Study Guide

THIRD PROFESSIONAL MBBS

STUDY GUIDE

Pathology

THIRD PROFESSIONAL MBBS

Pak Red Crescent Medical & Dental College

48-KM Multan Road, Lahore-Pakistan.

TITLE	**GENERAL PATHOLOGY**
INTRODUCTION	**Pathology** is the study (logos) of disease (pathos). More specifically, it is devoted to the study of the structural, biochemical, and functional changes in cells, tissues, and organs that underlie disease. The four aspects of a disease process that form the core of pathology are its cause (etiology), the mechanisms of its development (pathogenesis), the biochemical and structural alterations induced in the cells and organs of the body (molecular and morphologic changes), and the functional consequences of these changes (clinical manifestations). Subject of Pathology is taught as General Pathology and Microbiology. General Pathology is concerned with the reactions of cells and tissues to abnormal stimuli and to inherited defects, which are the main causes of disease. Microbiology includes General Bacteriology, Special Bacteriology, Virology, Mycology and Parasitology.
Target Students	3rd Year MBBS
Course to be studied in General Pathology	• Cellular Responses to Stress and Toxic Insults: Adaptation, Injury, and Death • Acute and Chronic Inflammation • Tissue Renewal, Regeneration, and Repair • Hemodynamic Disorders, Thromboembolic Disease, and Shock • Genetic Disorders • Diseases of the Immune System • Neoplasia
Assessment	By Professional exams. MCQs. SEQs. VIVA and Practical exam
Title	**1 BASIC BACTERIOLOGY**
Duration	1.5 week
Learning Outcomes	1. Students must have the knowledge that how cells adapt to stress. 2. They should know the causes, mechanisms and consequences of the various forms of acute cell damage. 3. Students must be aware of reversible cell injury, cell death and other processes that affect cells and tissues, including intracellular accumulations and pathologic calcification.

Learning Objectives	**At the end of the course student must be able to:** • To Compared and differentiate Bacteria with Other Microorganisms • To Describe the Structure of Bacterial Cells • To Describe the Phases of Bacterial Growth, Fermentation of sugars & Iron Metabolism • To Determine the Bacterial Genetics • To Classify of Medically Important Bacteria • To describe the Normal Flora • To describe the principal of Pathogenesis, Stages and Determinants of bacterial Pathogenesis • Describe the Principles of Host Defenses mechanism • Describe all the Methods of Laboratory Diagnosis in Bacterial Diseases • Classify Antimicrobial Drugs and describe their Mechanism of Action • Describe mechanism of Antimicrobial Drug Resistance and Antibiotic Senstivity Testing , use of antibiotics in combination • Describe Bacterial Vaccines with their principles • Define, Enumerate and Describe the methods of Sterilization & Disinfection
Title	**2. CLINICAL BACTERIOLOGY**
Duration	2 Weeks
Learning Outcomes	1. Must have a knowledge of inflammation which may contribute to a variety of diseases that are not thought to be primarily due to abnormal host responses. 2. Appraise the sequence of events and mediators of acute inflammation, and then its morphologic patterns. 3. Mast know the causes and major features of chronic inflammation with examples.
Learning Objectives	**At the end of the course student must be able to:** • Give the Overview of the Major Pathogens & Introduction to Anaerobic Bacteria • Enumerate & Describe Gram-Positive Cocci • Enumerate & Describe Gram-Negative Cocci • Enumerate & Describe Gram-Positive Rods • Enumerate & Describe Gram-Negative Rods Related to the Enteric Tract • Enumerate & Describe Gram-Negative Rods Related to the Respiratory Tract • Enumerate & Describe Gram-Negative Rods Related to Animal Sources (Zoonotic Organisms) • Enumerate & Describe Mycobacteria • Enumerate & Describe Actinomycetes

	• Describe Mycoplasmas • Enumerate & Describe Spirochetes • Enumerate & Describe Chlamydiae • Enumerate & Describe Rickettsiae • Enumerate & Describe Minor Bacterial Pathogens
Title	**3. BASIC VIROLOGY**
Duration	0.5 week
Learning Outcomes	1. Injury to cells and tissues sets in motion a series of events that contain the damage and initiate the healing process. This process can be broadly separated into regeneration and repair. 2. Students must have knowledge about the process of healing and repair and various factors involved in this process. 3. Student should know the factors that can affect wound healing and various complications that can occur as a result of poor healing.
Learning Objectives	**At the end of the course student must be able to:** • Determine the Structure Viruses • Describe the viral Growth & Replication • Determine the Viral Genetics & Gene Therapy • Classify of Medically Important Viruses • Describe the Pathogenesis of Viral Disease • Determine Host Defenses Mechanism • Describe Laboratory Diagnosis in Viral Diseases • Describe Antiviral Drugs & their Mechanism of Resistance • Determine Viral Vaccines
Course Title	**4.CLINICAL VIROLOGY**
Duration	2 weeks
Outcomes	1. Student must have knowledge of normal mechanism of fluid balance and hemostasis in the human body. 2. Know the pathogenesis of edema, congestion, thrombosis, embolism, infarction and shock. 3. Appraise the morphology of different organs in hemodynamic disorders. 4. Have a knowledge of the clinical presentation in different hemodynamic disorders.

Objectives	**At the end of the course, student must be able to:** • Enumerate & Describe DNA Enveloped Viruses • Enumerate & Describe DNA Non-enveloped Viruses • Enumerate & Describe RNA Enveloped Viruses • Enumerate & Describe RNA Non-enveloped Viruses • Enumerate & Describe Hepatitis Viruses • Enumerate & Describe Arboviruses • Describe Tumor Viruses • Slow Viruses & Prions • Enumerate & Describe Minor Viral Pathogens
Title	**5. MYCOLOGY**
Duration	1 week
Learning Outcomes	1. Students must know that genetic disorders are far more common than is widely appreciated. 2. Students must be able to understand the basis of genetic mutations and three major categories of genetic disorders: a. Disorders related to mutant genes of large effect. b. Diseases with multifactorial inheritance. c. Chromosomal disorders. 3. Have knowledge about the prenatal and postnatal diagnosis of genetic disorders and their molecular analysis.
Learning Objectives	**At the end of the course student must be able to:** • Determine the Structure, Growth, Pathogenesis, Fungal Toxins & Allergies, Laboratory Diagnosis, Antifungal Therapy • Enumerate & Describe Cutaneous & Subcutaneous Mycoses • Enumerate & Describe Systemic Mycoses • Enumerate & Describe Opportunistic Mycoses • Enumerate & Describe Intestinal & Urogenital • Enumerate & Describe Blood & Tissue Protozoa • Enumerate & Describe Cestodes • Enumerate & Describe Trematodes • Enumerate & Describe Nematodes
Course Title	**6. IMMUNOLOGY**
Duration	3 weeks
Learning Outcomes	• Students must have knowledge that the immune system is vital for survival, because our environment is teeming with potentially deadly microbes and the immune system protects us from infectious pathogens. • Know the diseases caused by immune deficiency, immunologic hyperreactivity and autoimmunity. • Know about amyloidosis.

Learning Objectives	**At the end of the course student must be able to understand:** • Define immunity, Describe the Function of Immunity & Determine the immune response • Determine the Cellular Basis of the Immune Response • Determine the Antibodies • Determine the Humoral Immunity • Determine Cell-Mediated Immunity • Discuss the Major Histocompatibility Complex & Transplantation • Describe Complement system • Determine Antigen–Antibody Reactions in the Laboratory • Describe Hypersensitivity (Allergy) Reactions • Determine the Tolerance & Autoimmune Disease • Determine the Tumor Immunity • Describe the Immunodeficiency, Congenital Immunodeficiencies & Acquired Immunodeficiencies
Course Title	**7. Precticals**
Duration	3 weeks
Learning Outcomes	1. Student must recall definitions of atrophy and hypertrophy, hyperplasia, metaplasia, dysplasia, neoplasia and anaplasia. 2. Development of a sound understanding about basic nomenclature of benign and malignant neoplasms including differences in their characteristics. 3. Understanding of molecular basics of neoplasia and biology of tumor progression with mechanism of invasion and metastasis. 4. Emphasis on clinical aspects of neoplasia, its diagnosis, importance of prognostic factors especially grading and staging.
Learning Objectives	**At the end of the course student must be able to:** • Define the parts of Microscope • Determine the steps of Gram Staining • Determine the steps of Ziehl Neelsen Staining • Determine the Stool Complete Examination • Determine the Urine Complete Examination • Discuss the methods of Sterilization & Disinfection • Determine and Describe the Culture Medias • Determine and Describe the Biochemical Reactions
TITLE	**GENERAL PATHOLOGY**
INTRODUCTION	Microbiology is the scientific discipline that examines microbes and microbial diseases. Microbes, small organisms that require microscopic tools for visualization, encompass bacteria, viruses, fungi and parasites. The discoveries of microbes and the realization that they represent

	causative agents of human, animal and plant diseases have transformed biological sciences and established the very broad foundations of molecular medicine. Antimicrobial therapies, vaccines, hygiene and antiseptic techniques are intellectual achievements that represent foundations for the current medical revolution. Apart from the contributions of Microbiology to human health, the foundations of modern molecular biology and genetics rest on research carried out with microbes. Basic research in Microbiology underwrites efforts for eradication of important pathogens, prevention of human diseases, development of gene therapies and the evolution of new strategies for personalized medicine. A 3rd year MBBS student studies epidemiology, general characteristics, modes of transmission, mechanisms of infection and growth, clinical signs and symptoms of diseases, methods for laboratory diagnosis, treatment options and preventive measures for different microscope.
Target Students	3rd year MBBS
Learning Objectives	• Determine the Cell as a Unit of Health and Disease • Describe the process of Cell Injury, Cell Death, and Adaptations, Intracellular Accumulations, Pathologic, Calcification & Cellular Aging • Define Inflammation, Describe acute and chronic inflammation. Discuss Process of Healing & Repair • Define & Describe Hemodynamic Disorders, Thromboembolism, and Shock • Determine the Genetic Disorders
Title	**PRACTICLES**
Duration	03 Weeks
Learning Outcomes	1. Identify diversity of microorganisms, bacterial cell structure and function, microbial growth and metabolism, normal flora, modes of transmission and pathogenesis and ways to control bacteria by antibacterial agents and vaccines. 2. Explain the basic genetic systems of bacteria and plasmids. 3. Understand the rationale for sterilization and disinfection and predict methods used for patient-care items.

	4. Demonstrate practical skills in fundamental microbiological techniques like microscopy, staining and biochemical tests.
Learning Objectives	**At the end of the course student must be able to:** • Determine Acute & Chronic Inflammation • Determine Chronic Granulomatous inflammation • Determine Necrosis • Determine Pathological Calcification • Determine Pigmentation • Determine Fatty Change • Determine Haemodynamics • Determine Chronic venous Congestion • Determine Infarction • Determine Thrombosis • Determine Lipoma • Determine Leiomyoma • Determine Haemangioma • Determine Malignant Tumors • Determine Squamous Cell Carcinoma • Determine Basal Cell Carcinoma

STUDY GUIDE

PHARMACOLOGY

THIRD PROFESSIONAL MBBS

Pak Red Crescent Medical & Dental College

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TITLE	
INTRODUCTION	Pharmacology is a multidisciplinary science that deals with all aspects of drugs and their interactions with living organisms. Thus, pharmacologists study the physical and chemical properties of drugs, their biochemical and physiological effects, mechanisms of action, pharmacokinetics, and therapeutic and other uses. Clinical pharmacology is the science of drugs in humans and their optimal clinical use in patients. It is underpinned by the basic science of pharmacology, with an added focus on the application of pharmacological principles and quantitative methods in the real human patient's population. It has a broad scope, from the discovery of new target molecules to the effects of drug usage in whole populations. It also includes application of pharmacological principals including pharmacokinetics and pharmacodynamics.
Target Students	3RD year MBBS
Course to be studied in 3rd year MBBS	General Pharmacology Special Pharmacology
Course Title	**GENERAL PHARMACOLOGY**
Duration	36 weeks
Outcomes	1. Outline the therapeutic uses (indications) and adverse effects of drugs acting on cardiovascular diseases. 2. Describe the principles of drug adverse effects and drug toxicity and their effects on the drug efficacy, duration of drug action. 3. Recognize the mechanisms of action of the pharmacological responses produced by the drugs. 4. Explain factors influencing the indications, dosages, efficacies, responses and compliance of drugs and identify interventions for managing side effects and adverse events that may occur. 5. Analyze drug-drug interactions, contraindications and adverse effects pertaining to medication safety issues, and be able to cite examples that are clinically relevant. 6. To prescribe drugs in special situations such as pregnancy, lactation, infancy

	and old age. 7. Antidotes and drugs used in common poisoning. 8. To calculate the dose of drugs according to age, body surface area, weight and associated diseases such as heart failure, renal and hepatic impairment. 9. To determine the rate of infusion of vital drugs such as dopamine, dobutamine, oxytocin and intravenous fluids.
ASSESSMENT	Assessment is done by Professional exams, MCQs, SEQs, Viva exams
Objectives	: students will be able to understand, discuss an explain,pharmacological,concepts,pharmacokinetics,pharmacodynamics,routes of drug administration,factors that affect drug absorption, drug distribution and drug excretion, difference between an agonist and antagonist, drug bioavailability, concept of receptors, dose-response curve **AUTONOMIC PHARMACOLOGY** TO be able to understand organs that are innervated by the sympathetic and parasympathetic systems and the functional responses of the organs to activation of either system along with drugs acting on autonomic nervous system.Use of neuromuscular relaxants **CNS** Student to be able to understand Sedative-Hypnotics Antiepileptics General Anaesthetics Local Anaesthetics Drugs For Movement Disorders Anti Parkinsonism Drugs Alcohol Drugs For Migraine Anti-psychotics Anxiolytics Anti-Depressants **Drugs Acting on Gastrointestinal Tract** Student be able to understand the use of Anti Emetics, Drugs affecting motility of GIT ,Ulcer Healing drugs ,Purgatives/Laxatives **Cardiovascular Drugs** To make students understand use of Anti-arrhythmic Drugs,Drugs used in cardiac failure,Anti-hypertensive Drugs,Anti-anginal Drugs.Thrombolytics/Anti-coagulants/Anti-platelets Anti-hyperlipidemic Drugs **Diuretics**

Make the student learn clinical use of carbonic anhydrase Inhibitors, osmotic diuretics,loop diuretics, thiazides, potassium-sparing diuretics,ADH antagonists.

ANALGESICS

Make the student learn use of NSAIDs and opiod analgesics their MOA side effects in patients and interactions

Drugs Acting on Respiratory System

Students to be able to use in patients after learning effects and side effects of

Drugs used in treatment of Bronchial Asthma

b. Expectorants

c. Mucolytics

d. Anti-tussives

Drugs Acting on Endocrine System

Students be able to know about

Pituitary-Hypothalamic Drugs Adrenocorticoids Sex Hormones/Hormonal contraception Thyroid/ Parathyroid Drugs Pancreatic Hormones and Oral Antidiabetic Agents Drugs used in infertility

Drugs Acting on Uterus

Student to know uses and side effects of of Ergometrine, Terbutaline, Dinoprostone, Carboprost, Ritodrine, Oxytocin.

Antimicrobial Drugs

Students to be well versed with uses and disadvantages of

Sulfonamides Penicillins

Cephalosporins Aminoglycosides,Tetracyclines

Macrolides ,Quinolones

Anti-tuberculous drugs

Antileprotic drugs ,Anti-fungal drugs ,Anti-viral drugs

Anti-protozoal drugs ,Anti-malarial drugs ,Anti-amoebic drugs ,Urinary tract anti-septics ,Anti cancer drugs

	Immunosuppressive agents and Antihelmintics
Drugs acting on autonomic nervous system	**1. General considerations**- Differences between somatic and autonomic nervous system, sympathetic and parasympathetic system, general outlay of autonomic nervous system, steps in neurohumoral transmission, co-transmission**.** **2. Cholinergic system**- Cholinergic transmission, characteristics of muscarinic receptors, nicotinic receptors and cholinergic responses mediated. **3. Cholinergic drugs***- Therapeutic Classification, cholinergic agonists – cholinomimetic alkaloids, anticholinesterase (reversible and irreversible), pharmacological actions and uses. Pharmacotherapy of glaucoma and myasthenia gravis and anticholinesterase (organophosphorous compounds) poisoning. **4. Anticholinergic drugs***- Therapeutic classification, Atropine (prototype), Atropine like drugs (mydriatics, antisecretory-antispasmodics, antiparkinsonian), atropine poisoning **5. Drugs acting on autonomic ganglia**-clinically important ganglionic stimulants and ganglion blockers. **6. Adrenergic transmission and its modification by drugs.** Adrenergic receptors & adrenergic responses mediated. Adrenergic drugs*- Therapeutic classification, Catecholamines: adrenaline (epinephrine)*, nor-adrenaline (nor-epinephrine), dopamine and Non-catecholamines: β agonists, pressor agents, cardiac stimulants, bronchodilators, nasal decongestants, CNS stimulants, anorectics, uterine relaxants and vasodilators. **7. Anti-adrenergic drugs*** - classification, α blockers* - (Phenoxybenzamine / Prazosin as prototypes) β blockers* - (Propranolol* as prototype) α & β blockers - (Labetalol, carvedilol) *** Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Drugs acting on cardiovascular system	1. **Drug therapy of arrhythmias** – Classification*, preparations, classes, mechanism of action, indications. Torsades de pointes. And re-entry arrhythmias. Wolf Parkinson White (WPW) syndrome. 2. **Drugs affecting renin angiotensin system**- angiotensin converting enzyme inhibitors - captopril (prototype)*, angiotensin receptor antagonist losartan (prototype)* 3. **Drugs therapy of heart failure** – classification, Cardiac glycosides*, digitalis toxicity. Newer inotropic agents, role of vasodilators, beta blockers*, ACE inhibitors and diuretics in heart failure. 4. **Lipid lowering drugs for the treatment of hypercholesterolemia** –

	Classification, Mechanism of action, pharmacological actions, adverse effects, and contraindications drug interactions and uses. 5. **Drug therapy of Hypertension** – Classification*, (angiotensin converting enzyme inhibitors, angiotensin receptor antagonist, calcium channel blockers, diuretics, beta blockers, alpha blockers, vasodilators, central sympatholytics**). Management of hypertensive emergencies 6. **Drugs for myocardial ischaemia** – Classification, rationale of combination therapy in angina pectoris, role of antiplatelet drugs. Drug treatment of myocardial infarction. **7. Drugs used in peripheral vascular diseases**. ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.** ** **Rationale of use of drugs in a specific condition**
Drugs acting on Water, Electrolyte and renal System	**1. Water and electrolytes** – transport, imbalance, effects and management. **2. Nutritional supplementation** – Enteral and Parenteral therapy. **3. Diuretics** – Classification*, role of diuretics in acute renal failure and forced alkaline diuresis, site of action pattern of electrolye excretion, short term and long term side effects and therapeutic uses. **4. Antidiuretics** - Vasopressin (antidiureitic hormone) and vasopressin analogues ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Autocoids and Related Drugs	1. Definition, the various autacoids, their physiological and pathological actions and effects. 2. Histamine actions, releasers, anaphylaxis, clinical significance of histamine, betahistine. Conventional H_1 antihistamines* - classification, Second generation H_1 antihistamines*, Drug therapy of vertigo and motion sickness. 3. 5HT (serotonin) – 5HT agonists and antagonists (pharmacological actions, preparations and therapeutic uses). Ergot alkaloids - preparations and uses and Pharmacotherapy of migraine. 4. Bradykinin and their antagonists. 5. Angiotensin and ACE inhibitors* and angiotensin receptor blockers. 6. Lipid derived autacoids – eicosanoids (prostaglandins*, leukotrienes) and platelet activating factor (PAF) antagonists – clinical significance, preparations and uses. 7. Non-steroidal anti – inflammatory drugs –classification, Aspirin* (prototype), non-selective and selective cycloxygenase inhibitors*. Drugs used for rheumatoid arthritis and gout. ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic**

	uses/indications.
Drugs acting on Respiration system	1. **Drugs for cough** – Classification * Principles of choosing appropriate cough remedies, expectorants, mucolytics, antitussives, preparations and uses. 2. **Drugs for bronchial asthma** – Classification*, Principles governing the selection of drugs in bronchial asthma, inhaled asthma medication, precautions to be taken during their use. Management of acute attacks, prophylaxis and status asthmaticus. ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Drugs Acting on Central Nervous System	Physiological role of neuro transmitters (excitatory, inhibitory), principles of neuronal regulation and basis of drug action in the CNS. 1. **General anaesthetics***– Definition, mechanism of action, stages of anesthesia, classification, properties of inhalational anesthetics, advantages and disadvantages. Intravenous anaesthetics* – (inducing agents, slower acting drugs) Dissociative anesthesia (ketamine), neuroleptanalgesia and neuroleptanaesthesia. Preanaesthetic medication. 2. **Aliphatic alcohol** – Pharmacological actions, interactions, toxicity, clinical uses. Disulfiram, treatment of alcoholism and treatment of methyl alcohol poisoning. 3. **Sedative - hypnotics**. Definition, classification – barbiturates*, benzodiazepines*, Non-Benzodiazepine hypnotics*, benzodiazepine antagonist. Treatment of barbiturates poisoning. 4. **Antiepileptic drugs** – Classification of drugs* Pharmacotherapy of epilepsy, Management of status epilepticus. 5. **Drugs for CNS degenerative disorders**. 6. **Drugs for Parkinsonism** – classification of drugs*, pharmacotherapy of alzheimer's disease, huntington's disease, motor neuron disease. 7. **Antipsychotic drugs** – Classification* (chlorpromazine* prototype) Atypical Antipsychotics* Pharmacotherapy of Schizophrenia. 8. **Antianxiety drugs** – Classification* Sedating, non-sedating antianxiety drugs, Pharmacotherapy of anxiety. 9. **Antidepressant drugs** – Classification* MAO inhibitors*, Tricyclic antidepressants (Imipramine* prototype) Selective serotonin reuptake inhibitors (SSRI's), Hetrocyclic antidepressants, Drugs for mania Lithium* and others, Drugs for ADHD. 10. **Opioid Analgesics** – Classification* (Morphine* prototype) Management of acute morphine poisoning, other opioids, partial agonists, agonist – Antagonists, Pure antagonists, Management of opium dependence 11. **Drug Dependence and drug abuse**. 12. **CNS stimulants** - Classification*, Cognition enhancers (Nootropics) – uses with examples. 13. **Therapeutic Gases** – Oxygen, Nitrous oxide, carbon dioxide and their use. 14. **Skeleton Muscle Relaxants**

	• Peripheral neuromuscular blockers *- classification* • Centrally acting muscle relaxants. • Directly acting muscle relaxants. **15. Local Anesthetics** • Classification, mechanism and actions of local anaesthetics, synergism with vasopressors, adverse effects, indications, contraindications and complications of different routes of administration of local anesthetics ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Drugs acting on the blood and blood forming organs	**1. Hematinics** (Iron, vitamin B**12** & folic acid)*, minerals (trace elements) and vitamins and clinical significance, preparations, uses, treatment of iron deficiency anemia, disadvantages of shotgun antianemic preparations, megaloblastic anemia, iron poisoning. Erythropoietin* and other growth factors. **2. Coagulants –** Vitamin K*, fibrinogen **3. Anticoagulants** – Classification* thrombolytics*, antifibrinolytics and sclerosing agents **4. Drugs used in the management of shock** ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Hormones and Hormone Antagonist	**1. Hormones** – Definition, different types and their mechanism of action. **2. Anterior pituitary hormones** – Regulation of secretion, preparations and uses. Importance of drug induced alterations in prolactin levels. **3. Thyroid hormones** – Levo thyroxine*, antithyroid drugs*- classification, preparations and uses. **4. Antidiabetic drugs** – Insulins – Actions conventional preparations, highly purified preparations, reactions, uses, newer insulin delivery devices. Oral hypoglycemic drugs*- classification, management of hypoglycemia, diabetic ketoacidosis. **5. Glucagon** – actions, uses. **6. Corticosteroids** – regulation of secretion, preparations*, Glucocorticoid antagonists. **7. Gonadal hormones** – Androgens*, anabolic steroids – preparations, side effects, uses, antiantrogens – side effects, uses. Estrogens – preparations*, hormonal replacement therapy, antiestrogens*, selective estrogen receptor modulators. Progestins – Preparations*, antiprogestins – (Mifepristone) hormonal contraceptives – types of methods, (oral, injectable), preparations*, male contraceptive. **8. Drugs acting on uterus** – uterine stimulants- classification, (Oxytocin*, Ergometrine*, Prostaglandins). Uterine relaxants – Preparations*. **9. Drugs affecting calcium balance**: Calcium parathyroid hormone, calcitonin, Vitamin D, preparations, uses. Bisphosphonates – actions, uses,

	Pharmacotherapy of osteoporosis ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Drugs acting on gastrointestinal disorders	**Drugs used for the control of gastric acidity, digestants, antiflatulents**. Drug treatment of peptic ulcer*- classification (H2 blockers*, proton pump inhibitors*, prostaglandin analogs, antacids, ulcer protectives). Treatment of helicobactor pylori infection. **Emetics, antiemetics***, prokinetic drugs – Classification*, mechanism of action, actions, adverse drug reaction, uses & drug interactions. Treatment of gastroesophageal reflux disease. **Drug treatment of gallstones.** **Agents used for constipation** – classification, laxatives*, purgatives* and hazards of purgatives. **Drugs used in diarrhoea** – indications for the use of antimotility agents*, antimicrobial agents and antisecretory agents and oral rehydration powder. Drugs used in therapy of inflammatory bowel disorders.* ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**
Chemotherapy	**Microbial Diseases** 1. **Principles of chemotherapy**, antibiotics – definition, sources, chemical nature, mechanism of action, (spectrum of activity, type of action, problems. Toxicity, hypersensitivity reactions, drugs resistance – types, mechanisms, prevention of super infection. Factors determining the choice of an antibiotic, minimum inhibitory concentration (MIC), post antibiotic effect (PAE), minimum bactericidal concentration (MBC). Combinations of Antimicrobials –Advantages, disadvantages, indications. Prophylactic use of Antimicrobials – indications with examples, causes for the failure of chemotherapy. 2. **Antimetabolites: Sulfonamides*** - preparations, cotrimoxazole* 3. **Nucleac acid synthesis inhibitors: Quinolones*** – Generational classification. Drugs used in typhoid fever. 4. **Cell wall synthesis inhibitors: Beta lactum antibiotics**: classification, Penicillins* (including semisynthetic, Acid resistant, penicillinase resistant, Extented spectrum), Beta lactamase inhibitors, Cephalosporins*, monobactams*, carbapenems*. 5. **Tetracyclines* and chloramphenicol*.**

	6. **Aminoglycosides*-** classification. 7. **Macrolide* and miscellaneous antibiotics** –classification, newer macrolides*, clindamycin, Lincomycin, vancomycin, Teicoplanin, Linezolid, Fusidic acid, Polymyxin B, Bacitracin, Tyrothricin – Spectrum and uses. 8. **Pharmacotherapy of urinary tract infection, urinary antiseptics,** 9. **Pharmacotherapy of sexually transmitted diseases.** 10. **Antitubercular drugs*** –classification, first line drugs*, second line drugs, newer drugs, antitubercular drug regimens, management of Adverse Drug Reaction with antitubercular drugs, chemoprophylaxis, tuberculosis in AIDS, pregnancy, breast feeding, drugs used in Atypical Mycobacteriae. 11. **Antileprotic drugs*** - Classification, Pharmacotherapy, drug regimen (MDT), Alternative regimens, management of lepra reactions, newer drugs. 12. **Antifungal drugs**: Classification*, local, systemic mycoses management. 13. **Antiviral drugs**: classification, Anti–herpes virus drugs*, Anti–retrovirus drugs*, WHO guidelines for the treatment of HIV infection, anti-influenza virus drugs*, nonselective antiviral drugs*. 14. **Anti-malarial drugs***: Classification, different forms of anti-malarial therapy, management of cerebral malaria, radical cure, malaria prophylaxis, resistant malaria. 15. **Antiamoebic drugs**: Classification*, drugs for giardiasis. Drugs for trichomoniasis, drugs for leishmaniasis (kalazar). 16. **Anthelmintics**: classification*, choice of drugs for various worm infestation. 17. **Antifilarial drugs*** 18. **Neoplastic Diseases** Classification according to cell cycle, general toxicity, general principles in chemotherapy of malignancy, cell cycle, toxicity amelioration, mechanism of development of resistance to antineoplastics ***Spectrum of activity, mechanism of action, Pharmacokinetics, Preparations, adverse effects, interactions, precautions, uses.**
Drugs Used for Immunomodulation	1. **The immune response** General principles of immunosuppressive therapy, immunosuppressants*, Immunostimulants – BCG, Peptides, Immunoglobulins, Cytokines (Interferon -α, Interleukin-2, Levamisole). 2. **Immune mechanism and drug allergy.** ***Mechanism of action, pharmacological actions, adverse drug reactions, precautions, contraindications, preparations, drug interactions, therapeutic uses/indications.**

STUDY GUIDE

FORENSIC MEDICINE

THIRD PROFESSIONAL MBBS

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Title	
INTRODUCTION	Different countries have different legal systems, which broadly divide into two areas – criminal and civil. The systems have generally evolved over many years or centuries and are influenced by a wide variety of factors including culture, religion and politics. Majority of the doctors working in the primary, secondary and specialized healthcare have to do medicolegal work along with postmortems. The diversity of medicolegal work ranges from doctors working at the level of the BHU to the emergency departments of tertiary care hospitals. The prevailing law and order situation of the country puts an additional demand for training the medical graduates in forensic medicine.
Target Students	3rd Year MBBS
Duration	187 hours of teaching in Third Year MBBS
Course Title	**Law And Legal Procedures**
Duration	15 hours
Outcomes	Establishment of brain death scientifically and calculating time since death depending upon changes after death.
Objectives:	Define law Name Legal System of the Country Enumerate different types of Law Describe criminal law. What do you know about law of substantial crime Memorize witness, evidence & oath. Rationalize testimony and testamentary capacity? Tabulate difference of Dying Declaration & Dying Deposition Observe the basis of Civil & Criminal Law Identify an Ordinance and an Act

	Classify different level of courts Record medical evidence. Examination of Witness in court of law
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Medical Jurisprudence**
Duration	17 hours
Outcomes	Establishment the cause of death with the help of scientific changes after death and chemical analysis to assist the justice in a court of law.
Objectives:	Summarize medical aspects of law and legal aspects of medicine Demonstrate consent and its types Infer how privileged communication differ from consent Distinguish between medical malpractice and therapeutic misadventure Associate professional misconduct and medical negligence Correlate professional secrecy and medical treatment Discuss medical documentation – Reporting and Certification Contrast Medical ethics and Unethical Practices Generalize PMC Ordinance 2019 Paraphrase legal aspects of Medical Practice

Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Forensic Psychiatry & Crimnal Responsibility**
Duration	17 hours
Outcomes	Establishment of individuality of a person, accused and victim.
Objectives:	Discuss medical documentation – Reporting and Certification Contrast Medical ethics and Unethical Practices Generalize PMC Ordinance 2019 Paraphrase legal aspects of Medical Practice Define forensic psychiatry Emphasize the scope and limitations of forensic psychiatry State insanity and Legal aspects of insanity Reproduce what is meant by medical treatment of mentally ill person Summarize McNaughton's Rule and Insanity Predict how the plea of insanity works Relate how lunatic asylum act covers the medical need of lunatics
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning

Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Personal Identity**
Rationale	Medical men have to appear in Court of law to give evidence in matters related with medicolegal cases. Therefore it will be helpful if doctors are acquainted with legal procedure, legal terms and court procedures.
Duration	24 hours
Outcomes	To understand legal responsibilities of doctor while practicing medicine.
Objectives:	Define Personal Identification Classify the parameters of Identification Compare partial identification with complete identification Enlist methods of Identification in detail Discuss Locard's Exchange Principal and Trace Evidence Explain Dactylography and Anthropometry Enumerate the components of identification Interpret Forensic Photography, Forensic Radiology, Blood Grouping and Examination of DNA Recognize Disaster Victim Identification (DVI) System Describe salient Features of Footprints, Scars, Tattoos and Poroscopy
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**

Course Title	**Trauma**
Rationale	One of the most important aspects of forensic medicine – both clinical and pathological – is the assessment, classification and documentation of injury. Any healthcare professional should be able to appropriately document injury in a way that can be understood and interpreted by others. Most non-forensic healthcare professionals will not be trained in the interpretation of injuries and wound causation, but accurate documentation can greatly assist the legal process at a later stage. Offences against individuals of a physical nature that may result in criminal prosecutions have a great variety of types and origins, not all of which may cause visible evidence (e.g. poisoning, infection).The role of the forensic pathologist and forensic physician is to ensure that the medical relevance of findings, or lack of them, is understood by the investigating authority.
Outcomes	The students should understand the "cause-effect relationship" of injury and its medicolegal implications
Course Title	**PostMortem Examination**
Duration	17 Hours
Objectives:	Identify Legal Aspects of Postmortem Examination Enumerate Objectives of Medicolegal Autopsy Infer Postmortem Report Writing Classify Postmortem Artifacts Paraphrase Exhumation Demonstrate Negative Autopsy Discuss Essentials & Authorization Explain Autopsy Techniques, Instrumentation & Autopsy Lab Describe Specimen Collection, Preservation & Dispatch
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh**

Texts and learning material	• Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Thanatology**
Duration	12 Hours
Objectives:	Express Introduction, Definition of Death & Types of Death Indicate Clinical Diagnosis of Death Memorize Certification of Death – Natural & Unnatural Enlist Cause, Mode & Manner of Death Reproduce Brain Death & Organ Transplantation Discuss the Study of Changes after Death – Immediate, Early & Late Changes Estimations regarding Forensic Entomology Infer Calculation of Postmortem Interval Construct Miscellaneous information regarding Cause, Manner Sketch the Study & Identification of Human Remains Mode & Time in case of sudden Natural Deaths
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Forensic Aspects Of Sexual Offences**
Duration	10 Hours

Objectives:	Classify the Sexual Offences and Related Crimes Analyze the Laws related to various Sexual Assaults Enumerate the Natural & Unnatural means of Sex, Sexual Perversion States and Society Concerns Discuss the various states of Sterility, Impotence, Infertility Marriage & Divorce Examine the cases of Sexual Assault Victims & Assailants Experiment the Specimen Collection, Preservation & Dispatch Demonstrate the Criminal Abortion & Relevant Laws Summarize the Causative Methods of Abortion, Examination of Fetus & Mother Explain the Medicolegal Aspects of Sex
Instructional Methods	➢ Lectures ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Forensic Taurmotology**
Duration	20 Hours
Outcomes	Understand the magnitude, social factors and psychopathology of prevalent social crimes in Pakistan and application of the laws of the country related to sexual offences.
Objectives:.	**A. GENERAL TRAUMATOLOGY** Emphasize Legal Aspects of Trauma & Classification Evaluate Swelling, Contusions, Hematoma & Skull Injuries Describe Abrasions, Bruises, Lacerations, Stab & Incised Wounds

	Differentiate between Antemortem & Postmortem Injuries Explain Injury as Cause of Death B. **SPECIAL TRAUMATOLOGY** Categorize the Death in Police Custody Correlate Regional Injuries (Head, Face & Neck (Skull), Chest Abdomen, Limbs, Bones, Brain) C. **TRANSPORTATION INJURIES** Examine Study of injuries sustained by Pedestrians, Cyclists Motorcyclists, Drivers, Front & Rare seat Occupants, Seat – belt Injuries, Use of Alcohol in Vehicular Accidents D**. FIREARM INJURIES** Classify Firearm Weapons & Types of Ammunition Explain Mechanism of Fire, Interior, Exterior and Terminal Ballistics Compare and Contrast Rifled & Smoothbore Entry Wounds Differentiate between Exit Wound at Various Distance Demonstrate Track of Injuries Tabulate Smooth Bore Firearm Injures Sketch Radiological Examination in case of Firearm Injuries Describe the Examination of Hands & Cloths State the Mechanisms leading to Death due to Firearm Injuries Analyze the Homicidal & Suicidal Accidents in Firearms Experiment the Fabricated Firearm Injuries Estimate the Specimen Collection & Ballistic Examination Correlation of the Study of Blast Injuries and Firearm Wounds Interpret the Legal Aspects in Blast & Firearm Injuries E. **ACCIDENTS IN HOME ENVIRONMENT** Evaluate the Burns & Scalds Examine the Hypothermia & Hyperthermia

	Differentiate the Frostbite & Trench Foot of Cold Envi Compare the Electrocution & Lightening Contrast the Drowning & Death in Bathroom Generalize the Starvation and related deaths
Instructional Methods	➢ Lecture ➢ Tutorials / SGDs ➢ PBL ➢ Demonstrations and Practicals ➢ Data – Based and computer assisted learning
Texts and learning material	• Principles and practice of Forensic Medicine & Toxicology **Nasib R Awan** • Text book of Medical Jurisprudence and Toxicology **C.K. Parekh** • Gradwohl's Legal Medicine (Reference) **Gradwhol** • Review of Forensic Medicine & Toxicology **Gautam Biswass** • Forensic Medicine **Simpson & Knight** • Modern Medical Toxicology **V V Pillay**
Course Title	**Forensic Taxitoloy**
Duration	General Toxicology 20 Hours Special Toxicology 20 Hours
Outcomes	Develop the understanding of management of a case of poisoning from medical and legal perspective.
Objectives:	**A: General Toxicology.** Introduce the Forensic Toxicology Estimate Lethal Doses and Lethal Periods Classify the Poisons of Domestic and Commercial Origin Summarize the Diagnosing a general poisonous case Demonstrate the Management & Treatment of a general case of Toxicology Summarize the Legal Duties of Medicolegal Officer Explain the Poison as cause of Death Estimate the Manners of Poisoning

	Analyze the Legal Aspects in Poisoning **B: Special Toxicology.** CORROSIVES Enlist poisonous Acids and Alkalies Classify Organic Acids and Mineral Ac Explain mechanism of corrosion by acids and alkalies Differentiate the features of corrosions alkalies and acids Define IRRITANTS Compare the irritants of Metallic, Vegetables & Animal Origin Emphasize the mechanism of action of Irritants Discuss the postmortem features and Medicolegal Significance of Corrosives and Irritants Enumerate the DRUGS AFFECTING CNS Contrast between the CNS Stimulants & CNS Depressants Recall different CARDIAC POISONS its features and medicolegal Significance State different types of INSECTICIDES, clinical features and postmortem findings Memorize the poisons called ASPHYXIANTS, its modus operandi lethal dose and period Demonstrate the poison called the THERAPEUTIC poisons and forensic implications Identify the legal aspects of forensic pharmacology for treatment of such poisons

STUDY GUIDE

BEHAVIORAL SCIENCES

THIRD PROFESSIONAL MBBS

Pak Red Crescent Medical & Dental College

48-KM Multan Road, Lahore-Pakistan.

Introduction	Behavioral sciences deal with the study of human behavior through integrative knowledge of psychology, neuro-sciences, sociology and anthropology. Psychology and neuro-science contribute to the study of human mind and the roles play by its various functions. The study of sociology helps a doctor understand the influences of society on the process of health. Anthropology involves the study of cultural methods of dealing with diseases and other distressing events of human life.
Target Students	3rd Year MBBS
Course Title	**Behavioral Sciences**
Duration	1 Year
Out comes	The students will be able to incorporate discipline of Anatomy, Physiology and Bio-chemistry to study Holistic Medicine.
Objectives	**At the end of the course student must be able to:** • Describe Behavioral Sciences And its importance • Explain Bio-psycho-social Model of Healthcare • Explain Desirable Attitudes of a Medical practitioner • Correlation of Brain, Mind and Behavioral Sciences • Discuss roles of a Doctor **Understanding Behavioral** • Describe Sensation and discuss sense organs/special organs • Define perception and explain Factors effecting it • Explain Attention and Concentration • Define Memory and its stages Illustrate methods to improve it • Explain Theory of Thinking and its types • Discuss Decision making strategies • Discuss problem solving strategies • Explain Cognition and its levels • Describe the communication, summarize its Types and explain Factors affecting. • The communication, Explain Characteristics of good communicator • **Personality and Intelligence** • Describe psychological growth , explain its stages, characteristics • Explain its Development • Explain the Personality and development theories of personality • Illustrate Factors affecting Personality Development • Summarize types of personality and its assessment • Discuss influence of personality in determining reactions during Health, disease, hospitalization and stress etc. • Define intelligence and explain its types. • Differentiate IQ and EQ. Explain methods of enhancing EQ and factors affecting intelligence and their assessment.

	Stress Management • Define stress and stressors. • Explain classification of Stress. • Discuss relationship of Stress and stressors with illness. • Illustrate effect of stress on Health. • Explain Anxiety. • Discuss Coping skills of Anxiety. • Discuss Human Psychological defense mechanisms. • Define and Explain Conflict • Define and Explain Frustration • Discuss Adjustment and Maladjustment. • Analyze Patient Anxiety and Stress. • Discuss Pain perception and theories of pain perception. • Describe Adherence and compliance, Explain its Treatment. • Discuss Psychological Techniques including Hypnosis **Doctor-Patient Relationship** • Discuss the Doctor patient Relationship and its Boundaries. • Explain psychological reactions of the Doctor Patient Relationship, which includes transference and counter transference **Medical Ethics** • Define Medical Ethics and Explain its importance • Discuss Hippocratic Oath –Do's and Don'ts • Discuss Responsibilities of Health professionals. • Describe Concept of Medical Ethics • Analyze interaction of a medical practitioner with Patients and colleagues • Explain standards of Ethical medical practice • Discuss common Ethical dilemmas in Doctor Patient Relationships • Explain importance of interaction with Families, Teachers, Pharmaceutical industry. • Illustrate rights of Patients and Doctors • Explain Informed consent and its importance. • Explain Importance of Patient's Confidentiality • Analyze how to Disclose information. • Explain Code Regarding advertisement of services and publicity.