

Syllabus

A) 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
 - f. Submandibular salivary 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
 - Thyroid
 - Parathyroid

- j. Exocrine glands
 - Parotid
 - Thyroid
 - Parathyroid
- k. Sympathetic chain
- l. Cranial nerves- V, VII, IX, XI, & XII
- 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. Paranasal air sinuses
- 5. Pharynx:
- 6. 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
- 7. Osteology:
 - a) Comparative study of fetal and adult skull
 - b) 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 respiratorytract
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:
 - a. Cell
 - b. Body Fluid Compartments
 - c. Classification
 - d. Composition
 - e. Cellular transport
 - f. RMP and action potential
2. Muscle Nerve Physiology:
 - a. Structure of a neuron and properties of nerve fibers
 - b. Structure of muscle fibers and properties of muscle fibers
 - c. Neuromuscular transmission
 - d. Mechanism of muscle contraction
3. Blood:

- a. RBC and Hb
 - b. WBC – Structure and functions
 - c. Platelets – functions and applied aspects
 - d. Plasma proteins
 - e. Blood Coagulation with applied aspects
 - f. Blood groups
 - g. Lymph and applied aspects
4. Respiratory System:
- a. Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
 - b. Lung volumes and capacities and applied aspects
 - c. Oxygen and carbon dioxide transport
 - d. Neural regulation of respiration
 - e. Chemical regulation of respiration
 - f. Hypoxia, effects of increased barometric pressure and decreased barometric pressure
5. Cardio-Vascular System:
- a. Cardiac Cycle
 - b. Regulation of heart rate/ Stroke volume / cardiac output / bloodflow
 - c. Regulation of blood pressure
 - d. Shock, hypertension, cardiac failure
6. Excretory System:
- a. Renal function tests
7. Gastro – intestinal tract:
- a. Composition, functions and regulation of:

- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

8. Endocrine System:

- a. Hormones – classification and mechanism of action
- b. Hypothalamic and pituitary hormones
- c. Thyroid hormones
- d. Parathyroid hormones and calcium homeostasis
- e. Pancreatic hormones
- f. Adrenal hormones

9. Central Nervous System:

- a. Ascending tract with special references to pain pathway

10. Special Senses:

- a. Gustation and Olfaction

Biochemistry:

1. Carbohydrates – Disaccharides specifically maltose, lactose, sucrose

- a. Digestion of starch/absorption of glucose
- b. Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
- c. Blood sugar regulation
- d. Glycogen storage regulation
- e. Glycogen storage diseases

- f. Galactosemia and fructosemia
2. Lipids
 - a. Fatty acids- Essential/nonessential
 - b. Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
 - c. Outline of cholesterol metabolism- synthesis and products formed from cholesterol
 3. Protein
 - a. Amino acids- essential/non essential, complete/incomplete proteins
 - b. Transamination/ Deamination (Definition with examples)
 - c. Urea cycle
 - d. Tyrosine-Hormones synthesized from tyrosine
 - e. Inborn errors of amino acid metabolism
 - f. Methionine and transmethylation
 4. Nucleic Acids
 - a. Purines/Pyrimidines
 - b. Purine analogs in medicine
 - c. DNA/RNA – Outline of structure
 - d. Transcription/translation
 - e. Steps of protein synthesis
 - f. Inhibitors of protein synthesis
 - g. Regulation of gene function
 5. Minerals
 - a. Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
 - b. Iron metabolism

- c. Iodine metabolism
 - d. Trace elements in nutrition
6. Energy Metabolism
- a. Basal metabolic rate
 - b. Specific dynamic action (SDA) of foods
7. Vitamins
- a. Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:
- a. Repair and regeneration, necrosis and gangrene
 - b. Role of complement system in acute inflammation
 - c. Role of arachidonic acid and its metabolites in acute inflammation
 - d. Growth factors in acute inflammation
 - e. Role of molecular events in cell growth and intercellular signaling cell surface receptors
 - f. Role of NSAIDs in inflammation
 - g. Cellular changes in radiation injury and its manifestations
2. Homeostasis:
- a. Role of Endothelium in thrombogenesis
 - b. Arterial and venous thrombi
 - c. Disseminated Intravascular Coagulation
 - d. Shock: Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

3. Chromosomal Abnormalities:
 - a. Marfan's syndrome
 - b. Ehler's Danlos Syndrome
 - c. Fragile X Syndrome

4. Hypersensitivity:
 - a. Anaphylaxis
 - b. Type II Hypersensitivity
 - c. Type III Hypersensitivity
 - d. Cell mediated Reaction and its clinical importance
 - e. Systemic Lupus Erythematosus
 - f. Infection and infective granulomas

5. Neoplasia:
 - a. Classification of Tumors
 - b. Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
 - c. Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
 - d. Spread of tumors
 - e. Characteristics of benign and malignant tumors

6. Others:
 - a. Sex linked agammaglobulinemia
 - b. AIDS
 - c. Management of Immune deficiency patients requiring surgical procedures
 - d. De George's Syndrome
 - e. Ghon's complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Pharmacology:

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 CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics 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

B) 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. Films and recording media
4. Processing of image in radiology
5. Design of x-ray department, dark room and use of automatic processing units
6. Localization by radiographic techniques
7. Faults of dental radiographs and concept of ideal radiograph
8. Quality assurance and audit in dental radiology
9. Extra-oral imaging techniques

10. OPG and other radiologic techniques
11. Advanced imaging techniques like **CBCT**, CT Scan, MRI, Ultrasound
12. Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI
13. Radio nucleotide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
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

c) 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 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
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