

Subjects	Topics
Pharmacology	General Pharmacology Principles of toxicology Drugs acting on urinary system Pharmacology of peripheral nervous system Pharmacology of central nervous System Pharmacology of cardiovascular system Immunopharmacology Drugs acting on Respiratory system Pharmacology of Endocrine system Neurohumoral transmission in autonomic and central nervous system Vitamins & Minerals Chemotherapy Autacoids and their Antagonists Pharmacology of drug acting on the gastrointestinal tract Chronopharmacology
Physical Chemistry	Composition & physical states of matter Refractive index Solutions Electrochemistry, Kinetics Colligative Properties Thermodynamics Ionic equilibrium
Physical Pharmacy	Buffer Solubility Matter, properties of matter Viscosity and rheology Surface and interfacial phenomenon Dispersion systems Complexation Micromeritics and powder rheology
Organic Chemistry	General principles Pericyclic reactions Aromaticity & chemistry of aromatic compounds Different classes of compounds

	<p>Amino acids & proteins</p> <p>Different aromatic classes of compounds</p> <p>Polycyclic aromatic hydrocarbons</p> <p>Stereochemistry</p> <p>Carbohydrates</p> <p>Carbonyl Chemistry</p> <p>Heterocyclic Chemistry</p> <p>Protection & deprotection of groups</p> <p>Bridged rings</p> <p>Kinetic & thermodynamic control</p>
<p>Dispensing and Hospital Pharmacy</p>	<p>Introduction to laboratory equipment, weighing methodology, handling of prescriptions, labelling instructions for dispensed products</p> <p>Posological calculations involved in the calculation of dosage for infants.</p> <p>Study of current patent and proprietary products, generic products and selected brand products, indications, contraindications, adverse drug reactions, available dosage forms and packaging</p> <p>Compounding and dispensing of following prescriptions</p> <p>Reading and counselling of prescriptions from the clinical practice</p> <p>Enlarging and reducing formula, displacement value</p> <p>Preparations of formulations involving allegation, alcohol dilution, isotonic solution</p>
<p>Pharmaceutical Chemistry</p>	<p>Pharmaceutical Inorganic Chemistry</p> <p>Dentifrices, desensitizing agents, & anticaries agents</p> <p>Pharmaceutical Impurities</p> <p>Isotopes</p> <p>Monographs</p> <p>Medicinal Chemistry</p> <p>Various classes of therapeutic agents</p> <p>Different classes of therapeutic drugs</p> <p>Therapeutic classes of drugs</p>

	Different classes of therapeutic drugs
Pharmaceutical Jurisprudence	<p>Narcotic Drugs and Psychotropic Substances Act, and Rules thereunder</p> <p>Factory Act</p> <p>Shops and Establishment Act</p> <p>Introduction to Intellectual Property Rights and Indian Patent Act 1970</p> <p>An Introduction to Standard Institutions and Regulatory Authorities such as BIS, ASTM, ISO, TGA, USFDA, MHRA, ICH, WHO</p> <p>Minimum Wages Act 1948</p> <p>Prevention of Food Adulteration Act 1954 and Rules</p> <p>Industrial Development and Regulation act 1951</p> <p>Drugs and Magic Remedies (Objectionable Advertisements) Act 1954</p> <p>Medicinal and Toilet Preparations (Excise Duties) Act 1955, Rules 1976</p> <p>Historical background Drug legislation in India, Code of Ethics for Pharmacists</p> <p>The Pharmacy Act 1948</p> <p>Drugs and Cosmetics Act 1940, Rules 1945, including New Drug applications</p> <p>Consumer Protection Act</p> <p>Indian Pharmaceutical Industry- An Overview</p> <p>Medical Termination of Pregnancy Act 1970 and Rules 1975</p> <p>Prevention of Cruelty to Animals Act 1960</p> <p>Drug (Price Control) Order</p>
Pharmaceutical Management	<p>Introduction to management</p> <p>Inventory Management</p> <p>Communication</p> <p>Research Management</p> <p>Human resource and development (HRD)</p> <p>Planning and Forecasting</p> <p>Organization</p> <p>World Trade Organization (WTO) and trade-related</p>

	<p>intellectual property rights (TRIPS) Standard institutions and regulatory authorities GATT Marketing Research Leadership and motivation</p>
Pharmaceutics	<p>Pharmacy Profession & Introduction to Pharmaceuticals Introduction to dosage form Biological products Pharmaceutical Plant, location, layout Ophthalmic preparations Preformulations Packaging Materials Cosmetics Pilot plant scale-up techniques Dosage Form Necessities and Additives Powders Sources of drug information Tablets Parenteral - product requiring sterile packaging Suspensions Emulsions Suppositories Stability of formulated products Prolonged Action Pharmaceuticals Novel Drug delivery system GMP and Validation Semisolids Allopathic dosage form Crude extract Allergenic extract Capsules Liquids(solutions, syrups, elixirs, spirits, aromatic water, liquid for external uses) Pharmaceutical Aerosols</p>

<p>Pharmaceutical Engineering</p>	<p>Material of constructions Drying Size reduction and size separation Extraction Mixing Crystallization Automated process control systems Industrial hazards & safety precautions Evaporation Distillation Fluid flow Heat transfer Filtration and Centrifugation Dehumidification and humidity control Refrigeration and air conditioning</p>
<p>Pharmacognosy</p>	<p>Introductory Pharmacognosy Classification of crude drugs Plant products Principles of plant classification Pharmaceutical aids Animal products Traditional herbal drugs Plants based industries and research institutes in India Patents Ayurvedic system of medicine Homeopathic system of medicine Toxic drugs Enzymes Natural pesticides and insecticides Adulteration and evaluation of crude drugs Quantitative microscopy Factors influencing quality of crude drugs Techniques in microscopy Introduction to phytoconstituents Biogenetic pathways Carbohydrates & lipids</p>

	<p>Tannins Volatile oils Resinous drugs Glycosides Alkaloids Extraction and Isolation Techniques Phytopharmaceuticals Quality control and Standardization of herbal drugs Herbal formulations Worldwide trade of crude drugs and volatile oils Herbal cosmetics</p>
<p>Human Anatomy and Physiology</p>	<p>Cell physiology Endocrine Glands Reproductive System Gastrointestinal tract Respiratory System Autonomic nervous system Cardiovascular system Lymphatic system The Blood Sense organs Skeletal System Central Nervous system Urinary System</p>
<p>Pharmaceutical Analysis</p>	<p>Importance of quality control in pharmacy Acid-base titrations Gravimetry Extraction techniques Potentiometry Calibration General principles of spectroscopy Mass spectrometry Polarography Nephelometry & Turbidimetry Ultraviolet-visible Spectrometry</p>

	<p>Spectrofluorimetry Flame photometry & atomic absorption spectrometry Infrared spectrometry Miscellaneous methods of analysis Non-aqueous titrations Oxidation-reduction titrations Precipitation titrations Complexometric titrations Proton nuclear magnetic resonance spectrometry Chromatography Miscellaneous</p>
<p>Clinical Pharmacy and Therapeutics</p>	<p>Drug information services, Drug interactions Drug interaction in pediatric and geriatric patients, drug treatment during pregnancy, lactation and menstruation Therapeutic drug monitoring, adverse drug reaction (ADR), types of ADR, Mechanism of ADR. Drug interaction, Monitoring and reporting of ADR and its significance Age-related drug therapy: concept of posology, drug therapy for neonates, paediatrics and geriatrics. Drugs used in pregnancy and lactation, Drug therapy in gastrointestinal, hepatic, renal, cardiovascular and Respiratory Disorders Pharmacovigilance, Therapeutic drug monitoring, Neutraceuticals, essential drugs and rational drug usage General Principles, preparation, maintenance, analysis of observational records in Clinical Pharmacy Drug therapy in infections of respiratory system, urinary system, infective meningitis, TB, HIV, malaria and filaria</p>

	<p>Drug therapy for thyroid and parathyroid disorders, diabetes mellitus, menstrual cycle disorders, menopause and male sexual dysfunction</p> <p>Drug therapy for malignant disorders like leukaemia, lymphoma and solid tumours</p> <p>Drug therapy for rheumatic, eye and skin disorders</p> <p>Clinical trials, type and phases of clinical trials, placebo, ethical and regulatory issues including Good clinical practice in clinical trials</p> <p>Drug therapy for neurological and psychological disorders</p>
Biochemistry	<p>Cell</p> <p>Lipids</p> <p>Enzymes</p> <p>Nucleic acids</p> <p>Vitamins</p> <p>Biological oxidations & reductions</p> <p>Carbohydrates</p> <p>Proteins</p> <p>Hereditary diseases</p>
Biopharmaceutics and Pharmacokinetics	<p>Bio-pharmaceutics</p> <p>Bio-pharmaceutical statistics</p> <p>Bio-availability & Bio-equivalence</p>
Biotechnology	<p>Plant Cell and Tissue Culture</p> <p>Fermentation Technology and Industrial Microbiology</p> <p>Recombinant DNA Technology</p> <p>Process and Applications</p> <p>Animal Cell Culture</p> <p>Biotechnology-Derived Products</p>
Pathophysiology	<p>Basic principles of cell injury and adaptation</p> <p>Neoplastic diseases</p>

	<p>Pathophysiology of common diseases</p> <p>Laboratory tests for Liver function tests and kidney function tests</p> <p>Immunopathology including amyloidosis</p> <p>Infectious diseases</p> <p>Basic mechanisms of inflammation and repair</p> <p>Disorders of fluid, electrolyte and acid-base balance</p> <p>Disorders of homeostasis: white blood cells, lymphoid tissue and red blood cells related diseases</p>
Microbiology	<p>Introduction to Microbiology</p> <p>Microscopy and staining technique</p> <p>Biology of Microorganisms</p> <p>Microbial spoilage</p> <p>Vaccines & Sera</p> <p>Fungi and Viruses</p> <p>Aseptic Technique</p> <p>Sterilization & Disinfection</p> <p>Microbial Assay</p>