



Panchakshri Shivacharya Trust's

CHANNABASWESHWAR PHARMACY COLLEGE (DEGREE)

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Course Outcomes

PROGRAMME: B. PHARM

Name of Subject with Code	CO Code	Course Outcomes	Bloom's Level
B. Pharm I (Semester-I)			
BP101T - Human Anatomy and Physiology - Theory	BP101T_CO1	Explain the relationships between cell structure and function, histology, gross anatomy, and physiology within various organ systems.	L2, L5
	BP101T_CO2	Apply knowledge to clinical scenarios, demonstrating integration and implementation in real-world healthcare situations.	L3
	BP101T_CO3	Critically evaluate diverse information sources related to organ systems, distinguishing reliable scientific information from unsourced data and pseudoscience.	L5
	BP101T_CO4	Assess social, environmental, and ethical implications of human health and medical research as a responsible member of society.	L5
	BP101T_CO5	Use scientific laboratory equipment proficiently to collect and analyze data on human anatomy and physiology.	L3
	BP101T_CO6	Demonstrate a holistic understanding of how human organ systems are interrelated, applying this knowledge to approach human health comprehensively.	L2
BP102T - Pharmaceutical Analysis I - Theory	BP102T_CO1	Recall and understand fundamental concepts of analytical chemistry.	L1
	BP102T_CO2	Comprehend sources of errors in analytical chemistry and techniques to minimize them.	L2, L5
	BP102T_CO3	Apply and demonstrate fundamentals of volumetric analytical skills in practical scenarios.	L3
	BP102T_CO4	Analyze and explain the basic principles of electrochemical analytical techniques.	L4
	BP102T_CO5	Evaluate and enhance student interpretation skills, especially in choosing analytical techniques for estimating drugs of different categories.	L5

BP103T - Pharmaceuti cs I - Theory	BP103T_CO1	Acquire fundamental knowledge of preparatory pharmacy, including the arts and science of preparing conventional dosage forms.	L1, L3
	BP103T_CO2	Understand the history of the pharmacy profession and	L2, L5
	BP103T_CO3	Understand the basics of dosage forms, pharmaceutical incompatibilities, and various pharmaceutical calculations.	L2, L5
	BP103T_CO4	Apply knowledge to prepare various conventional dosage forms.	L3
	BP103T_CO5	Analyze the professional way of handling prescriptions.	L4
BP104T - Pharmaceuti cal Inorganic Chemistry - Theory	BP104T_CO1	Recall the principles of limit tests	L1
	BP104T_CO2	Comprehend different classes of inorganic pharmaceuticals.	L2, L5
	BP104T_CO3	Understand and explain different pharmaceutical buffers, their preparations, uses in pharmaceutical systems, measurement of tonicity, identification of different anions, cations, and different inorganic pharmaceuticals.	L2, L5
	BP104T_CO4	Apply knowledge about sources of impurities and methods to determine impurities in inorganic drugs and pharmaceuticals.	L3
	BP104T_CO5	Analyze the medicinal and pharmaceutical importance of inorganic compounds	L4
	BP104T_CO6	Recall a variety of inorganic drug classes.	L1
BP105T - Communicat ion Skill - Theory	BP105T_CO1	Understand the behavioral needs for a pharmacist to function effectively in pharmaceutical operations.	L2, L5
	BP105T_CO2	Communicate effectively, both verbally and non-verbally.	L1
	BP105T_CO3	Effectively manage a team as a team player.	L3
	BP105T_CO4	Develop interview skills, leadership qualities, and essentials.	L3, L6
BP106RBT - Remedial Biology - Theory	BP105T_CO1	Study the classification and salient features of the five kingdoms of life.	L3, L4
	BP106RBT_CO 2	Understand the basic components of anatomy & physiology of plants with a special reference to humans.	L2, L5
	BP106RBT_CO 3	Understand the basic components of anatomy & physiology of animals, with a special reference to humans.	L2, L5
	BP106RBT_CO 4	Apply knowledge to learn and understand the components of the living world, structure, and functional systems of the plant and animal kingdom.	L3
BP106RMT - Remedial	BP106RMT_C O1	Recall and demonstrate fundamental mathematical concepts and operations.	L1

Mathematics – Theory	BP106RMT_C O2	Understand the principles and applications of basic mathematical operations, including arithmetic, algebra, and geometry.	L2, L5
	BP106RMT_C O3	Apply mathematical concepts to solve real-world problems and scenarios.	L3
	BP106RMT_C O4	Analyze and interpret mathematical data, recognizing patterns and relationships.	L4
	BP106RMT_C O5	Evaluate mathematical solutions for accuracy and relevance in specific contexts.	L5
	BP106RMT_C O6	Develop problem-solving strategies and methods for approaching mathematical challenges.	L3, L6
	BP106RMT_C O7	Applying Mathematical Skills: Apply mathematical skills to other academic disciplines and practical situations.	L3
BP107P - Human Anatomy and Physiology - Practical	BP107P_CO1	Recall and describe the gross morphology, structure, and functions of cells, skeletal, muscular, and cardiovascular systems of the human body.	L1
	BP107P_CO2	Understand various homeostatic mechanisms and recognize their imbalances.	L2, L5
	BP107P_CO3	Identify different types of bones in the human body.	L3
	BP107P_CO4	Identify different the various tissues in the human body.	L3
	BP107P_CO5	Apply knowledge of experimental techniques related to physiology.	L3
	BP107P_CO6	Perform various techniques such as blood group determination, blood pressure measurement, and blood cell counting.	L3
BP108P - Pharmaceuti cal Analysis I - Practical	BP108P_CO1	Explore and comprehend key concepts relevant to drug analysis	L2, L5
	BP108P_CO2	Acquire skills in the identification and characterization of pure drug substances using various analytical techniques	L1, L3
	BP108P_CO3	Perform assays related to pharmaceutical analysis.	L3
	BP108P_CO4	Understand the concept of analysis in pharmaceuticals.	L2, L5
BP109P - Pharmaceuti cs I - Practical	BP109P_CO1	Recall the principles used in the preparation of solid, liquid, and semi-solid dosage forms.	L1
	BP109P_CO2	Experiment with monophasic liquid dosage forms for internal and external administration.	L4, L6
	BP109P_CO3	Experiment with biphasic liquid dosage forms for internal and external administration	L4, L6
	BP109P_CO4	Design powders, granules dosage forms	L6
	BP109P_CO5	Design semi-solid dosage forms	L6
	BP109P_CO6	Formulate suppositories dosage forms.	L6
	BP110P_CO1	Prepare exact solutions for quantitative analysis.	L3

BP110P - Pharmaceuti- cal Inorganic Chemistry - Practical	BP110P_CO2	Identify the purity of inorganic compounds quantitatively.	L3
	BP110P_CO3	Analyze inorganic samples qualitatively.	L4
	BP110P_CO4	Synthesize inorganic compounds.	L6
	BP110P_CO5	Identify inorganic pharmaceuticals.	L3
	BP110P_CO6	Adjudge the level of specific impurities in given inorganic compounds through different limit tests.	L5
BP111P - Communicat- ion Skill - Practical	BP111P_CO1	Develop knowledge, skills, and judgment around human communication for effective collaboration.	L3, L6
	BP111P_CO2	Apply practical skills for effective communication, both verbal and non-verbal.	L3
	BP111P_CO3	Distinguish pronunciation of vowel and consonant sounds.	L4
	BP111P_CO4	Take part in advanced learning on comprehension, direct and indirect speech, and develop interview handling skills.	L3
	BP111P_CO5	Improve email etiquette for professional communication.	L6
BP112RBP - Remedial Biology – Practical	BP112RBP_CO 1	Identify and classify organisms based on their characteristics and salient features within the five kingdoms of life.	L3
	BP112RBP_CO 2	Observe and analyze the basic components of plant anatomy and physiology.	L2, L3, L5
	BP112RBP_CO 3	Understand the fundamental components of animal anatomy and physiology, with a special focus on human biology.	L2, L5
	BP112RBP_CO 4	Apply knowledge of the components of the living world to comprehend the structure and functional systems of plant and animal kingdoms.	L3
	BP112RBP_CO 5	Analyze and interpret experimental data related to biological concepts.	L4
	BP112RBP_CO 6	Perform experiments related to classification, anatomy, and physiology to reinforce theoretical knowledge.	L3
	BP112RBP_CO 7	Apply biological concepts learned in theory to practical situations and scenarios.	L3
	BP112RBP_CO 8	Engage in problem-solving exercises that require the application of biological principles.	L3
B. Pharm I (Semester-II)			
BP201T - Human Anatomy and Physiology II - Theory	BP201T_CO1	Recall and describe the structure and function of the nervous, endocrine, respiratory, urinary, and reproductive systems in the human body.	L1
	BP201T_CO2	Understand the interlinked mechanisms involved in the maintenance of normal functioning of the human body, emphasizing energy and metabolism.	L2, L5

	BP201T_CO3	Apply practical knowledge by performing experiments such as neurological reflex, body temperature measurement, olfaction, gustation reflex, and eyesight.	L3
	BP201T_CO4	Apply the knowledge gained to analyze and explain physiological processes within the human body.	L3
BP202T - Pharmaceutical Organic Chemistry I - Theory	BP202T_CO1	Recall the structure and name of organic compounds	L1
	BP202T_CO2	Understand the types of isomerism	L2, L5
	BP202T_CO3	Recall the reaction, name the reaction and orientation of reactions	L3
	BP202T_CO4	Understand the concept of reactivity/stability of compounds.	L4
	BP202T_CO5	Apply knowledge to identify and confirm unknown organic compounds.	L3
	BP202T_CO6	Analyze and name reactions of carbonyl compounds.	L4
	BP202T_CO7	Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration, etc.	L3
BP203T - Biochemistry - Theory	BP203T_CO1	Recall and explain the role, classification, and metabolism of various biomolecules (carbohydrates, proteins, and lipids).	L1
	BP203T_CO2	Understand the concepts of biological oxidation and bioenergetics.	L2, L5
	BP203T_CO3	Apply knowledge to discuss the metabolism of nucleic acids and protein biosynthesis.	L3
	BP203T_CO4	Analyze the application of enzyme inhibition in the pharmaceutical industry.	L4
BP204T - Pathophysiology - Theory	BP204T_CO1	Apply the knowledge of pathophysiology to understand the rationale behind pharmacological interventions and treatment modalities.	L3
	BP204T_CO2	Analyze the etiology and pathogenesis of selected disease states, name the signs and symptoms of diseases, and mention complications.	L4
	BP204T_CO3	Understand the fundamental principles of pathophysiology, including the normal physiological processes that can be disrupted in disease states.	L2, L5
	BP204T_CO4	Identify the manifestations and clinical signs of different diseases, recognizing the importance of early detection and diagnosis.	L3
	BP204T_CO5	Explain the mechanisms of inflammation and immune response in the context of various diseases, including autoimmune disorders.	L2, L5
BP205T - Computer	BP205T_CO1	Recall knowledge about the decimal, binary, octal, and hexadecimal number systems.	L1

Applications in Pharmacy - Theory	BP205T_CO2	Apply knowledge in project-based web development for creating dynamic web pages and understanding web applications and internet tools.	L3
	BP205T_CO3	Instruct on collecting drug data, records, and files, drug management,	L3
	BP205T_CO4	Identify and analyze biological drug targets	L3
	BP205T_CO5	Teach computers as data analysis tools in preclinical development using software applications.	L1, L3
BP206T - Environmental Science - Theory	BP206T_CO1	Create awareness about environmental problems among learners.	L6
	BP206T_CO2	Impart basic knowledge about the environment and related problems.	L3
	BP206T_CO3	Develop an attitude of concern for the environment and motivate learners to participate in environmental protection.	L3, L6
	BP206T_CO4	Acquire skills to help individuals identify and solve environmental problems.	L1, L3
	BP206T_CO5	Strive to attain harmony with nature.	L3
BP207P - Human Anatomy and Physiology II - Practical	BP207P_CO1	Identify and demonstrate the anatomical structures of the nervous, endocrine, respiratory, urinary, and reproductive systems through hands-on practical sessions.	L3
	BP207P_CO2	Apply practical skills to perform experiments related to neurological reflexes, body temperature measurement, olfaction, gustation reflex, and eyesight, ensuring accuracy and precision.	L3
	BP207P_CO3	Analyze experimental results to draw conclusions about the functioning of physiological mechanisms within the human body.	L4
	BP207P_CO4	Interpret data obtained from practical sessions to understand the physiological responses of the human body in various scenarios.	L2, L5
	BP207P_CO5	Engage in problem-solving exercises related to physiological experiments, including troubleshooting and proposing solutions to challenges encountered.	L3
	BP207P_CO6	Apply common laboratory techniques proficiently, including proper handling of laboratory equipment, maintaining safety protocols, and recording accurate observations.	L3
	BP207P_CO7	Collaborate with peers to perform group experiments, fostering teamwork and communication skills.	L6
	BP207P_CO8	Effectively communicate findings and observations through written reports, reinforcing the importance of clear and concise scientific communication.	L3

BP208P - Pharmaceutical Organic Chemistry I - Practical	BP208P_CO1	Explain the qualitative analysis and preparation of pharmaceutical organic compounds.	L2, L5
	BP208P_CO2	Identify functional elements present in pharmaceutical organic compounds.	L3
	BP208P_CO3	Analyze the presence of various functional groups in pharmaceutical compounds.	L4
	BP208P_CO4	Appraise the rules concerned with reactivity and orientation of organic compounds.	L5
	BP208P_CO5	Analyze unknown pharmaceutical organic compounds by determining their melting point/boiling point.	L4
	BP208P_CO6	Prepare and characterize derivatives of organic compounds.	L3
BP209P - Biochemistry - Practical	BP209P_CO1	Practice determining carbohydrates and proteins.	L3
	BP209P_CO2	Practice handling various instruments used in biochemical investigations and perform identification tests as per the Indian Pharmacopoeia.	L3
	BP209P_CO3	Identify normal and abnormal biochemical constituents of urine.	L3
	BP209P_CO4	Analyze and determine the factors affecting enzyme activity.	L4
BP210P - Computer Applications in Pharmacy - Practical	BP210P_CO1	Create documents demonstrating proficiency in word processing.	L6
	BP210P_CO2	Develop skills in using Microsoft Access effectively.	L3, L6
	BP210P_CO3	Instruct on reporting and printing reports from the patient database using MS Access.	L3
	BP210P_CO4	Design forms in MS Access for viewing, adding, deleting, and modifying patient records.	L6
	BP210P_CO5	Practice using computers for drug data information, record-keeping, and data recovery.	L3
	BP210P_CO6	Practice adding information to web pages using tables, queries, forms, and reports.	L3
	BP210P_CO7	Design the web pages using HTML and XML.	L6
B. Pharm II (Semester-III)			
BP301T - Pharmaceutical Organic Chemistry II - Theory	BP301T_CO1	Recall the structure, name, and the type of isomerism of organic compounds.	L1
	BP301T_CO2	Recall the reactions, name reactions, and orientation of reactions.	L1
	BP301T_CO3	Understand the concept of reactivity/stability of compounds.	L2, L5
	BP301T_CO4	Practice the preparation of organic compounds.	L3
BP302T - Physical Pharmaceutics I - Theory	BP302T_CO1	Understand various physicochemical properties of drug molecules in designing dosage forms.	L2, L5
	BP302T_CO2	Know the principles of chemical kinetics and apply them for stability testing and determining the expiry date of formulations.	L1, L3

	BP302T_CO3	Demonstrate the use of physicochemical properties in the formulation development and evaluation of dosage forms.	L2
	BP302T_CO4	Demonstrate the preparation of buffer and isotonic solutions and determination of pH	L2
	BP302T_CO5	Analyze the drug complexes by various methods and interpret the data	L4
BP303T - Pharmaceutical Microbiology - Theory	BP303T_CO1	Understand methods of identification, cultivation, and preservation of various microorganisms.	L2, L5
	BP303T_CO2	Apply the knowledge of sterilization and disinfection process in pharmaceutical industry	L3
	BP303T_CO3	Demonstrate the how sterility testing will be done for pharmaceutical products.	L2
	BP303T_CO4	Design and plan a sterile area, describe sources and prevention of contamination	L6
	BP303T_CO5	Understand cell culture technology and its applications in pharmaceutical industries.	L2, L5
BP304T - Pharmaceutical Engineering - Theory	BP304T_CO1	Describe the principles and methodology of various unit operation processes and their application in the pharmaceutical manufacturing industry.	L2
	BP304T_CO2	Teach how to analyze the use of correct material and handling techniques for the construction of pharmaceutical plants.	L1, L3
	BP304T_CO3	Understand the concept of corrosion and its preventive measures in the pharmaceutical manufacturing industry.	L2, L5
	BP304T_CO4	Apply engineering principles to address real-life issues in various pharmaceutical manufacturing processes.	L3
BP305P - Pharmaceutical Organic Chemistry II - Practical	BP305P_CO1	Acquire basic knowledge regarding general methods of preparation of organic compounds.	L1, L3
	BP305P_CO2	Understand the reactions of some organic compounds.	L2, L5
	BP305P_CO3	Understand the reactivity of organic compounds.	L2, L5
	BP305P_CO4	Identify or confirm the identification of organic compounds.	L3
BP306P - Physical Pharmaceuticals I - Practical	BP306P_CO1	Educate on various derived properties of drug molecules in the formulation of dosage forms.	L3
	BP306P_CO2	Demonstrate various instrumentation of physicochemical and derived properties in the formulation of dosage forms.	L2
	BP306P_CO3	Evaluate various dosage forms using physicochemical and derived properties.	L5
	BP306P_CO4	Remember principles of chemical kinetics and stability to use them for stability testing and determination of the expiry date of formulations.	L1

BP307P - Pharmaceuti- cal Microbiolog- y – Practical	BP306P_CO1	Understand practical methods of identification, cultivation, and preservation of various microorganisms.	L2, L5
	BP306P_CO2	Implement the sterilization process in pharmaceutical industry	L3
	BP306P_CO3	Understand the importance of sterility testing	L2, L5
	BP306P_CO4	Perform various experiments related to microbiological analysis	L3
BP308P Pharmaceuti- cal Engineering - Practical	BP308P_CO1	Conduct experiments related to unit operation processes involved in pharmaceutical manufacturing.	L3
	BP308P_CO2	Operate equipment used in the manufacture of pharmaceutical products.	L3
	BP308P_CO3	Analyze and interpret data generated from experiments, including graph and data representation.	L4
	BP308P_CO4	Demonstrate knowledge about the equipment used in pharmaceutical dosage form manufacturing.	L2
B. Pharm II (Semester-IV)			
BP401T Pharmaceuti- cal Organic Chemistry III – Theory	BP401T_CO1	Acquire knowledge of stereochemical features, including conformation and stereo electronic effects; understand geometrical isomers.	L1, L3
	BP401T_CO2	Acquire the knowledge and understanding of the basic experimental principles of heterocyclic chemistry	L1, L3
	BP401T_CO3	Create a simple pharmaceutically active organic compounds, especially five and six-membered heterocyclic compounds.	L6
	BP401T_CO4	Describe detailed mechanisms for common naming reactions.	L2
BP402T Medicinal Chemistry I –Theory	BP402T_CO1	Identify the physiochemical properties influencing drug behavior in the body	L3
	BP402T_CO2	Comprehend the chemistry of drugs in relation to their pharmacological activity.	L2, L5
	BP402T_CO3	Explain the interplay between drug metabolism, adverse effects, and therapeutic benefits.	L2, L5
	BP402T_CO4	Understand the Structural Activity Relationship (SAR) of different class of drugs and chemical synthesis of some drug.	L2, L5
	BP402T_CO5	Understand the classification, mechanism of action, and uses of drugs.	L2, L5
BP403T Physical Pharmaceuti- cs II – Theory	BP403T_CO1	Understand various physical and chemical properties of drug substances in designing dosage forms.	L2, L5
	BP403T_CO2	Apply physical and chemical properties in the development of formulations.	L3

	BP403T_CO3	Demonstrate the use of physicochemical properties in the evaluation of formulations.	L2
	BP403T_CO4	Understand the concepts and principles of chemical kinetics and stability;	L2, L5
	BP403T_CO5	Apply concepts and principles of chemical kinetics in determining the stability and expiry date of drug products.	L3
BP404T Pharmacology I – Theory	BP404T_CO1	Understand the pharmacological actions of different categories of drugs.	L2, L5
	BP404T_CO2	Explain the mechanism of drug action at organ system/subcellular/macromolecular levels.	L2, L5
	BP404T_CO3	Apply basic pharmacological knowledge in the prevention and treatment of various diseases.	L3
	BP404T_CO4	Understand basic pharmacological concepts and explain the pathophysiology of various disorders.	L2, L5
	BP404T_CO5	Explain the pathophysiology of various disorders.	L2, L5
BP405T Pharmacognosy and Phytochemistry I – Theory	BP405T_CO1	Explain the fundamentals of Pharmacognosy, including the scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them, and their medicinal properties.	L2, L5
	BP405T_CO2	Understand techniques in the cultivation and production of crude drugs.	L2, L5
	BP405T_CO3	Know the uses and chemical nature of crude drugs	L1, L3
	BP405T_CO4	Understand evaluation techniques for herbal drugs.	L2, L5
	BP405T_CO5	Carry out microscopic and morphological evaluation of crude drugs.	L3
BP406P Medicinal Chemistry I – Practical	BP406P_CO1	Prepare medicinal compounds or intermediates.	L3
	BP406P_CO2	Perform assays of drugs from their formulations.	L3
	BP406P_CO3	Apply knowledge to determine the partition coefficient of a few drugs.	L3
	BP406P_CO4	Study chemical structures and pharmacological actions.	L3, L4
BP407P Physical Pharmaceutics II – Practical	BP407P_CO1	Determine physicochemical properties in the formulation development and evaluation of dosage forms.	L5
	BP407P_CO2	Use principles of chemical kinetics for stability testing.	L3
	BP407P_CO3	Compare and contrast different methods used in determining the same physicochemical parameters.	L2, L4, L5
	BP407P_CO4	Demonstrate and explain the effects of different excipients and their concentrations on physicochemical determinants of dosage forms.	L2
BP408P Pharmacology	BP408P_CO1	Describe basic instruments used in experimental pharmacology and follow CPSEA guidelines.	L2

gy I – Practical	BP408P_CO2	Describe the use of experimental animals and models in the new drug development system.	L2
	BP408P_CO3	Describe various anesthetics, blood withdrawal techniques, and routes of drug administration in laboratory animals.	L2
	BP408P_CO4	Understand the mechanism of action, therapeutic uses, and toxicity of drugs.	L2, L5
BP409P Pharmacognosy and Phytochemistry I – Practical	BP409P_CO1	Analyze crude drugs by chemical tests and morphological characters.	L4
	BP409P_CO2	Understand methods of leaf constants for standardization.	L2, L5
	BP409P_CO3	Understand techniques of drug evaluation and extraction processes.	L2, L5
	BP409P_CO4	Study drug evaluation techniques and moisture content.	L3, L4
B. Pharm III (Semester-V)			
BP501T Medicinal Chemistry II - Theory	BP501T_CO1	Understand the chemistry of drugs in relation to their pharmacological activity.	L2, L5
	BP501T_CO2	Write classifications, metabolic pathways, adverse effects, and therapeutic uses of different classes of drugs.	L6
	BP501T_CO3	Explain the structure-activity relationship of a selective class of drugs.	L2, L5
	BP501T_CO4	Acquire knowledge about the mechanism of action of different classes of medicinal compounds.	L1, L3
	BP501T_CO5	Outline the synthesis of a selective class of medicinal drugs.	L2
BP502T Industrial Pharmacy I - Theory	BP502T_CO1	Study and understand the basic concepts and rationale of developing various pharmaceutical dosage forms.	L3, L4
	BP502T_CO2	Detail the manufacturing procedures of dosage forms.	L4
	BP502T_CO3	Study various equipment and instruments, along with modern tools used in the manufacturing of dosage forms.	L3, L4
	BP502T_CO4	Illustrate processing problems and their remedies in the development and manufacturing of dosage forms.	L2
	BP502T_CO5	Evaluate the quality control testing of dosage forms.	L5
	BP502T_CO6	Understand the applications of various dosage forms.	L2, L5
BP503T Pharmacology II - Theory	BP503T_CO1	Understand the mechanism of drug action and its relevance in the treatment of different diseases.	L2, L5
	BP503T_CO2	Explain pharmacokinetics, adverse drug reactions (ADR), and dosage of drugs.	L2, L5

	BP503T_CO3	Understand therapeutic uses and dosage regimens for disease treatment.	L2, L5
	BP503T_CO4	Appreciate newer targets for several disease conditions in treatment.	L3
BP504T Pharmacognosy and Phytochemistry II - Theory	BP504T_CO1	Understand modern extraction techniques, characterization, and identification of herbal drugs and phytoconstituents.	L2, L5
	BP504T_CO2	Understand the preparation and development of herbal formulations.	L2, L5
	BP504T_CO3	Understand herbal drug interactions.	L2, L5
	BP504T_CO4	Carryout the isolation and identification of phytoconstituents.	L2, L3
BP505T Pharmaceutical Jurisprudence - Theory	BP505T_CO1	Comprehend and understand pharmaceutical legislations and their implications in the pharmacy profession.	L2, L5
	BP505T_CO2	Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals, the regulatory approval process, and registration in Indian and international markets.	L1, L3
	BP505T_CO3	Understand various Indian pharmaceutical Acts and Laws and the code of ethics during pharmaceutical practice.	L2, L5
BP506P Industrial Pharmacy I - Practical	BP506P_CO1	Perform pre-formulation studies on the given sample of a drug.	L3
	BP506P_CO2	Manufacture given dosage forms (Tablet, Capsule, Injection, Cream, etc.).	L6
	BP506P_CO3	Evaluate the manufactured dosage form.	L5
	BP506P_CO4	Evaluate marketed dosage forms.	L5
	BP506P_CO5	Evaluate packaging material (e.g., Glass).	L5
BP507P Pharmacology II - Practical	BP507P_CO1	Demonstrate the isolation of different organs/tissues from laboratory animals through simulated experiments.	L2
	BP507P_CO2	Demonstrate various receptor actions using isolated tissue preparation.	L2
	BP507P_CO3	Understand the mechanism of drug action and its relevance in the treatment of different diseases.	L2, L5
	BP507P_CO4	Appreciate the correlation of pharmacology with related medical sciences.	L3
BP508P Pharmacognosy and Phytochemistry II - Practical	BP508P_CO1	Understand the morphology and microscopy of crude drugs, along with powder characteristics.	L2, L5
	BP508P_CO2	Understand identification, extraction, and isolation techniques.	L2, L5
	BP508P_CO3	Learn the isolation of chemical constituents by modern methods.	L3
	BP508P_CO4	Gain knowledge of the identification and standardization of crude drugs through chemical tests.	L1

B. Pharm III (Semester-VI)			
BP601T Medicinal Chemistry III - Theory	BP601T_CO1	Study the development and classification of medicinal agents based on the chemical nature of drugs.	L3, L4
	BP601T_CO2	Draw the structure, write the chemical name, and outline the synthetic procedure of drugs.	L6
	BP601T_CO3	Relate the knowledge of the chemistry of drugs of specified categories with respect to their application.	L1, L2
	BP601T_CO4	Explain the Structural Activity Relationship (SAR) of various classes of drugs.	L2, L5
	BP601T_CO5	Describe the importance of drug design and various techniques like CADD, QSAR, and Molecular modeling.	L2
	BP601T_CO6	Outline different strategies and applications of Combinatorial Chemistry.	L2
BP602T Pharmacology III - Theory	BP602T_CO1	Study the pharmacology and pharmacotherapy of various drugs acting on the respiratory system and gastrointestinal tract.	L3, L4
	BP602T_CO2	Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases.	L2, L5
	BP602T_CO3	Understand the pharmacology of chemotherapy.	L2, L5
	BP602T_CO4	Study details of immunopharmacology, toxicology, and chrono pharmacology.	L3, L4
	BP602T_CO5	Appreciate the correlation of pharmacology with related medical sciences.	L3
BP603T Herbal Drug Technology - Theory	BP603T_CO1	Understand raw materials as a source of herbal drugs from cultivation to herbal drug product.	L2, L5
	BP603T_CO2	Know the WHO and ICH guidelines for the evaluation of herbal drugs.	L1, L3
	BP603T_CO3	Understand herbal cosmetics, natural sweeteners, and nutraceuticals.	L2, L5
	BP603T_CO4	Appreciate the patenting of herbal drugs and Good Manufacturing Practices (GMP).	L3
BP604T Biopharmaceutics and Pharmacokinetics - Theory	BP603T_CO1	Understand basic concepts in biopharmaceutics and pharmacokinetics and their significance.	L2, L5
	BP604T_CO2	Use plasma drug concentration-time data to calculate pharmacokinetic parameters describing the kinetics of drug absorption, distribution, metabolism, excretion, and elimination.	L3
	BP604T_CO3	Understand the concept of bioavailability and bioequivalence of drug products and their significance.	L2, L5
	BP604T_CO4	Understand various pharmacokinetic parameters, their significance, and applications.	L2, L5

	BP604T_CO5	Impart knowledge and skills of biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development.	L3
BP605T Pharmaceutical Biotechnology - Theory	BP605T_CO1	Understand the importance of immobilized enzymes in pharmaceutical industries.	L2, L5
	BP605T_CO2	Instructed about genetic engineering applications in relation to the production of pharmaceuticals.	L2, L3
	BP605T_CO3	Given information about the importance of monoclonal antibodies in industries.	L1, L3
	BP605T_CO4	Appreciate the use of microorganisms in fermentation technology.	L3
	BP605T_CO5	Describe various blood products, plasma collection, and processing.	L2
	BP605T_CO6	Discuss the principles of fermentation, its design, and the production of pharmaceutical products.	L6
BP606T Quality Assurance - Theory	BP606T_CO1	Understand the responsibilities of QA and QC departments.	L2, L5
	BP606T_CO2	Understand the scope of quality certifications applicable to pharmaceutical industries.	L2, L5
	BP606T_CO3	Understand cGMP aspects in a pharmaceutical industry.	L2, L5
	BP606T_CO4	Understand the GLP aspect in the pharmaceutical industry.	L2, L5
	BP606T_CO5	Appreciate the importance of documentation.	L3
BP607P Medicinal Chemistry III - Practical	BP607P_CO1	Prepare medicinally important compounds/intermediates.	L3
	BP607P_CO2	Explain the physicochemical properties of drugs using drug design software.	L2, L5
	BP607P_CO3	Draw chemical structures and reactions using ChemDraw software.	L6
	BP607P_CO4	Analyze the purity of medicinal compounds.	L4
BP608P Pharmacology III - Practical	BP608P_CO1	Understand the basic principle of bioassay and types of bioassay.	L2, L5
	BP608P_CO2	Demonstrate the isolation of different organs/tissues from laboratory animals through simulated experiments.	L2
	BP608P_CO3	Understand the effect of different drugs on concentration-response curves.	L2, L5
	BP608P_CO4	Demonstrate various receptor actions using isolated tissue preparation.	L2
BP609P Herbal Drug Technology - Practical	BP609P_CO1	Understand raw materials as a source of herbal drugs from cultivation to herbal drug product.	L2, L5
	BP609P_CO2	Know the WHO and ICH guidelines for the evaluation of herbal drugs.	L1, L3
	BP609P_CO3	Understand herbal cosmetics, natural sweeteners, and nutraceuticals.	L2, L5
	BP609P_CO4	Appreciate patenting of herbal drugs and Good Manufacturing Practices (GMP).	L3

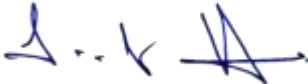
B. Pharm IV (Semester-VII)

BP701T Instrumental Methods of Analysis - Theory	BP701T_CO1	Gain brief knowledge about the electromagnetic spectrum and its interaction with matter.	L1
	BP701T_CO2	Explain the principles, instrumentation, and applications of UV-Visible and IR spectroscopy.	L2, L5
	BP701T_CO3	Recall and explain the principles, instrumentation, and applications of Fluorimetry.	L1
	BP701T_CO4	Describe the principles, instrumentation, and applications of Flame Photometry, Atomic Absorption Spectroscopy, and Nepheloturbidometry Techniques.	L2
	BP701T_CO5	Understand the chromatographic separation and analysis of drugs.	L2, L5
BP702T Industrial Pharmacy II - Theory	BP702T_CO1	Detail the process of pilot plant scale-up of pharmaceutical dosage forms.	L4
	BP702T_CO2	Demonstrate the practice and process of technology transfer from lab scale to commercial.	L2
	BP702T_CO3	Detail different laws and acts that regulate the pharmaceutical industry.	L4
	BP702T_CO4	Describe the approval process and regulatory requirements of drug products.	L2
	BP702T_CO5	Describe the role and responsibility of regulatory agencies in the approval of drugs; understand the organization and responsibilities of national and state licensing authorities.	L2
BP703T Pharmacy Practice - Theory	BP703T_CO1	Understand various drug distribution methods in a hospital.	L2, L5
	BP703T_CO2	Appreciate pharmacy stores management and inventory control.	L3
	BP703T_CO3	Monitor drug therapy of patients through medication chart review and clinical review; obtain medication history, interview, and counsel patients.	L5
	BP703T_CO4	Identify drug-related problems and detect/assess adverse drug reactions.	L3
	BP703T_CO5	Know pharmaceutical care services and perform patient counseling in community pharmacy.	L1, L3
	BP703T_CO6	Appreciate the concept of rational drug therapy.	L3
BP704T Novel Drug Delivery System - Theory	BP704T_CO1	Understand various approaches for the development of novel drug delivery systems.	L2, L5
	BP704T_CO2	Understand the criteria for the selection of drugs and polymers for the development of novel drug delivery systems.	L2, L5
	BP704T_CO3	Formulate and evaluate various novel drug delivery systems.	L6
	BP704T_CO4	Know about current developments in drug delivery technologies.	L1, L3

BP705P Instrumental Methods of Analysis - Practical	BP705P_CO1	Understand appropriate safety measures while handling instruments, chemicals, and apparatus.	L2, L5
	BP705P_CO2	Apply the basic principles of various spectroscopic techniques in the analysis of drugs using various instruments.	L3
	BP705P_CO3	Acquire knowledge for processing and interpreting data obtained through experimentation and report the results as per regulatory requirements.	L1, L3
	BP705P_CO4	Perform quantitative and qualitative analysis of drugs using various analytical instruments.	L3
BP706PS Practice School - Theory	BP706P_CO1	Know various drug distribution methods in a hospital.	L1, L3
	BP706P_CO2	Appreciate pharmacy stores management and inventory control.	L3
	BP706P_CO3	Monitor drug therapy of patients through medication chart review and clinical review; obtain medication history, interview, and counsel patients.	L5
	BP706P_CO4	Identify drug-related problems and detect/assess adverse drug reactions.	L3
	BP706P_CO5	Know pharmaceutical care services and perform patient counseling in community pharmacy.	L1, L3
	BP706P_CO6	Appreciate the concept of rational drug therapy.	L3
B. Pharm IV (Semester-VIII)			
BP801T Biostatistics and Research Methodology - Theory	BP801T_CO1	Understand the fundamental concepts of biostatistics and research methodology.	L2, L5
	BP801T_CO2	Apply statistical methods to analyze and interpret research data.	L3
	BP801T_CO3	Design and conduct research studies, incorporating appropriate statistical tools.	L6
	BP801T_CO4	Develop skills in critically evaluating research literature.	L3, L6
BP802T Social and Preventive Pharmacy - Theory	BP802T_CO1	Recognize the concepts and principles of public health.	L1
	BP802T_CO2	Relate food to nutritional health, balanced diet, deficiencies, and their prevention.	L1, L2
	BP802T_CO3	Illustrate sociocultural factors and their relation to health.	L2
	BP802T_CO4	Identify avoidable habits for personal hygiene and health.	L3
	BP802T_CO5	Explain the principles of the prevention and control of communicable and non-communicable diseases.	L2, L5
	BP802T_CO6	Provide a brief overview of national health programs, their objectives, functioning, and outcomes.	L3

	BP802T_CO7	Recognize community services in rural, urban, and school health.	L1
	BP802T_CO8	Explain general measures and strategies to be followed in social and preventive pharmacy.	L2, L5
BP804ET Pharmaceutical Regulatory Science - Theory	BP804ET_CO1	Understand the process of drug discovery, development, and generic product development.	L2, L5
	BP804ET_CO2	Describe the regulatory approval process and registration procedures for APIs and drug products in various countries.	L2
	BP804ET_CO3	Understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.	L2, L5
	BP804ET_CO4	Understand the development of clinical trial protocols.	L2, L5
	BP804ET_CO5	Learn the basic importance of the Orange Book, Federal Register, Code of Federal Regulations, and Purple Book.	L3
	BP804ET_CO6	Detail the registration process of Indian drug products in overseas markets.	L4
BP809ET Cosmetic Science - Theory	BP809ET_CO1	Understand the principles of formulation and the building blocks of various skin and hair care products.	L2, L5
	BP809ET_CO2	Explore the factors influencing cosmetic product development and formulation.	L2, L5
	BP809ET_CO3	Analyze the safety and regulatory aspects associated with cosmetic products.	L4
	BP809ET_CO4	Understand the basic principles and techniques of cosmetic product testing.	L2, L5
	BP809ET_CO5	Appreciate the significance of quality control and assurance in cosmetic	L3




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