appliances

vi. Use and care of occlusalsplints

Occlusal adjustment procedures –

Reversible

i. Occlusal stabilization splints and physical therapies

ii. Jaw exercises

iii. Jaw manipulation and other physiotherapy

Irreversible therapy

i. Occlusal repositioning appliances, orthodontictreatment

ii. Orthognathic surgery

iii. Fixed and removable prosthodontic treatment and occlusal adjustment

iv. Removable prosthodontic treatment and occlusal adjustment.

v. Indication for occlusal adjustment, special nature of orofacial pain

vi. Psychopathological considerations, occlusal adjustment philosophies

vii. Mandibular position, excursive guidance

viii. Occlusal contact scheme

ix. Goals of occlusal adjustment

x. Significance of a slide in centric

xi. Preclinical procedures

xii. Clinical procedures for occlusaladjustment

Scheme of Examination

A **Theory**

Part – I	Basic sciences paper	100 Marks
Part – II	Paper –I Paper-II, aper-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 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 :

*Part-I :****Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics***

Part-II : ***Fixed Prosthodontics, Occlusion, TMJ and esthetics.***

Paper-II 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 300 Marks**

1)	Practical/ Clinical Examination-	200 Marks
2)	Viva voce	100 Marks

1) Practical/ Clinical Examination (200 Marks)

i) Presentation of treated patients and records during their 3years 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	
d. I.S.P.	5 marks
e. Occlusal rehabilitation	5 marks
f. T.M.J	5 marks
g. Maxillofacial Prosthesis	5 marks
h. Pre-Clinical Exercises	10 marks

ii) 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 andsecuring centricand protrusive/lateral, record	15 marks
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 characterized, anatomic complete denture	
	Prosthesis	

ALL STEPS WILL INCLUDE CHAIRSIDE, LAB AND VIVA VOCE

iii) Fixed Partial Denture (35 Marks)

a. Case discussion including treatment planning and selection of Patient for FPD 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

iv) Removable Partial Denture (25 Marks)

a. Sueveying and designing of partially dentate cast. 15 Marks
b. Discussion on components and material selection including 10 Marks occlusal schemes.

v) Implant supported Prosthesis (2nd Stage protocol) (30 Marks)

a. Case discussion including treatment planning and selection of Patient for ISP. 10 Marks
b. Stage II Preparation, Abutment selection, placement and evaluation.10 Marks
c. Implant impression and making of cast. 10 Marks

2) ***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)