



Curriculum: B. in Pharm 2020-2024

Program Level Course - PO Matrix Report

Program Outcomes (POs) & Program Specific Outcomes (PSOs) :

- 1 . Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
- 2 . Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- 3 . Problem analysis: Utilize the principles of scientific inquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- 4 . Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
- 5 . Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
- 6 . Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
- 7 . Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- 8 . Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions



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9 . The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

10 . Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

11 . Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Course Outcomes (COs) - Program Outcomes (POs) & Program Specific Outcomes (PSOs) matrices:-

Course Outcomes (COs):

Course: Human Anatomy and Physiology I- Theory - [BP101T] Term: 1 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2		1								
CO4	2		1								
CO5	2										

CO1: Explain the gross morphology, structure and functions of various organs of the human body.

CO2: Describe the various homeostatic mechanisms and their imbalances.

CO3: Identify the various tissues and organs of different systems of human body.

CO4: Perform the various experiments related to special senses and nervous system.

CO5: Appreciate coordinated working pattern of different organs of each system

Course Outcomes (COs):

Course: Pharmaceutics-I - [BP103T] Term: 1 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	1										
CO2	1										
CO3	1										



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CO4	1										
CO1: 1. know the history of profession of pharmacy											
CO2: 2. understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations											
CO3: 3. understand the professional way of handling the prescription											
CO4: 4. preparation of various conventional dosage forms											

Course Outcomes (COs):

Course: Human Anatomy and Physiology I -Practical - [BP107P] Term: 1 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1											
CO2											
CO3											
CO4											
CO1: Perform rbc count, wbc count, hb content, esr, bleeding time, clotting time and interpret the results to correlate it with clinical conditions.											
CO2: Record/ measure heart rate, pulse rate and blood pressure and interpret the results to correlate it with clinical conditions.											
CO3: Distinguish and locate bones in human skeleton											
CO4: Identify and describe the various body tissues and organs based on the structure and organization of cells											

Course Outcomes (COs):

Course: Pharmaceutics-I Practical - [BP109P] Term: 1 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	1										
CO2	1										
CO3	1										
CO1: Gain the knowledge and will be able to compound and dispense the medicament as per standard compounding and dispensing procedure											
CO2: Design various dosage form and dispense the precaution for external use with proper packing and labelling and dispensing											
CO3: Decide the general and special instructions to be given on label											



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Course Outcomes (COs):

Course: Human Anatomy and Physiology II - [BP201T] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2										
CO4	2										
CO5	2										

CO1: Explain the gross morphology, structure and functions of various organs belongs to nervous system, endocrine system, digestive system, urinary system, respiratory system, reproductive system of the human body.

CO2: Describe the various homeostatic mechanisms and their imbalances.

CO3: Explain the coordinated working pattern of different organs of each system

CO4: Discuss the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

CO5: Discuss the concept of energetic and genetics of human body.

Course Outcomes (COs):

Course: Pharmaceutical Organic Chemistry I - [BP202T] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	1										
CO2	1										
CO3	1										
CO4	1										

CO1: Write the structure, name and the type of isomerism of the organic compound

CO2: write the reaction, name the reaction and orientation of reactions

CO3: Understand the reactivity/stability of compounds

CO4: Identify/confirm the identification of organic compound

Course Outcomes (COs):

Course: Biochemistry - [BP203T] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										



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C03	2										
C04	2										
C05	2										
CO1: Enlist different biomolecules along with its classification & biological role											
CO2: Understand the molecular level of chemical process (bioenergetics) accounted with living cells											
CO3: Explain the metabolism of nutrient molecule in physiological and pathological conditions											
CO4: Describe the genetics organization of mammalian genome and function of dna in the synthesis of rna and proteins											
CO5: Understand the catalytic role of enzymes importance of enzyme inhibitors in design of new drug therapeutic and diagnostic application of enzymes											

Course Outcomes (COs):

Course: Pathophysiology - [BP204T] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2					1			1		1
C02	2					1			1		1
C03	2					1			1		1
C04	2										
C05	2										
CO1: Describe the etiology and pathogenesis of the disease states mentioned in the syllabus.											
CO2: Name the signs and symptoms of the diseases mentioned in the syllabus.											
CO3: Mention the complications of the diseases.											
CO4: Discuss the basic principles of cell injury and adaptation.											
CO5: Explain the mechanism involved in the inflammation and repair:											

Course Outcomes (COs):

Course: Human Anatomy and Physiology II Lab - [BP207P] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2		1								
C02	2										
C03	2										



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CO4	2										
CO1: Perform to determine tidal volume, vital capacity , body temperature, basal mass index and different types of taste.											
CO2: Describe the different systems of human body, family planning devices, pregnancy diagnosis test.											
CO3: Identify vital organs and gonads by observing permanent slides.											
CO4: Demonstrate the general neurological examination, visual acuity, reflex activity, total blood count by cell analyser and positive - negative feedback mechanism.											

Course Outcomes (COs):

Course: Pharmaceutical Organic Chemistry_I Lab - [BP208P] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	1										
CO2	1										
CO3	1										
CO4	1										
CO1: Practice and follow safety rules and precautionary measures in laboratory and preparation of molecular models											
CO2: Understand theoretical aspects of physical constant determination, detection of functional groups											
CO3: characterize/ identify/spot monofunctional unknown organic compounds by physical constant, elemental analysis and functional group analysis											
CO4: Prepare derivatives of organic compounds.											

Course Outcomes (COs):

Course: Biochemistry Lab - [BP209P] Term: 2 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2		1								
CO2	2										
CO3	2										
CO4	2							1			
CO5	2			1							
CO1: Perform qualitative analysis for biomolecules & biological fluids											
CO2: Perform quantitative analysis for biomolecules & biological fluids											



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CO3: Explain effects of different factors on enzyme kinetics

CO4: Handle various instruments used in biochemical investigations.

CO5: Interpret, summarize and write the reports for performed experiments

Course Outcomes (COs):

Course: Pharmaceutical Organic Chemistry II - [BP301T] Term: 3 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2										
CO4	2										
CO5	2		1								

CO1: Write the structure, name and the type of isomerism of the organic compound.

CO2: Describe the reaction and orientation of reactions.

CO3: Understand for reactivity and stability of compounds.

CO4: Explain the oil values of oils & fats.

CO5: Interpret acidity and basicity of aromatic compounds.

Course Outcomes (COs):

Course: Physical Pharmaceutics I - [BP302T] Term: 3 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2	1									
CO2	2	1									
CO3	2	1									
CO4	2	1									
CO5	2	1									

CO1: Students are able to discuss various physicochemical parameters and principles for designing the dosage form.

CO2: Students are able to summarize knowledge of various concept for pharmaceutical applications

CO3: Students are able to explain various physicochemical concept and principles

CO4: Students are able to articulate relationship between various physicochemical properties and dosage form



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CO5: Students are able to elaborate use of physicochemical properties in formulation development and evaluation of dosage form

Course Outcomes (COs):

Course: Pharmaceutical Engineering - [BP304T] Term: 3 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2										
CO4	2										

CO1: To explain various unit operations used in pharmaceutical industries

CO2: To describe the material handling techniques

CO3: To draw well labelled diagram of various instruments used in pharmaceutical unit operations

CO4: To explain various preventive methods used for corrosion control in pharmaceutical industries

Course Outcomes (COs):

Course: Pharmaceutical Organic chemistry-II Lab - [BP305P] Term: 3 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2			1							

CO1: Students will be able to demonstrate different purification/analytical laboratory techniques.

CO2: students will be able to determine oil values of unknown fat/oil sample.

CO3: Students will be able to prepare compounds with different methods by understanding its reactions with mechanisms.

Course Outcomes (COs):

Course: Physical Pharmaceutics-I Lab - [BP306P] Term: 3 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2		2								
CO2	2		2								



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C03	2		2								
C04	2		2								
C05	2		2								
CO1: Students are able to understand various physicochemical properties of drug molecule require in designing and evaluation of dosage form											
CO2: Students are able to demonstrate use of physicochemical properties in formulation and development											
CO3: Students are able to articulate relationship between various physicochemical properties and dosage form											
CO4: Students are able to evaluate drug and dosage form using physicochemical properties											
CO5: Students are able to interpret the scientific data and represent the data in tabular and or graphical form											

Course Outcomes (COs):

Course: Pharmaceutical Engineering Lab - [BP308P] Term: 3 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2		1								
C02	2										
C03	2										
C04	2										
CO1: To perform various processes (size analysis, size reduction, filtration, evaporation, crystallization, blending) involved in pharmaceutical manufacturing											
CO2: To determine various material parameters (radiation constant, efficiency of steam distillation, heat transfer coefficient, drying curves, moisture content and loss on drying, humidity of air etc.)											
CO3: To explain various unit operations used in pharmaceutical industries											
CO4: To describe of construction working and application of pharmaceutical machinery											

Course Outcomes (COs):

Course: Pharmaceutical Organic Chemistry-III - [BP401T] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2		1								
C02	2		1								



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C03	2		1								
C04	2		1								
C05	2										
CO1: Explain the stereo-chemical aspects of organic compounds and stereo-chemical reactions											
CO2: Describe chemistry of carbocyclic & heterocyclic compound including nomenclature											
CO3: Understand the properties& methods of preparation of organic compounds											
CO4: Explain named reactions for the synthesis of different functional groups											
CO5: Enlist the medicinal uses & other applications of organic compounds											

Course Outcomes (COs):

Course: Medicinal chemistry-I - [BP402T] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	3										
C02	3										
C03	3										
C04	3										
C05	3										
C06	3										
CO1: Understand the physicochemical properties of drugs with respect to their biological activity.											
CO2: Write the metabolic pathways and metabolites for drugs.											
CO3: Classify the drugs based on their structures and therapeutic uses.											
CO4: Understand the chemistry of drugs with respect to their mechanism of action and pharmacological activity.											
CO5: Explain the structural activity relationships (sar) of different classes of drugs.											
CO6: Write the chemical synthesis of some selected drugs.											

Course Outcomes (COs):

Course: Physical Pharmaceutics-II - [BP403T] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2										



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C03	2										
C04	2										
C05	2										
CO1: Explain colloidal system and its properties											
CO2: Know (explain) the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations											
CO3: Demonstrate (describe) use of physicochemical properties in the formulation development and evaluation of dosage forms											
CO4: Explain rheology of various systems and deformation of solids											
CO5: Explain the properties of coarse dispersion and micromeritics											

Course Outcomes (COs):

Course: Pharmacology-I - [BP404T] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2										
C03	2										
C04	2										
CO1: Describe the basic concepts of pharmacology such as types of agonist and receptors, signaling mechanism, pharmacokinetic and pharmacodynamics of drugs, drug interaction, adverse drug reactions, drug discovery process and pharmacovigilance.											
CO2: Describe the pharmacological actions of drugs belonging to different categories such as drugs acting on central and peripheral nervous system.											
CO3: Explain the mechanism of action of drugs acting on central and peripheral nervous system at organ system/sub cellular/ macromolecular levels.											
CO4: Apply the basic pharmacological knowledge in the prevention and treatment of various diseases affecting central and peripheral nervous system.											

Course Outcomes (COs):

Course: Pharmacognosy-I - [BP405T] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2	1						1			1
C02	2							1			
C03	2				1			1			1



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CO4	2										
CO5	2	1	1			1		1		1	1
CO1: To recognize the techniques in the cultivation and production of crude drugs											
CO2: To discuss primary metabolites as the crude drugs, their uses and chemical nature											
CO3: To classify herbal drugs and illustrate the evaluation techniques for the herbal drugs											
CO4: To describe various medicinal systems and secondary metabolites											
CO5: To explain plant tissue culture in pharmacognosy											

Course Outcomes (COs):

Course: Medicinal Chemistry I - Practical - [BP406P] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	1										
CO2	2										
CO3	2		1								
CO4	1		1								
CO5		1						1			
CO1: Synthesize various drugs/ drug intermediates along with its recrystallization.											
CO2: Explain principle of synthesized organic compounds.											
CO3: Demonstrate the assay of various drugs as per ip.											
CO4: Determine the partition coefficient of drugs.											
CO5: Make report of experimental data of all organic synthesis and submit it on time.											

Course Outcomes (COs):

Course: Physical Pharmaceutics II - Practical - [BP407P] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2		1								
CO2	2		1								
CO3	2		1								
CO4	2		1								
CO1: Determine various powder properties- particle size, particle size distribution, bulk density, true density, porosity, angle of repose etc. exp 1-4											



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CO2: Know 'validate' the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations, exp 9-11

CO3: Determine sedimentation properties of disperse system 6,7

CO4: Determine the viscosity through various methods 5,8

Course Outcomes (COs):

Course: Pharmacology I - Practical - [BP408P] Term: 4 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2						1				
CO3	2										
CO4	2							1			

CO1: Observe the effects of drug on animal by simulated experiments

CO2: Explain the knowledge of animal handling techniques and describe ethical guidelines governing animal experimentation.

CO3: Describe correlation of pharmacology with other biomedical sciences

CO4: Prepare report on experimental findings and effectively communicate the pharmacological concept mentioned in the course

Course Outcomes (COs):

Course: Medicinal chemistry -II - [BP501T] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	3										
CO2	3			2							
CO3	3										
CO4	3								1		
CO5	3										1
CO6	3		2								

CO1: Identify drugs for the treatment of minor pain, allergies, gastric ulcers cancer, cvs diseases, endocrine related disorders, diabetes.

CO2: Categorize different drugs based on targets, scaffolds, pharmacophores, mode of action etc.

CO3: Explain chemistry of drugs with respect to their pharmacological activity.



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CO4: Justify the drug metabolic pathways, adverse effect and therapeutic value of drugs

CO5: Outline the chemical synthesis of selected drugs.

CO6: Predict the treatment by assessing the case study.

Course Outcomes (COs):

Course: Industrial Pharmacy-I - [BP502T] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2	2	1								
CO2	2	2	1								
CO3	2	2	1								
CO4	2	2	1								
CO5	2	2	1								
CO6	2	2	1								1
CO7	2	2	1								

CO1: Explain out assessment of physicochemical properties of drugs as a tool in the optimization of solid and liquid dosage forms.

CO2: Explain large scale preparation of tablets, capsules, parenteral and ophthalmic dosage forms and liquid orals using established procedures and technology

CO3: Describe the facilities and standards necessary for the industrial production of sterile dosage forms.

CO4: Summarize the pharmaceutical dosage forms for quality and stability and compare with standards prescribed in the pharmacopoeia

CO5: Apply the knowledge in formulating cosmetics such as lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens

CO6: Describe containers, closures, valves and propellants for different types of aerosol systems.

CO7: Explain appropriate packaging materials for various pharmaceutical dosage forms.

Course Outcomes (COs):

Course: Pharmacology-II - [BP503T] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2					1					



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C04	2		2								
CO1: Describe the basic pharmacology of hormones and hormonal analogues at molecular/cellular/organ system and whole body levels											
CO2: Explain the basic pharmacology of cardiovascular drugs at molecular/cellular/organ system and whole body levels											
CO3: Apply the concepts of pharmacology to single disease state pharmacotherapy											
CO4: Discuss the bioassay which provide evidences on their pharmacological activities											

Course Outcomes (COs):

Course: Pharmacognosy and phytochemistry II - [BP504T] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2										
C03	2	1						1			
C04	2										
CO1: Discuss the modern extraction techniques and applications of latest techniques.											
CO2: Describe isolation, identification, analysis, production and utilization of phytoconstituents											
CO3: Explain biosources, composition, chemistry, therapeutic uses and commercial applications of secondary metabolites											
CO4: Describe the metabolic pathways in higher plants and radioactive isotopes utilization in investigation of biogenetic studies											

Course Outcomes (COs):

Course: Pharmaceutical jurisprudence - [BP505T] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2										
C03	2										
C04	2										
C05	2										
C06	2						1		1		
CO1: Define various indian pharmaceutical acts and laws.											



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CO2: Discuss pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.

CO3: Explain the regulatory authorities and agencies governing the manufacture, sale and import of pharmaceuticals.

CO4: Explain the fundamental of intellectual property rights (ipr).

CO5: Describe the code of ethics during the pharmaceutical practice

CO6: Discuss offences & penalties concerned with laws for drugs and pharmaceuticals

Course Outcomes (COs):

Course: Industrial pharmacy I Practical - [BP506P] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2	1	1					1			
CO2	2	1	1					1			
CO3	2	1	1					1			
CO4	2	1	1								
CO5	2	1	1								

CO1: Prepare and evaluate formulations of different dosage forms as per the batch formula

CO2: Select suitable packaging container for a dosage form

CO3: Operate different equipment's used in preparation of dosage forms

CO4: Apply the physicochemical properties of drugs to dosage form characteristics

CO5: Interpret and communicate the results of the experiment

Course Outcomes (COs):

Course: Pharmacology II Practical - [BP507P] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2	1									
CO3	1										
CO4	2		1								
CO5	2										
CO6	2							2			

CO1: Distinguish different types of bioassays.



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CO2: Record physiological responses based on bioassay using simulated software's and submit journal assignment in stipulated time.

CO3: Calculate unknown drug concentration based on different types of bioassays and given data.

CO4: Analyze and interpret given data on the pharmacological action of given drugs.

CO5: Discuss the preclinical models which provide evidences on drug and their pharmacological activities.

CO6: Prepare report on the experimental findings and effectively communicate the pharmacological concepts mentioned in the course.

Course Outcomes (COs):

Course: Pharmacognosy II - Practical - [BP508P] Term: 5 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2	1									
CO2	2										
CO3	2										
CO4	2			1							
CO5	2							2			

CO1: Carry out the isolation and detection of phytoconstituents using different extraction technique

CO2: Identify given crude drugs by chemical tests

CO3: Identify the drug by the morphology, histology and powder characteristic of crude drugs

CO4: Perform distillation of volatile oils, paper chromatography of sugars and tlc of herbal extract

CO5: Prepare report on the experimental findings and effectively communicate the pharmacognostical concepts mentioned in the course.

Course Outcomes (COs):

Course: Medicinal Chemistry III - [BP601T] Term: 6 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	3										1
CO2	3										
CO3	3										



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CO4	3										
CO5	3			1							
CO6	2		2								

CO1: Explain drug designing basic aspects and identify drugs for the treatment of bacterial, viral, fungal and protozoal infections, malaria, tuberculosis, urinary tract infections etc.

CO2: Categorize different drugs based on targets, scaffolds, pharmacophores, mode of action etc.

CO3: Explain chemistry of drugs with respect to their pharmacological activity.

CO4: Justify the drug metabolic pathways, adverse effect and therapeutic value of drugs

CO5: Outline the chemical synthesis of selected drugs.

CO6: Predict the treatment by assessing the case study.

Course Outcomes (COs):

Course: Pharmacology III -Theory - [BP602T] Term: 6 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										
CO3	2		1								
CO4	2										
CO5	2										
CO1	2										
CO2	2										
CO3	2		1								
CO4	2										
CO5	2										

CO1: Explain the mechanism of drug action and its relevance in the treatment of different diseases.

CO2: Comprehend the principles of toxicology and treatment of various poisonings

CO3: Appreciate correlation of pharmacology with related medical sciences

CO4: Identify the drug based on their class and pharmacological action.

CO5: Discuss the basic concepts of chronopharmacology



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Course Outcomes (COs):

Course: Herbal Drug Technology - Theory - [BP603T] Term: 6 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2									1	
CO2	2										
CO3	2					1		1			1
CO4	2										
CO5	2								1		
CO6	2						1				

CO1: Discuss herbs as a raw material and their biodynamic agricultural practices.

CO2: Explain basic principles of indian medicinal systems with method of preparation and standardization of ayurvedic formulations

CO3: Describe the potential role of nutraceuticals in various ailments and herb - drug interactions of few herbal drugs

CO4: Explain the importance of herbs in preparation of cosmetics, formulations and as an excipient

CO5: Illustrate who and ich guidelines for assessment, patenting and various regulatory aspects of herbal drugs.

CO6: Discuss present status and prospects of herbal drug industry with special emphasis on good manufacturing practice for indian systems of medicine.

Course Outcomes (COs):

Course: Biopharmaceutics and Pharmacokinetics - Theory - [BP604T] Term: 6 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										
CO2	2										



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C03	2										
C04	2		1								
C05	2		1								
CO1: Explain the mechanism, physicochemical and physiological factors affecting drug absorption, distribution, metabolism and excretion											
CO2: Discuss non-linear pharmacokinetics in relation to causative factors and parameter estimation											
CO3: Describe dissolution, ba & be with regards to concepts and clinical methods for assesment											
CO4: Compare and contrast different pk model and based on that discuss model-based and model-independent approaches to characterize the pharmacokinetics of drugs											
CO5: Apply model-based methods to derive pk parameters and required dose for optimal effect											

Course Outcomes (COs):

Course: Pharmaceutical Biotechnology- Theory - [BP605T] Term: 6 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2										
C03	2										
C04	2										
C05	2										
CO1: Explain the importance and scope of pharmaceutical biotechnology in the field of pharmacy.											
CO2: Discuss scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology											
CO3: Elaborate new biological revolutions in diagnosis, prevention and cure of diseases											
CO4: Explain the importance of monoclonal antibodies in industries											
CO5: Summarize the use of microorganisms and immobilized enzymes in fermentation technology											

Course Outcomes (COs):

Course: Pharmaceutical Quality Assurance- Theory - [BP606T] Term: 6 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11



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C01	3	1				2					
C02	3	1				2					
C03	3	1				2					
C04	3	1				2					
C05	3	1				2					
C06	3	1				2					

C01: Outline the cgmp aspects in a pharmaceutical industry.

C02: explain the importance of documentation.

C03: Explain the scope of quality certifications applicable to pharmaceutical industries.

C04: Describe the responsibilities of qa & qc departments.

C05: Apply quality concept & different quality assuring techniques.

C06: Explain importance of qualified personnel & requirement of satisfactory qa system in pharma industries.

Course Outcomes (COs):

Course: Medicinal chemistry III - Practical - [BP607P] Term: 6 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
C01	3	2									
C02	3										
C03	3	2	2								
C04	3			3							

C01: Synthesize drugs/ drug intermediates along with recrystallization

C02: Characterize the drug/ drug intermediate with the help of a melting point.

C03: Analyze the purity of various drugs as per the pharmacopeial procedure.

C04: Use the chemistry software for drawing the chemical structures and determining physicochemical properties.

Course Outcomes (COs):

Course: Pharmacology III - Practical - [BP608P] Term: 6 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2		1								
C03	2		1								



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C04	2										
C05	2								1		
C06	2							2			

CO1: Discuss the preclinical models which provide evidences on drug and their pharmacological activity.

CO2: Interpret the given data and comment on mechanism of action of unknown drug.

CO3: Calculate dose, acute oral toxicity (ld50) and pharmacokinetic parameters of a drug from a given data.

CO4: Discuss and distinguish the biostatistics methods mentioned in curriculum

CO5: Estimate the serum biochemical parameters by using semi autoanalyser

CO6: Prepare report on the experimental findings and effectively communicate the pharmacological concepts mentioned in the course.

Course Outcomes (COs):

Course: Herbal Drug Technology - Practical - [BP609P] Term: 6 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
C01	2										
C02	2		1								
C03	2										
C04	2		1					1			

CO1: Perform preliminary phytochemical screening of crude drugs and evaluation of natural excipients.

CO2: Determine alcohol content, aldehyde content, phenol content and total alkaloid content of given samples

CO3: Carry out monographic analysis of herbal drugs as per pharmacopoeias.

CO4: To prepare and evaluate herbal formulations

Course Outcomes (COs):

Course: Instrumental method of analysis-theory - [BP701T] Term: 7 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
C01	2			2							1
C02	2			2							
C03	2			2							1
C04	2	2	1								1



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CO1: Explain the basic principles and instrumentation of uv, ir, fluorimeter, flame photometer atomic absorption spectroscopy, and nepheloturbidometry.

CO2: Understand the basic principles involved in separation and identification of compounds using tlc, column chromatography, paper chromatography and electrophoresis technique

CO3: Discuss theory and instrumentation of gc, hplc, gel chromatography, ion exchange chromatography and affinity chromatography.

CO4: Apply the basic spectroscopic and chromatographic principles for qualitative and quantitative applications

Course Outcomes (COs):

Course: Industrial pharmacy II - [BP702T] Term: 7 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2					1					1
CO2	2					1					1
CO3	2					1					1
CO4	2					1	1		1		1

CO1: Explain the process of pilot plant and scale up of pharmaceutical dosage form

CO2: Describe the process of technology transfer from lab scale to commercial batch

CO3: Elaborate on total quality management and certifications of pharmaceutical products.

CO4: Discuss the approval process and regulatory requirements for drug products

Course Outcomes (COs):

Course: Pharmacy Practice - [BP703T] Term: 7 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2					2		1	2		1
CO2	2					2		1	2		1
CO3	2					2		1	2		1
CO4	2					2		1	2		1
CO5	2		1			2		1	2		1

CO1: Explain different types of hospitals, the functions, layout, legal requirements, organization, drug procurement, storage and dispensing of medicines and different hospital health accessories in hospital pharmacy.



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CO2: Discuss the role, responsibilities and functions of the pharmacist in different setups like clinics, hospital pharmacies, budget preparation, patient counselling and patient education, and training

CO3: Understand different aspects of pharmacy and therapeutic committee, drug distribution, hospital formulary, drug information services, legal requirements, and documentation in the hospital and community pharmacy.

CO4: Describe type of adverse drug reaction, different aspects of tdm, potential drug-drug interaction, methods for detecting drug interactions.

CO5: Apply the knowledge of pharmacy practice and communication skills to recognize possibility of risk, adverse drug reaction, potential drug-drug interaction in prescription medicines given to the particular patient.

Course Outcomes (COs):

Course: Novel drug delivery system - [BP704T] Term: 7 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2										1
CO2	2										1
CO3	2										1
CO4	2										1

CO1: Understand basic concepts, rational, advantages, disadvantages and principle of novel drug delivery system

CO2: Explain different components and approaches for development of novel drug delivery system

CO3: Summarize the concepts of targeted drug delivery systems

CO4: Describe the applications of novel drug delivery system

Course Outcomes (COs):

Course: Instrumental method of analysis-practical - [BP705P] Term: 7 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2			1							
CO2	2	2	2	2							
CO3	2	2	2	2							
CO4	2			1							

CO1: Understand the different analytical technique mentioned in the course



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CO2: Analyse different substances using analytical instruments like uv-vis spectroscopy, fluorimetry, flame photometry, and nephloturbidometry

CO3: Development and optimisation of mobile phase and separation of compounds by paper, thin layer and column chromatography.

CO4: Demonstrate the operation and application of gc and hplc.

Course Outcomes (COs):

Course: Social and Preventive Pharmacy - [BP802T] Term: 8 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2	2	1								
CO2	2	1	1								
CO3	1				1	1		1			
CO4	1				1	1		1			
CO5	2	1			1	2		1		1	

CO1: Recognize the concepts and evaluation of public health in relation to disease, deficiencies and it's preventions for nutrition, socio-cultural factors and hygiene

CO2: Explain the principles on the prevention and control of communicable and non-communicable diseases.

CO3: Identify national health programs with its objectives, functioning and outcomes

CO4: Discuss national health intervention program for family and social welfare and role of who in it

CO5: Describe the community services in rural, urban and school health with respect to sanitation, health promotion and education

Course Outcomes (COs):

Course: Pharmacovigilance - [BP805ET] Term: 8 - Semester											
CO	1	2	3	4	5	6	7	8	9	10	11
CO1	2							1	1		
CO2	2					1		1	1		
CO3	2					1		1			
CO4	2					1		1			
CO5	2					1		1			
CO6	2					1		1			



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CO1: Discuss the importance of drug safety monitoring and the development of pharmacovigilance program with its prevalence in different setups and the terminologies used

CO2: Identify the different facets of adr along with pharmacogenomics of it in normal as well as in special populations with their relation to pharmacovigilance methods for drug evaluation

CO3: Apply knowledge of international standards for classification of diseases and drug

CO4: Describe the development and establishment of the pharmacovigilance program in an organization

CO5: Recognize various methods of drug safety surveillance and communication in pharmacovigilance

CO6: Explain the methods to generate safety data during the phases of clinical trial and recognize the role of ich and gcp guidelines.

Course Outcomes (COs):

Course: Cosmetics - [BP809ET] Term: 8 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	3	1									
CO2	3	1									
CO3	3	1									
CO4	3	1									
CO5	3	1									

CO1: Summarize regulatory aspects and raw materials used in cosmetics

CO2: Explain the building blocks of skin and hair products, oral hygiene based products, anti-perperspirants and syndet soap bars

CO3: Elaborate on role of various herbs in skin, hair and oral care products

CO4: Discuss different principles of cosmetic evaluation and bis specifications of certain cosmetics.

CO5: Elaborate on various skin and hair associated problems

Course: Project Work - [BP814PW] Term: 8 - Semester

CO	1	2	3	4	5	6	7	8	9	10	11
CO1	3	3	3	1	2	2		2	1		1
CO2	3			3	2			2			1
CO3	3	2	3	3							2



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C04					3		1	1			1
C05	3		3		2				2	2	1
C06	2			1	1		1	3			2

Course Outcomes (COs):

CO1: Students will be able to apply basic knowledge in the pharmaceutical sciences to solve societal /research problems in a group.

CO2: Students will be able to acquire and summarize scientific information from a variety of sources.

CO3: Students will be able to apply techniques and instrumentation to solve problems

CO4: Students will be able to develop interpersonal skills to work as member or leader of group.

CO5: Analyze the impact of problem solution in social, industrial and environmental context for sustainable development

CO6: Students will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific findings.