B.Pharm Syllabus

Semester 07

Subjects

Subject	PDF page	Open
Instrumental Methods of Analysis	2	Click here
Industrial Pharmacy II	4	Click here
Pharmacy Practice	5	Click here
Novel Drug Delivery Systems	7	Click here
Instrumental Methods of Analysis and Novel Drug Delivery Systems	8	Click here
Practice School	9	Click here
Hospital Training II	10	Click here

BP701T - Instrumental Methods of Analysis

Theory

Unit I

- UV Visible spectroscopy: Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.
- Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors-Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.
- Applications-Spectrophotometric titrations, Single component and multi component analysis.
- Fluorimetry: Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications.

Unit II

- IR spectroscopy: Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations.
- Instrumentation-Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications.
- Flame Photometry-Principle, interferences, instrumentation and applications.
- Atomic absorption spectroscopy-Principle, interferences, instrumentation and applications.
- Nephelo-turbidimetry-Principle, instrumentation and applications.

Unit III

- Introduction to chromatography: Adsorption and partition column chromatography-Methodology, advantages, disadvantages and applications.
- Thin layer chromatography-Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.
- Paper chromatography-Introduction, methodology, development techniques, advantages, disadvantages and applications.
- Electrophoresis-Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications.

Unit IV

- Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages and applications.
- High performance liquid chromatography (HPLC)- Introduction, theory, instrumentation, advantages and applications.

Unit V

- Ion exchange chromatography-Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications.

- Gel chromatography-Introduction, theory, instrumentation and applications.
- Affinity chromatography-Introduction, theory, instrumentation and applications.

BP702T - Industrial Pharmacy II

Theory

Unit I

- Pilot plant scale up techniques: General considerations-including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology.

Unit II

- Technology development and transfer: WHO guidelines for Technology Transfer (TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from RD to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipment, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE /SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legal issues.

Unit III

- Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals.
- Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.

Unit IV

- Quality management systems: Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL, GLP.

Unit V

- Indian Regulatory Requirements: Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.

BP703T - Pharmacy Practice

Theory

Unit I

- Hospital and it's organization Definition, Classification of hospital-Primary, Secondary and Tertiary hospitals, Classification based on clinical and non-clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.
- Hospital pharmacy and its organization Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.
- Adverse drug reaction Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction-beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.
- Community Pharmacy Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

Unit II

- Drug distribution system in a hospital Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labeling. Dispensing of drugs to ambulatory patients and dispensing of controlled drugs.
- Hospital formulary Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.
- Therapeutic drug monitoring Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.
- Medication adherence Causes of medication non-adherence, pharmacist role in the medication adherence and monitoring of patient medication adherence.
- Patient medication history interview Need for the patient medication history interview, medication interview forms.
- Community pharmacy management Financial, materials, staff, and infrastructure requirements.

Unit III

- Pharmacy and therapeutic committee Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.
- Drug information services Drug and Poison information centre, Sources of drug information, Computerized services, and storage and retrieval of information.
- Patient counselling Definition of patient counselling; steps involved in patient counselling, and Special cases that require the pharmacist Education and training program in the hospital Role of pharmacist in

the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

- Prescribed medication order and communication skills Prescribed medication order-interpretation and legal requirements, and Communication skills-communication with prescribers and patients.

Unit IV

- Budget preparation and implementation: Budget preparation and implementation. Clinical Pharmacy: Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring-medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care. Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.
- Over the counter (OTC) sales: Introduction and sale of over the counter and rational use of common over the counter medications.

Unit V

- Drug store management and inventory control Organization of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure.
- Investigational use of drugs Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.
- Interpretation of Clinical Laboratory Tests Blood chemistry, haematology and urine analysis.

BP704T - Novel Drug Delivery Systems

Theory

Unit I

- Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates. Approaches to design-controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations.
- Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.

Unit II

- Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications.
- Mucosal Drug Delivery system: Introduction, Principles of bioadhesion/mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems.
- Implantable Drug Delivery Systems: Introduction, advantages and disadvantages, concept of implants and osmotic pump.

Unit III

- Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches.
- Gastro-retentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS-Floating, high density systems, inflatable and gastro-adhesive systems and their applications.
- Naso-pulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers.

Unit IV

- Targeted drug Delivery: Concepts and approaches advantages and disadvantages, introduction to liposomes, niosomes, nanoparticles, monoclonal antibodies and their applications.

Unit V

- Ocular Drug Delivery Systems: Introduction, intra ocular barriers and methods to overcome-Preliminary study, ocular formulations and ocuserts.
- Intrauterine Drug Delivery Systems: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications.

BP705P - Instrumental Methods of Analysis and Novel Drug Delivery Systems

Practical

- Determination of absorption maxima and effect of solvents on absorption maxima of organic compounds.
- Estimation of sulphanilamide by colorimetry.
- Simultaneous estimation of ibuprofen and Paracetamol by UV spectroscopy.
- Estimation of quinine sulphate by fluorimetry.
- Study of quenching of fluorescence.
- Determination of sodium by flame photometry.
- Determination of potassium by flame photometry.
- Determination of chlorides and sulphates by nephelo-turbidimetry.
- Separation of sugars by thin layer chromatography.
- Separation of plant pigments by column chromatography.
- Demonstration experiment on HPLC.
- Demonstration experiment on Gas Chromatography.
- To perform in-vitro dissolution profile of CR/SR marketed formulation.
- To prepare sustained release matrix tablets and evaluate by UV spectroscopy.
- Formulation of nanoparticles and evaluate by HPLC.
- Formulation and evaluation of liposomes.
- To prepare buccal dosage form and evaluate by UV spectroscopy.
- To prepare Paracetamol transdermal patch and evaluate by UV spectroscopy.

BP706PS - Practice School

Activity

- Phytomedicine
- Formulation development
- Quality control and quality assurance
- Drug design and process chemistry
- Pharmaceutical software
- Artificial intelligence
- 3D printing
- Nutraceuticals
- Cosmeceuticals
- Alternative medicine

BP707P - Hospital Training II

Training

- First aid, including wound dressing and artificial respiration.
- Routes of injection.
- Patient observation charts.
- Prescriptions and dispensing.
- Simple diagnostic reports.

First Hope

SYLLABUS

Click here to visit our website

PHARMACY SYLLABUS

Complete subject and semesters are available on FirstHope app only.

Scan or click here

Click here to get the app >

Available on Google Play

JOIN THE FIRSTHOPE COMMUNITY

Join our Telegram channel

Click here to join Telegram >

Scan or click here

@FirstHopeNotes

Instagram

@firsthope.official

Click here to follow >

YouTube channel

FirstHope-Pharmacy / Live streams

Click here to watch >

WhatsApp channel

Follow FirstHope on WhatsApp

Click here to join >

FirstHope website

firsthope.co.in

Click here to visit >

B.Pharm / D.Pharm / M.Pharm / Pharm.D

Explore complete subject and semester notes in the FirstHope app.