



DCOP

Subjectwise Course Outcome - [B. Pharmacy - 2023-24]

Second Semester	
Human Anatomy & Physiology-II [Theory Regular]	
CO ID.	Course Outcome
CO1	To Explain the gross morphology, structure and functions of various organs of the human body.
CO2	Learn the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body
CO3	Learn coordinated working pattern of different organs of each system
CO4	Determination of respiratory volume capacities
CO5	Discuss concept of genetics and gene expression
CO6	To study disorders related with various system
Computer Application [Practical Regular]	
CO ID.	Course Outcome
CO1	know the various types of application of computers in pharmacy
CO2	know the various types of databases
CO3	know the various applications of databases in pharmacy
Human Anatomy & Physiology-II [Practical Regular]	
CO ID.	Course Outcome
CO1	To Explain the gross morphology, structure and functions of various organs of the human body.
CO2	Learn the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body
CO3	Identify the various tissues and organs of different systems of human body.
CO4	Learn coordinated working pattern of different organs of each system
CO5	Perform the hematological tests like blood cell counts
CO6	Determination of respiratory volume capacities.
CO7	Recording of body temperature, Body mass index.
CO8	Study of family planning devices and pregnancy diagnosis test
CO9	To study histology of vital organs and gonads
BP202T Pharmaceutical Organic Chemistry-I [Theory Regular]	
CO ID.	Course Outcome
CO1	CO 1. Understand nomenclature, classification, isomerism and importance of the organic compounds.
CO2	CO 2. Explain method of preparations, properties, elimination reactions and hybridization of alkanes and alkenes.
CO3	CO 3. Describe method of preparations, qualitative tests, substitution reactions, structure and uses of alkyl halides and alcohols.
CO4	CO 4. Explain method of preparations, condensation reactions, structure and uses of carbonyl compounds.
CO5	CO 5. Write method of preparations, qualitative tests, substituent effect, structure and uses of carboxylic acids and aliphatic amines.
CO 6	How to write reaction, Name the reaction and orientation of reactions
CO7	account for reactivity/stability of compounds and identify/confirm the identification of organic compound
BP203T Biochemistry [Theory Regular]	

CO ID.	Course Outcome
CO1	Gain the knowledge of Bioenergetics & bio molecules their structure classification & Significance
CO2	Explain the various metabolic pathways of carbohydrates & mechanism of ETC, oxidative phosphorylation
CO3	Describe the general reaction, catabolic pathway & their disorder of amino acid & Lipid & their disorder
CO4	Understand the catalytic role of enzyme, application & importance in design of new Drug.
CO5	Explain the various concepts in nucleic acid metabolism

BP203T Biochemistry [Practical | Regular]

CO ID.	Course Outcome
CO1	Identify & confirm various carbohydrates, proteins and abnormal constituents of urine by qualitative analysis.
CO2	Perform quantitative analysis of reducing sugars and proteins and determine various blood constituents.
CO3	Prepare buffer solutions & check the pH by using pH meter.
CO4	Study enzymatic hydrolysis of starch and effect of different parameters on enzymatic activity.

BP204T Pathophysiology [Theory | Regular]

CO ID.	Course Outcome
CO - 01	Understand the Basic Principles, Mechanism, Morphology of Cell injury and Adaptation.
CO - 02	Understand the Basic mechanism involved in the process of Inflammation and Repair.
CO - 03	Describe the etiology and pathogenesis of the selected disease states.
CO - 04	Name the signs and symptoms of the diseases.
CO - 05	Mention the complications of the diseases.

BP205T Computer Application [Theory | Regular]

CO ID.	Course Outcome
CO1	Know the various types of application of computers in pharmacy.
CO2	Know the various types of database.
CO3	Know the various applications of database in pharmacy.

BP208P Pharmaceutical Organic Chemistry-I [Practical | Regular]

CO ID.	Course Outcome
CO1	CO 1. Systematic qualitative analysis of unknown organic compounds.
CO2	CO 2. Preparation of suitable solid derivatives from organic compounds
CO3	CO 3. Understand the Construction of molecular models.

Fourth Semestser

Pharmaceutical Organic Chemistry-III [Theory | Regular]

CO ID.	Course Outcome
CO.1	Understand the concept of stereo-chemistry and isomerism with its type.
CO.2	Acquire knowledge about configurational and conformational isomerism with its effect on a stability of molecule, physical & chemical properties.
CO.3	Explain the different types of name reaction with its mechanism.
CO.4	Describe the nomenclature, classification, resonance, stability, synthesis method and reaction of heterocyclic compound.
CO.5	Know the medicinal uses and other applications of heterocyclic compound.

Pharmacology-I [Theory | Regular]

CO ID.	Course Outcome
CO1	Know basics of pharmacology like history, scope & general principles.
CO3	Upon completion of this course the student should be able to: Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
CO2	Classify the various routes of administration with advantages and disadvantages
CO4	Understand the process of new drug discovery and development of drug.
CO5	Understand the basics of pharmacokinetic and pharmacodynamics
CO6	Upon completion of this course the student should be able to Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.

Medicinal Chemistry-I [Practical | Regular]

CO ID.	Course Outcome
CO1	Carry out the synthesis of heterocyclic compound
CO2	Perform the assay of different medicinal drug.
CO3	. Understand the process of partition coefficient and determine the partition coefficient of any two pharmaceutical drugs.

Pharmacognosy & Phytochemistry-I [Practical | Regular]

CO ID.	Course Outcome
Co1	To evaluate the crude drugs by quantitative evaluation methods.
Co2	To evaluate the crude drugs by physical methods of evaluation
Co3	To evaluate the crude drugs by chemical methods of evaluation.
Co4	To remember different morphological and microscopical characteristic features of crude drugs
Co5	To understand the cellular structure of crude drugs.

Physical Pharmaceutics-II [Practical | Regular]

CO ID.	Course Outcome
CO1	Understand various physicochemical properties of drug molecules in the designing the dosage forms
CO 2	Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.
CO3	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

BP 403 T Physical Pharmaceutics-II [Theory | Regular]

CO ID.	Course Outcome
CO1	Understand various physicochemical properties of drug molecules of colloids
CO2	Gain detail knowledge of Rheology and Deformation of solids
CO3	Understand the concept of Suspension and Emulsion
CO4	Study the flow properties and powder characteristics in the formulation development and evaluation of dosage forms
CO5	Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations

BP402T Medicinal Chemistry-I [Theory | Regular]

CO ID.	Course Outcome
CO1	CO1 know the Structural Activity Relationship (SAR) & mechanism of action of different class of drugs
CO2	CO2 Discuss the Classification, Structures, IUPAC Names & therapeutic uses of drugs
CO3	CO3 understand the Physicochemical properties, drug metabolic pathways, biosynthesis & adverse effect of drugs.
CO 4	CO 4 write the chemical synthesis of some drugs.

BP405T Pharmacognosy & Phytochemistry-I [Theory | Regular]

CO ID.	Course Outcome
CO1	To know history of Pharmacognosy, various system of medicine and different sources of drug.
CO2	To know classification, adulteration and evaluation of natural drug .
CO3	To know the techniques in cultivation of collection.
CO4	To know Extraction techniques of crude drug and introduction to primary and secondary metabolites
CO5	To know Plant tissue Culture and application

BP408P Pharmacology-I [Practical | Regular]

CO ID.	Course Outcome
CO1	Understand the basics of experimental pharmacology.
CO2	Describe the blood withdrawal techniques and routes of drug administration in experimental animals.
CO3	Write the effect of drugs on animals by simulated experiments.

fifth Semester

Medicinal Chemistry-II [Theory | Regular]

CO ID.	Course Outcome
CO. 1	CO. 1 Study the available marketed drugs belonging to the different category of drugs used.
CO 2	CO 2. Acquire the knowledge about structure, IUPAC name, chemistry of drugs, drug metabolic pathways, adverse effect therapeutic value of drugs and mode of action of some drug belonging to the different category.
CO 3	CO 3. Study the chemical synthesis of selected drugs
CO 4	CO 4. Understand the structure activity relationship of particular class of drug
CO 5	CO 5. Explain the chemical classification of each class of a drug.

Pharmacognosy & Phytochemistry-II [Theory | Regular]

CO ID.	Course Outcome
BP504T1	Understand the concept of extraction and chromatography and spectroscopy
BP504T2	Acquire knowledge about Medicinal Plants
BP504T3	Explain the isolation, identification and analysis of phytoconstituents
BP504T4	Describe the metabolic pathway of different secondary metabolites
BP504T5	Know the industrial production, estimation and utilization of different phytoconstituents

Pharmaceutical Jurispidence [Theory | Regular]

CO ID.	Course Outcome
Co1	Pharmaceutical jurispidence Know the Pharmaceutical legislations and their implications in the development and marketing
Co2	Know various Indian pharmaceutical Acts, Laws and schedule
Co3	Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
Co4	Know code of ethics during the Pharmaceutical practice

Pharmacognosy & Phytochemistry-II [Practical | Regular]

CO ID.	Course Outcome
BP508P1	Study Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel, Coriander and chemical identification of crude drugs.
BP508P2	Exercise isolation & detection of active principles a. Caffeine - from tea dust. b. Diosgenin from Dioscorea c. Atropine from Belladonna d. Sennosides from Senna.
BP508P3	Separation of mixture of sugar, herbal extract and volatile oil by chromatography.

BP 502 T Industrial Pharmacy-I [Theory | Regular]

CO ID.	Course Outcome
CO 1.	Student shall be able to know the various pharmaceutical dosage forms and their manufacturing techniques.
CO 2	Students shall be able to know various considerations in development of pharmaceutical dosage forms.
CO 3	Students shall be able to formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.

BP404T Pharmacology-II [Theory | Regular]

CO ID.	Course Outcome
CO1	Describe the pharmacology of drugs acting on cardiovascular system.
CO2	Discuss the pharmacology of drugs acting on haemopoietic and urinary system.
CO3	Explain various autocooids, their blockers and drug related to them.
CO4	Write the pharmacology of drugs acting on endocrine system.
CO5	Understand principles, types and applications of bioassay.

BP507P Pharmacology-II [Practical | Regular]

CO ID.	Course Outcome
CO1	Study of physiological salt solutions, drug solution, and use in various animal experiments.
CO2	Study the effect of drugs on isolated heart, intestine, and various muscle preparation.
CO3	Study the diuretic, analgesic, and anti-inflammatory activity of drugs in rats/mice.
CO4	Understand different bioassay techniques and Determination of unknown concentrations of Histamine, Oxytocin, Serotonin, and Acetylcholine using suitable isolated tissue preparations.

BP801T Industrial Pharmacy-I [Practical | Regular]

CO ID.	Course Outcome
CO 1	student shall be able to Know the various pharmaceutical dosage forms and their manufacturing techniques.
CO 2	student shall be able to Know various considerations in development of pharmaceutical dosage forms
CO 3	Student shall be able to Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.

Sixth Semester**Herbal Drug Technology [Theory | Regular]**

CO ID.	Course Outcome
CO 1	Students should be able to understand raw material as source of herbal drugs from cultivation to herbal drug product.
CO 2	Students should be able to know the WHO and ICH guidelines for evaluation for evaluation of herbal drugs.
CO 3	Students should be able to know the herbal cosmetics, natural sweeteners, nutraceuticals.
CO 4	Students should be able to appreciate patenting of herbal drugs, GMP.

Pharmaceutical Biotechnology [Theory | Regular]

CO ID.	Course Outcome
CO1	Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
CO2	Genetic engineering applications in relation to production of pharmaceuticals
CO3	Importance of Monoclonal antibodies in Industries
CO4	Appreciate the use of microorganisms in fermentation technology

Herbal Drug Technology [Practical | Regular]

CO ID.	Course Outcome
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CO1	The students are able to perform preliminary phytochemical screening, evaluation, and monograph of herbal drugs.
CO2	The students are able to prepare and standardize herbal formulations.
CO3	The students are able to determine aldehyde content, phenol content, total alkaloid content, and alcohol content of Asava and Arista.

Medicinal Chemistry-III [Practical | Regular]

CO ID.	Course Outcome
BP601P.1	Study the reaction mechanism of synthetic drug molecule along with their mode of action.
BP601.2	Understand the various Computers aided techniques in relation with drug design.
BP601.3	Assay of drugs mentioned in syllabus

Pharmacology-III [Practical | Regular]

CO ID.	Course Outcome
CO 1	Understand the effect of drugs on animal models by using simulated experiments or videos
CO 2	Acquire the knowledge of serum biochemical parameters, pharmacokinetic parameters, and various toxicity studies
CO 3	Understand the use of Bio-statistical method in experimental pharmacology

BP601T Medicinal Chemistry-III [Theory | Regular]

CO ID.	Course Outcome
BP601T.1	CO.1 Understand drug discovery concept, physico-chemical properties, structure, IUPAC name of Antibiotics, Antifungals agents, Anti-tubercular Agents, Antiviral agents
BP601T.2	CO.2 Chemical classification of each class of a drug mentioned in syllabus
BP601T.3	CO.3 Know the structural activity relationship of different class of drugs
BP601T.4	CO 4. Describe the synthetic layout of essential drug mention in syllabus.

BP602T Pharmacology-III [Theory | Regular]

CO ID.	Course Outcome
CO1	Upon completion of this course the student should able to studied elaborately on mechanism of dug action & its relevance in the treatment of different infectious disease
CO2	Upon the completion of the course student shall be able to know they comprehended the principles of toxicology and treatment of various poisonings.
CO3	Appreciate correlation of pharmacology with related medical sciences.
CO4	Upon the completion of the course student shall be able understand the mechanism and significance of Chronopharmacology

BP604T Biopharmaceutics & Pharmacokinetics [Theory | Regular]

CO ID.	Course Outcome
Co 1.	Understand the basic concept in biopharmaceutics and pharmacokinetics and their significance.
Co 2	Use of plasma drug concentration, time data to calculate pharmacokinetic parameters to describe kinetics of drugs absorption, distribution, metabolism, excretion, elimination.
CO 3	To understand the concept of bioavailability and bioequivalence of drug products and their significance.
CO 4	Understand various pharmacokinetic parameters, their significance and applications.

BP606T Quality Assurance [Theory | Regular]

CO ID.	Course Outcome
CO1	BP606T.1 understand the cGMP aspects in a pharmaceutical industry
CO2	BP606T.2 appreciate the importance of documentation
CO3	BP606T.3 understand the scope of quality certifications applicable to pharmaceutical industries

CO4	BP606T.4 understand the responsibilities of QA & QC departments
CO5	BP606T.5 Illustrate the concept of calibration,validation & quality management

Seventh Semester

Pharmacy Practice [Theory | Regular]

CO ID.	Course Outcome
CO1	Upon completion of the course, the student shall be able to know various drug distribution methods in a hospital
CO2	Appreciate the pharmacy stores management and inventory control. Monitor drug therapy of patient through medication chart review and clinicalreview
CO3	Obtain medication history interview and counsel the patients ,Identify drug related problems and detect and assess adverse drug reactions
CO4	interpret selected laboratory results (as monitoring parameters in therapeutics) ofspecific disease states
CO5	Upon completion of the course, the student shall be able to know pharmaceutical care servicesand do patient counseling in community pharmacy;
CO6	Upon completion of the course, the student shall be able to appreciate the concept of Rational drug therapy

Novel drug delivery system [Theory | Regular]

CO ID.	Course Outcome
CO1	Understanding basics of CDDS/NDDS, its applications and advantages.
CO2	Select suitable drugs and polymers for NDDS along with proper parameters for it.
CO3	Analyse various biopharmaceutical factors affecting various NDDS.
CO4	Differentiate & prioritize between various NDDS based on advantages, manufacturing methods and evaluation.

Instrumental Methods of Analysis [Practical | Regular]

CO ID.	Course Outcome
BPH701P.1	CO.1 Calibrate and operate the various analytical instruments such as UV-VISIBLE spectroscopy, colorimetry,Nephelo-turbidity Meter, Photofluorimeter and Flame Photometer.
BPH701P.2	CO.2 Perform determination of drugs in formulation, metallic salt solution, fluorimetric assay by appropriate instrumental methods.
BPH701P.3	CO.3 To perform separation of sugars, amino acids, dyes by using Paper, TLC and column chromatography
BPH701.4	CO.4 Demonstration of HPLC,GC and FTIR instruments

BP 701 T Instrumental Method of Analysis [Theory | Regular]

CO ID.	Course Outcome
CO1	Students should understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
CO2	Students should understand the chromatographic separation and analysis of drugs.
CO3	Students should be able to perform quantitative & qualitative analysis of drugs using various analytical instruments.
CO4	Students must know in detail about applicability of various analytical instruments.

BP702T Industrial Pharmacy-II [Theory | Regular]

CO ID.	Course Outcome
CO1	Know the process of pilot plant and scale up of pharmaceutical dosage forms
CO2	Understand the process of technology transfer from lab scale to commercial batch
CO3	Know different Laws and Acts that regulate pharmaceutical industry
CO4	Understand the approval process and regulatory requirements for drug products
CO5	Know the organization of Indian regulatory requirements

Eight Semester

Social & Preventive Pharmacy [Theory | Regular]

CO ID.	Course Outcome
CO1	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
CO2	A critical way of thinking based on current healthcare development.
CO3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues
CO4	After the successful completion of this course, the student shall be able to: Evaluate alternative ways of solving problems related to health and pharmaceutical issues
CO5	After the successful completion of this course, the student shall be able to: know the various national health program rural and urban development.

BP801T Biostatistics & Research Methodology [Theory | Regular]

CO ID.	Course Outcome
CO1	Define the principal concepts about biostatistics, frequency distribution, correlation and dispersion.
CO2	Understand the concepts of regression, probability and various parametric tests.
CO3	Discuss different methodologies and techniques used in research work.
CO4	To familiarize students with Statistical packages such as SPSS/EXCEL.
CO5	Discuss different methodologies and techniques used in design and analysis of experiment.

BP809ET Cosmetics Science [Theory | Regular]

CO ID.	Course Outcome
CO.1	Provide knowledge on cosmetics, and related sciences cosmeceuticals (cosmetics with skin, hair, and oral care benefits), Personal care and hygiene products.
CO.2	Understand the concept of Principles of formulation and building blocks of skincare & Hair care products
CO.3	Describe the formulation of Sunscreens, herbal cosmetics for skin care, hair care, and oral Care & analytical method of cosmetics
CO.4	Evaluate cosmetics for various physicochemical properties
CO.5	Design cosmetics and cosmeceuticals that address the problems of dry skin, acne, dermatitis, prickly heat, wrinkles, blemishes, hair fall, Dandruff, body odour, bleeding gums, mouth odour, teeth discoloration and sensitive teeth.

BPH804ET Pharmaceutical Regulatory Science [Theory | Regular]

CO ID.	Course Outcome
CO1	Understanding the importance and functions of various regulatory/global organizations like USFDA/ICH/CDSCO etc.
CO2	Acquaint with the concept of innovator and generic drugs pertaining its drug development process from regulatory perspective.
CO3	Proficiency in understanding stages of drug developments and preparation of documents for clinical trial approvals, Pharmacovigilance and various approval processes.
CO4	Elementary knowledge of drug approval process along with submission of global documents in CTD/ eCTD, DMF, CMC formats etc