Academics

Post Graduate Programme Schedule

First Year

- PG orientation programme
- Entrance exam after 3 weeks, (BDS syllabus)
- Lectures and practical training in Basic science subjects (Anatomy, Physiology, Biochemistry, Pharmacology, Pathology and Microbiology)
- Case History taking and clinical examination of various cases seen in the department and medical management of oral mucosal lesions, facial pain etc: 100 cases
- Intraoral radiographic exercises – Practicing various intraoral radiographic techniques, manual and automatic processing and interpretation. Identification of landmarks in intraoral radiographs
- Extraoral radiographic exercises: Identification of various landmarks on tracings made of radiographic images, Practising various extraoral radiographic techniques
- 5 Seminars in Basic science subjects
- 10 Journal club presentations
- Library dissertation completion in one year
- Selection of Topic for dissertation and submitting the protocol in 3 months
- Undergraduate teaching- taking small group discussions
- 2 short studies – observational study or clinical trial
- Age estimation using radiographs
- Observe and assist FNAC and Biopsy- atleast 10
- Present at least one poster/paper at PG convention or Conference/ CDE
- 5 rare or interesting long cases will be presented every year
- Internal exam for applied basic science theory
- Part I University exam on Basic subjects

Second Year

- Case History taking and clinical examination of various cases seen in the department and medical management of oral mucosal lesions, facial pain etc
- 10 Seminars in Oral Medicine/ Imaging
- 10 journal club presentations
- Attending course of Basic life support
- One month posting each in Radio diagnosis and Imaging, Oncology, Dermatology, Medicine, Neurology, ENT
- Present at least one poster/paper at PG convention or Conference/ CDE
- Undergraduate teaching- taking small group discussions
- Undergraduate teaching- Two lecture classes
- FNAC and Biopsy- atleast 25
- Dissertation work
- Clinical club presentation

Third Year

- Case History taking and clinical examination of various cases seen in the department and medical management of oral mucosal lesions, facial pain etc
- Medically compromised patients- Dental management
- 10 Seminars in Recent advances in Diagnosis, management and imaging
- 10 Journal club presentations
• Present at least one poster/paper at PG convention or Conference/CDE
• Extraoral radiographic exercises- Taking various extraoral radiographs, manual and automatic processing and interpretation
• Completion of Dissertation and presentation before 6 months prior to exam
• Publication of at least one case report/short study in indexed journal (national or international)
• Model examination 3 months prior to university exam
• University Exam at the end of third year with four theory exams and clinical exam on two days with one long case, two short cases and 2 spotters, radiographic exercises, dissertation presentation, Viva.voce

**COURSE CONTENTS:**

**Applied Basic Sciences**

Applied Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology, Genetics, Embryology, Immunology, Nutrition, Behavioral sciences & Research Methodology

**Applied Anatomy**

Gross anatomy of the head and neck:
- Muscles of Facial Expression
- Muscles Of Mastication
- Muscles of deglutattion
- Arterial and venous supply of head and neck
- Nerve supply of face
  (Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve & autonomic nervous system)
- Lymphatic drainage of head and neck
- TMJ
- Salivary glands
- Tongue
- Hard and soft palate
- Nasal cavity
- Paranasal sinuses
- Triangles of the neck
- Facial spaces
- Pharynx and larynx
- Infratemporal fossa
- Pituitary
- Thyroid & Parathyroid

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

Osteology- Comparative study of fetal and adult skull, maxilla and mandible

Embryology -
- Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including tooth and dental hard tissue formation
- Growth & Development – Facial form and Facial growth and development overview from fetal period to maturity and old age, Development, ossification, age changes and evaluation of mandible in detail

Genetics -
- Principles of orofacial genetics, molecular basis of genetics, Chromosomal abnormalities genetic risks, genetic counseling, Dentofacial anomalies, Anatomical, psychological and pathological characteristic of major groups of developmental defects of the orofacial structures
Histology-
  Study of epithelium of oral cavity and the respiratory tract
  Connective tissue- Muscle, Nervous tissue, Blood vessels, Cartilage, Bone and tooth, Tongue
  Salivary glands, Tonsil, thymus, lymph nodes

PHYSIOLOGY

General Physiology:
  Cell structure and function (ultrastructural and molecular aspects), intercellular junctions, cell
cycle, cell cycle regulators, cell division
  Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and
translation and molecular biology techniques
  Cellular transport, RMP and action potential

Nervous system:
  Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous
system, hypothalamus and mechanism of controlling body temperature, Neuromuscular
transmission, Mechanism of muscle contraction

Blood:
  Composition, hemostasis, blood dyscrasias and its management, hemorrhage and its control,
  blood grouping, cross matching, blood component therapy, complications of blood transfusion,
  blood substitutes

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
  asphyxia, artificial respiration

Cardiovascular system:
  Cardiac Cycle
  Regulation of heart rate/ heart sounds / Stroke volume / cardiac output / blood flow
  Regulation of blood pressure
  Shock, hypertension, cardiac failure
  ECG

Excretory system:
  Fluid and Electrolytic balance/Acid Base metabolism-body fluid compartment
  Treatment of acidosis and alkalosis
  Renal function tests

GIT:
  Composition, functions and regulation of: Saliva, Gastric juice, Pancreatic juice, Bile and intestinal
  juice
  Mastication and deglutition
  Nutrition-General principles, balanced diet, effect of dietary deficiencies and starvation, Diet,
digestion, absorption, transportation and utilization, protein energy malnutrition, Kwashiorkor,
  Marasmus, Nutritional assessment, metabolic responses to stress, roots of access to GI tract,
  Parenteral nutrition, Access to central veins, Nutritional support for elderly, pregnancy and
  children. Role of Vitamins and minerals

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

Special senses:
Gustation and Olfaction

**BIOCHEMISTRY**
General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction, etc. general composition of the body, intermediary metabolism, Carbohydrates, proteins, liquids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood and other body fluids, Metabolism of inorganic elements, Detoxication in the body, Anti metabolites, Biochemical tests and their significance

**PATHOLOGY**

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

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

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

**MICROBIOLOGY**
Knowledge of organisms commonly associated with diseases of the oral cavity.
- Culture media and methods
- Various staining techniques
- Immunology and Infection
- Systemic bacteriology with special emphasis on oral microbiology
- Virology
- Cross infection control
- Sterilization and hospital waste management
- Applied microbiology and Diagnostic microbiology
- Immunology

**PHARMACOLOGY**
Definition of terminologies used
Dosage and mode of administration of drugs
Action and fate of drugs in the body
Drug addiction tolerance and hypersensitive reactions
Drugs acting on the central nervous system
General and local anesthetics, hypnotics, antiepileptics, tranquillizers
Chemotherapeutics and antibiotics
Analgesics and antipyretics
Antiseptics, styptics, Sialogogues and antisialogogues
Corticosteroids
Anticoagulants
Insulin and other antidiabetics
Vitamins: A, D, B – complex group C and K etc.
Chemotherapy and Radiotherapy
Drugs used in Emergency
Drug interactions
Dental therapeutics

ETHICS

Ethics of the individual –
  The patient as a person.
  Right to be respected
  Truth and confidentiality
  Autonomy of decision
  Doctor Patient relationship
Professional 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
  Human experimentation
  Human volunteer research-informed consent
  Drug trials
  Ethical workshop of cases
  Gathering all scientific factors
  Gathering all value factors
  Identifying areas of value – conflict, setting of priorities
  Working out criteria towards decisions

BIO-STATISTICS

Introduction
Collection, classification and presentation
Averages (Mean, Median, Mode)
Dispersion, skewness and kurtosis
Correlation
Regression
Binomial, poison and Normal Distribution
Tests of significance (large samples)
X2, t and p test
Clinical trials
Principles of research methodology
Types of Research:
  Basic or fundamental
Applied Clinical Experimental Qualification in Research Methodology
Open trials – Bias and safeguards against it.
Double blind, Triple blind studies
Cross over methods
Objectivity in Research Methodology
Instrumental quantification, rationales and fallacies
Reproducibility
Scoring methods – Safeguards against subjective bias.
Records, Protocols and analysis
Null hypothesis

Computer
Creation of Database for research purposes
To learn making of charts, bar graphs, means, standard deviation, percentiles and p values
Preparation of slides
Writing of articles and letters

ORAL MEDICINE
General principles of patient examination, systems review, procedures for diagnosis and examination of specific lesions.
Diagnostic laboratory investigations:
Routine: Collection of samples, laboratory investigative procedures, normal values interpretation of results.
Special Laboratory Investigations: Blood Chemistry, Sialochemistry, Serology.
Microbiology, Immunology, Histology, Cytology.
Culture techniques: Collection, presentation and transportation of specimens.
Biopsy - types and procedures
Chronic oral sensory disorders mainly orofacial pain, dysgeusia.
Diseases of pulp and periapical tissues, caries.
Diseases of periodontium
Developmental disturbances of oral and paraoral structures. Odontological diseases.
Disorders of temperomandibular joint
Disease of the tongue
Salivary gland disease
Pigmentary disturbances of oral and paraoral region
Benign and malignant tumors affecting the oral cavity
Cysts of odontogenic origin
Tumors of odontogenic origin
Metabolic, endocrine and nutritional disorders
Immunological disease
Bleeding and clotting disorders; Hematological disease
Primary and secondary mucosal lesions
Premalignant and malignant mucosal lesions
Red and white lesions, ulcerative, vesiculobullous lesions
Dermatologic, sexually transmitted disease, oral manifestations and management
Systemic disease: Oral manifestations and management of
Diseases of the respiratory system
Dermatologic diseases
Hematological diseases
Immunologic diseases
Endocrine disease
Neurologic disease
Cardiovascular diseases
Hepatic disease
Renal disease
G.I.T diseases
Reproductive diseases
Muscular disease
Urogenital diseases
Psychological disease
Geriatric diseases
Nutritional diseases
Ophthalmologic disease
E.N.T. diseases
Psychosomatic oral lesions
Occupational Hazards
General principles of patient care in admitted cases and hospital dentistry
Therapeutics in oral medicine
Medical management of oral disease
Drugs commonly used in Dentistry – analgesics, anti inflammatory drugs, antibiotic, steroids, vitamins, minerals, topically sued drugs, mouth washes, dentifrices, and desensitizing agents
Drugs commonly used for medical problems
Drug interactions
Oral manifestations of drug reactions and their management
Medical emergencies in dentistry
Legal considerations in Dentistry
Forensic Odontology

RADIOLOGY

1. General Physics, Radiobiology, Radiotherapy
Fundamentals of Dental Radiology
Origin of dental radiology, Historical aspect of radiology.
Radiation physics, Electromagnetic spectrum. Production and properties of X-rays.
Dental X-ray machine parts and factors affecting production of X-ray
X-ray film (intra oral and extra oral)
Film processing – Dark room procedures, Chemicals, processing errors & rectification,
Radiation Biology.
Radiation Physics
Radioactivity, radioactive materials, electromagnetic spectrum, production and properties of X-rays, gamma rays, intention of x-rays with matter and its effects. Measures and units of measurement, elementary knowledge of electronics.
Radiobiology
General principles, biological effects of radiation, departmental protection, protection measures, filters and filtration, personnel monitoring, dosimetry.
Radiotherapy
Physical principles of radiotherapy, types of therapy source, patient dosage, beam modification, collimations and beam direction devices.
Radioactive isotopes.
Diagnostic Radiology - Physical basis of diagnostic radiology geometric factors, x-ray absorption effects, control of scattered radiation image receptors, image processing, properties of image receptors, Conventional radiography normal land marks,
Contrast Radiography – Sialography, Arthrography
Tomography - Principles of Tomography, Conventional Tomography, Curved surface tomography (pantomography) – Evolution, Principles, Interpretation, Panoramic variants, Computed tomography, systems components, interpretation, Dental
application. CBCT, PET, SPECT - Dental application, Three dimensional computed tomography
Cephalometric Radiography
Telediagnosis, Telemedicine
Ultrasoundography - Principles, Dental application
Magnetic Resonance imaging in Dentistry, Basic concepts of analyzing magnetic resonance images.

2. Radiographic Principles and Techniques
Intra oral radiography (Periapical, Bite-wing, Occlusal)
Tube shift technique
Radiology in endodontics, pedodontics
Ideal radiograph
Defective radiographs
Extra oral radiography – All routine, modified and special views
Radiology of TM joint
Radiology of maxillary sinus
Radiology in oral and maxillofacial injuries
Localization techniques
Contrast radiography
Sialography
Arthrography
Angiography
Tomography
Panoramic radiography
Computed tomography

3. Radiographic interpretation
Fundamental principles of radiographic interpretation.
Normal radiographic anatomy of teeth, jaws and normal variations.
Developmental variations and abnormalities of teeth and jaws.
Acquired abnormalities of teeth and anomalies of eruption.
Radiology in – dental caries, - Periodontal diseases
Radiolucent lesions of jaw bones.
Mixed lesions of jaw bones
Radio-opaque lesions of jaw bones.
Cysts of oral cavity
Tumours of oral cavity
Fibro-osseous lesions
Radiologic features of trauma
Radiologic features of malignant diseases
Radiologic features of Infection of oral cavity
Radiologic features of Metabolic and endocrine disease
Radiologic features of Hematological and other systemic disease
Radiologic features of TMJ diseases
Radiologic features of Maxillary sinus pathologies
Radiologic features of Oral and Maxillofacial injuries
Radiologic features of Salivary gland disease
Principles and technique of therapeutic radiation
Osteodystrophies
Recent advances in Radiology
Digital radiology
Computed tomography
Radio-isotopes
PET.

LIST OF ESSENTIAL AND RECOMMENDED REFERENCE BOOKS
Oral Medicine
3. Oral Diseases of the tropics – Prabhu & Wilson
4. Oral and maxillofacial pathology — Neveille B W et al
5. Internal Medicine for Dentistry – Louis F Rose & Donald Kaye
7. Oral Cancer – Jatin Shah
8. Medical Problems in Dentistry – Scully & Cawson

Radiology
1. Fundamental Physics of Radiology - Merdith W J & Massey J B
2. Clarks positioning in Radiography — RA Swallow
3. Text of Dental and Maxillofacial Radiology – Freny R Karjodkar
4. Panoramic Radiology– Langland O E et al
6. Principles and practice in oral radiographic interpretation – Worth H M
7. Hand Book of signs in Dental and Maxillofacial Radiology- Wood R E
8. Principals and Interpretation, In Oral Radiology - Goaz P W & White S C.
9. Maxillofacial Imaging – Angilo M Delbaso
10. Principles of Dental Imaging – Baltimore Williams & Wilkins
11. Fundamentals of Dental Radiography– Mason Hing L R