Advance Pharmacology I

General Principles		
	Pharmacokinetics: The Dynamics of Drug, Absorption, Distribution, Metabolism, and Elimination.	
	Pharmacodynamics: Molecular Mechanisms of Drug Action	
	Membrane Transporters and Drug Response	
Neuropharmacology		
	Neurotransmission: The Autonomic and Somatic Motor Nervous Systems	
	Muscarinic Receptor Agonists and Antagonists	
	Anticholinesterase Agents	
	Agents Acting at the Neuromuscular Junction and Autonomic Ganglia	
	5-Hydroxytryptamine (Serotonin) and Dopamine	
	Hypnotics and Sedatives	
	General Anesthetics	
	Local Anesthetics	
Modulation of cardiovascular function		
	Regulation of Renal Function and Vascular Volume	
	The Renin-Angiotensin System	
	Pharmacotherapy of Myocardial Ischemia and Hypertension	
	Pharmacotherapy of Congestive Heart Failure and Anti-Arrhythmic Drugs	
	Blood Coagulation and Anticoagulant, Fibrinolytic, and Antiplatelet Drugs	
	Drug Therapy for Hypercholesterolemia and Dyslipidemia	

Advance Pharmacology II

Inflammation, Immunomodulation, and Hematopoiesis		
	Histamine, Bradykinin, and Their Antagonists	
	Lipid-Derived Autacoids: Eicosanoids and Platelet-Activating Factor	
	Anti-Inflammatory, Antipyretic, and Analgesic Agents; Pharmacotherapy of Gout	
	Immunosuppressants, Tolerogens, and Immunostimulants	
	Pulmonary Pharmacology	
	Hematopoietic Agents: Growth Factors, Minerals, and Vitamins	

Hormones and Hormone Antagonists		
	Introduction to Endocrinology: The Hypothalamic- Pituitary Axis	
	Thyroid and Anti-Thyroid Drugs	
	Estrogens and Progestins	
	Androgens	
	ACTH, Adrenal Steroids, and Pharmacology of the Adrenal Cortex	
	Endocrine Pancreas and Pharmacotherapy of Diabetes Mellitus and Hypoglycemia	
	Agents Affecting Mineral Ion Homeostasis and Bone Turnover	
Drugs Affecting Gastrointestinal Function		
	Pharmacotherapy of Gastric Acidity, Peptic Ulcers, and Gastroesophageal Reflux Disease	
	Treatment of Disorders of Bowel Motility and Water Flux; Anti-Emetics; Agents Used in Biliary and Pancreatic Disease	
	Pharmacotherapy of Inflammatory Bowel Disease	

Advance pharmacology III

Autacoid	
Nanopharmacology	
Zoo and wild pharmacology	
Excitable cell pharmacology	
Molecular pharmacology sub-membrane and nuclear	
Sensation pharmacology (eye, hear, test, cognition)	
Cell cycle pharmacology and checkpoint control	
Mamogenic pharmacology	
Hypothermia pharmacology	
Acute and chronic inflammation pharmacology	
Drug used in pregnancy	
Drug used in neonate	
Skin pharmacology	
Eating disorder pharmacology	

Therapeutics

General Principles of Antimicrobial Therapy		
	Chemotherapeutic Drugs	
	Antimicrobial therapy	
	Classification of antibacterial	
	Mechanism of resistance	
Inhibition of cell wall synthesis		
	Penicillins, Cephalosporins, and Other β-Lactam Antibiotics	
Inhibition of Protein synthesis		
	Aminoglycosides, Tetracyclines & glycylcyclines , Chloramphenicol,	
	Macrolides and ketolides	
	Oxazolidinone class (Linezolid)	
	Aminocyclitols (Spectinomycin) , Streptogramins	
	Polymyxins , Glycopeptides (vancomycin and Teicoplanin), Daptomycin	
	Bacitracin, Mupirocin,	
Inhibition of Nucleic Acid Synthesis		
	Sulfonamides, Trimethoprim-Sulfamethoxazole,	
	Folate antagonists	
	Quinolones, Agents for Urinary tract antiseptic	
Combination of antibacterial		
	Failure treatment with antibacterial	
Chemotherapy of protozoal infection		
	Anticoccidal drugs	
	Babesiocidal drugs	
	trypanocidal drugs	
	Antithelmintic drugs	
	Fascioliasis therapy	
	Chemotherapy of worm infections	
	Drugs acting on flukes	
	Drugs acting of external parasite	
	Vitamins antagonists	
	Antiseptic & disinfected	

Clinical Pharmacology

Basic principles		
	Introduction: The Nature of Drugs & Drug Development & Regulation	
	Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action	
	Pharmacogenomics	
Autonomic drugs		
	Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs	
	Cholinoceptor-Blocking Drugs	
	Adrenoceptor Agonists & Sympathomimetic Drugs	
	Adrenoceptor Antagonist Drugs	
Cardiovascular drugs		
	Antihypertensive Agents	
	Vasodilators & the Treatment of Angina	
	Drugs Used in Heart Failure	
	Agents Used in Cardiac Arrhythmias	
Drugs with important action on smooth muscle		
	Histamine, Serotonin, & the Ergot Alkaloids	
	Vasoactive Peptides	
	The Eicosanoids: Prostaglandins, Thromboxanes, Leukotrienes, & Related Compounds	
	Nitric Oxide	
	Drugs Used in Asthma	
Drugs used to treat Diseases of the blood, inflammation & gout		
	Agents Used in Cytopenias; Hematopoietic, Growth Factors	
	Drugs Used in Disorders of Coagulation	
	Agents Used in Dyslipidemia`	
	Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout	
Endocrine drugs		
	Hypothalamic & Pituitary Hormones	
	Thyroid & Antithyroid Drugs	
	Adrenocorticosteroids & Adrenocortical Antagonists	
	The Gonadal Hormones & Inhibitors	
	Pancreatic Hormones & Antidiabetic Drugs	
	Agents That Affect Bone Mineral Homeostasis	
	Drugs Used in the Treatment of Gastrointestinal Diseases	
	Diuretic Agents	
	Pharmacogenetic and drug polymorphism	
	Chronopharmacology	
	Pharmacovigilance	

Drugs Evaluation

Evaluation of safety of drug		
	Acute toxicity(determination of LD50, ED50 and TD50)	2w
	Sub-acute, sub chronic, chronic toxicity and other related test for safety.	
	Mutagenesis and carcinogenesis test for drug in vitro and in vivo test	1w
	Teratogenesis and reproductive test in vitro and in vivo test	1w
Microbiological assay		4 w

	Disk Diffusion Test and Gradient Methodologies	
	Macro- and Microdilution Methods of Antimicrobial	
	Agar Dilution Susceptibility Testing	
	Antifungal Susceptibility Testing	
	Thin layer chromatography	
	Bioautography	
Methods of plants extraction		2w
	Detection of phytochemical	
Test of reproductive drugs		2w
	Evaluation of spermatogenesis	
	Fertility index	
	Mating index	

Pharmaceutical analysis

Chromatographic technique uses in evaluation of drugs and xenobiotics		4 w
	Principles and techniques of chromatography	
	Plane chromatography techniques (paper and THC)	
	Different developmental techniques	
	Role of solvent, solute and solid matrix in development	
	Ion exchange chromatography	
	Gel filtration and gel permeation chromatography (GFC, GPC)	
	Gas liquid chromatography	
	GC-MS technique	
HPLC technique : principle- types- uses in pharmacology and toxicology		
	Isocratic and gradient technique	
	Calculation and determination of drug concentration	
	Factors affecting HPLC tech	
ELISA (Enzyme Linked Immunosorbent Assay)		
Polymerase Chain Reaction (PCR)		
Spectroscopic technique		
	Control of the quality of analytical methods	
	General Spectrophotometer visible and Ultraviolet	
	Atomic Spectrophotometry, Atomic Emission Spectrophotometry, Mass spectrometry	
	Infrared Spectrophotometer	

Advance Pharmacokinetic

	Introduction to Pharmacokinetics and Pharmacodynamics	7 w
	Basic Pharmacokinetics	
	Half-Life, Elimination Rate, and AUC	
	Intravenous Bolus Administration, Multiple Drug Administration, and Steady-State Average Concentrations	
	Relationships of Pharmacokinetic Parameters and Intravenous Intermittent and Continuous Infusions	
	Two-Compartment Models	
	Biopharmaceutics: Absorption	
	Drug Distribution and Protein Binding	

	Drug Elimination Processes	
	Nonlinear Processes	
	Pharmacokinetic Variation and Model-Independent Relationships	
	Pharmacodynamics-The Concentration Effect Relationship	
	Dose regimen	
	In Vitro-In Vivo translation Pharmacokinetic	

Advance Therapeutics

	Chemotherapy of Tuberculosis, Mycobacterium Avium Complex Disease, and Leprosy	
	Antifungal Agents	
	Antiviral Agents (Nonretroviral) & Antiretroviral Agents	
	General Principles of Cancer Chemotherapy	
	Cytotoxic Agents	
	Targeted Therapies: Tyrosine Kinase Inhibitors, Monoclonal Antibodies, and Cytokines	
	Gene Therapy	
	antiparacitics	
	Anthelmintics: nematodes (roundworms), cestodes (tapeworms) trematodes flukes).	
	Anti Ecto-parasite drug	

Drug interaction

	Pharmacokinetic interaction	
	Absorption, Distribution	
	Metabolism, Execration	
	Food – drug interaction	
	Pharacodynamic interaction	
	Drug interactions toxicology	

Special topics

Biological toxin and food poisoning		2 W
	Biological toxins (microbial and mycotoxin)	
Food additives and hazard (direct and indirect)		
	Hazard of colors	
	Animal and hormonal drug hazards	
	Role of structure and exposure dose	
	Food poisoning and food adverse effects	
Carcinogenesis and hazard carcinogens		2 W
	Multi stage carcinogenic development	
	Genotoxic and non genotoxic carcinogen	
	Carcinogen classification according to structure and effects	
	Epigenetic carcinogenesis mechanism	
	Evaluation of initiator , promotor and progressor carcinogen	
new drug development and approval process		2 W

	Stem cells, aromatherapy	1 W
	Drug effecting on appetite	1 W
Therapeutic Gain of a Control System		
Molecular technique: Electrophoresis, denaturation, hybridization, dot blot, Southern blotting, and RFLP		
Animal model pharmacology and toxicology		
Metabolomics		