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The Pakistan Medical & Dental Council is a statutory body constituted by the Federal Government under the Pakistan Medical & Dental Council Ordinance, 1962. Presently controlled by the Council. One of the main function of the Council is to lay down the minimum standard of basic and higher qualifications in Medicine & Dentistry. The Council has been empowered to:

- To prescribe a uniform minimum standard of courses of training for obtaining graduate and postgraduate dental qualification.
- To prescribe minimum requirements for the content and duration of courses of studies for the degree of BDS.
- To prescribe condition for admission to courses of training for the degree of BDS.
- To prescribe the standards of examinations method of conducting the examination.

For this purpose senior teachers of all specialties were invited & draft curriculum was finalized after due consideration of the comments and suggestions received from the Universities and Colleges where the subject under consideration is taught.

The Curriculum prepared by the Curriculum Revision Committee of Higher Education Commission was duly approved by Council & is being circulated for implementation by the concerned institutions on.

This Curriculum is to be followed by all the Dental Colleges and Universities in Pakistan to get registration of the Council for Dental practitioners.

(PROF.DR. ALTAF ALI G. SHAIKH) (DR. M. SOHAIL KARIM HASHMI)
ADVISER (Academics/R&D) SECRETARY
CURRICULUM OF BDS
(FOUR YEARS)

A meeting of NCRC B.D.S. was held on 19.8.2003 to restructure the B.D.S. curriculum into four years from five years as decided in the Council Session held on 29th & 30th April 2003.

The Committee considered the proposals of subjects specialists in various disciplines of Dentistry and discussed the following:-

1. Nomenclature of various subjects
2. Duration of BDS course
3. Year-wise distribution of subjects
4. Distribution of sub-specialties
5. Examination system restructuring
6. Internal assessment factors
7. Allocation of credit hours
8. First draft curriculum of various subjects taught in BDS.
9. Books recommended

Following recommendations were proposed unanimously:-

1. Nomenclature of Oral Surgery should be changed to Oral and Maxillofacial Surgery.
2. Prosthetics should be called Prosthodontics
3. Conservative Dentistry be called Operative Dentistry
4. Dental Anatomy should be renamed as Oral Biology and Tooth Morphology
5. Dental Chemistry should be called Science of Dental Materials
6. It was also proposed that Periodontology, Gerodontology and Paedodontics are the best descriptive terms.
YEAR WISE DISTRIBUTION OF SUBJECTS:

<table>
<thead>
<tr>
<th>1^ST YEAR</th>
<th>2^ND YEAR</th>
<th>3^RD YEAR</th>
<th>4^TH YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Anatomy Histology and Embryology</td>
<td>General Pharmacology</td>
<td>Medicine</td>
<td>Prosthodontics</td>
</tr>
<tr>
<td>Physiology</td>
<td>General Pathology</td>
<td>Surgery</td>
<td>Operative Dentistry</td>
</tr>
<tr>
<td>Bio-Chemistry</td>
<td>Oral Biology and Tooth Morphology</td>
<td>Oral Pathology</td>
<td>Oral and Maxillofacial Surgery</td>
</tr>
<tr>
<td>Science of Dental Materials</td>
<td>Community and Preventive Dentistry</td>
<td>Periodontology and Oral Medicine</td>
<td>Orthodontics</td>
</tr>
<tr>
<td>Pak Studies and Islamiat / Ethics</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* It was felt that Oral Medicine and Periodontology should be independent subjects but till the availability of subject specialists they could be taught together. Those institutions where separate subject specialists are available with developed departments may teach and examine these subjects independently.

?? Where the department of Paediatric Dentistry with qualified staff is available there will be a separate examination of the subject in final year BDS.

**Examination System**

Examination System was restructured as following: -

1. All papers should consist of MCQs and essay type question.

2. Internal evaluation of each subject carries 10% marks of the total to be adjusted in practical marks.

3. The question paper should be according to the table of specification provided in curriculum of that subject.
SCHEME OF STUDIES

YEAR AND SUBJECT WISE DISTRIBUTION OF MARKS

FIRST PROFESSIONAL BDS

SUBJECTS | Theory | Practical |
--- | --- | --- |
General Anatomy | 100 | 100 |
General Physiology | 100 | 100 |
Biochemistry | 50 | 50 |
Science of Dental Materials | 100 | 100 |
**Total** | **350** | **350** = **700** |

SECOND PROFESSIONAL BDS

SUBJECTS | Theory | Practical |
--- | --- | --- |
Pathology | 100 | 100 |
Pharmacology | 100 | 100 |
Oral Biology and Tooth morphology | 100 | 100 |
Community and Preventive Dentistry | 50 | 50 |
**Total** | **350** | **350** = **700** |

THIRD PROFESSIONAL BDS

SUBJECTS | Theory | Practical |
--- | --- | --- |
General Surgery | 100 | 100 |
General Medicine | 100 | 100 |
Oral Pathology | 100 | 100 |
Periodontontology/Oral Medicine | 100 | 100 |
**Total** | **400** | **400** = **800** |

**Note:** Periodontontology/Oral Medicine will share equal weightage of marks in theory and practical i.e. 50% each.
### FINAL PROFESSIONAL BDS

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosthodontics</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Operative Dentistry</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Orthodontia</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

Total: 400 800 = 1200

### ALLOCATION OF CREDIT HOURS

#### FIRST PROFESSIONAL BDS

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>LECTURE HOURS</th>
<th>PRACTICAL HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Physiology</td>
<td>50</td>
<td>200</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>50</td>
<td>120</td>
</tr>
<tr>
<td>Science of Dental Materials</td>
<td>75</td>
<td>250</td>
</tr>
<tr>
<td>Pakistan Studies/ Islamic Studies</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>Information Technology</td>
<td>-</td>
<td>30</td>
</tr>
</tbody>
</table>

Total: 300 900 = 1200 hrs

#### SECOND PROFESSIONAL BDS

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>LECTURES HOURS</th>
<th>PRACTICAL HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Pathology</td>
<td>50</td>
<td>200</td>
</tr>
<tr>
<td>General Pharmacology</td>
<td>50</td>
<td>200</td>
</tr>
<tr>
<td>Oral Biology and Tooth morphology</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Community and Preventive Dentistry</td>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>Junior Operative/Dental Material Medica</td>
<td>25</td>
<td>110</td>
</tr>
<tr>
<td>Junior Prosthodontics</td>
<td>25</td>
<td>110</td>
</tr>
<tr>
<td>Information Technology</td>
<td>-</td>
<td>30</td>
</tr>
</tbody>
</table>

Total: 250 950 = 1200 hrs

Note: Paedodontics will have 25% weightage of Operative Dentistry where ever fully operational department with qualified staff exists.
### THIRD PROFESSIONAL BDS

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>LECTURES AND DEMONSTRATION</th>
<th>PRACTICAL AND CLINICAL HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td>General Medicine</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td>Oral Pathology</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Oral Medicine &amp; Diagnosis</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>Periodontology</td>
<td>50</td>
<td>125</td>
</tr>
<tr>
<td>Prosthodontics</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td>Operative Dentistry</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>330</strong></td>
<td><strong>920 = 1250 hrs</strong></td>
</tr>
</tbody>
</table>

**NOTE:** Clinical hour of General Medicine and Surgery may be extended to evening ward duties in addition to allotted hours.

### FINAL PROFESSIONAL BDS

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>LECTURES AND DEMONSTRATION</th>
<th>PRACTICAL HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosthodontics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Dentures</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Fixed Prosthodontics</td>
<td>20</td>
<td>250</td>
</tr>
<tr>
<td>Occlusion</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Maxillofacial Prosthodontics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Gerodontology</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

| Operative Dentistry                        |                            |                 |
| Operative                                  | 20                          |                 |
| Endodontics                                | 10                          |                 |
| Paedodontics                               | 10                          |                 |
| Crowns                                     | 10                          | 250             |
| Radiology                                  | 05                          |                 |

<p>| Oral and Maxillofacial Surgery             |                            |                 |
| Oral Surgery                               | 60                          |                 |
| Anesthesia                                 | 10                          |                 |</p>
<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forensic Dentistry</td>
<td>5</td>
<td>250</td>
</tr>
<tr>
<td><strong>Orthodontia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthodontics</td>
<td>40</td>
<td>250</td>
</tr>
<tr>
<td>Radiology (Cephalometry)</td>
<td>05</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>250</td>
<td>1000 = 1250 hrs</td>
</tr>
</tbody>
</table>
DETAILS OF COURSES
FIRST PROFESSIONAL BDS

A. GENERAL ANATOMY

1. Brief history of Anatomy. Different disciplines of the subject.
2. Anatomical nomenclature-descriptive terms.

3. Skeletal system-bones.
   - Axial Skeleton
   - Appendicular Skeleton
   - Functions of bone
   - Classification on the basis of shape, development, region and structure.
   - General concepts of development & ossification of bones
   - Parts of young bones
   - Blood supply of long bones
   - Applied Anatomy of bones

4. Joints
   - Structural classification
   - Regional classification
   - Functional classification
   - Characteristics and classification of Synovial joints
   - Movements of Synovial joints
   - Anatomy of joints with reference to dislocation, sprain and inflammation

5. Muscle
   - Parts of a muscle
   - Classification
   - Blood supply and nerve supply of muscle
   - Neuromuscular junction
   - Applied anatomy of muscle with reference to spasm, paralysis, atrophy and regeneration.

6. Cardiovascular system
   - Introduction to C.V.S
   - Types of circulation
   - Anastomosis

7. Introduction to lymphatic system
   - Lymph node
8. Nervous system
   ? Introduction to CNS
   ? Different parts of CNS with their brief functions
   ? Peripheral nervous system (cranial and spinal nerves)- introduction

9. Autonomic nervous system
   ? Introduction to parasympathetic and sympathetic nervous system

10. Skin and Fascia
    ? Skin, superficial and deep fascia, introduction

11. Techniques to study Anatomy
    ? Introduction to radiographs
    ? Radio opaque media
    ? Special X-Ray techniques like Barium Meal, Angiography, Ultrasound, C.T.Scan and MRI.

GENERAL HISTOLOGY

?? Histology will be taught concurrently with Anatomy throughout the course.
?? Underlying principles of histology techniques and staining specific tissues should be explained.
?? Most of the teaching will be done on stained and mounted sections and every type of normal tissue will be covered.

1. Cell
   ?? Cell as a whole
   ?? Cell Membrane
   ?? Interior of cell
   ?? Nucleus

2. Microscopy
3. Epithelial tissues
4. Connective tissue
5. Cartilage
6. Bone
7. Muscular tissue
8. Nervous tissue & Nervous system
   The nervous system
GENERAL EMBRYOLOGY

Embryology should be taught with the object of making students understand and grasp those fundamental principles, which result in better comprehension of the structural organization in the body. Stress should be laid on those developmental processes such as growth and differentiation, which have a direct bearing on clinical subjects. The genesis of congenital malformations should be one of the chief aims. All details should be kept on the essential outline.

1. Male & female reproductive systems.
2. Cell Division and Gametogenesis
3. Fertilization, cleavage, blastocyst formation and implantation
4. Development during second week
5. Development during third week
6. Embryonic period
7. Fetal period
8. Fetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)
9. Introduction to Genetics and Teratogenesis
10. Perinatology

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and cross-sectional anatomy.

REGION TO BE COVERED IN EACH PART

PART-I

?? GENERAL ANATOMY
?? GENERAL HISTOLOGY
?? GENERAL EMBRYOLOGY including teratogenesis
?? UPPER LIMB} Introduction
?? LOWER LIMB} Introduction
?? THORAX
PART – II

?? SPECIAL HISTOLOGY
?? SPECIAL EMBRYOLOGY
?? ABDOMEN
?? HEAD & NECK
?? NEUROANATOMY

BOOKS RECOMMENDED

Latest editions of the books recommended should be consulted.

ANATOMY

1. GRAY’S ANATOMY to be used as a reference book
2. CUNINGHAM’S MANUAL OF PRACTICAL ANATOMY
3. CLINICAL ANATOMY BY SNELL’S
4. CLINICALLY ORIENTED ANATOMY BY K.L.MOORE

HISTOLOGY

1. JANQUERA TEXTBOOK OF HISTOLOGY
2. COLOURD ATLAS OF HISTOLOGY BY DEFIERO

EMBRYOLOGY

1. LANGMAN’S EMBRYOLOGY
2. CLINICALLY ORIENTED DEVELOPMENT ANATOMY BY K.L.MOORE

RECOMMENDATIONS

Learning in the anatomy should be through dissection/dissected parts/models.

Evaluation should consist of: -

1. Continuous internal assessment
2. MCQs
3. Short essay questions
4. Viva voce examination

SPECIAL HISTOLOGY

1. The digestive system
2. The respiratory system
   - Nasal cavity, paranasal sinuses, larynx and trachea
   - Bronchi and lungs

3. The endocrine system
   - Pituitary
   - Thyroid and parathyroid
   - Adrenal
   - Pineal body

SPECIAL EMBRYOLOGY
1. Development of Head & Neck
   - Tongue
   - Thyroid
   - Pituitary
   - Upper respiratory system
   - Development of face and palate

2. The digestive system
3. The respiratory system
4. The cardiovascular system
5. The musculo-skeletal system
   - Development of skeleton
   - Development of muscles
6. Special Senses
7. Development of nervous system

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and Cross-sectional anatomy.

- **HEAD & NECK** (In detail)

- Brain, limb, Thorax, Abdomen & Pelvis. (General consideration)
# B - Physiology

## Basic Concepts

<table>
<thead>
<tr>
<th>General Physiology / Cell</th>
<th>Functional organization of human Body</th>
<th>Abnormalities of the cell &amp; its organelles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homeostasis</td>
<td>Control systems in the body</td>
<td></td>
</tr>
<tr>
<td>Cell membrane and its functions</td>
<td>Transport through cell membrane</td>
<td></td>
</tr>
<tr>
<td>Genetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composition and General Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasma proteins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Blood Cell (Erythropoiesis)</td>
<td>Anemia</td>
<td></td>
</tr>
<tr>
<td>Haemoglobin &amp; Blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indices, Iron metabolism, Fate of Hb</td>
<td>Blood indices in various disorders</td>
<td></td>
</tr>
<tr>
<td>White Blood Cells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leucopoiesis, functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemostasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Transfusion &amp; complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reticuloendothelial systems, spleen</td>
<td>Blood grouping / cross matching &amp; significance</td>
<td></td>
</tr>
</tbody>
</table>

## Nerve and muscle

<table>
<thead>
<tr>
<th>The neuron-structure &amp; functions</th>
<th>Nerve Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties of Nerve Fibers</td>
<td></td>
</tr>
<tr>
<td>Physiology of action Potential</td>
<td></td>
</tr>
<tr>
<td>Including compound action potentials</td>
<td></td>
</tr>
<tr>
<td>Conduction of Nerve Impulse, Nerve Degeneration and regeneration</td>
<td></td>
</tr>
<tr>
<td>Synapses</td>
<td></td>
</tr>
<tr>
<td>Structure of the muscle</td>
<td></td>
</tr>
<tr>
<td>Skeletal muscle contraction</td>
<td>Rigor Mortis &amp; Contractures</td>
</tr>
<tr>
<td>Isometric and isotonic contraction</td>
<td></td>
</tr>
<tr>
<td>Smooth muscle contraction</td>
<td></td>
</tr>
<tr>
<td>Neuromuscular Transmission</td>
<td>Myasthenia Gravis</td>
</tr>
<tr>
<td>Excitation-contraction coupling</td>
<td></td>
</tr>
<tr>
<td>Motor Unit</td>
<td></td>
</tr>
<tr>
<td>Neuromuscular Blockers</td>
<td></td>
</tr>
</tbody>
</table>
Gastrointestinal Tract
Structure and General Functions
Enteric nervous system (Gut Brain)
Mastication, Swallowing and their Control
Functions and movements of Stomach
Functions and movements of Small intestine
Functions and movements of large Intestine
Hormones of GIT
Vomiting and its pathway
Defecation and its pathway
Functions of Liver

Cardio Vascular system

Introduction to heart & circulation
Physiology of cardiac muscle
Action potential in atrial & ventricular Muscle and pacemaker potential
Regulation of cardiac functions
Cardiac impulse-origin & propagation
Cardiac cycle- various events
ECG-Recording & interpretation

Functional types of blood vessels
Local control of blood flow
Systemic circulation,
Characteristics and control
Regulation of peripheral resistance
Arterial pulse
Arterial blood pressure (short/long Term regulation)
Cardiac output (regulation/measurement)
Heart sound/murmurs

Venous return & its regulation
Coronary circulation
Pulmonary circulation
Cerebral circulation

Dysphagia, achlasia of esophagus
Examination of abdomen,
Peptic Ulcer, pancreatitis
Gastric function tests
Vomiting and its effects
Diarrhoea
Jaundice, Liver function tests
Correlation of cardiac cycle with ECG & heart sounds
Jugular venous pulse
Radial/other pulses
Hypertension, types & effects
Cardiovascular changes during exercise

**RESPIRATORY SYSTEM**

Organization / functions of
Respiratory Tract
Functions of Lungs (respiratory & non
Respiratory) Types of respiration
(intrapeural pressure, pneumothorax,
effusion)
Mechanics of Breathing Lung function tests spirometry)
Protective reflexes
Lung volumes and capacities Obstructive/Restrictive lung
Disease (FEV1 / FVC)
Dead space
Diffusion of Gases (composition) Abnormal
Ventilation / perfusion Ventilation / perfusion
Transport of CO2 in blood Respiratory
Regulation of respiration (Nervous / Chemical)
Abnormal breathing Asphyxia
Hypoxia-types and effects Hypoxia, cyanosis,
Physiology of Cyanosis dyspnoea
Physiology of high altitude, Artificial respiration
Oxygen debt Oxygen therapy
Exercise

**ANNEXURE FOR PHYSIOLOGY**

Recommended books

2. Review of Medical physiology by Ganong.

**RECOMMENDED MODES OF ASSESSMENTS**

Continuous Internal Assessment (as recommended by PM&DC).

Theory

b. Multiple choice questions (MCQ's)

Oral & Practicals

a. Viva voce: it should be about definitions, normal values, mechanisms, interpretations. Drawing / labelling of graphs / diagrams. Conceptual questions should be asked.

b. Practical: Two experiments to be performed by the student OSPE (objective structured practical examinations) should be encouraged.

**Nervous System**

**Organization of Nervous system**

Classification of nerve fibers
Properties of Synaptic transmission

Types and function of sensory Receptors
Functions of spinal cord, ascending Tracts Reflex action/muscle tone Interpretation of Reflexes
Muscle spindle / muscle tone UMN/LMN Lesion-features and Localization

Tactile, temperature and pain
Sensations structure of cerebral Cortex
Sensory Cortex
Motor Cortex
Motor pathways, pyramidal & extra Pyramidal
Basal Ganglia, connections and functions Parkinsonism and other lesions
of Vestibular Apparatus/Regulation of Basal ganglia
Posture & Equilibrium Reticular formation cerebellar Disorder

Physiology of sleep / EEG
Physiology of speech
Thalamus- Nuclei & functions
Hypothalamus & limbic System Lesion of Hypothalamus
Cerebrospinal fluid
Regulation of body temperature
Functions of skin Hydrocephalus
Autonomic Nervous system
Special senses
Physiology of smell Olfaction / taste
Physiology of taste

Endocrinology

General principles (classification, Mechanism of action, feed back control) Acromegaly, Giantism

Biosynthesis, transport, metabolism, actions and control of secretion of hormones of; Hormonal assay

Hypothalamus

Anterior Pituitary Dwarfism

Posterior Pituitary Panhypopituitarism

Thyroid gland

Parathyroid, calcitomin Diabetes insipidus

Adrenal Medulla Syndrome, of inappropriate ADH Secretion

Adrenal Cortex Myxoedema, Creatinism, Thyrotoxicosis

Pancrease Pheochromocytoma

GIT Cushing’s syndrome, Cohn’s disease

Addision’s disease,

Syndrome

Kidney Diabetes Mellitus & Hypoglycemia

Physiology of growth (Head & Neck)
EXPERIMENTAL PHYSIOLOGY

Haematolgy

Study of the microscope
Determination of:

Haemoglobin (Hb%)
Erythrocyte Sedimentation Rate (ESR)
Packed cell volume (PVC) Haematocrit
Bleeding time (BT)
Clotting time (CT)
Blood Groups

Study of Neubauer chamber
RBCs Count
Red cell indices
WBCs Count
Differential leucocyte Count (DLC)

Osmotic fragility of chest
Demonstration of prothrombin time and thrombin time

Respiratory System

Measurement of Pulmonary volumes and capacities (Spirometry)
Stethography

Nervous System

Examination of superficial reflexes
Examination of deep reflexes
Examination of sensory, motor system
Clinical Examination of cranial nerves

Cardiovascular System

Cardiopulmonary resuscitation

Examination of arterial pulse
ECG recording/interpretation
Measurement of arterial blood pressure
Effect of exercise & posture on BP
Examination of Apex Beat
Heart Sounds – auscultation of normal sounds/murmurs

Special Senses

Taste sensation

Recording of body temperature

**C : BIOCHEMISTRY**

1. **Introduction of Biochemistry:**

   **Biochemistry of the Cell**
   
   a) Introduction to cell (Biochemical point of view)
   b) Scientific methods to study the cell Biochemistry
   c) Biochemical composition of the cell

   **Biochemistry of the Cell and Body Fluids:**
   
   a) Ionization of water & weak acids, Bases
   b) Concept of Ph, and pH scale
   c) Dissociation constant & titration curve of weak acids, the concept of pK values
   d) Buffers, their mechanism of action
   e) Henderson-Hesselbalch Equation (No derivation)
   f) Importance of selectively permeable membranes, Osmosis, Osmotic pressure, surface tension, viscosity & their importance related to body fluids

   **Carbohydrates:**
   
   a) Definition, biochemical function and classification
   b) Structure and functions of Monosaccharides, and their derivatives
   c) Disaccharides, their important examples
   d) Oligosaccharides, their important combination with other macromolecules
   e) Polysaccharides, their important examples and biochemical role
   f) The biochemical importance of carbohydrates
Proteins:

a) Definitions, Biomedical importance and classification of proteins
   Based on
   
   - Physiochemical properties
   - Functional
   - Nutritional
   - Structural
b) Amino acids, their structure, properties and functions
c) Classification and nutritional significance of amino acids
d) Structure of proteins and their significance
e) Separation of proteins e.g. salting out, Electroresis, Chromatography, Centrifugation
f) Immunoglobulins and its biomedical significance
g) Plasma proteins & their clinical significance

Nucleotide and Nucleic Acid:

a) Chemistry and structure of nucleotides and their biochemical role
b) Nucleotides, structure, their derivatives and their biochemical role
c) Nucleic acids, their types, structure and functions

Lipids:

a) Definition, biomedical function
b) Classification of lipids
c) Phospholipids, Glycolipids, Sphingolipids and their Biochemical signation
d) Fatty acids, chemistry, classification and biochemical function
e) Essential fatty acids
f) Eicosanoids, their classification and functions in health and disease
g) Steroids, Sterol e.g. Cholesterol, their chemistry, functions and clinical Significance
h) Lipid peroxidation and its Significance
**Biological Membrane:**

a) Biochemical composition
b) Biochemistry of cell membrane, chemical composition, importance of Lipid and proteins in membranes, chemistry of signals and receptors
c) Biochemistry of membrane transport mechanism, active transport, Passive transport, simple and facilitated diffusion

**Enzymes:**

a) Introduction, definition, mechanism of catalysis
b) Coenzymes, co-factors
c) Isoenzymes, their clinical importance
d) Factors affecting enzymes activity, Michaelis-Menten Equation,
(no derivation of equations)
e) Enzyme inhibitors and their classification and biomedical importance
f) Application of enzyme in clinical diagnosis and therapeutic use

**Porphyrins & Hemoglobin:**

a) Chemistry and biosynthesis of porphyrins and its disorders (porphyrias)
b) Structure, functions and types of hemoglobin
c) Oxygen binding capacity of hemoglobin, factors affecting and regulating the oxygen binding capacity of hemoglobin
d) Degradation of heme, formation of Bile pigments, its types, transport and excretion
e) Hyperbilirubinemia, their biochemical causes and differentiation, Jaundice and its types
f) Hemoglobinopathies (HP-S, Thalasemia etc) and their biochemical causes

**Vitamins:**

a) Introduction, classification
b) Chemistry, biochemical functions, deficiency manifestations, daily allowances and source of water soluble and fat-soluble vitamins

c) Hypervitaminosis

Biochemistry of Digestive Tract:

a) Introduction of digestion and absorption
b) Introduction, composition, functions, daily secretion, stimulants and depressants of:
   - Saliva
   - Gastric Juice & HCL
   - Pancreatic Juice
   - Bile Juice
   - Succus Entericus

c) Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids.
d) Biochemical disorders of GIT, e.g. achlorhydria, peptic ulcers, Lactose intolerance, cholelithiasis and related disorders. (Introductions)

Mineral & Trace Elements:

Classification and Biochemical role of:

- Macro minerals (Na, K, Ca, Cl, PO4)
- Micro minerals (Fe, Zn, Mg, Se, I, Cu, Cr, Cd, Mn)

Laboratory Practicals

1. Introduction to use laboratory facilities / equipment’s
2. Basic techniques and fundamental informations
3. Preparation of solutions- Normal solution and Normal saline
4. Experiments on Carbohydrates qualitative analysis
5. Experiments on proteins- qualitative analysis
6. Experiments on Fats- qualitative analysis
7. Chemical analysis of Urine- Normal and abnormal specimens
D: SCIENCE OF DENTAL MATERIALS

1 Introduction to Dental Materials

2 Physical properties of materials:-
   a) Characterisation of solid surfaces
   b) Adsorption, absorption, and sorption.
   c) Surface tension, wetting, capillary rise
   d) Forces involved in denture retention

3 Thermal, Electrical and other related properties of dental materials

4 Mechanical properties i.e. stress, strain, stress/strain relationship and other related properties.

5 Classification of dental materials on their basis of chemistry eg. example Polymers, Ceramics, Metals, Alloy and Composites.

6 Impression materials in all respects and duplicating materials.

7 Duplicating materials

8 Gypsum products and investment materials.

9 Investment materials

10 Dental Waxes.

11 Separating media used in dentistry

12 Polymers:-
   ? Requirements of denture base materials.
   ? Properties of Acrylic Resin as a denture base materials, their composition, manipulation and processing.
   ? Alternative denture base materials.
   ? Artificial teeth.
   ? Types of Acrylic Resin polymerization i.e. heat cured Acrylic denture plastics, chemically accelerated plastics, fluid resin acrylic denture plastics, light cured denture plastics, repair, relining and rebasing materials
   ? Tissue conditioning materials and soft liner.
13 Adhesion: Enamel and Dentine bonding agents and bonding system.

14 Dental Cements.

- Zinc Phosphate Cement.
- Zinc Oxide/Eugenol, Modified Zinc Oxide/Eugenol, Ethoxy Benzoyic Acid Cement, Zinc Polycarboxylate, Zinc Polyacrylate Cement, Silico Phosphate Cement.
- Glass Ionomer Cement and Hybrid Ionomer Cement
- Componers, Cavity Varnish, Cavity Linners, Calcium Hydroxide and Guttapurcha.

Composite Restorative Materials and properties of composites

- Dental amalgam alloys
- Amalgamation process
- Properties and uses of dental amalgam

General Characteristics of Metals

- Extraction of metals from their ores and their purification.
- Micro leakage, creep, galvanism, cold working/strain hardning, Annealing
- Welding and soldering.
- Tarnish and corrosion and their types.

Alloys and its types.

Dental casting gold alloys its composition, properties uses.

Base metal casting alloys, their composition, properties and comparison with casting gold alloys.

Wrought alloys, i.e. steel and stainless steel.

Porcelain and bonded porcelain as a dental ceramic, classification of dental porcelain, composition, properties, manufacturing and firing and their uses.

Maxillo facial materials used in dentistry.

Abrasion and polishing materials
Practical And Laboratory Techniques

Identification and manipulation of all dental materials.

Laboratory procedures / experience of Acrylic, partial denture and
crown and bridge work.

Books Recommended

a) Restorative Dental Material by Robert G. Craig and John M. Power.
b) Skinner’s “Science of Dental Materials”
c) Chemistry of Dental Materials by Mc Cabe
d) Notes on Dental Materials by M. C. Comb
e) Science of Dental Materials by William and Cunnigham

E - PAKISTAN STUDIES AND ISLAMIAT

The role of sufis and saints in the spread of Islam in the
subcontinent. Shah Waliullah and Tehrik – I – Mujahidin. The war of
The Aligarh Movement. The Muslim League. The Nehru report and
Quaid-I-Azam 14 points. The Ideology of Pakistan. The initial
problems faced by newly independent Pakistan. Pakistan and the
Muslim World. The Kashmir problem. The U.N.O.

ISLAMIYAT

The fundamental pillars of Islam. The Holy Qur’an: Sura-e-Furqan.
SECOND PROFESSIONAL BDS

A: GENERAL PATHOLOGY

1. Cell Injury:
   a. Terms necrosis, ischemia, hypoxia, infarction and gangrene.
   b. Sequence of the ultrastructural and biochemical changes which occur in the cell in response to the following:
      ?? Ischemia
      ?? Immunological injury- eg. Asthma / SLE /Anaphylactic reaction
      ?? Physical agents: eg. Radiation
      ?? Genetic defects- eg. Thalassemia / haemophilia
      ?? Nutritional deficiency
      ?? Infectious agents
      ?? Viruses: eg. Hepatitis / Aids / HIV infections
      ?? Fungi: eg. Candida Albicans/Candidosis
      ?? Parasites: eg. Malaria
   c. Irreversible and reversible injury.
   d. Apoptosis and its significance.
   e. Necrosis and its types.
   f. Exogenous and endogenous pigment deposition
   g. Dystrophic and metastatic calcification along with clinical significance.
   h. Metabolic disorders
      ?? Lipid
      ?? Protein
      ?? Carbohydrate

2. INFLAMMATION AND MEDIATORS OF INFLAMMATION
   a) Describe the role of inflammation in the defense mechanisms of the body.
   b) Describe the vascular changes of acute inflammation and relate these to the morphological and tissue effects.
   c) Describe the process of chemotaxis, opsonization and phagocytosis.
   d) Describe the role of cellular components in inflammatory exudate
   e) Differentiate between exudate and transudate.
   f) List the important chemical mediators of inflammation
   g) Describe the pathway of Arachidonic Acid metabolism.
   h) Discuss the role of products of Arachidonic acid metabolism in inflammation.
i) Describe the mechanism for development of fever, with reference to exogenous and endogenous pyrogens.

j) Describe chronic inflammation including granulomas.

k) Describe granuloma, its type and causes.

l) Describe the systemic effects of acute and chronic inflammation and their possible outcomes.

m) Describe the signification of ESR.

n) Give two examples of induced hypothermia in medicine.

o) Describe the pathogenesis, clinical features and lab. Diagnosis of Gout.

p) Describe the management of acute and chronic Gout.

3. **WOUND HEALING**

   ?? Describe the differences between repair and regeneration.
   ?? Describe wound healing by first and second intention.
   ?? Discuss the factors that influence the inflammatory reparative response.
   ?? Compare wound contraction with cicatrization.
   ?? Describe the formation of granulation tissue.
   ?? Describe the complications of wound healing.

4. **DISORDERS OF CIRCULATION**

   a) **THROMBO-EMBOLIC DISORDERS AND THEIR MODALITIES**:

      1. Explain the pathogenesis of thrombosis.
      2. Describe the possible consequences of thrombosis.

   b) **DISORDERS OF THE CIRCULATION AND SHOCK**

      1. Define edema, ascites, hydrothorax and anasarca.
      2. Describe the pathophysiology of edema with special emphasis on CHF.
      3. Describe the pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal and septic) and list their causes.
      4. Describe the compensatory mechanisms involved in shock.
MICROBIOLOGY

1. Describe the defense mechanisms of the body.
2. Describe the microbial mechanisms of invasion and virulence.
3. Differentiate between sterilization and disinfection.
4. Describe methods of disinfection and sterilization.
5. Describe the principles of aseptic techniques.
6. Describe universal precautions for infection control.
7. Describe the general principles of the following serological tests:
   ?? ELISA – Hepatitis (A,B,C,D,E,G) Rubella, CMV and HIV
   ?? Haemagglutination – TPHA
   ?? Western blot – HIV
   ?? ICT – Malaria
8. Interpret: a) Culture reports, b) Serological reports and c) microscopic reports of gram stain and AFB stain.
9. Describe the principles of proper collection and submission of specimens for laboratory investigations with due precautions.
10. Describe the general characteristics and taxonomy of Bacteria, Viruses and Fungi.
11. Define communicable endemic, epidemic and pandemic diseases, carriers, pathogens, opportunists, commensals and colonizers.
12. List the microorganisms responsible for infection of the body with especial reference to oral cavity.
13. Describe pathogenesis, treatment, epidemiology, prevention and control of the following organisms.
   ?? Bacteria:
   ?? Viruses:
   ?? Fungus:
   ?? Protozoa:
   ?? Helminths:
14. DESCRIBE PRINCIPLES OF ANTI MICROBIAL ACTION

GENETICS

2. Cell cycle and list cell types (stable, labile, permanent)
3. Mechanisms controlling cell growth.
4. Classification systems of tumors.
6. Grading and staging system of tumors.
9. Host defense against tumors.
10. Mechanism of local and distant spread.
11. Local and systemic effects of tumors.
12. Tumor markers used in the diagnosis and management of cancers.
14. Epidemiology of common cancers in Pakistan.

**IMMUNOLOGY**

Antigen, antibody, epitope, hapten and adhesion molecules.  
Innate and acquired immunity.  
Type I, type II, type III, and type IV hypersensitivity reactions.  
Classification of the immunodeficiency disorders.  
Autoimmunity.

**THE ORAL CAVITY:**

?? Leukoplakia.  
?? Predisposing factors (pipe smoking, ill fitting denture, alcohol abuse, irritant foods) of leukoplakia.  
?? Risk factors of oral cancer.  
?? Clinical and morphological features of oral cancer.  
?? Benign and malignant tumours of salivary glands.  
?? Clinical and morphological features of pleomorphic adenoma.

**B: GENERAL PHARMACOLOGY**

General Pharmacology:

1. Definition of drug and drug nomenclature.  
2. Branches / Divisions of Pharmacology  
3. Sources of drugs  
4. Active principles of drug and Pharmacology  
5. Dosage forms and doses of drugs.  
6. Drug administration.  
7. Absorption of drugs and processes involved in drug absorption  
8. Factors modifying absorption of drugs.  
9. Transport of drugs across cell-membrane  
10. Bioavailability, its clinical significance and factors affecting bioavailability  
11. Drugs reservoirs, distribution and redistribution of drugs, plasma protein binding  
12. Pro-drug, Biotransformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation
13. Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
14. Excretion of drugs.
15. Mechanism of drug action.
17. Factors modifying action and doses of drugs.
18. Pharmacokinetics, pharmacodynamics and Receptors

Locally Acting Drugs

?? Demulcents, Emollients, Irritants, Counter irritants, Astringents, anti-seborrheics, locally acting enzymes.
?? Antiseptics and Disinfectants
?? Ectoparasiticides

Drugs Acting on Gastrointestinal Tract

?? Anti Emetics

Cardiovascular Drugs

?? Antiarrythmic Drugs
?? Ionotropic Drugs
?? Antianginal Drugs
?? Thrombolytics
?? Antihyperlipidemic Drugs

Diuretics

Autocoids

Drugs Acting on Autonomic Nervous system

Cholinergic Drugs

?? Choline Esters
?? Anticholine-esterases
?? Cholinomimetic Alkaloids

Anti- Cholinergic Drugs

?? Anti Muscarinic
?? Non catecholamine

Sympatholytics / Antiadrenergics

?? Alpha Adrenergic Blockers
?? Beta Adrenergic receptor Blockers
Adrenergic Neuron Blockers
Autonomic Ganglionic Blockers
Skeletal Muscle Relaxants
  a) Neuromuscular Blocking Agents – D-tubocurarine, Suxamethanin
  b) Central Muscle Relaxants, Meprobromate, Mephenesim, Diazepam etc.

Central Nervous System
  a) Sedative-Hypnotics
  b) Antiepileptics
  c) General Anaesthetics
  d) Local Anesthetics
  e) Drugs for movement Disorder/Muscle Relaxant
  f) Alcohol
  g) Drugs for Migraine
  h) Stimulants of the Central Nervous System:
     ?? Caffeine, Theophyline, Theobromine
     ?? Brain stem stimulants: Picrotoxin, Nikethamide, Ethamivan, Doxapram
  i) Psychopharmacology
     ?? Anti-psychotics
     ?? Anxiolytics
     ?? Anti-Depressant/ Anti mania

Drugs acting on Endocrine System
  a) Drugs-Hypothalamic Drugs
  b) Adrenocorticoids
  c) Sex Hormones
  d) Thyroid/Parathyroid Drugs
  e) Pancreatic Hormones and Oral hypoglycemic Agents

ANTIBIOTICS:

Parameters:
  ?? Provisional Diagnosis, Investigation, Empirical Therapy, prescribing after culture and sensitivity.

VITAMINS:

Parameters:

  ?? Groups of vitamins prescribed
  ?? Vitamins prescribed on basis of therapeutic indication or empirical
  ?? Single/multiple vitamins prescribing
  ?? Rational with use of vitamins.
ANALGESICS:

Parameters:
?? Various groups of analgesics prescribed
?? Single / multiple adverse drug prescription.
?? Non specific indications of analgesic prescribed

ADVERSE DRUG REACTIONS
Anti-microbials, cytotoxic drugs, steroids etc.

C: ORAL BIOLOGY & TOOTH MORPHOLOGY

EMBRYOLOGY

?? General human development
?? The brachial apparatus
?? Development of face/tongue/thyroid gland
?? Development of nasomaxillary complex
?? Development of palate
?? Development of mandible and temporo mandibular joint
?? Development of para-nasal sinuses
?? Development of salivary glands
?? Tooth development and its associated structures
?? Development of cartilages and bones of facial skeleton
?? Introduction of clinical anomalies related with all the above topics
?? Introduction to Post natal facial growth.
?? Development of base of skull

Developmental Histology (structure) and Function of: -

?? Bone/cartilage (specially jaws)
?? Alveolar bone
?? Periodontal ligament
?? Cementum
?? Tooth eruption and shedding
?? Oral mucous membrane
?? Dentine
?? Pulp
?? Enamel
?? Temporo-mandibular joint clinical consideration
?? Endogenous implants/changes during tooth movement/wound healing
ORAL PHYSIOLOGY:
?? Immunology
?? Calcium metabolism and bone
?? The healing of bone fractures
?? Repair and regeneration of dental tissues
?? Histology and function of
   a) Saliva and salivary glands
   b) Taste and taste organs
   c) Pain and pain pathway

TOOTH MORPHOLOGY AND OCCLUSION
?? Introduction and nomenclature
?? Anatomic and physiologic consideration of form and function of oro-dento-facial structures
?? Brief study of comparative Oral Biology and Tooth Morphology

The Deciduous Dentition:
?? Detail description of each primary tooth
?? The pulp cavities
?? The difference between deciduous and permanent teeth

Occlusion:
?? Temporo-mandibular joint
?? Muscles of mastication and facial expression
?? Mastication and Swallowing
?? Occlusion at primary/mixed/adult dentition stages
?? Innervation and arterial supply of orofacial structures

PRACTICALS:

Preparation of slides with different staining techniques

HISTOLOGY:

Practical use of microscope, microtome and preparation of ground section of teeth

Books Recommended:
?? Orban’s Oral Histology and Embryology, S.N.Bhaskar
?? Oral Histology (Development, Structure and Function), A.R.Tencate
?? Oral Development and Histology, James K. Avery
D – COMMUNITY AND PREVENTIVE DENTISTRY

Introduction to Community Dentistry and Dental Public Health: Concepts of health; disease and illness and factors affecting these states; activities carried out in the field of community dentistry.

Oral epidemiology: Definition, uses and principles of epidemiology; Research designs; dental surveys; clinical trials; screening; oral health assessment indices; current concepts about etiology, natural history and epidemiology of oral diseases and conditions having public health implications; assessment of disease risk and predictive tests.

Prevention of oral and dental diseases: Levels of prevention; health promotion; specific protection; dental plaque and its role in the etiology of dental diseases; diet; nutrition and dental health; water fluoridation; fluoride supplements; professionally and self-applied topical fluorides; fissure sealing; methods of plaque control; principles and strategies of dental health education and promotion; infection control; protection from radiation and mercury hazards in dental practice.

Dental health care delivery system: The structure and financing of dental care, role of dentists, dental auxiliaries and general health workers in oral health care, dental care of people with special needs including the elderly, the handicapped, HIV / AIDS patients, school children, principles and elements of primary health care, ethical issues in dental care.

Behavioral sciences: Health behavior and its determinates, attitudes, beliefs and values about health and illness, theories of health behavior, dentist – patient communication, management of stress, fear and anxiety in dentistry, child psychology and behavior management and modification techniques, counseling, motivation and compliance.

Introduction to bio – statistics: Types of variables, frequency distribution, measures of central tendency and variability in data, methods of sampling,
sampling error, probability, normal distribution, confidence interval, tests of statistical significance, Kappa test.

1. Community Dentistry practical & field assignments:

   A. Clinical Oral Examination

   i. Exercise on Models and Extracted teeth
   ii. Exercise on patients in out patients department
   iii. Examination of institutionalized population like school children

   B. Questionnaire / interview study

   i. Designing a questionnaire
   ii. Pilot testing the questionnaire
   iii. Data coding, processing and analysis

   C. Planning and conducting a dental health education (D.H.E.) session:

   i. Designing D.H.E. material
   ii. Planning, conducting and evaluating (D.H.E) sessions

2. Chairside preventive dental procedures

   i. High fluoride gel application
   ii. Fissure sealing
   iii. Dietary counseling
   iv. Plaque disclosing
   v. Instructions about Oral Hygiene measures
      ?? Tooth Brushing demonstration
      ?? Inter-dental cleaning
      ?? Chemical control of dental plaque

**PRE CLINICAL DENTISTRY**

It is not an examination subject will be examined in the subject of operative dentistry and Prosthodontics in final year.

The preclinical dentistry include the following: -

A. Junior Operative Techniques/Dental Materia Medica
B. Junior Prosthodontic Techniques
A-1 Junior Operative Techniques
- Introduction to dental operative Techniques
- Introduction to instrument used in cavity preparation
- Classification of dental caries
- Principles of Cavity preparation
- Cavity preparation on plaster models/phantom head
- Filling Materials
- Dental Materia Medica

B-1 Junior Prosthodontics Techniques:

i. Introduction of impression and denture materials
ii. Laboratory procedures
   a) Complete Dentures
   b) Acrylic removeable partial denture
   c) Cast partial denture
   d) Anterior crowns
   e) Posterior crowns
   f) Bridges
   g) Relining / Rebasing procedures
   h) Repairs
   i) Soldering and welding techniques.
THIRD PROFESSIONAL B.D.S

A: GENERAL MEDICINE

Core Knowledge and Principles of Medicine.

To deal with critical Situations:

Clinical Teaching.

?? History taking in general,
?? GPE, Pallor, Cyanosis, Jaundice, Clubbing and Koilonychia.
?? Thyroid, Lymph nodes, Dehydration, Nutrition, Decubitus, Edema.
?? Pulse.
?? Examination of Blood Pressure and JVP.
?? History taking in GIT – Vomiting, Diarrhea, Pain Abdomen, Constipation.
?? Hematemesis, Melena, Dyspepsia, Distension.
?? Examination of GIT – Inspection, Palpation.
?? Percussion, Auscultation.
?? Any deficient program.
?? Chest pain, wheezing.
?? Inspection, Palpation, Percussion, Auscultation front of chest.
?? Inspection, Palpation, Percussion, Auscultation back of chest.
?? Any deficient program.
?? History taking in CVS.
?? GPE in CVS – Clubbing, Koilonychia, Osler’s nodes, Splinter Hemorrhages, Cyanosis.
?? Pulse, JVP, Blood pressure.
?? Inspection, Palpation of pericardium.
?? Percussion, Auscultation of pericardium – Mitral, Tricuspid, Aortic.
?? Pulmonary areas.
?? Any deficient program.
?? History taking in CNS.
?? Higher Mental Functions – level of consciousness, Behavior, Speech, Memory.
?? Examination of cranial nerves – I, II, III, IV nerves.
?? V, VI, VII, VIII nerves.
?? IX, X, XI, XII nerves.
?? Examination of Motor system.
?? Examination of sensory system – Crude touch, pain, Temperature.
?? Fine touch, Pressure, Vibration, Joint position,
?? Cortical sensations.
?? Two point localization, Two point discrimination.
Knowledge of Systems and the Diseases:

1. Genetic factors in disease.
2. Immunological factors in disease.
3. Climate and environmental factors in disease.
4. Diseases due to infection.
5. Diseases of the cardiovascular system.
6. Diseases of the respiratory system.
7. Diseases of the alimentary tract and pancreas.
8. Diseases of the liver and biliary system.
10. Disturbances in water, electrolyte and acid base balances.
11. Diseases of the kidney and genito-urinary system.
12. Endocrine and metabolic Diseases.
15. Diseases of connective tissues joint and bones.
17. Psychiatry.
18. Diseases of the nervous system.
20. Acute poisoning.

B: GENERAL SURGERY

Core Knowledge and Principles of Surgery.

1. Physiological response to Surgical Trauma and homeostasis.
2. Wound and its Repair.
3. Pathophysiology and Management of Shock including fluid and electrolyte imbalance.
To deal with critical Situations:

1. Cardiac Arrest.
2. Polytrauma with airway difficulty and circulatory instability.
3. Uncontrolled External Hemorrhage.
4. Sudden upper Respiratory Tract Obstruction.
5. Patient in Hypovolumic or Septicemic Shock.
6. Tension Pneumothorax.
7. Cardiac Temponade.
8. Unconscious patient due to Head Injury.
10. Burns

Knowledge of Systems and the Diseases:

?? Head, Face and Neck:

1. Development abnormalities of face, palate, lip.
3. Oral region including tongue.
4. Diseases of Salivary glands (Inflammation, Calculus, Tumors)
5. Neck lumps including Lymphatics Thyroid, Parathyroid.

?? Chest Wall & Thorax:

2. Lung abscess and Empyema Thoracis.

?? Gastro Intgestinal Tract:

1. Diseases causing Oesophageal Obstruction.
2. Peptic Ulcer disease & its complications.
3. Tumors of Stomach.
5. Conditions causing Chronic Abdomen including malignant lesions of small and large bowel.

?? Abdominal, Pelvic and Genital Traumas and Hernias.

1. Principles in management of abdominal trauma
2. Epigastric Hernia
3. Incisional Hernia
Liver:
1. Trauma
2. Obstructive Jaundice
3. Liver Abscess
4. Hydatid cyst
5. Malignancy (Hepatoma & Secondaries)

Gall Bladder:
1. Acute and chronic Cholecystitis
2. Cholelithiasis and its Complications
3. Malignancies

Pancreas:
1. Acute, Relapsing and Chronic pancreatitis
2. Pancreatic masses including (benign, malignant) neoplasia

Skin & Soft Tissues:
1. Common benign and malignant skin lesions
2. Wounds / Ulcers / abscesses / Sinuses / Fistulae
3. Soft Tissue Lumps

Orthopedics and Trauma:
2. Bone Fracture & their Complications.
3. Sports injuries and afflictions of Tendons and Bursae.
5. Arthritis.

Vascular and Nerve Disorders:
1. Vascular afflictions.
2. Varicosities.
4. Peripheral nerve Injuries.

Essential Skill to be acquired:
1. Provide First Aid: Resuscitation (ABC) of Polytrauma, CPR.
2. Collect samples of blood, urine, sputum, pus swab etc.
3. Understand the principles of pre-operative preparations, Sterilization /Disinfecting techniques.
4. Understand principles of wound care, Skin Suturing and Suture Removal, Incision and Drainage of Superficial Abscesses, Excision of Small Soft Tissue Lumps, Needle Biopsies, Aspiration of localized fluids, etc.
5. Have Observed common surgical procedures, treatment of Fracture / Dislocation and Methods of General / Local Anesthesia.
6. Have observed instillation of Chemotherapy and principles of Radiotherapy.

C. ORAL PATHOLOGY

1. Developmental disturbances of Teeth
2. Pre malignant , Benign and Malignant lesions
3. Salivary gland tumors and diseases
4. Odontogenic & non –Odontogenic tumours
5. Tooth wear
6. Caries
7. Diseases of pulp and periapical tissues
8. Spread of Infections
9. Wound Healing
10. Diseases of bones and joints
11. Cysts of Jaws and Oral Cavity
12. Immunology

Practical in Oral Pathology to include:

1. Study of Histopathological slides
2. Study of Radiographs
3. Histochemical Techniques

Books Recommended:
?? Oral Pathology, J.V.Soans, J.C.Southam
?? Clinical Guide of Oral Medicine, P.J.Lamy & MAO Lenix
?? Essential of Oral Pathology and Oral Medicine, R.A.Cawson, E.W.Odell

D: PERIODONTOLOGY

Introduction to Periodontology

1. Knowledge of healthy periodontium macro and micro anatomy and physiology of periodontium.
1. Gingiva
2. Periodontal Ligament  Blood supply
3. Root cementum  Nerve supply
4. Alveolar bone  Lymphatic System
5. Dentogingival Junction

2. Epidemiology of Periodontal diseases.

   a) Plaque index
   b) Debris index
   c) PMA index
   d) Gingival index
   e) Sulcus bleeding index
   f) Periodontal index
   g) Periodontal destructive index
   h) Community Periodontal index of treatment need (CPITN)

3. Etiology of periodontal diseases

   A) Dental plaque
      a) Definition
      b) Composition
      c) Maturation
      d) Structure
      e) Plaque microbiology

   B) Dental Calculus
      Definition
      a) Origin and composition
      b) Mode of attachment
      c) Mineralization
      d) Clinical significance of calculus

4. Microbiology of Plaque associated Periodontal diseases.

5. Histopathogenesis of Plaque associated Periodontal diseases.

6. Host response in Periodontal Disease
   Hypersensitivity reaction cell mediated and Humoral immunity.

7. Classification of Periodontal Diseases
   Clinical significance of Dental Plaque in the formation of gingivitis

A) Acute Gingivitis
   Signs and symptoms of acute gingivitis and different types of gingivitis.
   a) Traumatic gingivitis
   b) Acute Necrotizing gingivitis
c) Acute Herpetic - gingivo stomatitis
d) Circum coronitis
e) Streptococcal gingivitis

(With their etiological factors and treatment)

B) Chronic Gingivitis
Specific and Non-specific gingivitis
Specific Gingivitis
?? T.B.
?? Syphilitic gingivitis
?? Plasma cell gingivitis
?? Allergic gingivitis

Emphasis should be given towards.

a) Gingival Bleeding
b) Gingival texture
c) Gingival consistency
d) Gingival swelling (Hyperplasia)
e) Gingival Recession
f) Gingival Pigmentation

8. Desquamative Gingivitis.

a) Definition, clinical features in the form of
b) Mild, moderate and severe form of Desquamative Gingivitis.
   i. Nutritional factors
   ii. Hormonal factors
   iii. Dermatological condition
   iv. Chemotherapeutic agents
   v. Fungal infection


A) a) Definition
   b) Soft tissue wall of Periodontal pocket
   c) Hard tissue wall of Periodontal pocket
   d) Pocket content.

B) Classification of periodontal pocket
   a) Suprabony pocket
   b) Infrabony pocket

C) Bone loss and pattern of bone loss in periodontal disease.
10. Periodontitis

A) Adult onset periodontitis (Slowly Progressional Periodontitis)

B) Rapidly Progressive Periodontitis
   a) Early onset Periodontitis
      i. Prepubertal Periodontitis
      ii. Juvenile Periodontitis
   b) Adult onset rapidly Progressional Periodontitis.

C) Necrotizing Periodontitis
   i. AIDs Related
   ii. Non AIDs Related

D) Refractory Periodontitis

E) Trauma from Occlusion
   Definition
   i. Acute & Chronic trauma
   ii. Primary & Secondary trauma
   iii. Consequences of trauma
   iv. Tissue Response of trauma

F) Periodontal manifestation of Systemic diseases.
   (Different systemic diseases are discussed with respect to periodontal manifestation)

11. Tumour and Tumour like lesions of the Periodontium.

12. Periodontal Abscess and treatment
    Acute Chronic

13. Periodontium and AIDs

14. Furcation involvement in Periodontal disease
    Classification
    Management

15. Periodontal Consideration with:
    1. Orthodontics
    2. Endodontics
    3. Removable Prosthodontics
    4. Fixed Prosthodontics
    5. Implants
16. GTR (Guided Tissue Regeneration)
   Introduction, knowledge and the techniques.

17. Diagnosis of Cause Related Disease.
   a) History taking
   b) Examination of the Oral Cavity
   c) Importance should be given to the periodontitis.
   d) Differential Diagnosis
   e) Plaque Recognition
      i. Visualization with naked eyes.
      ii. Visualization with disclosing agents.
   f) Treatment Planning
      i. Mechanical control of Dental Plaque
         - Motivation, education and instruction.
         - Interdental cleaning (AIDs)
         - Scaling and root palning with advantages and disadvantages.
   g) Chemical control of dental Plaque
      i. Chemotherapeutic agents for topical and systemic administration.

18. Re-evaluation of the cause related therapy, surgical control of dental Plaque.
   A) Aims and objectives of periodontal therapy.
      i. Local Anaesthesia in Periodontal Surgery
      ii. Instruments for periodontal surgery procedures
      iii. Periodontal probing impact and radiographic interpretation.
      iv. Sterilization, universal precautionary measures
   B) Indications and contra indications of periodontal surgery.
      Surgical Procedures
      i. Curattage
      ii. Gingivectomy with different modalities
      iii. Flap Surgery with different modalities
      iv. Muco gingival Problem
         - Soft tissue graft
         - Pedical graft or displaced flap
         - Free gingival graft
         - Crown lengthening procedure
         - Vestibular widening procedure
         - Frenectomy

19. Periodontal dressing
20. Periodontal Suturing

21. Periodontal treatment of medically compromised patients

22. Occlusal Analysis
   i. Diagnosis of Occlusal trauma
   ii. Occlusal Adjustment
   iii. Splinting

Clinical & Practical Work

1. Knowledge of the objectives of Periodontal therapy.
   - Elimination of local etiological factor
   - Elimination of periodontal pocket
   - Establishment of normal Physiologic architecture of periodontium
   - To be able to interpret
     - Findings of medical and dental history and relate this to periodontal diagnosis and treatment

2. To be able to secure a good dental history pertaining to:
   a) Past Periodontal treatment.
   b) Present oral hygiene habits
   c) Past present oral habits
   d) Presence of Hypersensitive teeth
   e) Past extraction (Reason)
   f) Past Restorative treatment, filling types, fixed/removal restoration.
   g) Past orthodontic treatment
   h) Family Dental history

3. Detailed clinical examination and charting of the Periodontium i.e. accurate probing.

4. Shallow vestibule
   - High muscle frenum attachment
     a) Scaling manual
     b) Root Planning
     c) Polishing
d) Curettage  
e) Gingivectomy  
f) Epulus Removal (with incisional and excisional procedure)  
g) Flap Surgery.

Books Recommended
1. Clinical periodontology by Glickman  
2. Clinical Periodontology by Manson  

E: ORAL MEDICINE

Introduction: Significance of Oral Medicine:

1. Oral diagnosis: Histology, general health status, oral examination (including lips, oral mucosa, floor of the mouth, teeth, gingival, occlusion, salivary glands, jaw bones), examination of tempro-mandibular joint. Roentgenological examinations, laboratory aids, analysis Treatment Planning and Patient Management.  
2. Immunity and its impact on oral health.  
3. Oral Infections:  
   a. Bacterial infections.  
   b. Fungal infections.  
   c. Viral infections.  
4. ORAL SOFT TISSUE LESIONS; Classification;  

   White lesions  
   Pigmented lesions  
   Ulcerative lesions  
   Vesiculo-bullous lesions.  

   a. Pre-malignant lesions, Clinical features, Diagnosis and management.  
c. Diseases of salivary glands, xerostomia; Clinical features, Diagnosis and management.
d. Diseases of Jaw bones, Clinical features, Diagnosis and Management.
e. Disorders of Tempromandibular joint: Clinical features, Diagnosis and treatment.
f. Disorders of Teeth, Clinical features, Diagnosis and Treatment.
g. Focal infection: Significance diagnosis and management of effect cases.
h. Clinical features, Diagnosis and treatment of pain;
   1. Dento-alveolar pain
   2. Neurological pains.

5. Halitosis: Causes, Clinical features, diagnosis and therapy.
6. Allergy and drug reactions in dental practice: Clinical features, Diagnosis and treatment of anaphylactic shock.
7. Special consideration to the dental problems of children and senior citizens.

10. **ORAL MANIFESTATIONS OF SYSTEMIC DISEASES:**
    - Auto immune diseases related to oral cavity.
15. **SEXUALLY TRANSMITTED DISEASES:**
    - AIDS, oral manifestations, diagnosis and management.
    - Syphilis, oral manifestations, diagnosis and management.
    - Oral aspects of Gonococcal Infections, diagnosis and management.

16. Diseases of Liver with special attention to the infectivity of the patients and mode of its further spreads and control specific reference to universal precautions.
17. Diseases of Kidneys, special attention to patient on dialysis.

- Oral aspects of puberty, menstruation, pregnancy and menopause.
20. Special considerations for patients suffering from systemic disorders, like blood disorders requiring blood examination prior to oral surgery.

- Anaemia
- Leukemia
- Bleeding disorders.
- Patients on anti-coagulant therapy, management.

21. Oral Malignancies, Diagnosis and management.
- Patients on Radio therapy
- Patients on Chemo-therapy

22. Methods of report writing

BOOKS RECOMMENDED

1. Oral Medicine by W.R. Tyldesley
3. Oral Medicine and Pathology by Cawson and Odel

F: PROSTHODONTICS

Partial Dentures

a) Definitions
b) Applied Anatomy and Physiology
c) Oral manifestations of local and systemic disorders
d) History General and oral examination
e) Evaluation
f) Diagnosis and treatment planning, prognosis
g) Bio-mechanics of oral cavity and contributory factors
h) Classification
i) Study cast, master cast, working cast.
j) Components: Outline of support, retention, bracing and reciprocation, connectors.
k) Surveying, Design of partial dentures
l) Mouth rehabilitation/Odontoplasty
m) Impression techniques and modifications
n) Construction of wax pattern and casting procedures
o) Trial of metal frame work
p) Maxilo mandibular relations: Use of face bow, articulation techniques including split cast techniques
q) Selection of artificial teeth
r) Arrangements of teeth
s) Processing and finishing procedures
t) Insertion and post insertion counseling and follow up

BOOKS RECOMMENDED

Removable Partial Dentures.
   a. MacCraken’s Removable partial dentures
   b. Boucher’s treatment of partially edentulous patients by Gavin P Renner.
   c. Miller’s Removable partial dentures,
   d. Designing Removable partial dentures by John Osborn.

G. ORAL AND MAXILLOFACIAL SURGERY

1. BASIC PRINCIPLES OF SURGERY
   i) Introduction, History and Diagnosis and treatment planning
   ii) Sterilization, instruments and armamentarium
   iii) Incisions, Flap design and tissue handling
   iv) Haemostasis, debridement and suturing.
   v) Post Operative care and nutrition, Prevention of infection, Antibiotics and cross-infection

2. LOCAL ANAESTHESIA
   i) Introduction, types and Pharmacology.
   ii) Indications and contra-indications,
   iii) Surgical Anatomy
   iv) Administration techniques
   v) Complications and management

3. EXODONTIA
   i) Introduction
   ii) Indications and contra-indications
   iii) Principles and application of forceps extraction
   iv) Principles and application of elevators
   v) Surgical removal of erupted/broken down roots teeth
   vi) Complication of Extraction
   vii) Management of complications

4. Prevention And Management of Medical Emergencies
5. Introduction to Dental Ethics and Law, Forensic Dentistry
6. General Anaesthesia and Sedation in Dentistry
7. Impacted Wisdom tooth Surgery
   a) Introduction and Aetiology
   b) Indications and contra-indications
   c) Surgical Techniques
   d) Complications of impacted wisdom tooth Surgery and its management

H: OPERATIVE DENTISTRY

Dental Caries
   - Etiology
   - Pathogenesis
   - Prevention

Examination, Diagnosis, and Treatment Planning
   - Examination and Diagnosis
   - Caries
   - Erosion, Attrition, Abrasion, cracked tooth, others
   - Treatment sequencing, placement and repair/replacement
   - Selection of restorative materials
   - Restorative failure
   - Postoperative problems

Principles of cavity design & preparation
   - Basic principles, instrumentation and nomenclature
   - Introduction to lasers
   - Preparations
   - Dental amalgam
   - Tooth colored restorative materials

Sterilization and cross infection control

Isolation, Operator and the environment
   - Instruments and equipment
   - Control of the operating field
   - Soft tissue management
   - Esthetic considerations
A: PROSTHODONTICS

1. Complete Dentures.
   a) Definitions.
   b) Applied Anatomy and Physiology
   c) Peripheral tissue attachment of denture bearing area.
   d) Tongue form
   e) Saliva
   f) Systemic disorders and applied pathology.
   g) Evaluation of patients.
   h) Identification of patients
   i) General conditions.
   j) Muscle tone and muscular development.
   k) Osmotic balances
   l) Oral lesions with skin manifestations
   m) Psychiatric evaluation of patients
   n) Oral condition of denture bearing area
   o) Ridge form and relations.
   p) Oral mucosa: resistant and non resistant tissues
   q) Alveolar bone resorption.
   r) Face forms
   s) Fundamentals of Denture retention and contributing factors
   t) Mouth preparation including preprosthetics Surgery

Impression Procedures

a) Objectives of impression.
   a) Theories and techniques
b) Impression techniques: minimum pressure, definite pressure, selective pressure impression.
   c) Pascal's law and its corollaries, atmospheric pressure, intermolecular attraction, interfacial, surface tension
d) Impression Techniques: primary, wash and secondary impressions, impression trays, impression materials.
e) Factors responsible for physical retention, physiological, mechanical, surgical and psychological factors.
   f) Stability
   g) Maxillo-mandibular relations.
h) Occlusal and Rest vertical relations.
   i) Horizontal relations.
j) Centric and Eccentric relations.
k) Articulators.
l) Theories of articulation.
m) Protrusive records condylar path.
n) Lateral records.
o) Hanau’s formula.
p) Facebow, arbitrary and kinematics.
q) Hinge axis.
r) Semi adjustable and acron type articulators.
s) Selection of teeth, arrangement of teeth Factors responsible for size, shape, colour, shade, position and relationship of teeth.
?? Curve of Spee.
?? Curve of Wilson.
?? Monson curve.
t) Occlusal and articulation,
u) Phonetics
v) Trial
w) Insertion
x) Post-insertion follow up.

Immediate Dentures and Replacement Dentures

a) Classification and types (partial, complete).
b) Indications and contra indications
c) Objectives
d) Clinical and laboratory procedures
e) Multi disciplinary approach including care during surgery
f) Insertion, follow up and maintenance.

Implantology

a) Types of implants
   a) Endosseous
   b) Sub periosteal
   c) Endodontic implants.
b) Osseo integration and Bio compatibility.
c) Limitation of implants.
d) Prosthodontic Options.
e) Clinical and laboratory procedures

Maxillo Facial Prosthodontics.

f) Classification of congenital and acquired defects.
g) Principles governing treatment and management of patients presenting with various defects
h) Obturators
i) Cleft palate prosthesis
j) Speech aid prostheses
k) Facial prostheses
l) TMD splints
m) Bite Raising appliances
n) Occlusal splints
o) Arthralgia and Myalgia splints
p) Splints and Stents.

**Occlusion including TMD/MPD**

a) Theories and Principles of Occlusion.
b) Occlusal Trauma
c) Concept, Aetiology, Treatment planning and options

**Gerodontology**

a) Principles and procedures relating to the management of medically compromised patients and the elderly
b) Effects of medication
c) Medical conditions having oral manifestation
d) Xerostomia
e) Root caries
f) Geriatric Nutrition
g) Principles of prosthodontic procedures in geriatric patients

1. **Fixed Prosthodontics**

   A) Principles of Fixed prosthodontics

   a) Definitions:
b) Applied Anatomy and Physiology
c) Oral manifestations of local and systemic disorders
d) History: General and oral examination
e) Evaluation
f) Diagnosis and treatment planning, prognosis
g) Bio-mechanics of oral cavity and contributory factors

   B) Bridges

   a) Indications and contraindications
b) Classification and types
c) Components of a bridge
d) Design of various component parts
e) Abutment and retainer selection
f) Margin placement and pontic designs.
g) Steps of Procedures
   i. Tooth preparation
   ii. Impression procedures
   iii. Lab procedures
   iv. Localization and trial of bridge framework
v. Final cementation
vi. Post insertion follow up, complication and management

h) Material considerations and cementation
i) Resin – Bonded Bridge

2. Over Dentures

a) Definitions
b) Applied Anatomy and Physiology
c) Oral manifestations of local and systemic disorders
d) History General and oral examination
e) Evaluation
f) Diagnosis and treatment planning, prognosis
g) Bio-mechanics of oral cavity and contributory factors
h) Classifications and types
i. Partial and complete
ii. Removable and Fixed
iii. Transitional or Diagnostics and permanent definitive.
iv. Tooth supported, root supported, implant supported
i) Indications contra indications, advantages and disadvantages
j) Steps of procedures and follow up.

3. Precision Retained Dentures
Intra Coronal, Extra Coronal and Intra radicular attachments.

4. Relining, Rebasing and Repairs
i) General indications and principles
ii) Procedures.

Geriodontology

1. Management strategies for the dental care of the elderly.
2. Dental and oral diseases and disorder in the elderly.
3. Range of psychological and social factors involved with geriatric patients.
4. Distinguish between normal and abnormal consequences of aging.
5. Excessive tooth wear.
7. Recession of the gingival tissues and the special difficulties of providing movable prostheses.
Books Recommended

A) Fixed Prosthodontics
   a. Planning and making crowns and bridges by B. G. Smith.
   b. Contemporary fixed prosthodontics by Rossential and Fujimoto.
   c. Fundamentals of crown and bridge by Shillenberg.
   d. Tillman’s Principles of crown and bridge.

B) Complete Denture Prosthodontics
   a. Boucher’s Prosthodontic treatment for edentulous Patients by Dicky and Zarb.
   c. Syllabus of complete dentures by Heartwell and Rahn.
   d. Immediate and Replacement dentures by Anderson and Storer.
   e. Fenn’s Clinical dental Prosthodontics by MacCraken.
   f. Complete Dentures Prosthodontics by Basker and Devenpot.

C) Miscellaneous
   b. Dental laboratory techniques by Morrow, Rudd and Eissman.
   c. Occlusion by Ramfjord and Ash.
   d. Management of Temporomandibular Disorders by Okeson.
B: OPERATIVE DENTISTRY

1. Radiology & Radiography
   Periapical
   Bitewing
   Occlusal
   OPG

2. Restorative materials
   Amalgam
     Applied Chemistry
     Mercury hazards & hygiene
   Composite resins
     Applied Chemistry,
     Acid etching,
     Enamel & Dentine bonding,
     Restoration of Class III & IV
   Posterior Composite
   Composite Veneers

Cements
   Ca(OH)2
   Glass Ionomers
   Zinc Phosphates
   Zinc Oxide Eugenol and others

3. Discoloration of teeth

4. Inlays and Onlays

5. Restoration of Pulpless teeth (Post and Core)

Pin Retained restorations

Bleaching
   - Internal
   - External

Veneers
   Porcelain.
   Composite
   Metal

Restorative / Gingival Interface
Management of medically compromised patients with special reference to
HIV and Hepatitis
Implant supported restorations
Occlusion
Paedodontics

1. Child management in dental practice
2. Prevention of Dental Disease
   a) Prenatal Counseling
   b) Oral prophylaxis
   c) Fluoride administration
   d) Dietary management
   e) Diet counseling
   f) Home care
3. The Acid etch Technique in caries prevention
4. Pit & Fissure Sealants & Preventive resin restorations
4. Radiology
5. Problem of Pain & Sedation
6. Periodontal disease in children
7. Injury to the primary & permanent teeth
8. Pulp therapy for the primary & young permanent teeth
   - Apexification
   - Apexogenesis
9. Restorative dentistry for the primary dentition
10. Anesthesia
11. Oral habits
12. Space maintenance in the primary dentition
13. Treatment planning & interceptive orthodontics
   a) Rampant caries
   b) Fluorides
   c) Treatment of handicapped children

Endodontics

1. Diagnostic Procedures.
   - History
   - Clinical examination
   - Therapeutics
2. Clinical Classification of pulpal & periapical disease
   - Reversible pulpitis.
   - Irreversible pulpitis.
   - Acute apical periodontitis.
   - Acute apical abscess
   - Chronic apical periodontitis
3. Local Anesthesia
4. Instruments
5. Internal Morphology & Access opening
6. Pulpectomy – diagnostic & working length, cleaning filing, shaping
7. Bio-mechanical canal preparation etc.
8. Irrigants & intra canal medicaments.
10. Failures in endodontics
11. Surgical Endodontics & Re-treatment
12. Endo – perio lesions
13. Internal, external resoption
15. Dental emergency
16. Sterilization and asepsis
17. Traumatic injuries
   - Crown fracture
   - Root fracture
   - Displacement
   - Avulsion

**Crowns**
1. Terminology, Indications & Contra indications
2. Diagnosis & Treatment Planning
3. Basic Principles of preparation
5. Procelain Fused to metal crowns
   - Indications, Contraindications
   - Clinical assessment
   - Steps of preparation
6. Full Crowns
   - Indications, Contraindications
   - Clinical assessment
   - Steps of preparation
7. Fluid control & soft tissue management
8. Electrosurgery Indications, Contra indication & Technique
9. Post & Core crowns
10. Impressions & Impression materials
11. Clinical Procedures
12. Laboratory Technique for
13. Porcelain veneers
15. CAD-CAM
16. Occlusion
List of Operative Dentistry Books

3. Fundamentals of Operative Dentistry by Schwartz
5. Pathway of the Pulp by Cohen.
6. Paediatric Dentistry Infancy through Adolesurse by Pinkham.
8. Planning & making crowns and bridges by B.G.Smith.
9. Tillman’s principles of crowns and bridges.

C: ORAL AND MAXILLOFACIAL SURGERY

1. Dento-alveolar Surgery
   i) Sterlization
   ii) Local Anaesthesia
   iii) Exodontia
   iv) Impactation
   v) Elevators.
   vi) Pre-prosthetic Surgery
   vii) Surgical Aid to Orthodontics

2. Maxillary Antrum
   i) Diseases, Oro-antral fistula, foreign body.

3. Oro-facial Infections
   i) Specific and non-specific, spread, principles of management

4. Cyst
   i) Cyst of Soft and hard tissues of Oro-facial region and their management

5. Oncology
   i) Benign and malignant tumors of oral cavity, jaws and associated tissue: odontogenic tumors, squamous cell carcinomas, Lymphoma etc.
   ii) Protocol of investigation including biopsy, X-Ray’s, CT Scan, MRI, Bone Scan.
   iii) Principles of different treatment modalities including: Surgery, Radiotherapy, Chemotherapy Cryotherapy, lasers.
6. **Salivary Glands**  
i) Diseases of salivary glands including tumors, sialadenitis, sialolithiasis, means of investigation, management.

7. **Temporo-mandibular joint**  
i) Surgical anatomy, diseases and disorders including ankylosis.

8. **Fibro-osseous Lesion**  
i) Classification and management

9. **Giant Cell Lesions**  
i) Types and management

10. **Developmental anomalies**  
i) Introduction and management of cleft lip and palate.

11. **Maxillofacial injuries**  
i) Surgical anatomy, first aid, treatment, soft tissue injuries of head and neck, dento-alveolar injuries, fractures of mandible, fractures of mid-face, fractures of zygomatic complex, Naso-ethmoid fractures, orbital involvement, head injuries, blood and fluid replacement.

12. **Orthognathic Surgery**  
i) Introduction, evaluation and principles of treatment of facial disharmony including excess and deficiency of mandible and maxilla and craniofacial anomalies

13. **Management of medically compromised patients.**  
i) Outpatient and in-patient management. Especially emphasis on cardio-vascular, respiratory disorders, immuno-compromised, blood dyscrasias etc.

14. **Implantology**  
i) Introduction, indications, contra-indications, types, surgical techniques, after care.

**Books Recommended:**  
3. Killey’s Fractures of Middle third of the facial skeleton  
4. Killey’s Fracture of the Mandible  
5. Medical problems in Dentistry by Scully & Cawson  
6. Contemprary Oral & Maxillofacial Surgery by Patterson, Ellis & Tucker.
7. Oral and Maxillofacial Surgery by LASKIN
9. Local Anaesthesia in Dentistry G.L. Howe, Whitehead
10. Law and Ethics in Dentistry J. Sear
11. General Anaesthesia & Sedation in Dentistry by Hill, Morris
14. Oral Medicine and Pathology by Cawson and Odel
15. Oral & Maxillo Surgery by John Peddler

D: ORTHODONTICS

1. Introduction
   a. Definitions and Terminologies
   b. Types
      ii) Preventive
      iii) Interceptive
      iv) Corrective
   a. Aims and needs for Orthodontic Treatment

2. Growth and Development
   a. Basic concepts and definitions
   b. Variables affecting growth
   c. Prenatal and postnatal craniofacial growth
   b. Methods of studying growth
   c. Theories of growth
   d. Clinical application of growth and development in orthodontics
   e. TMJ Development

3. Occlusion
   a. Normal Occlusion
   b. Andrews Six Keys of Occlusion

4. Diagnostic Aids in Orthodontics
   a. History
   b. Clinical Evaluation
      ii) Extraoral examination
      iii) Intraoral examination
c. Radiographs
   iv) Periapical Xrays
   v) Orthopantomogram
   vi) Occlusal Xrays
   vii) Cephalometric Xray
      (1) Identifying relevant anatomical structures and landmarks
      (2) Tracing
      (3) Analyses

d. Tooth mass and size analyses
   viii) Cast analysis
   ix) Bolton Analysis
   x) Mixed Dentition analysis

f. Formulation of problem list

5. **Dental Radiology**

   a. Roentgen Anatomy of teeth, jaws and T.M.Joints
   b. Variations within normal limits, and abnormalities
   c. Different types of X-Rays machines
   d. Varieties of X-Ray Films: Extra Oral, Intra oral, Bite wing and Occlusal films
   e. Film taking and exposure procedures
   f. Film development techniques
   g. Indications and uses of dental radiology
   h. Interpretation of films
   i. Radiation Hazards

6. **Development of dentition and occlusion**

   a. Prenatal development of dentition
   c. Features of Primary dentition
   d. Mixed dentition period
   e. Permanent dentition period
   a. Dimensional changes in dental arch
   b. Variations in development including size, form, number and position of teeth
   c. Factors affecting development.

7. **Malocclusion**

   a. Definitions
   b. Classification

8. **Etiology of Malocclusion**

   a. Local factors
   b. Heredity
   c. Environmental Factors
9. Preventive and Interceptive Orthodontics  
   a. Diagnosis and Management of Habits  
   b. Space supervision  
   c. Space maintainers  
   d. Space regainers  
   e. Serial Extractions  

10. Bone metabolism  
    a. Normal Structure of Periodontal Ligament and Bone  
    b. The role of bone in eruption and stabilization  
    c. Effects of Orthodontic force  
    d. Factors affecting tooth movement  

11. Biomechanics  
    a. Concepts, Types and Control of Anchorage  
    b. Types of Wires and Alloys used in orthodontics  
    c. Ideal properties of Orthodontic wires and comparison of different alloys  

12. Retention and relapse  
    a. Concepts of retention and relapse  
    b. Occlusal Stability and factors related to retention  
    c. Strategies of management.  

13. Removable appliances  
    a. Functional appliances  
       i) Types  
       ii) Indications  
       iii) Construction  
    b. Introduction to various extraoral appliances for tooth movement  
    c. Expansion appliances  

14. Fixed appliances  
    a. Introduction and background of different systems  
    b. Indications and drawbacks  
    c. Components and its accessories  
    d. Edgewise and Straight Wire systems  
    e. Bonding and Banding materials  

15. Treatment Planning  
    a. Non-skeletal problems including Class I malocclusion, crowding, spacing, crossbite, open bite, deepbite  
    b. Skeletal problems  
    c. Class II  
       i) Division 1
ii) Division 2
d. Class III
e. Extractions in Orthodontics
f. Adjunctive treatment goals and principles

16. Surgical Orthodontics
a. Indications

17. Cleft Lip and Palate
a. Etiology & Clinical Features

18. Practical and Clinical Orthodontics

1. Wire bending exercises including
   a. Adams clasp
   b. Labial Bow
   c. Canine retractor
   d. Cantilever and Z spring
   e. Arch wire fabrication+

2. Making of removable appliances

3. A comprehensive orthodontic case presentation of a non-skeletal malocclusion.

4. History

5. Examination

6. Cast analysis

7. Ceph Analysis
   a) Diagnosis
   b) Suggested Treatment Plan
   c) Mixed dentition analysis

8. Fixed Appliance

Books Recommended

?? Contemporary Orthodontics, Profit
?? Introduction to Orthodontics, Luar Mittehels
?? Hand Book of Orthodontics, Robert-E-Moyers