

**D. Pharm 2nd Year  
Syllabus 2022-23**

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## **D Pharmacy 2nd Year Syllabus**

There were six theory subjects on the old D Pharm syllabus but after the recent changes in the syllabus, there are now also six subjects a list of the old syllabus is shared below in the table.

### **D.Pharm 2nd Year New Subjects (Theory) D.Pharm 2nd Year Old Subjects (Theory)**

Pharmacology	Pharmaceutics-II
Community Pharmacy & Management	Pharmaceutical Chemistry-II
Biochemistry & Clinical Pathology	Pharmacology & Toxicology
Pharmacotherapeutics	Pharmaceutical Jurisprudence
Hospital & Clinical Pharmacy	Drug store and Business Management
Pharmacy Law & Ethics	Hospital & Clinical Pharmacy

Comparison of D.Pharm 2nd Year New and Old Subjects according to new D Pharm Syllabus

The detailed Subject wise and Topic wise Syllabus of D.Pharm 1st Year is shared below.

## Pharmacology DPharm 2nd Year Syllabus

### Chapter 1: General Pharmacology

- Introduction to Pharmacology and the scope of Pharmacology
- Different routes of drug administration and advantages and disadvantages
- Drug absorption – factors affecting drug absorption, types and definition of Drug absorption
- Bioavailability and different factors that affect bioavailability
- Drug distribution – factors affecting drug distribution and definition of Drug distribution
- Biotransformation of drugs – Definition, factors that influence drug metabolisms, types of biotransformation reactions
- Excretion of drugs – Definition, different routes of drug excretion
- General mechanism of drug action and factors that modify drug action

### Chapter 2: Drugs Acting on the Peripheral Nervous System

- Different Steps Involved in the neurohumoral transmission process
- Definition, pharmacological actions, indications, classification, dose and contraindications of
  - Anti-Cholinergic drugs
  - Cholinergic drugs
  - Local anaesthetic agents
  - Adrenergic drugs
  - Anti-adrenergic drugs
  - Drugs used in Myasthenia gravis
  - Neuromuscular blocking agents
  - Non-Steroidal Anti-Inflammatory drugs (NSAIDs)

### Chapter 3: Drugs Acting on the Eye

Definition, pharmacological actions, dose, classification, indications and contraindications of

- Mydriatics
- Miotics
- Drugs used in Glaucoma

### Chapter 4: Drugs Acting on the Central Nervous System

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Hypnotics and sedatives
- Anti-anxiety drugs
- Anti-psychotics

- Centrally acting muscle relaxants
- General anaesthetics
- Anti-Convulsant drugs
- Anti-depressant drugs
- Nootropic agents
- Opioid analgesics

### **Chapter 5: Drugs Acting on the Cardiovascular System**

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Anti-anginal drugs
- Drugs used in atherosclerosis
- Drug therapy for shock
- Anti-hypertensive drugs
- Anti-arrhythmic drugs
- Congestive heart failure

### **Chapter 6: Drugs Acting on Blood and Blood Forming Organs**

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Anti-coagulants
- Thrombolytic drugs
- Hematinic agents
- Anti-platelet agents

### **Chapter 7:**

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Expectorants
- Mucolytic agents
- Bronchodilators
- Anti-tussive agents

### **Chapter 8: Drugs Acting on the Gastro-Intestinal Tract**

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Anti-emetics
- Anti-diarrheal drugs
- Anti-ulcer drugs
- Laxatives and purgatives

### **Chapter 9: Drugs Acting on the Kidney**

Definition, pharmacological actions, classification, indications, dose and contraindications of

- Anti-Diuretics
- Diuretics

### **Chapter 10: Hormones and Hormone Antagonists**

Clinical Uses, Pathological role and physiological use of

- Anti-thyroid drugs
- Calcitonin
- Insulin
- Estrogen
- Oxytocin
- Thyroid hormones
- Parathormone
- Vitamin D
- Oral hypoglycemic agents
- Progesterone
- Corticosteroids

### **Chapter 11: Autocoids**

- The physiological role of 5 HT, Histamine and Prostaglandins
- Classification, adverse effects and clinical uses of 5 HT and antihistamines

### **Chapter 12: Chemotherapeutic Agents**

Introduction, infestations and neoplastic diseases, dose, indication, basic principles of chemotherapy of infections, Classification and contraindications of drugs belonging to the following classes:

- Cephalosporins
- Fluoroquinolones
- Tetracyclines
- Anti-tubercular drugs
- Anti-viral drugs
- Anthelmintics
- Anti-neoplastic agents
- Penicillins
- Aminoglycosides
- Macrolides
- Sulphonamides
- Anti-fungal drugs
- Anti-amoebic agents
- Anti-malarial agents

### **Chapter 13: Biologicals**

- Definition
- indications of biological agents with their examples
- types of biologicals

# Community Pharmacy and Management

## D. Pharm 2nd Year Syllabus 2022-23

### Chapter 1: Community Pharmacy Practice

- Definition
- Development and the history of community pharmacy
- Indian and International scenarios of Community Pharmacy

### Chapter 2:

- Professional responsibilities of the community pharmacists
- An Introduction to the concept of SOPs and Good Pharmacy Practice.

### Chapter 3: Prescription and Prescription Handling

- Definition, Different parts of a sample prescription, legality of prescriptions, handling of prescriptions, labelling of the dispensed medications, and brief instructions on the medication usage.
- Process of Dispensing, Good Dispensing Practices, dispensing errors and different strategies to minimize the errors.

### Chapter 4: Communication Skills

- Definition and Different Types of Communication Skills.
- Interactions with patients and professionals.
- Verbal communication skills (over the telephone, one-to-one )
- Body language
- Patient interview techniques
- Written communication skills

### Chapter 5: Patient counselling

- Definition and benefits of patient counselling
- Stages of patient counselling – Introduction, counselling content, counselling process, and closing the counselling session
- Barriers to effective counselling – Types and strategies to overcome the barriers
- Patient counselling points for chronic diseases/disorders – Hypertension, Diabetes, Asthma, Tuberculosis, Chronic obstructive pulmonary disease, and AIDS
- Patient Package Inserts – Definition, importance and benefits, Scenarios of PPI use in India and other countries
- Patient Information leaflets – Definition and uses

### Chapter 6: Medication Adherence

- Definition, factors influencing non-adherence, strategies to overcome non-adherence

### Chapter 7: Health Screening Services in Community Pharmacy

- Introduction, scope, and importance of various health screening services – for routine monitoring of patients, early detection, and referral of undiagnosed cases

### **Chapter 8: Over The Counter (OTC) Medications**

- Definition, need and role of Pharmacists in OTC medication dispensing
- OTC medications in India, counselling for OTC products
- Self-medication and the role of pharmacists in promoting the safe practices during self-medication
- Responding to symptoms, minor ailments, and advice for self-care in conditions such as – pain management, Cough, Cold, Diarrhea, Constipation, Vomiting, Fever, Sore throat, Skin disorders, Oral health (mouth ulcers, dental pain, gum swelling)

### **Chapter 10: Community Pharmacy Management**

- Legal requirements to set up a community pharmacy
- Site selection requirements
- Pharmacy designs and interiors
- Vendor selection and ordering
- Procurement, inventory control methods, and inventory management
- Financial planning and management
- Accountancy in community pharmacy – Daybook, Cashbook
- Introduction to pharmacy operation Software – usefulness and availability
- Customer Relation Management (CRM)
- Audits in Pharmacies
- SOP of Pharmacy Management
- Introduction to Digital Health, mHealth and Online pharmacies

# Biochemistry and Clinical Pathology

## D. Pharm 2nd Year Syllabus 2022-23

### Chapter 1: Introduction to Biochemistry

- Scope of biochemistry in pharmacy
- Cell and its biochemical organization

### Chapter 2: Carbohydrates

- Definition, classification with examples, chemical properties
- Monosaccharides – the Structure of glucose, fructose, and galactose
- Disaccharides – the structure of maltose, lactose, and sucrose
- Polysaccharides – chemical nature of starch and glycogen
- Qualitative tests and the biological role of carbohydrates

### Chapter 3: Proteins

- Definition and classification of proteins based on composition and solubility with examples
- Definition, and classification of amino acids based on chemical nature and nutritional requirements with examples
- Structure of proteins (four levels of organization of protein structure)
- Qualitative tests and the biological role of proteins and amino acids
- Diseases related to malnutrition of proteins.

### Chapter 4: Lipids

- Definition, classification with examples
- Structure and properties of triglycerides (oils and fats)
- Fatty acid classification – Based on chemical and nutritional requirements with examples
- Structure and functions of cholesterol in the body
- Lipoproteins – types, composition and functions in the body
- Qualitative tests and functions of lipids

### Chapter 5: Nucleic Acids

- Definition, purine and pyrimidine bases
- Components of nucleosides and nucleotides with examples
- Structure of DNA (Watson and Crick model), RNA and their functions

### Chapter 6: Enzymes

- Definition, properties and IUB and MB classification
- Factors affecting enzyme activity
- Mechanism of action of enzymes, Enzyme inhibitors
- Therapeutic and pharmaceutical importance of enzymes

### Chapter 7: Vitamins

- Definition and classification with examples



- Sources, chemical nature, functions, coenzyme form, recommended dietary requirements, deficiency diseases of fat-and water-soluble vitamins

### **Chapter 8: Metabolism**

- Metabolism of Carbohydrates: Glycolysis, TCA cycle and glycogen metabolism, regulation of blood glucose level. Diseases related to abnormal metabolism of Carbohydrates
- Metabolism of lipids: Lipolysis,  $\beta$ -oxidation of Fatty acid (Palmitic acid) ketogenesis and ketolysis. Diseases related to abnormal metabolism of lipids such as Ketoacidosis, Fatty liver, Hypercholesterolemia
- Metabolism of Amino acids (Proteins): General reactions of amino acids and their significance— Transamination, deamination, Urea cycle and decarboxylation. Diseases related to abnormal metabolism of amino acids, Disorders of ammonia metabolism, phenylketonuria, alkaptonuria and Jaundice.
- Biological oxidation: Electron transport chain and Oxidative phosphorylation

### **Chapter 9: Minerals**

- Types, Functions, Deficiency diseases, recommended dietary requirements

### **Chapter 10: Water and Electrolytes**

- Distribution, and functions of water in the body
- Water turnover and balance
- The electrolyte composition of the body fluids, Dietary intake of electrolytes and Electrolyte balance
- Dehydration, causes of dehydration and oral rehydration therapy

### **Chapter 11: Introduction to Biotechnology**

### **Chapter 12: Organ Function Tests**

- Functions of kidney and routinely performed tests to assess the functions of kidneys and their clinical significance
- Functions of liver and routinely performed tests to assess the functions of the liver and their clinical significance
- Lipid profile tests and their clinical significance

### **Chapter 13: Introduction to Pathology of Blood and Urine**

- Lymphocytes and Platelets, their role in health and disease
- Erythrocytes – Abnormal cells and their significance
- Normal and Abnormal constituents of Urine and their significance

## **Chapter 1: Pharmacotherapeutics**

- Introduction, scope, and objectives.
- Rational use of Medicines, Evidence-Based Medicine,
- Essential Medicines List, Standard Treatment Guidelines (STGs)

## **Chapter 2:**

- Definition, etiopathogenesis, clinical manifestations, non-pharmacological and pharmacological management of the diseases associated with

## **Chapter 2: (A) Cardiovascular System**

- Hypertension
- Hyperlipidaemia
- Angina and Myocardial infarction
- Congestive Heart Failure

## **Chapter 2: (B) Respiratory System**

- COPD
- Asthma

## **Chapter 2: (c) Endocrine System**

- Thyroid disorders – Hypo and Hyperthyroidism
- Diabetes

## **Chapter 2: (D) Central Nervous System**

- Epilepsy
- Parkinson's disease
- Alzheimer's disease
- Stroke
- Migraine

## **Chapter 2: (E) Gastro-Intestinal Disorders**

- Gastro-oesophageal reflux disease
- Alcoholic liver disease
- Peptic Ulcer Disease
- Inflammatory Bowel Diseases (Crohn's Disease and Ulcerative Colitis)

## **Chapter 2: (F) Haematological Disorders**

- Megaloblastic anaemia
- Iron deficiency anaemia

## **Chapter 2: (G) Infectious Diseases**

- Tuberculosis
- Urinary tract infections

- Gonorrhoea and Syphilis
- HIV and Opportunistic infections
- Pneumonia
- Hepatitis
- Malaria
- Viral Infections (SARS, CoV2)

#### **Chapter 2: (H) Musculoskeletal Disorders**

- Osteoarthritis
- Rheumatoid Arthritis

#### **Chapter 2: (I) Dermatology**

- Psoriasis
- Eczema
- Scabies

#### **Chapter 2: (J) Psychiatric Disorders**

- Depression
- Psychosis
- Anxiety

#### **Chapter 2: (K) Ophthalmology**

- Glaucoma
- Conjunctivitis (bacterial and viral)

#### **Chapter 2: (L) Anti-microbial Resistance**

#### **Chapter 2: (M) Women's Health**

- Polycystic Ovary Syndrome
- Dysmenorrhea
- Premenstrual Syndrome

# Hospital and Clinical Pharmacy

## D. Pharm 2nd Year Syllabus 2022-23

### Chapter 1: Hospital Pharmacy

- Definition, scope, national and international scenario
- Organisational structure
- Professional responsibilities, Qualifications and experience requirements, job specifications, workload requirements and interprofessional relationships
- Good Pharmacy Practice (GPP) in hospital
- Hospital Pharmacy Standards (FIP Basel Statements, AHSP)
- Introduction to NAQS guidelines and NABH Accreditation and Role of Pharmacists

### Chapter 2: Different Committees in the Hospital

- Pharmacy and Therapeutics Committee – Objectives, Composition, and functions
- Hospital Formulary – Definition, the procedure for development and use of hospital formulary
- Infection Control Committee – Role of Pharmacist in preventing Antimicrobial Resistance

### Chapter 3: Supply Chain and Inventory Control

- Preparation of Drug lists – High-Risk drugs, Emergency drugs, Schedule H1 drugs, NDPS drugs, reserved antibiotics
- Procedures of Drug Purchases – Drug selection, short the term, long term, and tender/e-tender process, quotations, etc
- Inventory control techniques: Economic Order Quantity, Reorder Quantity Level, Inventory Turnover etc.
- Inventory Management of Central Drug Store – Storage conditions, Methods of storage, Distribution, Maintaining Cold Chain, Devices used for cold storage (Refrigerator, ILR, Walk-in-Cold rooms)
- FEFO, FIFO methods
- Expiry drug removal and handling, and disposal. Disposal of Narcotics, cytotoxic drugs
- Documentation – purchase and inventory

### Chapter 4: Drug Distribution

- Drug distribution (in-patients and out-patients) – Definition, advantages and disadvantages of individual prescription order method, Floor Stock Method, Unit Dose Drug Distribution Method, Drug Basket Method
- Distribution of drugs to ICCU/ICU/NICU/Emergency wards.
- Automated drug dispensing systems and devices
- Distribution of Narcotic and Psychotropic substances and their storage

### Chapter 5:

- Compounding in Hospitals. Bulk compounding, IV admixture services and incompatibilities, Total parenteral nutrition

## **Chapter 6: Radio Pharmaceuticals**

- Storage, dispensing and disposal of radiopharmaceuticals

## **Chapter 7:**

- Application of computers in Hospital Pharmacy Practice, Electronic health records, Software used in hospital pharmacy

## **Chapter 8: Clinical Pharmacy**

- Definition, scope, and development – in India and other countries
- Technical definitions, common terminologies used in clinical settings and their significance such as Paediatrics, Geriatric, Anti-natal Care, Post-natal Care, etc.

## **Chapter 9: Daily activities of clinical pharmacists**

- Definition, goal, and procedure of
  - Ward round participation
  - Adverse drug reaction monitoring
  - Medication history
  - Interprofessional collaboration
  - Treatment Chart Review
  - Drug information and poisons information
  - Patient counselling
- Pharmaceutical care: Definition, classification of drug-related problems. Principles and procedures to provide pharmaceutical care

## **Chapter 10: Clinical laboratory tests used in the evaluation of disease states – significance and interpretation of test results**

- Haematological, Liver function, Renal function, thyroid function tests
- Fluid and electrolyte balance
- Tests associated with cardiac disorders
- Pulmonary Function Tests

## **Chapter 11: Poisoning**

- Types of poisoning: Clinical manifestations and Antidotes
- Drugs and Poison Information Centre and their services – Definition, Requirements, Information resources with examples, and their advantages and disadvantages

## **Chapter 12: Pharmacovigilance**

- Definition, aim and scope
- Overview of Pharmacovigilance

## **Chapter 13: Medication errors**

- Definition, Types, consequences, and strategies to minimize medication errors, LASA drugs and Tallman lettering as per ISMP
- **Drug Interactions:** Definition, Types, the clinical significance of drug interactions

# Pharmacy Law and Ethics

## D. Pharm 2nd Year Syllabus 2022-23

### Pharmacy Law and Ethics D.Pharm 2nd Year Syllabus

#### Chapter 1

- General Principles of Law, History and various Acts related to Drugs and the Pharmacy profession

#### Chapter 2: Pharmacy Act-1948 and Rules

- Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils, Registration of Pharmacists, Offences and Penalties.
- Pharmacy Practice Regulations 2015

#### Chapter 3: Drugs and Cosmetics Act 1940 and Rules 1945 and New Amendments

- Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit
- **Manufacture of drugs** – Prohibition of manufacture and sale of certain drugs, Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for the test, examination and analysis, manufacture of a new drug, loan license and repacking license.
- Study of schedules C and C1, G, H, H1, K, P, M, N, and X
- **Sale of Drugs** – Wholesale, Retail sale and Restricted license, Records to be kept in a pharmacy  
Drugs Prohibited for Manufacture and sale in India
- **Administration of the Act and Rules** – Drugs Technical Advisory Board, Central Drugs Laboratory, Drugs Consultative Committee, Government analysts, licensing authorities, controlling authorities, Drug Inspectors.

#### Chapter 4: Narcotic Drugs and Psychotropic Substances Act 1985 and Rules

- Objectives, Definitions, Authorities and Officers, Prohibition, Control and Regulation, Offences and Penalties.

#### Chapter 5: Drugs and Magic Remedies (Objectionable Advertisements) Act 1954

- Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties.

#### Chapter 6: Prevention of Cruelty to Animals Act-1960

- Objectives, Definitions, CPCSEA – brief overview, Institutional Animal Ethics Committee, Breeding and Stocking of Animals, Performance of Experiments, Transfer and Acquisition of animals for the experiment, Records, Power to suspend or revoke registration, Offences and Penalties.

#### Chapter 7: Poisons Act-1919

- Introduction, objective, definition, possession, possession for sales and sale of any poison, import of poisons

#### Chapter 8: FSSAI (Food Safety and Standards Authority of India) Act and Rules

- Brief overview and aspects related to manufacturing, storage, sale, and labelling of Food Supplements

## **Chapter 9: National Pharmaceutical Pricing Authority**

- Drugs Price Control Order (DPCO) – 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, Pharmaceutical Policy 2002, National List of Essential Medicines (NLEM)

## **Chapter 10: Code of Pharmaceutical Ethics**

- Definition, ethical principles, ethical problem solving, registration, code of ethics for Pharmacist in relation to his job, trade, the medical profession and his profession, Pharmacist's oath.

## **Chapter 11: Medical Termination of Pregnancy Act and Rules**

- Basic understanding, salient features, and Amendments

## **Chapter 12**

- Role of all the government pharma regulator bodies – Central Drugs Standards Control Organization (CDSCO), Indian Pharmacopoeia Commission (IPC)

## **Chapter 13**

- Good Regulatory practices (documentation, licenses, renewals, e-governance) in Community Pharmacy, Hospital Pharmacy, Pharma Manufacturing, Wholesale business, inspections, import, and export of drugs and medical devices

## **Chapter 14**

- Introduction to BCS system of classification, Basic concepts of Clinical Trials, ANDA, NDA, New Drug development, New Drugs and Clinical Trials Rules, 2019. Brand v/s Generic, Trade name concept, Introduction to Patent Law and Intellectual Property Rights, Emergency Use Authorization

## **Chapter 15**

- Blood bank – basic requirements and functions

## **Chapter 16**

- Clinical Establishment Act and Rules – Aspects related to Pharmacy

## **Chapter 17**

Biomedical Waste Management Rules 2016 – Basic aspects, and aspects related to pharma manufacture to disposal of pharma / medical waste at homes, pharmacies, and hospitals

## **Chapter 18: Bioethics**

- Basic concepts, history and principles. A brief overview of ICMR's National Ethical Guidelines for Biomedical and Health Research involving human participants

## **Chapter 19: Introduction to the Consumer Protection Act**

## **Chapter 20: Introduction to the Disaster Management Act**

## **Chapter 21: Medical Devices**

- Categorization, basic aspects related to manufacturing and sale