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PRINCETON COLLEGE OF PHARMACY

(Affiliated to JNTUH & Approved by PCI, New Delhi)

Chowdaryguda, Korremula (V), Ghatkesar (M), Medchal (Dist.)-500 088

2.6.2 Attainment of POs and COs are evaluated.

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Princeton College of Pharmacy has detailed the learning objectives of each Academic programme, as well as the institution's vision and mission. The significance of Program Outcomes (POs) and Program Specific Outcomes (PSOs) in sustaining the level of the graduating programme cannot be emphasised. When establishing the curriculum for each college department, all of the POs were taken into account. PSOs are designed in conjunction with the curriculum.

Course Outcomes (COs) are concise statements that employ exact, quantitative language to convey the learning that will occur across the programme. Then Pos and PSOs are utilised to map these COs.

The efficiency of the CO-PO/PSO mapping will be reviewed by the course lead at the start of the semester. The course is tested throughout the semester using evaluation methodologies to gauge CO achievement.

Because there are more samples available for this category, direct procedures receive a 75% weighting in the computation of PO achievement, whereas indirect methods receive a 25% weighting.

The following assessment strategies are used to assess programme results and program-specific outcomes:

1. **Direct Evaluation (75%).**

- Assignment
- Examination from within
- Semester-ending test

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This method is made up of the three aspects described below:

- Each student is given one assignment (5%) that comprises of a number of questions related to the material being studied. The assessment will be based on their performance.
- Internal Exam (20%): This type of performance evaluation is done during the examination sessions, which are held twice a semester. Each internal test focuses on the course results.
- Semester Final Exam (75%): The end-of-semester test includes the whole course topic and acts as a gauge for judging whether or not all COs have been acquired.

2. Indirect Evaluation (25%)

Student feedback Evaluations of the overall teaching effectiveness of each faculty member assigned to a specific class will be done in the middle of the semester. The Internal Quality Assurance Cell (IQAC) will examine the input and share its results with the faculty via the HOD.

Faculty members will meet with the HOD and Principal in person to discuss their performance difficulties.

Course Evaluation: At the end of the semester, each subject's learning results will be reviewed. Course Goals that are part of the assessment process will be associated with Values that demonstrate the level of success.

Response to an Event: Various Club Activities The department and institute have created clubs to assist students in developing their whole personality as well as their technical talents.

In the beginning of the semester, these groups plan their activity programme.

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SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Human Anatomy and Physiology –I BP101 T	C101.1	Identify gross morphology, structure and functions of the various organs of the human body.
	C101.2	Describe various homeostatic mechanisms and their imbalances in the human body.
	C101.3	Identify the different tissues and different systems of the human body.
	C101.4	Demonstrate the different types of bones in the human body.
	C101.5	Illustrate the coordination of working pattern of different organs of each system.
Pharmaceutical Analysis – I BP102 T	C102.1	Explain the theoretical basis of commonly used statistical methods & correctly analyze & interpret the results of statistical data from surveys, experiments & observational studies.
	C102.2	Illustrate sources of errors in analytical techniques, methods to minimize them and calibration of analytical methods.
	C102.3	Describe the various titrimetric and electrochemical methods of analysis and their application in quality control of pharmaceuticals.
	C102.4	Develop and enhance the analytical skills
Pharmaceutics – I BP103 T	C103.1	Describe the history of pharmacy profession and its scope.
	C103.2	Identify the prescription in a professional manner.
	C103.3	Describe the basics of Pharmaceutical calculations & calculate the dose for a drug.
	C103.4	Discuss about various dosage forms.
	C103.5	Identify and suggest the correction methods in pharmaceutical incompatibilities in prescription.
Pharmaceutical Inorganic Chemistry BP104 T	C104.1	Acquire Knowledge of sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
	C104.2	Demonstrate the principles of limit tests.
	C104.3	Identification of different anions, cations and different inorganic pharmaceuticals.
	C104.4	Describe the basic concepts of acidity /basicity, buffers and tonicity applicable in pharmaceuticals.
	C104.5	Summarize the medicinal and pharmaceutical importance of inorganic compounds.
	C104.6	Describing concepts, principles and applications of radiopharmaceuticals.
Communication Skills BO105 T	C105.1	Explain the key terminologies of process of communication.
	C105.2	Identify the importance of tone, body language and active listening as elements of effective communication.
	C105.3	Interpret the factors influencing communication perspectives.
	C105.4	Explain the nuances of audience – centric presentation.
	C105.5	Demonstrate effective interview skills.
	C105.6	Apply appropriate communication style in professional context.
	C106.1	Identify and understand the components of living world, Both Plants and Animals.



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Remedial Biology BP106RBT	C106.2	Classify and remember the salient features of five kingdoms of life.
	C106.3	Understand the basic components, both anatomy and physiology of plants.
	C106.4	Discuss and assess anatomy physiology of animals, particularly humans.
	C106.5	Identify and understand the various tissue systems and organ systems in plants and animals.
Remedial Mathematics BP106RMT	C106.1	Know the theory and their application in Pharmacy
	C106.2	Solve the different types of problems by applying theory.
	C106.3	Appreciate the important application of mathematics in Pharmacy.
	C106.4	Apply both conventional and creative techniques to the solutions of mathematical problems.
	C106.5	Solve problems of calculus, matrices.
Human Anatomy and Physiology –I BP107 P	C106.6	Apply range of techniques effectively to solve problems including theory deduction, approximation and simulation.
	C107.1	Perform various experiments related to identification of the tissues indifferent systems of human body.
	C107.2	Examine various techniques like blood group determination, blood pressure determination, blood cell counting.
	C107.3	Evaluate various experiments related to special senses and nervous system.
	C107.4	Practice the determination of heart rate and pulse rate.
Pharmaceutical Analysis – I BP108 P	C107.5	Record blood parameters like hemoglobin, clotting and bleeding time.
	C108.1	Understand the principles of volumetric and electro chemical analysis.
Pharmaceutics – I BP109 P	C108.2	Evaluate various volumetric and electrochemical titrations.
	C108.3	Develop analytical skills.
	C109.1	Explain some solid, liquid and semisolid dosage forms.
Pharmaceutical Inorganic Chemistry BP110 P	C109.2	Select suitable container and storage conditions for a product.
	C109.3	Asses the pharmaceuticals.
	C110.1	Demonstrate with the principles of limit tests.
	C110.2	Acquire the knowledge on identification of inorganic salts through various qualitative tests.
	C110.3	Apply the knowledge to perform tests for purity for different compounds as per IP.
Communication Skills BP111 P	C110.4	Implement skills to prepare inorganic salts -boric acid, potash alum and ferrous sulphate.
	C110.5	Apply knowledge to assess safety, health and consequent responsibilities relevant to this.
	C111.1	Recognize phonemes for proper articulation of words.
	C111.2	Explain the key concepts of writing skills and listening skills.
	C111.3	Apply listening skills and reading skills for comprehension.
	C111.4	Demonstrate conversation skills using appropriate body language and tone.
	C111.5	Demonstrate audience – centric presentation.
	C111.6	Develop professional written document.



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Remedial Biology BP112RBP	C112.1	Construct and develop microscopic sections of parts of the plant.
	C112.2	Identify various systems of frog using computer model.
	C112.3	Differentiate the various blood groups.
	C112.4	Calculate the blood pressure and tidal volumes.
Human Anatomy and Physiology – II BP201 T	C201.1	Recognize gross morphology, structure and functions of various organs of the human body.
	C201.2	Explain various homeostatic mechanisms in the human body.
	C201.3	Generalize the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
	C201.4	Understand the mechanisms in the maintenance of normal functioning of human body.
	C201.5	Understand the different coordinated working patterns of different organs of each system.
Pharmaceutical Organic	C202.1	acquire the knowledge and understanding of the basic experimental principles of pharmaceutical organic chemistry.
Chemistry – I BP202 T	C202.2	Generalize the classification, nomenclature, structure and the type of isomerism of the organic compound.
	C202.3	Review of important physical properties, reactions (and underlying mechanisms) and methods of preparation of various functional groups.
	C202.4	List out reactivity/stability of compounds and intermediates forming in reactions.
	C202.5	Demonstrate the identification of organic compound.
	C202.6	Summarize the concepts of named reactions and its applications.
Biochemistry BP203 T	C203.1	The study of bio molecules gives knowledge on bio chemical organization of living organisms along with their role.
	C203.2	It helps in understanding the catalytic role of enzymes, importance of enzyme inhibition in the design of new drugs.
	C203.3	Study of enzymes and isoenzymes emphasizes their role in therapeutic and diagnostic applications.
	C203.4	Metabolic pathways of bio molecules helps the students to acquire knowledge on various energy metabolisms that occur in living organisms.
	C203.5	Understanding the concepts of mammalian genetic organization, concepts of DNA, RNA, Protein and mutations gives wide knowledge to the student community to face the future challenges in health care sector.
	C203.6	The study of metabolic reactions and deficiency diseases gives awareness to the students to develop new alternatives in pharmaceutical industries to face the challenges of nutritional sciences.
Pathophysiology BP204 T	C204.1	Study the various etiological factors for the development of diseases.
	C204.2	Understand the concepts of pathophysiological basis of selected diseases.
	C204.3	Learn the basics of signs and symptoms of diseases.

	C204.4	Study of common complications of the diseases.
Computer Application in Pharmacy	C205.1	To know the various computer applications in pharmacy.
BP205 T	C205.2	To understand various number systems in computers.
	C205.3	To know web technologies.
	C205.4	To understand the various types of databases and applications of databases in pharmacy.
	C205.5	To learn Computers as data analysis in Preclinical development.
	C205.6	To know databases in the concept of bio-informatics.
Environmental Sciences BP206 T	C206.1	To create the awareness about environmental problems among learners.
	C206.2	To impart basic knowledge about the environment and its allied problems.
	C206.3	To develop an attitude of concern for the environment.
	C206.4	To motivate learner to participate in environment protection and environment improvement.
	C206.5	To acquire skills to help the concerned individuals in identifying and solving environmental problems.
	C206.6	To strive to attain harmony with Nature.
Human Anatomy and Physiology – II BP207 P	C207.1	Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc.
	C207.2	Identify the various organs of different systems of human body.
	C207.3	Practice the experiments like neurological reflex, body temperature measurement
	C207.4	Study of basic physiological parameters like blood pressure, heart rate, pulse and respiratory volumes.
	C207.5	Conceptualized study of integumentary systems
Pharmaceutical Organic Chemistry – I BP208 P	C208.1	Assessment of safety measures in organic chemistry laboratory and various laboratory techniques.
	C208.2	Evaluation of steps involved in identification of unknown organic compound.
	C208.3	State abilities to prepare suitable solid derivatives from organic compounds.
	C208.4	Build skills to prepare stereo models containing various functional groups.
	C208.5	Represent stereo models and its arrangement.
	C208.6	Apply knowledge to assess safety, health and consequent responsibilities relevant to this.
Biochemistry BP209 P	C209.1	Experiments on qualitative analysis of biomolecules gives practical knowledge to the students for better understanding of compositions of blood and urine samples.
	C209.2	Quantitative analysis of blood sugars, creatinine and cholesterol levels makes the students to be aware of the health conditions like Diabetes and jaundice etc.
	C209.3	Students can gain knowledge on different buffer preparations that helps them in research applications.
	C209.4	Study of enzymes like Amylases give knowledge to the students related to enzyme applications in industries.



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	C209.5	Qualitative analysis of urine sample for abnormal constituents helps to know about the diseases related to urine in human beings.
Computer Application in Pharmacy BP210 P	C210.1	To know how to design a questionnaire using a word processing package and a form in MS Access.
	C210.2	To understand how to create a HTML web page, invoice table and database.
	C210.3	To learn how to create mailing labels Using Label Wizard, generating label in MS word.
	C210.4	To understand generating report and printing the report from database.
	C210.5	To know drug information storage and retrieval using online tools and MS Access.
	C210.6	To understand exporting tables, queries, forms and reports to web and XML pages.
Pharmaceutical Organic Chemistry – II BP301 T	C301.1	Explain the concept of orbital picture, resonance, reactions and effects of substituent's of benzene.
	C301.2	Understand on acidity, effect of substituent's, reaction and qualitative test of phenols.
	C301.3	Demonstrate basicity, effect of substituent's, reaction of aromatic amines.
	C301.4	Reproduce the concept of optical isomerism and geometrical isomerism of organic compounds. Including concept of resolution of racemic modifications.
	C301.5	Describe the synthesis, reactions, structure and medicinal uses of some polynuclear hydrocarbons.
	C301.6	Explain the theory of cycloalkanes and chemistry of fats and oils.
Physical Pharmaceutics – I BP302 T	C302.1	State the physicochemical properties of drug molecules, pH, solubility and formation of complexes.
	C302.2	Explain the role of surfactants.
	C302.3	Explain physical principles of states of matter and phase rule.
	C302.4	Complete pKa values and estimate HLB values.
	C302.5	Summarize the importance of pH and buffers in manufacturing pharmaceutical dosage forms and maintaining stability and Solving problems related to buffers and isotonic solutions.
	C302.6	Summarize skills and working knowledge of the principles and concepts of surface tension and its measurement.
Pharmaceutical Microbiology BP303 T	C303.1	Study of ph. Microbiology gives overall knowledge on microorganisms, infections, treatment and their applications in pharmaceutical industries and medicine.
	C303.2	Methods of identification, cultivation and preservation of microbes give knowledge to students for better understanding in handling them and to know their applications in human life.
	C303.3	Understanding of sterilization concepts gives immense knowledge to the students which help them in getting knowledge in industrial processing.
	C303.4	Concepts of sterility testing are more useful to the students to have sound knowledge in pharmaceutical product manufacturing.
	C303.5	The concepts of cell culture technology are useful for various applications in industries.



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	C303.6	Study of equipments like aseptic cabinet, hot air oven and incubator updates the knowledge of students to have experience in modern tool usage in academics
Pharmaceutical Engineering BP304 T	C304.1	Explain various unit operations used in Pharmaceutical industries.
	C304.2	To comprehend the material handling techniques.
	C304.3	Identify various processes involved in pharmaceutical manufacturing process.
	C304.4	Instruct the pharmaceutical applications of various unit operations.
	C304.5	Review the significance of plant lay out design for optimum use of resources.
	C304.6	Generalize the preventive methods used for corrosion control in Pharmaceutical industries.
Pharmaceutical Organic Chemistry – II BP305 P	C305.1	Acquire Knowledge on separation and identification of qualitative analysis of solid-solid organic binary mixtures.
	C305.2	Demonstrate the concept of re-crystallisation and Steam distillation.
	C305.3	Determination of Ester value, Acid value and saponification value of oil sample.
	C305.4	Use various techniques for the different organic compounds to understand the reaction mechanisms.
	C305.5	Apply knowledge to assess safety, health and consequent responsibilities relevant to this.
Physical Pharmaceutics – I BP306 P	C306.1	Demonstrate solubility studies for different drugs.
	C306.2	Evaluate pKa values and estimate HLB values.
	C306.3	Examine and determine the percentage composition.
	C306.4	Asses Critical Micellar Concentration of various surfactants.
	C306.5	Evaluate of stability constants and partition coefficients.
Pharmaceutical Microbiology BP307 P	C307.1	Hands on experience on the equipments like BOD incubator, LMF chamber, aseptic cabinet and Hot air oven gives knowledge to the students that is useful in understanding microbiological concepts.
	C307.2	Sterilization techniques illustrates role of sterilization and disinfection in various ph. Industries.
	C307.3	Staining techniques helps the students to identify the morphological and cultural characteristic features of microorganisms.
	C307.4	Pure culture (isolation) techniques helps the students in better understanding of contamination, spoilage like conditions in processing mechanism in industries.
	C307.5	Sterility testings give knowledge to the students about the industrial production of various drugs and medicines and their safety.
	C307.6	Biochemical and analytical tests makes the students to learn the safety issues of products that are useful for community.
Pharmaceutical Engineering BP308 P	C308.1	Design various experiments related to unit operations.
	C308.2	Instruct to operate equipment's used in the manufacture of pharmaceutical products.
	C308.3	Interpret results of the experiments conducted.



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	C308.4	Demonstrate the material and energy requirements for optimizing the pharmaceutical unit processes.
Pharmaceutical Organic Chemistry – III BP401 T	C401.1	Summarize the medicinal uses and other applications of organic compounds.
	C401.2	Acquire the knowledge and understanding of the basic experimental principles of heterocyclic chemistry.
	C401.3	Instruct to draw the structures and synthesize simple pharmaceutically active organic compounds having five and six membered heterocyclic compounds.
	C401.4	Describe detailed mechanisms for common naming reactions.
	C401.5	Identify Stereo-chemical features including conformation and stereo electronic effects; Geometrical isomers.
Medicinal Chemistry – I BP402 T	C402.1	Explain history and basic principles of Medicinal Chemistry.
	C402.2	Study the concept of Physicochemical properties on biological action of drug molecule
	C402.3	Describe classification, mechanism of action, structure activity relationship and uses of drugs acting on Autonomic nervous and Central Nervous system.
	C402.4	Explanation on recent development of Prodrugs, Soft drugs and hard drugs. Scheme of synthesis of drugs from various therapeutic categories.
	C402.5	Acquire Knowledge on structural activity relationship (SAR) of different class of drugs.
	C402.6	Classification of centrally and peripherally acting analgesic drugs.
Physical Pharmaceutics – II BP403 T	C403.1	Explain the concept of rheology and flow properties of pharmaceutical preparations.
	C403.2	Describe the factors leading to instability of disperse systems, effect of particle size distribution of powders on the manufacture of dosage forms.
	C403.3	State the principles of chemical kinetics in stability testing.
	C403.4	Apply the principles of micrometrics, rheology, chemical kinetics & stability, coarse dispersions in the formulation development and evaluation of dosage forms.
Pharmacology – I BP404 T	C404.1	Describe the pharmacological actions of different classes of drugs.
	C404.2	Recognize molecular mechanisms of drug action in the human body.
	C404.3	Read the Basic pharmacological knowledge of drugs in the prevention and treatment of various diseases.
	C404.4	Define the concepts of different types of drug receptors and their signaling mechanisms.
	C404.5	Enumerate the basic knowledge of drug addiction, abuse, drug interactions, and Pharmacovigilance.
	C405.1	know the techniques in the cultivation, storage and production of crude drugs .
Pharmacognosy and Phytochemistry –	C405.2	Learn the fundamental aspects and applications of plant tissue culture.
	C405.3	Apply various techniques to evaluate the herbal drugs.

I BP405 T	C405.4	Understand the significance of Pharmacognosy in allopathy and traditional system of medicine.
	C405.5	Explain the Sources, chemical nature and uses of plant fibres, hallucinogens, teratogens and natural allergens and novel medicinal agents from marine sources.
Medicinal Chemistry – I BP406 P	C406.1	Construct synthetic procedure and understand related reaction mechanism.
	C406.2	Learn synthesis of medicinally important compounds / drug intermediates with Recrystallization and TLC techniques.
	C406.3	Implement Purification methods for synthesized compounds using Column chromatography.
	C406.4	Evaluation of Partition coefficient of drugs.
	C406.5	Examination of Ionisation constants of drugs.
	C406.6	Apply knowledge to assess safety, health and consequent responsibilities relevant to this.
Physical Pharmaceutics – II BP407 P	C407.1	Evaluate flow properties of liquids and powders.
	C407.2	Asses the particle size & size distribution using various methods.
	C407.3	Demonstrate the effect of suspending agents on sedimentation volume.
	C407.4	Asses the various orders of reactions.
	C407.5	Examine shelf – life by carrying out accelerated stability studies.
Pharmacology – I BP408 P	C408.1	Choose different routes of drug administration in experimental animals.
	C408.2	Demonstrate the effects of drugs on animals by simulated experiments.
	C408.3	Define the knowledge of the interrelation of pharmacology with other biomedical sciences.
	C408.4	Performance of laboratory investigation techniques.
	C408.5	Basic knowledge of anesthetic and euthanasia techniques used in animal studies.
Pharmacognosy and Phytochemistry – I BP409 P	C409.1	Understand the chemical nature of crude drug by chemical tests.
	C409.2	Perform stomatal number, stomatal index, vein islet number, vein islet termination and palisade ratio of leaf drug.
	C409.3	Understand and determine size of starch grains, calcium oxalate crystals, length and width of fiber of the sample.
	C409.4	Able to perform Ash value, Extractive values, moisture content, swelling and foaming index for the evaluation of crude drug.
Medicinal Chemistry – II BP501 T	C501.1	Evalate basic principles and development of diuretics.
	C501.2	Generalize History and basic and core aspects of the drug design.
	C501.3	Summarize the development of drugs used in cardiac diseases like Arrhythmias, hypertension, diuretics and endocrine system.
	C501.4	Describe recent development in Drugs acting on blood.
	C501.5	To acquire knowledge about the chemotherapy for cancer.
	C502.1	Asses the physicochemical properties of drugs as a tool in the optimization of solid and liquid dosage forms.



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Industrial Pharmacy – I BP502 T	C502.2	Develop Solid dosage forms and liquid dosage forms using established procedures and machinery.
	C502.3	To learn Awareness on the facilities and required standards necessary for the industrial production of sterile dosage forms.
	C502.4	To Formulate and prepare different types of parenteral, ophthalmic dosage forms, cosmetics such as lipsticks, shampoos, cold cream and vanishing cream.
	C502.5	Select and evaluate appropriate packaging materials for various pharmaceutical dosage forms.
Pharmacology – II BP503 T	C503.1	Understand the pharmacology and pharmacotherapy of common and essential medications used to treat cardiovascular disorders.
	C503.2	Explain the principles, uses, and types of bioassays.
	C503.3	Recognize drugs interactions and adverse drug responses.
	C503.4	Understand the relationship between pharmacology and other biomedical sciences.
	C503.5	Discuss pharmacological mechanisms and their importance in disease treatment.
	C504.1	Know the basic metabolic pathways and formation of different secondary metabolites through various biosynthetic pathways.
Pharmacognosy and Phytochemistry – II BP504 T	C504.2	Understand the utilization of radioactive isotopes in the investigation of biogenetic studies.
	C504.3	Understand the basic techniques like spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.
	C504.4	Learn the isolation, identification and analysis of phytoconstituents.
	C504.5	Explain the source, chemistry, therapeutic uses and commercial applications of various secondary metabolites containing drugs.
	C504.6	Discuss the method for industrial production, estimation and utilization of some therapeutically important phytoconstituents.
	Pharmaceutical Jurisprudence BP505 T	C505.1
C505.2		Memorize and explain the provisions of acts pertaining to drugs and cosmetics.
C505.3		State the latest amendments with respect to DPCO and patent and design act.
C505.4		Describe the concepts of price fixation of pharmaceutical products.
C505.5		Summarize the Pharmaceutical Acts and Laws and their implications in the development and marketing of pharmaceuticals.
C505.6		Identify the labelling requirements of scheduled and non-scheduled formulations.
Industrial Pharmacy – I BP506 P	C506.1	Produce formulations of different dosage forms by using various excipients.
	C506.2	Select suitable packaging container and closing and labeling requirements for the prepared dosage forms.



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	C506.3	Demonstrate different equipment's used in preparation of solid and other dosage forms.
	C506.4	Apply the physicochemical properties of drugs to dosage form characteristics.
	C506.5	Summarize to evaluate different dosage forms by performing quality control tests with the range of limits to pass the test.
Pharmacology – II BP507 P	C507.1	Study of physiological salt solutions, drug solution and use in various animal experiments.
	C507.2	Analyze the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
	C507.3	Using computer models to demonstrate drug effects.
	C507.4	Analyze the impact of spasmogens and spasmolytics on appropriate tissue preparations.
	C507.5	Conduct in vivo research using isolated tissue preparations.
Pharmacognosy and Phytochemistry – II BP508 P	C508.1	Analyze the Macroscopy, Microscopic and powder characteristics of crude drugs for detection.
	C508.2	Apply techniques and tests for the isolation, identification of phytoconstituents.
	C508.3	Understand the separation techniques of sugars and herbal extract by paper and thin layer chromatography.
	C508.4	Know the separation and detection techniques of volatile oils.
	C508.5	Distinguish the unorganized crude drugs by various chemical test.
Medicinal Chemistry – III BP601 T	C601.1	Generalize the concept and development of anti-biotic.
	C601.2	Describe how current drugs were developed by using pharmacophore modelling and docking technique.
	C601.3	Acquire knowledge in the chemotherapy for cancer.
	C601.4	Impart knowledge on microbial diseases.
	C601.5	Demonstrate the concept of viral diseases and its development.
	C601.6	To acquire knowledge about the mechanism pathways of different class of medicinal compounds.
Pharmacology – III BP602 T	C602.1	Outline classification, category and pharmacology of drugs acting on respiratory and gastrointestinal systems.
	C602.2	Understand the significance of chemotherapeutic agents.
	C602.3	Explain the importance of drugs used in treatment of Cancer, tuberculosis, leprosy, fungal Diseases, viral diseases, UTI, STD & immunosuppressive agents.
	C602.4	Understand the mechanism of action and treatment of drugs act on infectious diseases.
	C602.5	Evaluate the symptoms and treatment of various drug poisoning.
	C603.1	Understand raw material as source of herbal drugs from cultivation to herbal drug product.
	C603.2	Utilize the plants as nutraceuticals in ailments and also understand herb-food and herb-drug interaction of various plant drugs.

Herbal Drug Technology BP603 T	C603.3	Identify the natural origin drugs as raw materials for preparation of cosmetics, excipients, conventional herbal formulations and novel dosage forms like phytosomes.
	C603.4	Explain and understand the stability testing of herbal drugs as per WHO and ICH guidelines for evaluation of herbal drugs and patenting of natural products.
Biopharmaceutics and Pharmacokinetics BP604 T	C604.1	Describe the concept of ADME of drug in human body.
	C604.2	Describe the various pharmacokinetic parameters from either plasma concentration or urinary excretion data of the drug.
	C604.3	Apply the various regulations related to developing BA-BE study protocol for the new drug molecule.
	C604.4	Summarize the concept of multi compartment models, multiple dose administration and their significance.
	C604.5	Identify the various causes of nonlinear pharmacokinetics.
Pharmaceutical Biotechnology BP605 T	C605.1	Ph. Biotechnology helps in understanding the applications of Immobilized enzymes in pharmaceutical industries.
	C605.2	The study of genetic engineering concepts emphasizes the applications of various r DNA products for the future therapeutics.
	C605.3	Monoclonal antibodies by Hybridoma technology gives knowledge on future problems and their solutions in healthcare sector of our society.
	C605.4	Fermentation technology mainly illustrates the production of various fermented products in industries and their benefits to the community as well as learning skills of various techniques on fermentation process.
	C605.5	The concepts of immunology gives knowledge to the students to aware of various infections or diseases caused by different pathogens.
	C605.6	The techniques like PCR, Blottings and ELISA are the modern tools for the usage in pharmacy and medicine.
Quality Assurance BP606 T	C606.1	Understand the cGMP and GLP, ICH aspects in a pharmaceutical industry.
	C606.2	Realize the importance of documentation.
	C606.3	Explain the responsibilities of TQM, QA & QC departments.
	C606.4	Know the handling of return goods and Good Warehousing Practices in pharma industry.
	C606.5	Describe the importance of calibration and validation of instruments.
Medicinal Chemistry – III BP607 P	C607.1	Apply various Synthetic, recrystallization techniques and understand reaction mechanisms involved in synthesis of medicinally important organic compound.
	C607.2	Learn the Synthesis of medicinally important organic compounds using microwave assisted organic synthesis.
	C607.3	Acquire Knowledge on assay principles and procedure of medicinally important drugs including antibiotic.



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	C607.4	Examine and implementation of principle and operating procedure of microwave assisted synthesis in comparison with conventional procedure.
	C607.5	Apply knowledge to assess safety, health and consequent responsibilities relevant to this.
Pharmacology – III BP608 P	C608.1	Calculate animal doses for experiments in pharmacology.
	C608.2	Examine the biochemical investigations.
	C608.3	Record the effect of drugs on isolated preparations by using computerized simulated software.
	C608.4	Define OECD guidelines and ethical principles in acute and chronic oral toxicity study.
	C608.5	Understand various Biostatistics methods in experimental pharmacology.
Herbal Drug Technology BP609 P	C609.1	Evaluate the preliminary qualitative screening of crude drugs and excipients of natural sources.
	C609.2	Determine the alcohol content of ayurvedic preparation and aldehyde content, phenol content of volatile oils.
	C609.3	Know the formulation and evaluation techniques of herbal creams, lotions and shampoos.
	C609.4	Apply the Preparation and standardization process for herbal syrup, mixtures and tablets.
	C609.5	Analyze the monograph herbal drugs as per Pharmacopoeia.
Instrumental Method of Analysis BP701 T	C701.1	Impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique.
	C701.2	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
	C701.3	Describe the general methods for separation and purification of components from a mixture and their application to pharmaceutical industry.
	C701.4	Perform quantitative & qualitative analysis of drugs using various analytical instruments.
	C701.5	Underlines on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.
Industrial Pharmacy – II BP702 T	C702.1	Summarize the scale up process in pharmaceutical industry.
	C702.2	Review the technology transfer.
	C702.3	Explain about various laws and acts that regulate pharmaceutical industry.
	C702.4	Implement the regulatory environment by upholding good regulatory practices.
	C702.5	Describe the regulations and approval process in pharmaceutical industry.
Pharmacy Practice BP703 T	C703.1	Describe the functioning of hospital and community pharmacy. Identify and assess adverse drug reactions.
	C703.2	Establishment of pharmacy and therapeutic committee. To develop the contents of hospital formulary and adapt to drug distribution system in the hospital.
	C703.3	Implementation and practice patient medication history interview and patient counseling in management of diseases.



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	C703.4	To establish drug store, manage and implement inventory control techniques.
	C703.5	To identify and interpret clinical laboratory tests of specific disease states.
	C703.6	To describe the functions and responsibilities of hospital and clinical pharmacist.
Novel Drug Delivery System BP704 T	C704.1	List the Various Approaches for Development of Novel Drug Delivery Systems.
	C704.2	Review Different Types of Oral Controlled Drug Delivery System.
	C704.3	Recite Knowledge on Transdermal Drug Delivery Systems.
	C704.4	Evaluate various approaches for the development of targeted drug delivery systems.
	C704.5	Describe about Mucoadhesive Delivery Systems and Their Significance.
	C704.6	Fundamental Study of Resealed Erythrocytes: A Novel and Promising drug carrier.
Instrumental Method of Analysis BP705 P	C705.1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
	C705.2	Describe the chromatographic separation and analysis of drugs.
	C705.3	Perform quantitative & qualitative analysis of drugs using various analytical instrument.
Biostatistics and Research Methodology BP801T	C801.1	To Formulate a research question, hypotheses and related objectives (general and specific).
	C801.2	To Understand and apply statistical methods for the design of biomedical research.
	C801.3	To gain the knowledge and understanding the concept of statistical theories in evaluation of research.
	C801.4	To gain the knowledge how to and interpret results from specialized computer software.
	C801.5	To Know the various statistical techniques to solve statistical problems.
	C801.6	To Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment).
Social and Preventive Pharmacy BP802T	C802.1	Understand the concept of health and health education.
	C802.2	To create awareness about various preventive measures of stated communicable and non communicable diseases.
	C802.3	Applying the mentioned knowledge of national health program serving the community in the real world.
	C802.4	To describe the several vaccines included in the national immunization program and their schedule.
	C802.5	To illustrate the influence of urbanization and socio-cultural influences on health.
	C802.6	To assess the issue with pharmacy and health from a societal perspective.



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