SECOND PROFESSIONAL BDS
SYLLABUS & COURSES

General Pathology and Microbiology
Pharmacology and Dental Materia Medica
Community and Preventative Dentistry
Science of Dental Materials
Introduction to research methodology
Communication skills
Pre-clinical Dental Techniques
Operative dentistry
Prosthodontics
Periodontology
Orthodontics

GENERAL PATHOLOGY AND MICROBIOLOGY

Cell Injury and Cellular Adaptations
Introduction
Causes of cell injury
Ischemic and hypoxic injury
Free radicals and cell injury
Cell death (necrosis) types of necrosis; pathogenesis and clinical examples of each
Gangrene dry, wet and gas gangrene with clinical examples
Intracellular accumulations
Fatty change - pathogenesis and manifestations of fatty change in liver, heart and kidneys
Pigments endogenous and exogenous; disorders of pigmentation with special emphasis on
oral pigmentation
Cellular adaptations of growth and differentiation; hypertrophy, hyperplasia, atrophy,
hypoplasia, metaplasia and dysplasia
Calcification - metastatic and dystrophic
Hyaline change.

Inflammation
Introduction
Acute inflammation cellular and vascular events
Mononuclear phagocytes system
Chronic inflammation
Chronic granulomatous inflammation
Giant cells
Morphologic patterns in acute and chronic inflammation
Systemic effects of inflammation
Healing and Repair

Introduction
Regeneration
- Repair by connective tissue
- Healing of skin wounds
- Complications of wound healing
- Mechanisms involved in repair
- Factors affecting healing – local as well as systemic
- Repair in the CNS
- Healing in specialized tissues (Bone)
- Abnormalities of fracture healing.

Hemodynamics

Hyperemia and congestion
Edema
Shock – types with pathogenesis and stages
Burns
Thrombosis
Emboli
Infarction

Immunology

Introduction
Antigens
The cellular basis of immune reactions
Antibodies
Complement system
Cytokines
The Immune response
Transplantation and major histocompatibility antigen
Immune deficiency – congenital and acquired clinical significance of common immunodeficiencies
Hypersensitivity reactions; pathogenesis and clinical examples
Autoimmunity; pathogenesis and clinical examples
Amyloidosis; classification, pathogenesis and clinical examples
Vaccination

Genetic Basis of Disease

Introduction
Mutations
Mendelian disorders
Disorders of defects in structural proteins
Disorders of defects in receptor proteins
Disorders of defects in enzymes
Disorders with multifactorial inheritance
Cytogenetic disorders molecular diagnosis
Diagnosis of genetic disease
Neoplasia

Introduction
Classification of tumors
Nomenclature of tumors
Characteristics of benign and malignant tumors with emphasis on local invasion, anaplasia and metastasis
Differences between benign and malignant tumors
Differences between carcinomas and sarcomas
Biology of tumor growth
Carcinogenic agents and their cellular interactions
Chemical carcinogenesis
Radiation carcinogenesis
Viral oncogenesis
Oncogenes and cancer
Pathogenesis of cancer
Effect of malignant tumors on Host
Laboratory diagnosis of cancer
Oral cancer and precancer
Salivary gland tumors

Recommended Books
Pathological basis of disease 6th Edition Cortan, Kumar, Collins
Text book of Pathology by Walter & Israel

Microbiology

Cell types: prokaryocytes, eukaryocytes
Structure of bacteria
Culture media
Basic properties of micro-organisms and their mechanisms of pathogenicity
Common bacteria and their pathogenicity cocci, bacilli, spirochetes
The mode of action of chemotherapeutic agents
Mechanisms of resistance in bacteria
Hospital infections
Structure and properties of fungi and an overview of common fungal infections
Structure and properties of parasites and an overview of common parasitic infections
Structure and properties of protozoa and an overview of common protozoal infections
Structure and properties of viruses and an overview of common viral infections
Disinfection and sterilization.
The spread of infectious diseases in dentistry

Recommended Books
Essentials and Applications of Microbiology Larry Mckane Judy Kandel
Microbiology by Jawetz
PHARMACOLOGY AND DENTAL MATERIA MEDICA

This course presents the pharmacological properties of drugs and their proper use in dental therapeutics. It covers currently available drugs and the basic principles for evaluating new drugs as they become available. Special attention is given to those drugs that are relevant to the daily delivery of good dental care.

General Pharmacology
Definition of drug and drug nomenclature
Branches/divisions of pharmacy
Sources of drugs
Active principles of drug and pharmacy
Dosage forms and doses of drugs
Drug administration
Absorption of drugs and processes involved in drug absorption
Factors modify absorption of drugs
Transport of drugs across cell-membrane
Bio-availability its clinical significance and factors affecting bio-availability
Drugs reservoirs, distribution and redistribution of drugs, plasma protein blinding
Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
Excretion of drugs.
Mechanisms of drug action.
Dose response curves, structure activity relationship
Factors modifying action and doses of drugs
Pharmacokinetics, pharmaco-dynamics and receptors

Central Nervous system
Sedatives and hypnotics
Anti-epileptics
Central muscle relaxants
Anti-psychotics
Anxiolytics
CNS stimulants

Autonomic Nervous system
Parasympathomimetics
Parasympatholytics
Sympathomimetics
Sympatholytics
Ganglion blocking agents
Analgesics
Narcotic analgesics
Non-steroidal anti-inflammatory drugs

Anesthetics
Preanesthetic medication
General anesthetics
Local anesthetics

Chemotherapeutic Agents
Antibiotics
Antifungals
Anti-virals

Autooids
Cancer chemotherapeutic agents

Cardiovascular Drugs
Anti-anginal drugs
Cardiac glycosides
Anti-arrhythmic drugs
Anti-hypertensives
Thrombolytics
Anti-hyperlipidemics

Drugs acting on Blood
Drug treatment of iron deficiency anemia
Drug treatment of megaloblastic anemia
Anticoagulants
Coagulants

Drugs acting on Kidneys
Diuretics
Inhibitors of tubular transport of water

GIT Drugs
Emetics
Anti-emetics
Ant-acids
Purgatives
Laxatives
Dental Pharmacology:

Pharmacology and therapeutic of drugs employed in dental practice:
Antimicrobial agents used in dentistry
Analgesics used in dentistry
Antiseptics and disinfectants
Agents used for the prevention of dental caries
Agents used for maintenance of oral hygiene
Dentin desensitizing agent
Agents used in root canal therapy
Local anesthetics used in dentistry
Artificial salivary preparations
Hemostatic agents used in dentistry

(Dental pharmacology shall be taught at a dental institution and paper setter should select a question from dental pharmacology)

Practical Pharmacology:
Pharmacy
Measurements systems
Common drug preparations: lotion, liniment, ointment, solution, emulsion, powder, mixture suspension etc.

Recommended Books
Lippincott's pharmacology by Champ & Harvey
Basic Pharmacology by RW Foster
Pharmacology by L.S Jacob
Principles of pharmacology and therapeutics by Goodman & Gillman
Lectures note on drug for dental students by Wilkin & Davidson
Clinical pharmacology in dental practice by S.V Holroyd
Pharmacology by Dr. Maqsood Cheema
Clinical dental pharmacology Kamran Ali
COMMUNITY AND PREVENTIVE DENTISTRY

Role of the preventive dentistry in community health
Fluorides and water fluoridation, pure water, drinking water,
Nutrition, care of the teeth of the child during all stages of growth right from infancy.
Role of dental health education in preventive dentistry, elaborate discussion covering all aspects
Administration of dental Services, indices, epidemiological surveys clinical trials.

Primary health care approach:
Concepts of primary health, oral health in PHC principles, implications
Society and oral health:
Sociological perspective, social classes and society, family socialization and health, research methods in social sciences.
Health needs assessment: impairment, disability and handicap, development of socio-dental indicators, use of health needs assessment to plan oral health care.
Basic principles and methods of oral epidemiology:
Diagnostic testing, measures of disease frequency, variable and bias, type of studies.
Public health aspect of oral disease and disorders:
Dental caries, periodontal disease, oral cancer, dental trauma, developmental enamel defects, dentofacial irregularities.
Community based strategies for preventing dental caries:
Fluoride tooth paste, water fluoridation, fluoridated salts, dietary fluoride, fluoride mouth rinses, fluoride varnishes, pit and fissure sealant.
Trends in oral health:
The primary dentition, the permanent dentition, international comparison, root caries, changes associated with caries diagnosis.
Principles in community oral health:
Introduction, design of study and calculation of sample size determination, analysis, issues, common statistic methods.
Principles of health economies:
Type of economic evaluation, stages of economic analysis, assessing the quality of economic evaluation and limitations.
Principles of Oral Health Promotion:
Principles of oral health behavior and health education: conceptualization health, health behavior and health education and health psychology perspective, determination of health education and health behavior models, theory to practice.
Nutritional dietary guideline and food policy in oral health:
Effect of nutrition and diets and value of teeth in nutrition, guideline for nutrition, sugar consumption.
Fluoridation:
History, legal framework and decision making about fluoridation, the ethics of water fluoridation, fluoridation case studies.
Approaches in oral health promotion:
Planning, development skill required in oral health promotion, identification of sources.
Principles of organization and models of delivery of oral health care:
The oral health care delivery system, policies and objectives, organization and potential for changes evaluation of opportunities.

Recommended Books
Cynthia M. Pine, community oral health
John O. Forrest, preventive dentistry.
SCIENCE OF DENTAL MATERIALS

Introduction to dental materials:
- Physical properties of dental materials
- Thermal and electrical properties of dental materials
- Mechanical properties i.e. stress, strain, stress/strain relationship and other related properties.
- Biocompatibility

A comprehensive understanding of the composition, properties, setting reactions, manipulation, application and adverse effects of dental materials is required and the following materials are important in this regard:

- Impression materials – classification, types
- Gypsum product – model and Die materials
- Investment materials – casting and casting defects.
- Dental waxes
- Separating media used in dentistry
- Polymers:
  - Non metallic denture base materials
  - Tissue conditioning materials and soft liner.
- Amalgam – types, composition, mercury toxicity.
- Composites – development, types, acid etching
- Compomers
- Glass ionomers
- Dental cements – different classes and usage.
- Adhesives and dentin bonding materials
- Materials used in endodontics
- Metals and alloys – gold, Cobalt Chromium, Nicked – Chromium
- Steel and Stainless steel & other wire materials,
  - Ceramic materials – porcelain, metal fused porcelain, castable ceramics
  - Abrasive and polishing materials
  - Dental implant materials
  - Soldering, welding, generals principles.

Laboratory Assignments:
- Identification of all dental materials
- Manipulation of dental plasters
- Exercises in acrylic partial dentures
- Exercises in cast partial denture

Recommended Books
- Restorative dental materials by Robert. Craig.
- Phillip’s Skinner’s science of dental materials.
- Notes on dental materials by Shahina Nusrat.
- Clinical handling of dental materials by B.N Smith.
- Notes on dental materials by E.C.Combe.
- Dental chemistry by Cunnigham.
PRE-CLINICAL DENTAL TECHNIQUES

Introduction to:
- Operative Dentistry
- Prosthetic Dentistry
- Orthodontics
- Maxillofacial Appliances
- Periodontology

Operative Techniques
- Introduction to dental operatory & armamentarium
- Introduction to instruments used in cavity preparation
- Principles of cavity preparation
- Cavity preparation on plaster models/phantom head using different materials
- Cavity preparation and filling on extracted teeth using different materials
- Methods of sterilization
- Rubber dam, components, application
- Use of matrix bands, matrix band retainers, and wedges
- Anterior crowns: porcelain fused to metal
- Posterior crowns: metal, porcelain fused to metal
- Bridges: metal, porcelain fused to metal
- Repair work of crown & bridges

Prosthetic Techniques
- Introduction of impression and denture materials
- Laboratory procedures
- Plaster slab, wire bending exercises, manipulation of dental waxes, denture exercise (partial), anterior partial denture, posterior partial denture.
- Acrylic removable partial denture
- Cast partial denture
- Complete denture
- Soldering and welding techniques

Maxillofacial Appliances
- Bite raising appliances
- Occlusal splints

Orthodontics Laboratory Procedures
- Properties of wires used in Orthodontics.
- Principles of wire bending including wire bending on wooden blocks.
- Removable appliance: interceptive, corrective, retainers appliances.

Periodontology
- Introduction of instruments
- Prophylaxis exercises on phantom head
INTRODUCTION TO RESEARCH METHODOLOGY

Introduction to philosophy of sciences and its implications.
Scientific enquiry, hypothesis, theory & law.
Introduction to Bio-statistics.
Myth of scientific methods.
Origin and categories of ideas in research.
Varieties of models.
Introduction to medical / dental writing.
Introduction to basic terminologies of research.
Illustrating presentations and publications.

COMMUNICATION SKILLS

Introduction and principles of communication skills, factors involved in communication, presentation skills, principles of presentation. Introduction of visual aids. Counseling, principles of counseling, communication with patients.