





College of Pharmacy, Shivalik Campus, Dehradun

Approved by Pharmacy Council of India (PCI) New Delhi, MHRD, Govt of India, New Delhi
Affiliated to Veer Madho Singh Bhandari Uttarakhand Technical University Dehradun and Uttarakhand Board of Technical Education Roorkee

Bachelor of Pharmacy EVEN SEMESTER Course Outcomes


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EVEN SEMESTER
Course Outcomes and CO-PO Mapping



Course Name: Human Anatomy and Physiology II- Theory Course Code: BP201T		
CO	Course Outcomes:	BL
CO BP201T 1	Explain the anatomy, physiology, and parameters related to the nervous system and ANS.	2
CO BP201T 2	Explain the basics of energetics, anatomy, and physiology related to the digestive system.	2
CO BP201T 3	Understand the anatomy and physiology of the human respiratory and urinary system.	2
CO BP201T 4	Understand the classification, structure, and different hormones secreted by endocrine glands and the mechanism of actions, and disorders related to the hormones.	2
CO BP201T 5	Explain the basics of genetics, anatomy & physiology of the male and female reproductive system.	2

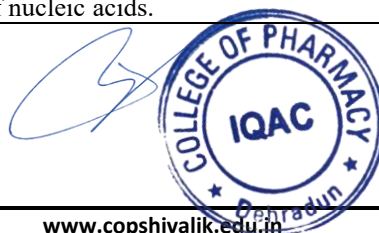
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP201TCO1	3	2	2	2	-	2	2	2	2	-	3
BP201TCO2	3	2	2	2	-	2	2	2	2	-	3
BP201TCO3	3	2	2	2	-	2	2	2	2	-	3
BP201TCO4	3	2	2	2	-	2	2	2	2	-	2
BP201TCO5	3	2	2	2	-	2	2	2	2	-	3
AVERAGE	3.0	2.0	2	2.0	-	2.0	2.0	2.0	2.0	-	2.8

Course Name: Pharmaceutical Organic Chemistry I- Theory Course Code: BP202T		
CO	Course Outcomes	BL
BP202TCO1	Understand the organic compound's classification, nomenclature, structure, and type of isomerism.	2
BP202TCO2	Understand the important physical properties and reactions of various functional groups	2
BP202TCO3	Account for the reactivity/stability of compounds and intermediates formed in reactions.	2
BP202TCO4	Understand carbonyl compounds and the chemistry of various name reactions.	2
BP202TCO5	Classify and interpret the IUPAC nomenclature of organic compounds.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP202TCO1	3	2	2	-	-	2	-	2	2	-	2
BP202TCO2	3	2	1	-	-	2	-	2	2	-	2
BP202TCO3	3	2	1	-	-	2	-	2	2	-	2
BP202TCO4	3	2	2	-	-	2	-	2	2	-	2
BP202TCO5	3	2	2	-	-	2	-	2	2	-	2
AVERAGE	3.0	2.0	1.6	-	-	2.0	-	2.0	2.0	-	2.0

Course Name: Biochemistry- Theory Course Code: BP203T		
CO	Course Outcomes	BL
BP203TCO1	Gain knowledge of the classification and biological role of various biomolecules.	2
BP203TCO2	Understand the pathways and significance of carbohydrate metabolism, including glycolysis and the citric acid cycle.	2
BP203TCO3	Understand the processes of lipid metabolism and amino acid metabolism.	2
BP203TCO4	Understand the biochemistry of nucleic acids.	2

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Course Outcomes and CO-PO Mapping



BP203TCO5	Outline the enzyme properties, kinetics, inhibitors, and their regulation.	2
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CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP203TCO1	3	2	2	1	-	2	2	2	3	2	2
BP203TCO2	3	2	3	3	-	-	3	2	3	3	2
BP203TCO3	3	-	3	3	-	-	3	2	3	3	2
BP203TCO4	3	2	3	3	-	-	3	2	3	3	2
BP203TCO5	3	-	3	3	-	2.0	3	2	3	3	2
AVERAGE	3.0	2.0	2.8	2.6	-	2.0	2.8	2.0	3.0	2.8	2.0

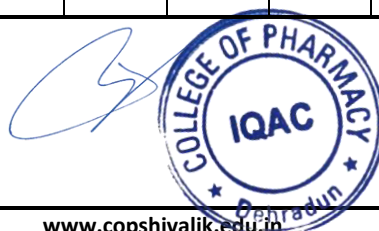
Course Name: Pathophysiology- Theory Course Code: BP204T		
CO	Course Outcomes	BL
BP204TCO1	Define pathophysiology's fundamental terms and concepts.	1
BP204TCO2	Describe various mechanisms of cell injury and the origin of diseases	2
BP204TCO3	Illustrate the epidemiology, etiology, clinical manifestations, and pathophysiology of cardiovascular, respiratory, and digestive disorders.	3
BP204TCO4	Understand the epidemiology, etiology, clinical symptoms, and pathophysiology of disorders of the CNS, urinary system, endocrine system, reproductive system, immunology, musculoskeletal system, and blood.	2
BP204TCO5	Explain the epidemiology, etiology, clinical manifestations, and pathophysiology of malignancy, leprosy, and STD, including HIV.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP204TCO1	3	2	2	-	-	2	-	2	2	-	3
BP204TCO2	3	2	2	-	-	2	2	2	2	-	3
BP204TCO3	3	2	2	-	-	3	-	2	2	-	3
BP204TCO4	3	2	2	-	-	2	2	2	2	-	3
BP204TCO5	3	2	2	-	-	2	2	2	2	-	3
AVERAGE	3.0	2.0	2.0	-	-	2.2	2.0	2.0	2.0	-	3.0

Course Name: Computer Applications in Pharmacy- Theory Course Code: BP205T		
CO	Course Outcomes	BL
BP205TCO1	Test and examine different kinds of software for different medicines.	4
BP205TCO2	Create a database for the pharmacy using the Laboratory Information Management System.	5
BP205TCO3	Estimate the Impact of Bioinformatics on Vaccine Discovery.	5
BP205TCO4	Create a website using CSS to demonstrate different diseases and medicine.	6
BP205TCO5	Create Electronic Prescribing and discharge (EP) systems for patients.	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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BP205TCO1	3	2	2	3	-	2	-	-	2	-	3
BP205TCO2	3	2	2	3	-	2	-	-	2	-	3
BP205TCO3	3	2	2	3	-	2	-	-	2	-	3
BP205TCO4	3	2	2	3	-	2	-	-	2	-	3
BP205TCO5	3	2	2	3	-	2	-	-	2	-	3
AVERAGE	3.0	2.0	2.0	3.0	-	2.0	-	-	2.0	-	3.0

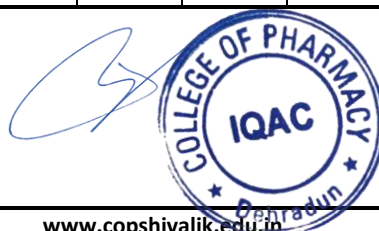
Course Name: Environmental Sciences – Theory Course Code: BP206T		
CO	Course Outcomes	BL
BP206TCO1	Understand the different factors of environmental pollution and measures to minimize it.	2
BP206TCO2	Describe the concept of environment and natural resources problems associated with them, and the role of an individual in their conservation.	2
BP206TCO3	Classify different types of ecosystems, their structure, functions, and characteristics	2
BP206TCO4	Discuss an attitude of concern for the environment and create awareness among learners	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP206TCO1	-	-	2	2	-	-	1	2	-	3	2
BP206TCO2	-	-	2	3	-	-	2	2	-	3	2
BP206TCO3	-	-	3	3	-	-	1	2	-	3	2
BP206TCO4	-	-	2	3	-	-	2	2	-	3	2
AVERAGE	-	-	2.3	2.8	-	-	1.5	2.0	-	3	2.0

Course Name: Human Anatomy and Physiology II- Practical Course Code: BP207P		
CO	Course Outcomes	BL
BP207PCO1	Demonstrate the various tissues and parts of different organ systems of the human body.	3
BP207PCO2	Interlink organs and organ systems of the human body.	3
BP207PCO3	Examine the different types of taste.	4
BP207PCO4	Apply their knowledge to practical scenarios including understanding family planning devices, pregnancy diagnosis, and feedback mechanisms.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP207PCO1	3	2	-	2	2	2	2	2	2	-	3
BP207PCO2	3	2	-	2	2	2	2	2	2	-	3
BP207PCO3	3	2	-	2	2	2	2	2	2	-	3
BP207PCO4	3	2	-	2	2	2	2	2	2	-	3
AVERAGE	3.0	2.0	-	2.0	2.0	2.0	2.0	2.0	2.0	-	3.0

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Course Outcomes and CO-PO Mapping



Course Name: Pharmaceutical Organic Chemistry I- Practical Course Code: BP208P		
CO	Course Outcomes	BL
BP208PCO1	Examine the presence of elements such as nitrogen, sulfur, and halogens in unknown samples.	4
BP208PCO2	Identify the functional group present in the unknown organic compounds.	2
BP208PCO3	Synthesize solid derivatives from organic compounds and evaluate them.	6
BP208PCO4	Develop skills to prepare stereo models.	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP208PCO1	3	2	2	2	2	2	-	2	2	2	2
BP208PCO2	3	2	2	2	2	2	-	2	2	2	2
BP208PCO3	3	2	2	2	2	2	-	2	2	2	2
BP208PCO4	3	2	2	3	2	2	-	2	2	2	2
AVERAGE	3.0	2.0	2.0	2.3	2.0	2.0	-	2.0	2.0	2.0	2.0

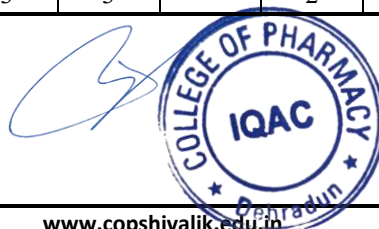
Course Name: Biochemistry- Practical Course Code: BP209P		
CO	Course Outcomes	BL
BP209PCO1	Outline the abnormal constituents in urine through qualitative analysis, indicating potential medical conditions.	1
BP209PCO2	Identify carbohydrates and proteins through qualitative tests.	2
BP209PCO3	Determine the enzyme activity of saliva against starch and the factors affecting it.	3
BP209PCO4	Analyze the constituents present in the blood.	4

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP209PCO1	3	2	2	3	2	2	-	2	2	-	3
BP209PCO2	3	2	2	3	2	2	-	2	2	-	2
BP209PCO3	3	2	2	3	2	3	-	2	2	-	1
BP209PCO4	3	2	2	3	2	2	-	2	2	-	3
AVERAGE	3.0	2.0	2.0	3.0	2.0	2.3	-	2.0	2.0	-	2.25

Course Name: Computer Applications in Pharmacy- Practical Course Code: BP210P		
CO	Course Outcomes	BL
BP210PCO1	Identify the various applications of databases in pharmacy.	2
BP210PCO2	Demonstrate the various types of databases.	3
BP210PCO3	Apply various types of application of computers in the pharmacy.	3
BP210PCO4	Apply web-based tools for pharmacy practice.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP210PCO1	3	2	2	3	-	2	-	-	2	-	2
BP210PCO2	3	2	1	3	-	2	-	-	2	-	2
BP210PCO3	3	2	2	3	-	2	-	-	2	-	2
BP210PCO4	3	2	3	3	-	2	-	-	2	-	2

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Course Outcomes and CO-PO Mapping



AVERAGE	3.0	2.0	2.0	3.0	-	2.0	-	-	2.0	-	2.0
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Course Name: Pharmaceutical Organic Chemistry III– Theory Course Code: BP401T		
CO	Course Outcomes	BL
BP401TCO1	Understand the methods of preparation and properties of organic and Heterocyclic compounds.	2
BP401TCO2	Propose the mechanism and orientation regarding the reactions of prescribed organic compounds.	3
BP401TCO3	Assess the chemistry of Stereoisomerism.	3
BP401TCO4	Illustrate the reactivity of organic compounds.	3
BP401TCO5	Discuss naming reactions.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP401TCO1	3	2	2	3	2	-	1	2	1	-	2
BP401TCO2	3	-	3	3	2	-	1	2	1	-	2
BP401TCO3	3	2	3	3	2	-	2	2	1	-	1
BP401TCO4	3	-	3	2	2	-	2	2	1	-	1
BP401TCO5	3	-	-	1	2	-	1	2	1	-	2
AVERAGE	3	2.0	2.8	2.4	2.0	-	1.4	2.0	1.0	-	1.6

Course Name: Medicinal Chemistry I – Theory Course Code: BP402T		
CO	Course Outcomes	BL
BP402TCO1	Understand the drug metabolic pathways, adverse effects, and therapeutic value of drugs.	2
BP402TCO2	Understand the Chemical classification of drugs with their structure.	2
BP402TCO3	Understand the pharmacokinetics of the drug with respect to biological actions	2
BP402TCO4	Understand the SAR studies of the drugs according to the chemical classification.	2
BP402TCO5	Explore the synthesis of selective drugs.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP402TCO1	3	2	2	3	2	2	-	2	1	-	2
BP402TCO2	3	-	3	3	2	1	-	2	1	-	2
BP402TCO3	3	2	3	3	2	2	-	2	1	-	2
BP402TCO4	3	-	3	2	2	1	-	2	1	-	2
BP402TCO5	3	2	-	2	2	2	-	2	1	-	2
AVERAGE	3	2	2.8	2.6	2.0	1.6	-	2.0	1	-	2

Course Name: Physical Pharmaceutics II Course Code: BP403T		
CO	Course Outcomes:	BL
BP403TCO1	Define and explain the properties of powders and liquids and their application in the pharmaceutical industry.	2
BP403TCO2	Understand the concepts of biphasic liquid dosage forms, including suspension, emulsion, and their applications.	2
BP403TCO3	Understand the instability issues occurring in pharmaceutical dosage forms or deformation in solids, and design the formulations accordingly.	2
BP403TCO4	Determine the reaction kinetics, reaction order, and half-life, and calculate the numerical problem associated with chemical kinetics.	3
BP403TCO5	To solve the degradation issue of medicinal agents, as well as to examine the stability testing.	3

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Course Outcomes and CO-PO Mapping



CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP403TCO1	3	2	3	2	-	-	-	2	2	-	2
BP403TCO2	3	2	3	2	-	2	-	2	2	-	2
BP403TCO3	3	2	3	2	-	2	-	2	2	-	2
BP403TCO4	3	2	2	2	-	-	-	2	3	-	2
BP403TCO5	3	2	2	2	-	-	-	2	2	-	2
AVERAGE	3.00	2.00	2.60	2.00	-	2.00	-	2.00	2.20	-	2.00

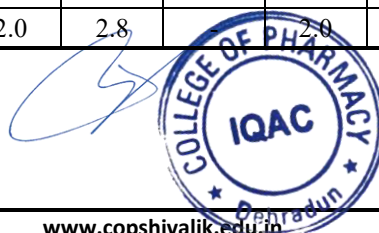
Course Name: Pharmacology I Course Code: BP404T		
CO	Course Outcomes	BL
BP404T CO1	Define and discuss terms and concepts surrounding pharmacology and understand the basics of Pharmacokinetics and pharmacodynamics.	2
BP404T CO2	Understand the various routes of administration and explain the process of new drug discovery and development of the drug.	2
BP404T CO3	Explain various bounding and non-bounding interactions of drugs with receptors	2
BP404T CO4	Identify the knowledge of the Pharmacology of drugs acting on the peripheral nervous system	3
BP404T CO5	Identify the knowledge of the pharmacology of drugs acting on CNS.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP404TCO1	3	-	2	2	-	2	-	2	2	-	3
BP404COT 2	3	-	2	2	-	2	-	2	2	-	2
BP404TCO 3	3	-	2	2	-	2	-	2	2	-	2
BP404TCO 4	3	-	2	2	-	2	-	2	2	-	2
BP404TCO 5	3	-	2	2	-	2	-	2	2	-	3
AVERAGE	3.00	-	2.00	2.00	-	2.00	-	2.0	2.00	-	2.4

Course Name: Pharmacognosy and Phytochemistry I– Theory Course Code: BP405T		
CO	Course Outcomes	BL
BP405TCO1	Memorize the type, biological source, classification, and evaluation of crude drugs obtained from natural origin.	1
BP405TCO2	Discuss the effect of endogenous and exogenous factors on the quality of crude drugs during the cultivation, collection, processing, and storage of drugs.	2
BP405TCO3	Describe the plant tissue culture and its role in the production of secondary metabolites.	2
BP405TCO4	Classify and discuss the secondary metabolites; explain the role of plants and their constituent as pharmaceuticals in different systems of medicines.	2
BP405TCO5	Discuss on pharmacognosy of natural products such as fibers, hallucinogens, teratogens, natural allergens, primary metabolites (carbohydrates, proteins, enzymes, lipids), and marine drugs.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP405TCO1	3	3	3	2	-	2	2	2	2	1	2
BP405TCO2	3		2	3	-	2	-	2	2	1	2
BP405TCO3	3	2	2	3	-	2	-	2	1	2	2
BP405TCO4	3	3	2	3	-	2	2	2	1	2	2
BP405TCO5	3	2	1	3	-	2	2	2	2	2	2
AVERAGE	3.0	2.5	2.0	2.8		2.0	2.0	2.0	1.6	1.6	2.0

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Course Outcomes and CO-PO Mapping



Course Name: Medicinal Chemistry I- Practical Course Code: BP406P		
CO	Course Outcomes	BL
BP406PCO1	Understand the chemistry of drugs concerning biological action.	2
BP406PCO2	Extends the different parameters to identify the synthesized compound.	2
BP406PCO3	Evaluate the purity of drugs by different methods.	5
BP406PCO4	Synthesize the medicinal compound in the lab.	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP406PCO1	3	2	2	2	2	2	-	2	2	-	2
BP406PCO2	3	2	2	2	2	2	-	2	2	-	2
BP406PCO3	3	2	2	2	2	2	-	2	1	-	2
BP406PCO4	3	2	3	3	3	2	-	2	1	-	2
AVERAGE	3.0	2.0	2.3	2.3	2.3	2.0	-	2.0	1.5	-	2.0

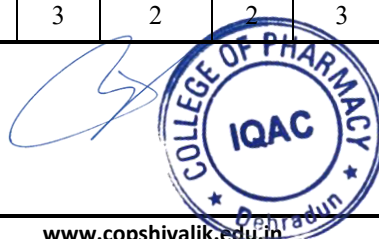
Course Name: Physical Pharmaceutics II Practical Course Code: BP 407P		
CO	Course Outcomes:	BL
BP407PCO1	Apply the knowledge of the fundamental and derived properties of powder to calculate the particle size by different methods.	3
BP407PCO2	Apply the knowledge of the concept of viscosity and its measurement for the optimization of a dosage form.	3
BP407PCO3	To examine the rate of reaction, half-life, and shelf life of the given drug substances	4
BP407PCO4	To formulate and evaluate the biphasic dosage forms, including suspension and emulsion.	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP407PCO1	3	3	2	-	2	3	-	2	2	-	3
BP407PCO2	3	2	3	2	2	2	-	2	2	-	3
BP407PCO3	3	2	2	3	2	3	-	2	2	-	3
BP407PCO4	3	3	3	2	2	2	-	2	2	-	2
AVERAGE	3.0	2.5	2.5	2.3	2.0	2.5	-	2.0	2	-	2.75

Course Name: Pharmacology I Practical Course Code BP408P		
CO	Course Outcomes	BL
CO BP408P 1	Understand the basic instruments, common laboratory animals, and chemicals used in experimental pharmacology.	2
CO BP408P 2	Demonstrate the common laboratory techniques, like routes of administration and euthanasia, used for animal studies	3
CO BP408P 3	Analyze the effect of drugs belonging to different categories on laboratory animals by using software.	4
COBP408P4	Correlate the working of pharmacological equipment with the software/videos	4

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP408PCO1	3	2	2	2	2	2	2	2	2	-	1
BP408PCO2	3	2	2	2	2	3	2	2	2	-	3
BP408PCO3	3	2	3	2	2	3	2	2	2	-	2

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BP408PCO4	3	2	2	2	2	2	2	2	-	-	2
AVERAGE	3.0	2.0	2.3	2.0	2.0	2.5	2.0	2.0	2.0	-	2.0

Course Name: Pharmacognosy and Phytochemistry I- Practical Course Code: BP409P

CO	Course Outcomes	BL
BP409PCO1	Examine the qualitative and quantitative evaluations of herbal products.	4
BP409PCO2	Estimate the phytochemical screening and standardize the extract used in herbal formulations.	5
BP409PCO3	Assemble the monograph of herbal drugs for preparations and documentation.	6
BP409PCO4	Formulate herbal pharmaceuticals, cosmetics, and their analysis.	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP409PCO1	3	3	2	2	2	2	-	2	2	1	2
BP409PCO2	3	2	2	2	2	2	-	2	2	2	2
BP409PCO3	3	3	2	3	2	3	-	2	3	1	2
BP409PCO4	3	2	2	2	2	2	-	2	2	1	3
AVERAGE	3.0	2.5	2.0	2.3	2.0	2.3	-	2.0	2.3	1.25	2.25

Course Name: Medicinal Chemistry III – Theory Course Code: BP601T

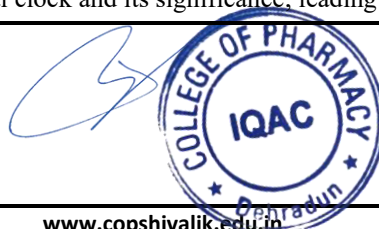
CO	Course Outcomes	BL
BP601TCO1	Understand the mechanisms and metabolic pathways of different classes of drugs with their adverse effects.	2
BP601TCO2	Classify the different classes of drugs with their structure.	2
BP601TCO3	Understand the various approaches used in drug design.	2
BP601TCO4	Understand the adverse effects and therapeutic uses of the drugs.	2
BP601TCO5	Illustrate the structural activity relationship & synthesis of selective classes of drugs.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP601TCO1	3	2	2	2	-	2	-	2	2	-	2
BP601TCO2	3	-	-	2	-	1	-	2	2	-	2
BP601TCO3	3	2	2	2	-	2	-	2	2	-	2
BP601TCO4	3	-	2	2	-	2	-	2	2	-	2
BP601TCO5	3	-	-	2	-	1	-	2	2	-	2
AVERAGE	3	2.0	2.0	2.0	-	1.6	-	2.0	2.0	-	2.0

Course Name: Pharmacology III Course Code: BP602T

CO	Course Outcomes	BL
CO BP602T 1	Explain the various drugs used in respiratory and gastrointestinal complications.	1
CO BP602T 2	Understand the principles of chemotherapy and illustrate the mechanism of action of antibiotics.	2
CO BP602T 3	Analyze the chemotherapy of UTIs, STDs, and anti-cancer drugs and categorize the immunopharmacology.	4
CO BP602T 4	Discuss the various types of toxicity studies, principles of treatment of poisoning, and management of various poisoned conditions.	2
CO BP602T 5	Compile the biological clock and its significance, leading to chronotherapy.	3

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CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO BP602T 1	3	-	3	1	-	2	-	2	3	-	2
CO BP602T 2	3	-	2	2	-	3	-	2	3	-	3
CO BP602T 3	3	-	3	2	-	3	-	2	3	-	2
CO BP602T 4	3	-	2	1	-	3	-	2	3	-	2
CO BP602T 5	3	-	2	2	-	2	-	2	3	-	2
AVERAGE	3.00	-	2.40	1.6	-	2.60	-	2.0	3.00	-	2.2

Course Name: Herbal Drug Technology – Theory Course Code: BP603T		
CO	Course Outcomes	BL
BP603TCO1	Understand raw material as a source of herbal drugs from cultivation to herbal drug products.	2
BP603TCO2	Describe herbal cosmetics, natural sweeteners, and nutraceuticals.	2
BP603TCO3	Appraise various regulatory guidelines for the evaluation of herbal drugs.	5
BP603TCO4	Design herbal drug products using plant materials as raw substances.	6
BP603TCO5	Device the patenting of herbal products and good manufacturing practice (GMP).	6

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP603TCO1	3	-	-	-	-	2	-	2	-	-	2
BP603TCO2	3	-	1	2	-	2	-	2	2	-	2
BP603TCO3	3	2	-	-	-	-	-	2	2	-	2
BP603TCO4	3	3	3	2	-	2	-	2	3	-	2
BP603TCO5	3	3	-	2	-	2	-	2	2	-	2
AVERAGE	3.0	2.7	2.0	2.0	-	2.0	-	2.0	2.3	-	2.0

Course Name: Biopharmaceutics & Pharmacokinetics Course Code: BP604T		
CO	Course Outcomes:	BL
BP604TCO1	Define and explain the concepts of biopharmaceutics, pharmacokinetics, and their significance.	2
BP604TCO2	Understand the concepts of bioavailability, bioequivalence of drug products, and their significance.	2
BP604TCO3	Understand the concepts of linear and non-linear pharmacokinetic models with their significance.	2
BP604TCO4	Apply the concepts of compartment and non-compartment models for calculating various pharmacokinetic parameters and drug dose.	3
BP604TCO5	Apply the concepts of linear and Non-linear pharmacokinetic models for estimating various pharmacokinetic and pharmacodynamic parameters.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP604TCO1	3	2	2	3	-	2	2	2	2	-	2
BP604TCO2	3	2	2	3	-	3	2	2	2	-	2
BP604TCO3	3	2	2	3	-	2	3	2	1	-	1
BP604TCO4	3	2	2	3	-	2	3	2	1	-	1
BP604TCO5	3	2	2	3	-	2	-	2	1	-	1
AVERAGE	3.00	2.00	2.00	3.00	-	2.20	2.50	2.0	1.40	-	1.40

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Course Name: Pharmaceutical Biotechnology – Theory Course Code: BP605T		
CO	Course Outcomes	BL
BP605TCO1	Relate the basic knowledge of microorganisms in the production of several pharmaceutically significant enzymes.	3
BP605TCO2	Assess various types of immunological reactions that occur in the human body and apply the knowledge of producing and storing vaccines properly.	6
BP605TCO3	Apply the basic concepts related to rDNA technology, vaccines, hormones, blood, and protein for producing commercially significant biotechnological products	3
BP605TCO4	Understand the various immunological assay employed in the production of biotechnological products of medicinal value.	2
BP605TCO5	Demonstrate the design and working of fermenters employed to produce biotechnological products.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP605TCO1	3	-	3	-	-	2	-	2	2	-	2
BP605TCO2	3	-	2	2	-	2	-	2	2	-	2
BP605TCO3	3	-	3	2	-	2	-	2	2	-	2
BP605TCO4	3	-	2	2	-	2	-	2	3	-	-
BP605TCO5	3	-	3	-	-	2	-	2	2	-	2
AVERAGE	3.0	-	2.6	2.0	-	2.0	-	2.0	2.2	-	2.0

Course Name: Quality Assurance –Theory Course Code: BP606T		
CO	Course Outcomes	BL
BP606TCO1	Recalling the basic aspects of GMP, GWP, and GLP while working in the pharmaceutical industry	1
BP606TCO2	Illustrate the basic knowledge of various quality management systems.	2
BP606TCO3	Explain the basic concept of handling complaints and documentation	2
BP606TCO4	Understand the scope of quality certifications and Quality Control, which is applicable in the pharmaceutical industry	2
BP606TCO5	Understand the importance of QA & QC departments in the pharmaceutical industry.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP606TCO1	3	2	2	2	-	2	2	2	3	-	2
BP606TCO2	3	2	2	2	-	2	2	2	3	-	2
BP606TCO3	3	2	2	3	-	2	2	2	3	-	2
BP606TCO4	3	2	2	-	-	2	2	2	2	-	2
BP606TCO5	3	-	2	2	-	2	2	2	2	-	3
AVERAGE	3.0	2.0	2.0	2.3	-	2.0	2.0	2.0	2.6	-	2.2

Course Name: Medicinal Chemistry III – Practical Course Code: BP607P		
CO	Course Outcomes	BL
BP607PCO1	Understand the chemistry of drugs in relation to biological action.	2
BP607PCO2	Extends the different parameters to identify the synthesized compound.	2
BP607PCO3	Synthesize the medicinal compounds in the laboratory by conventional & microwave techniques.	6
BP607PCO4	Evaluate the purity of drugs by different methods.	5

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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BP607PCO1	3	2	2	2	2	2	-	2	2	-	2
BP607PCO2	3	2	2	3	2	2	-	2	2	-	2
BP607PCO3	3	2	2	2	2	2	-	2	2	-	2
BP607PCO4	3	2	2	2	2	2	-	2	2	-	2
AVERAGE	3.0	2.0	2.0	2.3	2.0	2.0	-	2.0	2.0	-	2.0

Course Name: Pharmacology III Practical Course Code: BP608P		
CO	Course Outcomes	BL
CO BP608P 1	Recall the dose calculations in pharmacological experiments and relate the antiallergic activity / anti-ulcer activity in rat models.	1
CO BP608P 2	Develop practical and software skills in the pharmacology lab.	3
CO BP608P 3	Demonstrate the effect of drugs on gastrointestinal motility and the effect of agonists/antagonists on the guinea pig ileum.	3
CO BP608P 4	Understand the concept of toxicology and OECD guidelines.	2
CO BP608P 5	Evaluation of Drug absorption and the mode of action of various drugs using the software.	5

CO/PO	PO1	PO2	PO3	PO4	PO5	POSS6	PO7	PO8	PO9	PO10	PO11
CO BP608P 1	3	2	3	-	2	2	2	2	2	-	1
CO BP608P 2	3	2	3	2	2	2	2	2	2	-	2
CO BP608P 3	3	2	3	-	2	2	2	2	3	-	1
CO BP608P 4	3	2	1	2	2	2	2	2	2	-	1
CO BP608P 5	3	2	2	2	2	2	2	2	2	-	2
AVERAGE	3.00	2.00	2.40	2.00	2.00	2.00	2.00	2.00	2.20	-	1.40

Course Name: Herbal Drug Technology – Practical Course Code: BP609P		
CO	Course Outcomes	BL
BP609PCO1	Assemble the monograph of herbal drugs for preparations and documentation.	6
BP609PCO2	Estimate the phytochemical screening and standardize the extract used in herbal formulations.	2
BP609PCO3	Formulate herbal pharmaceuticals, cosmetics, and their analysis.	6
BP609PCO4	Examine the qualitative and quantitative evaluations of herbal products.	4

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP609PCO1	3	2	2	2	2	2	2	2	2	1	2
BP609PCO2	3	-	2	2	2	-	3	2	-	2	2
BP609PCO3	3	2	2	3	2	2	2	2	3	2	2
BP609PCO4	3	-	2	2	2	2	3	2	-	1	2
AVERAGE	3.0	2.0	2.0	2.3	2.0	2.0	2.5	2.0	2.5	1.5	2

Course Name: Biostatistics and Research Methodology Course Code: BP801T		
CO	Course Outcomes	BL
BP801TCO1	Understand the basic concepts of biostatistics in pharmacy.	2
BP801TCO2	Create and apply statistical concepts and techniques to perform computations for Pharmaceutical Sciences and research fields in pharmacy.	6

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BP801TCO3	Develop an understanding of various kinds of research, objectives of doing research, research process, research design, and sampling in pharmaceutical sciences.	6
BP801TCO4	Understand the knowledge of measurement, scaling techniques, data analysis, and hypothesis testing using suitable tests of statistical significance.	2
BP801TCO5	Statistical analysis using Excel, SPSS, Design of Experiment, and R-software to industrial and clinical trial approaches.	4

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP801TCO1	3	2	2	3	-	1	1	1	1	-	2
BP801TCO2	3	2	-	3	-	1	1	2	1	-	2
BP801TCO3	3	2	2	2	-	3	3	2	3	-	3
BP801TCO4	3	2	2	2	-	-	-	-	-	-	2
BP801TCO5	3	2	2	2	-	-	-	-	-	-	2
AVERAGE	3	2	2	2.4	-	1.6	1.6	1.6	1.6	-	2.2

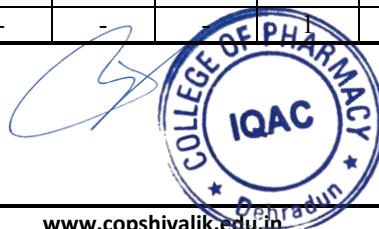
Course Name: Social and Preventive Pharmacy Course Code: BP802T		
CO	Course Outcomes	BL
BP802TCO1	Understand the concepts related to health, disease, prevention, and the sociocultural factors related to health.	2
BP802TCO2	Examine the causes, signs, symptoms, and management of various diseases for the prevention of diseases.	4
BP802TCO3	Understand the National health programs, their objectives, functioning, and outcome.	2
BP802TCO4	Understand the role of WHO in Indian national programs.	2
BP802TCO5	Understand and support the Community services in rural, urban, and school health.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP802TCO1	3	2	2	-	-	-	-	2	-	-	2
BP802TCO2	3	2	2	3	-	3	2	2	2	-	2
BP802TCO3	3	2	2	2	-	3	2	2	2	-	2
BP802TCO4	3	2	2	2	-	3	-	2	2	-	2
BP802TCO5	3	2	2	2	-	3	2	2	2	-	2
AVERAGE	3.0	2.0	2.0	2.2	-	3.0	2.0	2.0	2.0	-	2

Course Name: Pharmaceutical Regulatory Science Course Code: BP804ET		
CO	Course Outcomes	BL
BP804ETCO1	Define the basic concepts of stages of drug discovery, Clinical studies, and generic product development.	1
BP804ETCO2	Outline the ideas about the regulatory approval process of new drugs and drug products in the regulated markets of India & other countries.	1
BP804ETCO3	Explain the various Procedures for the export of Pharmaceutical Products.	2
BP804ETCO4	Understand the basic importance of the Orange Book, Federal Register, Code of Federal Regulations, and Purple Book.	2
BP804ETCO5	Illustrate the basic understanding of developing clinical trial protocols, along with their management and monitoring	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP804ETCO1	3	2	2	2	-	2	2	2	2	2	3
BP804ETCO2	3	-	-	-	-	2	2	2	2	-	3
BP804ETCO3	3	-	-	-	-	-	-	2	2	-	2

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BP804ETCO4	3	-	-	-	-	1	-	2	3	-	2
BP804ETCO5	3	2	2	2	-	2	2	2	2	2	2
AVERAGE	3.0	2.0	2.0	2.0	-	1.6	2.0	2.0	2.2	2.0	2.4

Course Name: Pharmacovigilance Course Code: BP805ET		
CO	Course Outcomes	BL
BP805ETCO1	Define and explain the concept of Pharmacovigilance, ADR detection and reporting, and Regulatory terminologies.	2
BP805ETCO2	Describe the drug and disease classification, dictionaries, coding, and terminologies used in Pharmacovigilance.	2
BP805ETCO3	Understand the Vaccine safety surveillance, Pharmacovigilance methods, and the importance of communication in pharmacovigilance.	2
BP805ETCO4	Discuss the methods for evaluating data from different phases and enumerate them.	2
BP805ETCO5	Understand the ICH guidelines and their significance in Pharmacovigilance.	2

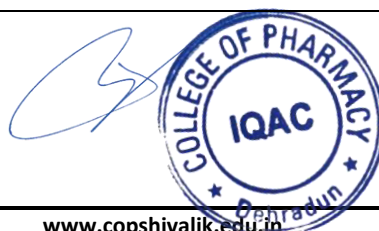
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP805ETCO1	3	2	2	2	-	2	2	2	2	-	3
BP805ETCO2	3	2	2	2	-	2	2	2	2	-	3
BP805ETCO3	3	3	-	2	-	1	-	2	2	-	2
BP805ETCO4	3	2	2	3	-	1	-	2	1	-	2
BP805ETCO5	3	2	-	3	-	2	2	2	1	-	2
AVERAGE	3.00	2.20	2.00	2.40	-	1.6	2.0	2.0	1.60	-	2.40

Course Name: Cosmetic Science Course Code: BP809ET		
CO	Course Outcomes	BL
BP809ETCO1	Learn about the classification of cosmetics and the role of key excipients in the formulation.	1
BP809ETCO2	Understand fundamental insights into skin, hair, and oral cavity functions and associated common problems.	2
BP809ETCO3	Understand the herbal benefits, analytical techniques, and solutions for common cosmetic issues.	2
BP809ETCO4	Apply the formulation principles for various products like face wash, creams, shampoos, conditioners, toothpaste, and mouthwash.	3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP809ETCO1	3	2	2	-	-	2	-	2	2	-	2
BP809ETCO2	3	-	2	-	-	2	-	2	2	-	2
BP809ETCO3	3	2	2	-	-	2	-	2	2	-	2
BP809ETCO4	3	2	2	-	-	2	-	2	2	-	2
AVERAGE	3.0	2.0	2.0	-	-	2.0	-	2.0	2.0	-	2.0

Course Name: Pharma Marketing Management Course Code: BP803ET		
CO	Course Outcomes	BL

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BP803ETCO1	Discuss fundamental marketing concepts, buying behaviour, pharmaceutical market structure, market segmentation, prescribing behaviour, and the role of market research.	2
BP803ETCO2	Outline product classification, product mix decisions, product life cycle, positioning, branding, and pharmaceutical product management.	2
BP803ETCO3	Summarize the promotional mix, promotional budgeting, and major promotional tools used in pharmaceutical marketing.	2
BP803ETCO4	Interpret pharmaceutical marketing channels, physical distribution management, and the roles and responsibilities of professional sales representatives.	3
BP803ETCO5	Discuss pricing concepts, pricing methods, regulatory controls, and emerging trends in pharmaceutical marketing.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP803ETCO1	3	3	3	2	2	3	-	2	3	2	3
BP803ETCO2	3	3	2	2	-	3	1	3	-	-	3
BP803ETCO3	3	2	-	1	2	3	-	3	3	-	3
BP803ETCO4	3	3	3	2	3	3	3	-	-	-	3
BP803ETCO5	3	2	2	3	2	3	3	-	-	-	3
AVERAGE	3.0	2.6	2.5	2.0	2.3	3.0	2.3	2.7	3.0	2.0	3.0

Course Name: Dietary supplements and nutraceuticals Course Code: BP812ET		
CO	Course Outcomes	BL
BP812ETCO1	Explain the concepts, classification and therapeutic applications of nutraceuticals and functional foods in prevention and management of lifestyle and public health disorders.	2
BP812ETCO2	Describe the occurrence, chemical nature and medicinal benefits of phytochemicals, probiotics and functional food components.	2
BP812ETCO3	Explain the generation and biological effects of free radicals and the protective role of dietary fibers and complex carbohydrates.	2
BP812ETCO4	Understand the role of oxidative stress in chronic diseases and mechanisms of action of natural and synthetic antioxidants.	2
BP812ETCO5	Discuss processing effects, regulatory frameworks, quality control and safety aspects of nutraceuticals and dietary supplements.	2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP812ETCO1	3	2	2	-	-	2	2	-	2	-	2
BP812ETCO2	3	2	2	-	-	2	2	-	2	-	2
BP812ETCO3	3	2	3	-	-	2	2	-	2	-	2
BP812ETCO4	3	2	3	-	-	2	2	-	2	-	2
BP812ETCO5	3	2	2	-	-	3	3	-	3	2	2
AVERAGE	3	2	2.4	-	-	2.2	2.2	-	2.2	2	2

Course Name: Project Work Course Code: BP813PW		
CO	Course Outcomes	BL
BP813PWCO1	Develop communication and presentation skills.	6
BP813PWCO2	Enhance skills and build confidence.	3
BP813PWCO3	Learn to write a thesis and research paper.	1
BP813PWCO4	Understand research methodology.	2

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CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP813PWCO1	3	3	2	2	-	2	-	3	2	-	3
BP813PWCO2	3	3	2	2	-	2	-	3	2	-	3
BP813PWCO3	3	3	2	2	-	2	-	3	2	-	3
BP813PWCO4	3	3	2	2	-	2	-	-	2	-	3
AVERAGE	3.0	3.0	2.0	2.0	-	2.0	-	3.0	2.0	-	3.0

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