

PART I MDS – SYLLABUS

1. BIOSTATISTICS AND RESEARCH METHODOLOGY:

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/ organization of data/ measurement scales / presentation of data and analysis
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution & indicative statistics
- Estimating population values
- Tests of significance(parametric/non-parametric qualitative methods)
- Analysis of variance
- Association, correlation and regression

2. APPLIED GROSS ANATOMY OF HEAD AND NECK, HISTOLOGY AND GENETICS :

- Temporo-mandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues
- Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
- Development of teeth & dental tissues and developmental defects of oral and maxilla-facial region & abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles
- Introduction to genetics

- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders
- Didactic Lectures
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

3. PHYSIOLOGY (GENERAL & ORAL)

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- • Vitamins (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)
- Calcium metabolism
- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)
- Didactic Lectures

4. CELL BIOLOGY

- Cell structure and function (ultra structural & molecular aspects)
- Intercellular junctions
- Cell cycle and division
- Cell cycle regulators
- Cell-cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA, RNA and intracellular organelles, transcription and
- translation and molecular biology techniques

Approach:

- Seminars & Didactic Lectures

5. GENERAL HISTOLOGY

- Light & electron microscopy considerations of epithelial tissues and glands, bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

6. BIOCHEMISTRY

- Chemistry of carbohydrates, lipids and proteins
- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

7. GENERAL PATHOLOGY

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

8. GENERAL MICROBIOLOGY

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

9. BASIC IMMUNOLOGY

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

10. SYSTEMIC MICROBIOLOGY / APPLIED MICROBIOLOGY

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

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids&fusobacteria
- Actinomycetales
- Spirochetes

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

- Herpes virus
- Hepatitis virus
- HIV

- C. General properties of fungi
- D. Superficial, subcutaneous, deep opportunistic infections
- E. General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

11. ORAL BIOLOGY (ORAL AND DENTAL HISTOLOGY)

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

12. BASIC HISTO-TECHNIQUES AND MICROSCOPY

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy
- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

:

PAPER II MDS – SYLLABUS

1. ORAL AND DENTAL PATHOLOGY

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders

- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs
- Diseases of nerves and muscles
- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

2. BASIC HISTO-TECHNIQUES AND MICROSCOPY

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

3. RECENT MOLECULAR TECHNIQUES:

- Basic principles, techniques and applications of –

- PCR
- BLOTS
- Hybridization
- Recombinant DNA technology
- Micro array
- DNA sequencing
- Cell culture and cloning

PAPER III MDS – SYLLABUS

1. Forensic odontology
2. Giant cell lesions
3. Clear cell lesions
4. Round cell lesions
5. Spindle cell lesions
6. Pigmented lesions
7. Fibro-osseous lesions
8. Mechanism of formation and expansion of cysts of orofacial region
9. Mechanism of growth and metastasis of tumors
10. Lab diagnosis of bacterial infections
11. Lab diagnosis of viral infections
12. Lab diagnosis of fungal infections
13. Hamartomas
14. Phakomatoses
15. Vascular tumors of oro-facial region
16. Genodermatoses
17. Tumor markers
18. Histogenesis of salivary gland tumors
19. Tumor angiogenesis
20. Concept of premalignancy
21. Blue cell lesions
22. Molecular basics of oral squamous cell carcinoma
23. Matrix remodelling in pathological condition
24. Etiopathogenesis of developmental defects of teeth

25. Viral oncogenesis
26. Lesions associated with impacted and missing teeth
27. Syndromes affecting oro-facial region
28. Hereditary oral defects
29. Techniques to assess the prognosis of neoplastic lesions
30. Vesiculo-bullous lesions
31. Lymphoreticular malignancy
32. Haemopoietic malignancy
33. Micronutrients
34. Oral aspects of metabolic disorders
35. Hormones and oro-maxillofacial lesions
36. Matrix metalloproteinases
37. Current concepts in HIV related oral diseases
38. Current concepts in OSMF
39. Epithelial –connective tissue interaction
40. Stem cell research