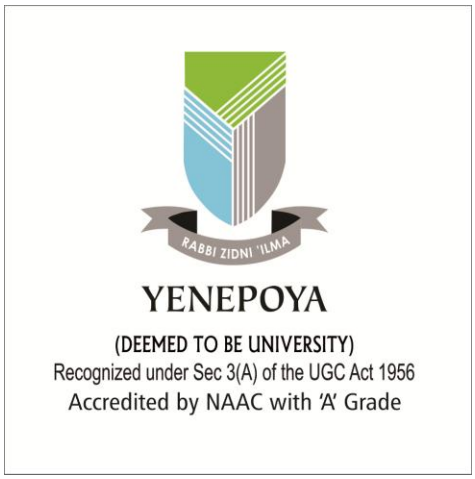

CURRICULAM

FOR

POST GRADUATES

ORAL MEDICINE AND RADIOLOGY

ORAL MEDICINE AND RADIOLOGY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to acquire adequate knowledge of the discipline.

KNOWLEDGE:

Theoretical, Clinical and practical knowledge of all mucosal lesions, diagnostic procedures pertaining to them and latest information of imaging modules.

SKILLS AND ATTITUDE:

Three important skills need to be imparted

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

ATTITUDES:

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

COURSE CONTENTS

Part I

Paper I: APPLIED BASIC SCIENCES

Applied Anatomy

1. Gross anatomy of the face:
   a. Muscles of Facial Expression And Muscles Of Mastication
   b. Facial nerve
   c. Facial artery
   d. Facial vein
   e. Parotid gland and its relations
2. Neck region:
   a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
   b. Facial spaces
   c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
   d. Jugular system
      Internal jugular

      External jugular

   e. Lymphatic drainage
   f. Cervical plane
   g. Muscles derived from Pharyngeal arches
   h. Infratemporal fossa in detail and temporomandibular joint
   i. Endocrine glands
      Pituitary

   j. Sympathetic chain
   k. Cranial nerves- V, VII, IX, XI, & XII
      - Thyroid
      - Parathyroid
   l. Exocrine glands
      - Parotid
      - Thyroid
      - Parathyroid
3. Oral Cavity:
   a. Vestibule and oral cavity proper
   b. Tongue and teeth
   c. Palate – soft and hard
4. Nasal Cavity
   a. Nasal septum
   b. Lateral wall of nasal cavity
   c. Para nasal air sinuses
5. Pharynx:
   Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem

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

Osteology: Comparative study of fetal and adult skull

Mandible:

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

EMBRYOLOGY:

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

HISTOLOGY:

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

PHYSIOLOGY:

1. General Physiology:

- Cell
- Body Fluid Compartments
  - Classification
  - Composition
- Cellular transport
- RMP and action potential

MUSCLE NERVE PHYSIOLOGY:

1. Structure of a neuron and properties of nerve fibers

2. Structure of muscle fibers and properties of muscle fibers

3. Neuromuscular transmission
4. Mechanism of muscle contraction

BLOOD:

1. RBC and Hb

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

RESPIRATORY SYSTEM:

- Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
- Lung volumes and capacities and applied aspects
- Oxygen and carbon dioxide transport
- Neural regulation of respiration
- Chemical regulation of respiration
- Hypoxia, effects of increased barometric pressure and decreased barometric pressure

CARDIO-VASCULAR SYSTEM:

- Cardiac Cycle
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- Regulation f blood pressure
- Shock, hypertension, cardiac failure

EXCRETORY SYSTEM:

- Renal function tests

GASTRO – INTESTINAL TRACT:

- Composition, functions and regulation of:
- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

ENDOCRINE SYSTEM:

- Hormones – classification and mechanism of action
- Hypothalamic and pituitary hormones
- Thyroid hormones
- Parathyroid hormones and calcium homeostasis
- Pancreatic hormones
- Adrenal hormones

CENTRAL NERVOUS SYSTEM:

- Ascending tract with special references to pain pathway

SPECIAL SENSES:

- Gustation and Olfaction

BIOCHEMISTRY:

1. **Carbohydrates** – Disaccharides specifically maltose, lactose, sucrose
   - Digestion of starch/absorption of glucose
   - Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
   - Blood sugar regulation
   - Glycogen storage regulation
   - Glycogen storage diseases
   - Galactosemia and fructosemia

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

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

4. Nucleic Acids

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

5. Minerals

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

6. Energy Metabolism

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

7. Vitamins

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

PATHOLOGY:

1. Inflammation:

    - Repair and regeneration, necrosis and gangrene
    - Role of complement system in acute inflammation
    - 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

    Homeostasis:

    - 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, edema, infarction

Chromosomal Abnormalities:

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

Hypersensitivity:

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

Neoplasia:

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

Others:

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

MICROBIOLOGY:

- General bacteriology with special emphasis on oral

Microbiology.

- Culture media and methods

- Sterilization and Disinfection.

- Immunology

VIROLOGY - general properties of Viruses

- Herpes, Hepatitis, HIV and EB

MYCOLOGY- Candidisis

- Other fungal infection

- Culture media and methods

Hospital acquired infection and its management

Applied Microbiology.

PHAMACOLOGY:

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

PART II

PAPER-I: ORAL AND MAXILLOFACIAL RADIOLOGY

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x – ray tube, production of x – ray, property of x – rays
2. Biological effects of radiation
3. Filtration of collimation, grids and units of radiation
4. Films and recording media
5. Processing of image in radiology
6. Design of x –ray department, dark room and use of automatic processing units
7. Localization by radiographic techniques
8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra – oral-imaging techniques
11. Panoramic and other radiologic techniques
12. Advanced imaging technique like CBCT, CT Scan, MRI, Ultra Sound & thermo graphic
13. Radio nucleotide techniques and imaging
14. Contrast radiography in salivary gland, TMJ etc
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its various types of advantages

PAPER-II: ORAL MEDICINE, THERAPEUTICS AND LABORATORY INVESTIGATIONS

Study includes seminars / lectures / discussion

1. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques
2. Laboratory investigations including special investigations of oral and oro – facial diseases
3. Teeth in local and systemic diseases, congenital, and hereditary disorders
4. Oral manifestations of systemic diseases
5. Oro – facial pain

6. Psychosomatic aspects of oral diseases
7. Management of medically compromised patients including medical emergencies in the dental chair
8. Congenital and Hereditary disorders involving tissues of oro facial region
9. Systemic diseases due to oral foci of infection
10. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
11. Neuromuscular diseases affecting oro –facial region
12. Salivary gland disorders
13. Tongue in oral and systemic diseases
14. TMJ dysfunction and diseases
15. Concept of immunity as related to oro – facial lesions, including AIDS
16. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions
17. Oral changes in Osteo – dystrophies and chondro – dystrophies
18. Pre malignant and malignant lesions of oro facial region
19. Allergy and other miscellaneous conditions
20. Therapeutics in oral medicine –clinical pharmacology
21. Forensic odontology
22. Computers in oral diagnosis and imaging
23. Evidence based oral care in treatment planning
24. Molecular Biology

EXAMINATION:

The university examination shall consist of theory, practical / clinical examination, viva-voce and Pedagogy

A. Theory:

Part-I: Shall consist of one paper, There shall be a theory examination in the Basic Sciences at the end of 1st year of course. The question papers shall be set and evaluated by the concerned Department/Specialty. The candidates shall have to secure a minimum of 50% in the Basic Sciences and shall have to pass the **Part-I** examination at least six months prior to the final (Part-II) examination

Part-I: Shall consist of one paper namely Paper-I

Paper-I: Applied Basic Sciences- Applied Anatomy, Physiology and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

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Part-II: Shall consist of three papers, namely-

Paper-I: Oral and Maxillofacial Radiology

Paper-II: Oral Medicine, therapeutics and laboratory investigations

Paper-III: 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 Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

Distribution of Questions

Two questions from anatomy & Embryology

Two questions from physiology

Two questions from pathology

One question from bio-chemistry

One question from Microbiology

One question from Pharmacology

One question from Research methodology and bio-statistics

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 topic.

B. PRACTICAL/ CLINICAL EXAMINATION;

1. CLINICAL/PRACTICAL EXAMINATION:

Clinical/practical examination is designed to test the clinical skill, performance and competence of the candidate in skills such as communication, clinical examination, medical/dental procedures or prescription, exercise prescription, latest techniques, evaluation and interpretation of results so as to undertake independent work as a specialist. The affiliating university shall ensure that the candidate has been given ample opportunity to perform various clinical procedures. The practical/clinical examination in all the specialities shall be conducted for six candidates in two days, Provided that practical/clinical examination may be extended for one day, if it is not complete in two days.

2. Viva-voce: All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach and expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also. Viva voce examination aims at assessing the depth of knowledge, logical reasoning,confidence and communication skill of the students.

3. **Pedagogy:** A topic shall 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.

DISTRIBUTION OF MARKS:

Clinical Examination: 200 Marks

Viva-voce and Pedagogy: 100 Marks

A. Practical / Clinical Examination: 200 Marks

1) Clinical Case Presentation: 100 Marks

2 Spotters	2 x 10 = 20 Marks
2 Short Cases	2 x 15 = 30 Marks
1 Long Essay	1 x 50 = 50 Marks

2) Radiology Exercise: 100 Marks

One Intra Oral Radiograph:	10 Marks
One Occlusal Radiograph :	30 Marks
Two Extra Oral Radiograph:	2 x 30 = 60 Marks

(Including technique and interpretation)

B. Viva Voce and Pedagogy: 100 Marks

1) Viva-Voce examination: 80 marks

2) Pedagogy Exercise: 20 marks

TOTAL MARKS:

THEORY: Part I: 100 Marks

Part II: 300 Marks

CLINICAL: 300 Marks