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.