PROGRAM OUTCOMES
BACHELOR OF PHARMACY (B PHARM)

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 enquiry, 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 well-being.

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.

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.

First Semester

Course Name: Human Anatomy and Physiology-I(Theory) Course Code: BP101T

After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant POs
BP101T.1	Explain and correlate the gross morphology, structure, and physiological functions of various human body organs in relation to their roles in maintaining health.	PO1, PO9
BP101T.2	Describe and analyze the homeostatic mechanisms, interpret causes of physiological imbalances, and relate them to clinical implications.	PO1, PO3, PO9
BP101T.3	Identify and classify different tissues and organs microscopically and macroscopically, demonstrating understanding of structure–function relationships.	PO1, PO3
BP101T.4	Perform and interpret experiments related to special senses and the nervous system, demonstrating the use of modern tools and practical skills in physiology.	PO4, PO8, PO11
BP101T.5	Appreciate and explain the integrated functioning and coordination among various organ systems that contribute to homeostasis and overall well-being.	PO1, PO6, PO10
BP101T.6	Demonstrate understanding of cellular structure and functions of cell organelles, correlating them with metabolic and physiological activities essential for life.	PO1, PO3, PO11

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	-	-	-	3	-	-
CO2	3	-	3	-	-	-	-	-	3	-	-
CO3	3	-	3	-	-	-	-	-	-	-	-
CO4	-	-	-	3	-	-	-	3	-	-	3
CO5	3	-	-	-	-	3	-	-	-	3	-
CO6	3	-	3	-	-	-	-	-	-	-	3
Average	3	-	3	3	-	3	-	3	3	3	3

Course Name: Human Anatomy and Physiology-I(Practical); Course Code: BP107P

After completion of this course, student should be able to

Course Outcome (CO)	CO Statements	Relevant POs
BP107P.1	Describe and explain the histology and microscopic structure of various human tissues, correlating their functional significance in health and disease.	PO1, PO3
BP107P.2	Illustrate the anatomy and structural organization of the human skeletal system, identifying bones and their physiological roles in body movement and protection.	PO1, PO9
BP107P.3	Demonstrate the use of hemocytometer for enumeration of blood cells and interpret erythrocyte and leukocyte counts to assess hematological status.	PO3, PO4
BP107P.4	Perform physiological experiments to measure heart rate, pulse rate, and blood pressure using appropriate instruments and analyze variations in normal and abnormal conditions.	PO4, PO10, PO9
BP107P.5	Correlate and appreciate the coordinated functioning of organs and systems in maintaining homeostasis, reflecting understanding of integrated human physiology.	PO1, PO6, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		2								
CO2	3								2		
CO3			3	3							
CO4			2	3					2	1	
CO5	3					2					2
Avg	3		2.33	3		2			2	1	2

Course Name: Pharmaceutical Analysis (Theory); Course Code: BP102T
After completion of this course, student should be able to

CO No.	CO Statements	Relevant Pos
BP102T.1	Explain and interpret the fundamental principles underlying volumetric and electrochemical analysis used in pharmaceutical sciences.	PO1, PO3
BP102T.2	Perform various volumetric and electrochemical titrations accurately using standard laboratory procedures.	PO1, PO4, PO2
BP102T.3	Demonstrate analytical and problem-solving skills essential for pharmaceutical quality control and assurance.	PO3, PO4, PO11
BP102T.4	Illustrate various analytical techniques and express concentrations using appropriate scientific units and methods.	PO1, PO3, PO8
BP102T.5	Identify, quantify, and assess the purity of pharmaceutical substances following standard analytical protocols and ethical practices.	PO1, PO7, PO9

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP102T.1	3	–	2	–	–	–	–	–	–	–	–
BP102T.2	3	2	–	2	–	–	–	–	–	–	–
BP102T.3	–	–	3	2	–	–	–	–	–	–	2
BP102T.4	2	–	2	–	–	–	–	2	–	–	–
BP102T.5	3	–	–	–	–	–	2	–	2	–	–
Avg	2.75	2	2.333333	2			2	2	2		2

Course Name: Pharmaceutical Analysis (Practical); Course Code: BP108P
After completion of this course, student should be able to

CO No.	CO Statements	Relevant Pos
BP108P.1	Apply fundamental knowledge in the preparation, standardization, and calculation of solution strengths using appropriate analytical techniques.	PO1, PO3, PO4
BP108P.2	Perform and interpret various volumetric analyses including acid-base, redox, complexometric, precipitation, and non-aqueous titrations following standard laboratory protocols.	PO1, PO3, PO4, PO7
BP108P.3	Demonstrate competence in performing electro-analytical techniques such as potentiometry and conductometry to quantify pharmaceutical substances.	PO1, PO3, PO4, PO11
BP108P.4	Identify, analyze, and limit metallic impurities in pharmaceutical compounds in compliance with pharmacopeial standards.	PO1, PO3, PO9
BP108P.5	Determine and validate the purity of given pharmaceutical substances using appropriate analytical methodologies.	PO1, PO3, PO4, PO7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	**3**		**2**	**2**							
CO2	**3**		**3**	**2**			**1**				
CO3	**3**		**2**	**3**							**2**
CO4	**3**		**2**						**2**	**2**	
CO5	**3**		**3**	**2**			**1**				
Avg	3		2.4	2.25			1		2	2	2

Course Name: Pharmaceutics-I(Theory); Course Code: BP103T
After completion of this course, student should be able to

CO No.	Course Outcome Statement	Relevant Program Outcomes (POs)
BP103T.1	Describe the evolution and history of the pharmacy profession and its role in healthcare systems.	**PO1**, **PO6**, **PO9**
BP103T.2	Explain the fundamental principles of dosage form design, pharmaceutical incompatibilities, and perform accurate pharmaceutical calculations.	**PO1**, **PO3**, **PO4**
BP103T.3	Demonstrate a professional approach to prescription handling, interpretation, and dispensing in accordance with ethical and legal standards.	**PO6**, **PO7**, **PO9**
BP103T.4	Formulate, prepare, and label various conventional dosage forms following standard operating procedures and good manufacturing practices.	**PO1**, **PO2**, **PO4**, **PO10**
BP103T.5	Correlate evaluation parameters with formulation characteristics to assess the quality, stability, and performance of dosage forms.	**PO1**, **PO3**, **PO11**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3					2			2		
CO2	3		2	2							
CO3	2					3	3	2	3		
CO4	3	2	2	3						2	
CO5	3		3	2							2
Avg	2.8	2	2.333333	2.333333		2.5	3	2	2.5	2	2

Course Name: Pharmaceutics-I (Practical) Course Code: BP109P
After completion of this course, student should be able to

CO	Course Outcome Statement	Relevant Program Outcomes (POs)
BP109P.1	Develop competencies in compounding and dispensing various pharmaceutical dosage forms following standard procedures.	**PO1**, **PO3**, **PO4**
BP109P.2	Explain the principles, formulation methods, and evaluation of monophasic and biphasic liquid dosage forms with appropriate scientific rationale.	**PO1**, **PO3**, **PO8**
BP109P.3	Demonstrate understanding of formulation principles and standard operating procedures for solid and semisolid dosage forms.	**PO1**, **PO3**, **PO11**
BP109P.4	Select and justify appropriate containers and packaging materials for various pharmaceutical dosage forms considering safety, stability, and regulatory requirements.	**PO1**, **PO9**, **PO10**
BP109P.5	Design and prepare accurate and regulatory-compliant labels for pharmaceutical dosage forms ensuring proper communication of essential drug information.	**PO6**, **PO7**, **PO8**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	**3**		**2**	**2**							
CO2	**3**		**2**					**1**			
CO3	**3**		**2**								**1**
CO4	**3**								**2**	**1**	
CO5						**2**	**3**	**2**			
Avg	3		2	2		2	3	1.5	2	1	1

Course Name: Pharmaceutical inorganic chemistry(Theory); Course Code: BP104T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP104T.1	Identify and analyze the sources of impurities in inorganic drugs and apply appropriate methods for their detection and estimation in compliance with pharmacopoeial standards.	PO1, PO3, PO7
BP104T.2	Explain and correlate the medicinal and pharmaceutical significance of various inorganic compounds used in therapy and formulation.	PO1, PO9, PO10
BP104T.3	Describe and interpret the definitions, preparation methods, and assay procedures for gastrointestinal agents, expectorants, haematinics, astringents, and antidotes, ensuring accuracy in analytical practices.	PO1, PO3, PO8
BP104T.4	Demonstrate understanding of the measurement, storage, and pharmaceutical applications of radiopharmaceuticals, considering safety and ethical aspects in handling radioactive substances.	PO1, PO4, PO7, PO9
BP104T.5	Evaluate and relate the role of inorganic salts in the treatment and prevention of dental caries, connecting chemical properties with therapeutic action.	PO1, PO9, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	2	–	–	2	–	–	–	1
CO2	3	–	2	–	–	2	–	1	3	2	1
CO3	3	–	3	2	–	1	–	3	–	–	1
CO4	3	–	2	3	1	–	3	2	3	2	1
CO5	3	–	2	–	–	–	–	–	3	3	2
Avg	3		2.4	2.333333	1	1.5	2.5	2	3	2.333333	1.2

Course Name: Pharmaceutical Inorganic Chemistry (Practical); Course Code: BP110P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements (Aligned with POs)	Relevant Program Outcomes (POs)
BP110P.1	Identify and determine the limits of trace impurities in pharmaceuticals by performing standard limit tests, applying analytical and problem-solving skills to ensure product quality and safety.	PO1, PO3, PO9
BP110P.2	Synthesize, prepare, and evaluate pharmaceutical inorganic compounds using appropriate laboratory techniques and modern analytical tools.	PO1, PO4, PO2
BP110P.3	Identify and classify various pharmaceutical inorganic compounds based on their chemical properties, therapeutic uses, and official standards.	PO1, PO6
BP110P.4	Assess and determine the purity and quality of inorganic compounds following pharmacopeial standards and ethical laboratory practices.	PO1, PO7, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	–	–	–	–	–	2	–	–
CO2	3	2	–	3	–	–	–	–	–	–	–
CO3	3	–	–	–	–	2	–	–	–	–	–
CO4	3	–	–	–	–	–	2	–	–	2	–
Avg	3	2	3	3		2	2		2	2	

Course Name: Communication skills (Theory); Course Code: BP105T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements (Aligned with POs)	Relevant Program Outcomes (POs)
BP105T.1	Demonstrate an understanding of the behavioral and professional attributes required for a pharmacist to function effectively across pharmaceutical operations and healthcare settings.	PO1, PO5, PO6, PO7
BP105T.2	Communicate effectively using verbal, non-verbal, and written modes with healthcare professionals, patients, and society to ensure clarity and empathy in professional practice.	PO8, PO6, PO7
BP105T.3	Exhibit teamwork and management skills by functioning efficiently as a member or leader in multidisciplinary teams for achieving organizational and healthcare objectives.	PO2, PO5, PO6
BP105T.4	Develop and apply interview and interpersonal skills for effective participation in recruitment processes and professional interactions within pharmaceutical and healthcare environments.	PO8, PO5, PO6
BP105T.5	Demonstrate leadership qualities, ethical responsibility, and the ability to motivate and guide teams toward achieving common goals in pharmaceutical and healthcare sectors.	PO5, PO6, PO7, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1			2	2	2	1			
CO2	1					2	1	3			
CO3		3			3	2		2			
CO4					2	2		3			
CO5		2			3	3	3	1		1	2
Avg	2	2			2.5	2.2	2	2		1	2

Course Name: Communication skills (Practical); Course Code: BP111P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements (Aligned with POs)	Relevant Program Outcomes (POs)
BP111P.1	Understand the behavioral competencies required for a pharmacist to perform effectively in diverse areas of pharmaceutical operations, integrating ethical and professional conduct in practice.	PO1, PO5, PO6, PO7
BP111P.2	Demonstrate effective verbal and non-verbal communication skills with peers, healthcare professionals, and the community to ensure clarity, empathy, and professionalism in pharmacy practice.	PO8, PO6
BP111P.3	Exhibit teamwork and collaboration skills to manage, coordinate, and contribute effectively as a team member or leader in multidisciplinary healthcare settings.	PO2, PO5, PO6
BP111P.4	Develop and demonstrate interpersonal and interview skills necessary for professional growth, recruitment processes, and workplace communication.	PO8, PO11, PO6
BP111P.5	Develop leadership qualities and essential managerial skills to motivate, guide, and inspire others for achieving collective goals in professional and societal contexts.	PO2, PO5, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2			2	3	2				
CO2						2		3			
CO3		3			3	2		2			
CO4						2		3			2
CO5		2			3	2			2		
Avg	3	2.333333			2.666667	2.2	2	2.666667	2		2

Course Name: Remedial Biology (Theory); Course Code: BP106RBT
After completion of this course, student should be able to

CO No.	Course Outcome Statement	Relevant Program Outcomes (POs)
BP106RBT.1	Describe the classification, salient features, and structural diversity of the five kingdoms of life, establishing a foundation for understanding biological systems relevant to pharmacy.	PO1
BP106RBT.2	Explain the anatomy and physiological functions of major plant components and relate them to pharmacognostic and pharmaceutical relevance.	PO1, PO3
BP106RBT.3	Illustrate the basic anatomy and physiological mechanisms of animals, with special reference to humans, correlating biological organization with function.	PO1, PO9
BP106RBT.4	Apply knowledge of human physiology to analyze the functional mechanisms of the circulatory, respiratory, and reproductive systems and interpret physiological responses.	PO1, PO3, PO4
BP106RBT.5	Apply understanding of human physiology to explain the structure and function of digestive, excretory, and nervous systems and their clinical relevance to health and disease.	PO1, PO3, PO10, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	1	–	–	–	–	–	–	–	1
CO2	3	–	2	–	–	–	–	–	–	1	1
CO3	3	–	2	–	–	–	–	–	2	1	1
CO4	3	–	3	2	–	–	–	1	2	–	1
CO5	3	–	3	2	–	–	–	1	2	1	2
Avg	3		2.2	2				1	2	1	1.2

Course Name: Remedial Biology (Practical); Course Code: BP112RBP
After completion of this course, student should be able to

CO No.	Course Outcomes (After completion of the course, students will be able to:)	Mapped Program Outcomes (POs)
BP112RBP.1	Explain various microscopic techniques, staining methods, and procedures for permanent slide preparation.	**PO1, PO3, PO4**
BP112RBP.2	Perform microscopic study and identification of plant tissues such as stem, root, leaf, seed, fruit, and flower.	**PO1, PO3, PO4, PO10, PO11**
BP112RBP.3	Determine the blood group and measure blood pressure accurately using standard laboratory procedures.	**PO1, PO3, PO4, PO9, PO7**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	2	-	-	-	-	-	-	-
CO2	3	-	2	3	-	-	-	-	-	2	2
CO3	3	-	2	2	-	-	2	-	2	-	-
Avg	3		2.05	2.25			2	1	2	1.5	1.6

Course Name: Remedial Mathematics (Theory); Course Code: BP 106RMT
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements (Aligned with POs)	Relevant Program Outcomes (POs)
BP 106RMT.1	Apply fundamental mathematical theorems, principles, and formulas to analyze and solve pharmacy-related problems, enhancing understanding of quantitative aspects of pharmaceutical sciences.	PO1, PO3, PO11
BP 106RMT.2	Develop the ability to solve diverse types of numerical and analytical problems by integrating mathematical theories with real-world pharmaceutical scenarios.	PO3, PO4, PO2
BP 106RMT.3	Understand and apply mathematical concepts in various pharmaceutical applications such as pharmacokinetics, formulation design, and data interpretation.	PO1, PO9, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	-	-	-	-	–	–	2
CO2	–	2	3	2	-	-	-	-	–	–	–
CO3	3	–	–	–	-	-	-	-	2	2	–
Avg	3	2	2.35	2.125			2	1	2	1.75	1.8

Second semester

Course Name: Human Anatomy and Physiology-II (Theory); Course Code: BP201T
After completion of this course, student should be able to

CO Code	Course Outcomes	Pos
BP201T.1	Explain the morphology, structure, and functions of various organs of the human body in relation to health and disease.	PO1, PO3, PO9
BP201T.2	Describe the mechanisms of homeostasis and analyze the physiological imbalances leading to disorders.	PO1, PO3, PO10
BP201T.3	Identify and differentiate various tissues and organs of different systems through structural and functional correlation.	PO1, PO4, PO11
BP201T.4	Illustrate the coordinated functioning of organ systems in maintaining normal physiology and health.	PO1, PO5, PO9
BP201T.5	Evaluate the interlinked mechanisms contributing to the maintenance of homeostasis and appreciate their role in clinical and therapeutic contexts.	PO1, PO6, PO7, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	-	-	-	-	1	-	-
CO2	3	-	3	-	-	-	-	-	-	2	-
CO3	3	-	-	2	-	-	-	-	-	-	2
CO4	3	-	-	-	2	-	-	-	1	-	-
CO5	3	-	-	-	-	2	2	-	-	-	2
Avg	3		2.5	2	2	2	2		1	2	2

Course Name: Human Anatomy and Physiology-II(Practical); Course Code: BP207P
After completion of this course, student should be able to

CO No.	Course Outcome Statement	Relevant Program Outcomes (POs)
BP207P.1	Demonstrate the structure, location, and function of various sense organs, the nervous system, and the endocrine system using anatomical models, emphasizing their physiological coordination and relevance to human health.	PO1, PO3, PO9
BP207P.2	Determine and interpret physiological parameters such as tidal volume and vital capacity to understand respiratory mechanics and their clinical significance.	PO1, PO3, PO4
BP207P.3	Demonstrate the anatomy and physiology of the digestive, respiratory, cardiovascular, urinary, and reproductive systems using models and preserved specimens, integrating structural knowledge with functional understanding.	PO1, PO6, PO9
]BP207P.4	Perform hematological experiments such as blood cell counts, hemoglobin estimation, bleeding and clotting time, and measurement of blood pressure, heart rate, and pulse, following ethical and professional laboratory practices.	PO1, PO4, PO7, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	2	–	–
CO2	3	–	2	2	–	–	–	–	–	–	–
CO3	3	–	–	–	–	2	–	–	2	–	–
CO4	3	–	–	2	–	–	2	2	–	–	–
Avg	3		2	2		2	2	2	2		

Course Name: Pharmaceutical organic chemistry-I (Theory); Course Code: BP202T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP202T.1	Explain the fundamental principles of organic chemistry including nomenclature, structural representation, and isomerism of organic compounds.	PO1, PO3, PO11
BP202T.2	Interpret and apply the concepts of hybridization, electronic effects, resonance, and steric factors influencing the stability and reactivity of organic molecules.	PO1, PO3, PO4
BP202T.3	Analyze the reactivity and transformation pathways of organic compounds containing diverse functional groups.	PO1, PO3, PO9
BP202T.4	Illustrate and rationalize the mechanisms of organic reactions including nucleophilic substitution, addition, elimination, and rearrangement processes.	PO1, PO3, PO11
BP202T.5	Design new chemical entities or synthetic pathways by applying reaction orientation rules and mechanistic understanding.	PO2, PO3, PO10, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		2								1
CO2	3		3	2							1
CO3	3		3						2		1
CO4	3		3								2
CO5	3	2	3							2	3
Avg	3	2	2.8	2					2	2	1.6

Course Name: Pharmaceutical organic chemistry -I(Practical); Course Code: BP208P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statement	Relevant Program Outcomes (POs) Mapped
BP208P.1	Perform systematic qualitative analysis of unknown organic compounds using established analytical procedures.	PO1, PO3, PO4, PO7
BP208P.2	Identify unknown organic compounds through determination and interpretation of physical constants such as melting and boiling points.	PO1, PO3, PO4, PO10
BP208P.3	Synthesize and characterize organic derivatives through standard organic reactions to confirm structural features.	PO1, PO3, PO4, PO11
BP208P.4	Illustrate the structure, geometry, and reactivity of organic compounds using molecular modeling techniques.	PO1, PO3, PO4, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	2	–	–	2	1	–	–	1
CO2	3	–	2	2	–	–	1	1	–	2	1
CO3	3	–	3	3	–	–	2	1	–	2	2
CO4	3	–	2	3	–	–	–	3	–	–	2
Avg	3		2.5	2.5			1.666667	1.5		2	1.5

Course Name: Biochemistry (Theory); Course Code: BP203T
After completion of this course, student should be able to

CO No.	Course Outcomes (COs)	Mapped Program Outcomes (POs)
BP203T.1	Explain the catalytic role of enzymes and analyze the significance of enzyme inhibitors in drug design, therapeutic, and diagnostic applications.	PO1, PO3, PO9
BP203T.2	Interpret the metabolism of carbohydrates, lipids, and proteins under normal and pathological conditions to understand disease mechanisms.	PO1, PO3, PO10
BP203T.3	Describe the genetic organization of the mammalian genome and correlate the role of DNA in the synthesis of RNA and proteins.	PO1, PO8, PO11
BP203T.4	Illustrate and differentiate the molecular mechanisms of DNA replication, transcription, and translation processes.	PO1, PO4, PO11
BP203T.5	Identify and classify various biomolecules and explain their role in bioenergetics and cellular metabolism.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	-	-	-	-	2	-	-
CO2	3	-	3	-	-	-	-	-	-	2	-
CO3	3	-	-	-	-	-	-	2	-	-	2
CO4	3	-	-	2	-	-	-	-	-	-	2
C05	3	-	2	-	-	-	-	-	-	-	2
Avg	3		2.333333	2				2	2	2	2

Course Name: Biochemistry (Practical); Course Code: BP209P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP209P.1	Perform and interpret qualitative analysis of carbohydrates, proteins, and lipids using standard biochemical techniques, demonstrating understanding of biomolecular structure and function.	PO1, PO3, PO4
BP209P.2	Quantitatively estimate blood glucose and cholesterol levels using biochemical assays, applying analytical reasoning and laboratory accuracy in health-related evaluations.	PO1, PO3, PO9
BP209P.3	Determine creatinine levels in urine samples to assess renal function, integrating biochemical principles with clinical relevance.	PO1, PO3, PO9
BP209P.4	Evaluate salivary amylase activity to understand enzyme kinetics and physiological regulation, applying appropriate analytical techniques.	PO1, PO3, PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		2	2							
CO2	3		3						2		
CO3	3		3						2		
CO4	3		2	3							2
Avg	3		2.5	2.5					2		2

Course Name: Pathophysiology (Theory); Course Code: BP204T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP204T.1	Explain the etiology and pathogenesis of selected disease states using scientific reasoning and biomedical principles	PO1, PO3, PO11
BP204T.2	Identify and describe the characteristic signs and symptoms associated with specific disease conditions.	PO1, PO8, PO9
BP204T.3	Analyze and interpret possible complications arising from various disease states and their clinical implications.	PO1, PO3, PO10
BP204T.4	Explain the etiology, clinical features, and diagnostic interpretation of infectious diseases using evidence-based approaches.	PO1, PO3, PO9, PO7
BP204T.5	Discuss the etiology, signs and symptoms, and diagnostic interpretation of sexually transmitted diseases with emphasis on prevention and counseling.	PO1, PO9, PO7, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	2
CO2	3	–	1	–	–	–	–	2	1	–	–
CO3	3	–	3	–	–	–	–	–	1	2	–
CO4	3	–	3	2	–	–	2	–	3	–	–
CO5	3	–	2	–	–	–	3	3	3	–	–
Avg	3		2.2	2			2.5	2.5	2	2	2

Course Name: Computer Applications in Pharmacy (Theory); Course Code:BP205T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP205T.1	Explain the various types and applications of computers in pharmacy, including their roles in formulation, analysis, and documentation.	PO1, PO4, PO11
BP205T.2	Describe the structure, types, and functions of databases relevant to pharmaceutical operations.	PO1, PO3, PO4
BP205T.3	Apply database management systems for various pharmacy applications such as inventory control, patient information, and research data management.	PO3, PO4, PO8, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	1	3	1	–	–	1	–	1	2
CO2	3	–	2	3	–	–	–	1	–	–	2
CO3	2	–	3	3	–	–	–	2	1	1	3
Avg	2.75	1	2.05	2.75	1		2.5	1.625	1.5	1.333333	2.25

Course Name: Computer Applications in Pharmacy (Practical); Course Code: BP210P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP210P.1	Design and develop a basic HTML web page to present personal or professional information, demonstrating understanding of web-based information representation.	PO1, PO4, PO8
BP210P.2	Develop and manage a Microsoft Access database for storing, organizing, and retrieving patient and drug information to support healthcare data management.	PO1, PO3, PO4, PO10
BP210P.3	Create and format mailing labels using Label Wizard in MS Word for efficient communication and document management in pharmacy settings.	PO2, PO4, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	–	–	3	–	–	–	2	–	–	–
CO2	2	–	3	3	–	–	–	–	–	1	–
CO3	–	2	–	3	–	–	–	2	–	–	–
Avg	2.25	1.5	2.525	2.9375	1		2.5	1.875	1.5	1.166667	2.25

Course Name: Environmental Sciences (Theory); Course Code: BP206T
After completion of this course, student should be able to

Course Outcomes (COs)	**Statements**	**Relevant Program Outcomes (POs) Mapped**
BP206T.1	Explain the fundamental concepts of the environment and create awareness about current environmental issues and their global significance.	PO1; PO10
BP206T.2	Demonstrate understanding of environmental components, natural resources, and associated challenges to enable informed decision-making for sustainable development.	PO1; PO9; PO10
BP206T.3	Develop a responsible attitude and ethical concern toward environmental protection and conservation practices.	PO5; PO7; PO10
BP206T.4	Participate actively in initiatives for environmental improvement and community-based ecological activities to promote sustainable practices.	PO5; PO9; PO10
BP206T.5	Acquire analytical and problem-solving skills to identify, assess, and mitigate environmental problems using scientific approaches.	PO3; PO4; PO10
BP206T.6	Integrate environmental values into professional and personal life to strive for harmony with nature and promote sustainable living.	PO6; PO7; PO10; PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	–	–	–	3	–
CO2	3	–	–	–	–	–	–	–	2	3	–
CO3	–	–	–	–	2	–	3	–	–	3	–
CO4	–	–	–	–	3	–	–	–	2	3	–
CO5	–	–	3	2	–	–	–	–	–	3	–
CO6	–	–	–	–	–	2	2	–	–	3	2
Avg	3		3	2	2.5	2	2.5		2	3	2

Third Semester

Course Name: Pharmaceutical Organic Chemistry-II(Theory); Course Code: BP301T
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Relevant Program Outcomes (POs)
BP301T.1	Explain the reactivity, stability, and characteristic reactions of benzene and its derivatives using resonance and substitution mechanisms.	PO1, PO3, PO11
BP301T.2	Analyze the acidic and basic behavior of phenols and amines based on their structure and electronic effects.	PO1, PO3, PO10
BP301T.3	Evaluate the importance and applications of analytical constants in assessing the purity and quality of organic compounds.	PO1, PO4, PO9
BP301T.4	Outline the methods of synthesis and characteristic reactions of polynuclear hydrocarbons and interpret their industrial and environmental relevance.	PO1, PO9, PO10
BP301T.5	Compare the stability of cycloalkanes using different theoretical models such as Baeyer strain theory and modern conformational analysis.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	1	–	–	2
CO2	3	–	3	–	–	–	–	–	–	2	2
CO3	3	–	2	3	–	–	–	–	2	–	–
CO4	3	–	2	–	–	–	–	–	2	3	1
CO5	3	–	3	–	–	–	–	–	–	–	3
Avg	3		2.4	3				1	2	2.5	2

Course Name: Pharmaceutical Organic Chemistry-II (Practical); Course Code:BP305P
After completion of this course, student should be able to

CO	CO Statement	Relevant Program Outcomes (POs)
BP305P.1	Perform systematic qualitative analysis of unknown organic compounds using chemical and physical methods to identify functional groups and molecular structure.	PO1, PO3, PO4
BP305P.2	Determine quantitative analytical constants of pharmaceutical oils such as acid value, saponification value, and iodine value with precision and accuracy.	PO1, PO2, PO3
BP305P.3	Synthesize organic derivatives through appropriate chemical reactions following standard laboratory protocols.	PO1, PO4, PO10
BP305P.4	Purify and recrystallize synthesized or isolated organic compounds using suitable methods to obtain pure products.	PO1, PO2, PO7, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3	2	–	–	1	1	–	–	2
CO2	3	2	3	2	–	–	1	1	–	1	2
CO3	3	1	2	3	–	–	1	–	–	2	2
CO4	3	2	2	2	–	–	2	1	–	1	3
Avg	3	1.5	2.5	2.25			1.25	1		1.333333	2.25

Course Name: Physical Pharmaceutics-I(Theory); Course Code:BP302T
After completion of this course, student should be able to

CO	Course Outcome Statement	Mapped POs
BP302T.1	Explain the influence of various physicochemical properties of drug molecules on dosage form design, demonstrating comprehension of fundamental pharmaceutical sciences.	PO1, PO3, PO11
BP302T.2	Analyze the solubility characteristics of pharmaceutical substances and evaluate factors affecting solubility for formulation optimization.	PO1, PO3, PO4
BP302T.3	Interpret the behavior and properties of different states of matter and apply this understanding to the development of stable and effective pharmaceutical products.	PO1, PO3, PO10
BP302T.4	Examine interfacial phenomena and justify the selection of suitable surface-active agents to modify interfaces in formulation development.	PO1, PO3, PO4
BP302T.5	Integrate the principles of complexation, buffers, and isotonicity in the rational design and evaluation of pharmaceutical dosage forms.	PO1, PO3, PO9, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	2
CO2	3	–	3	2	–	–	–	–	–	–	2
CO3	3	–	2	–	–	–	–	–	–	2	1
CO4	3	–	3	2	–	–	–	–	–	–	1
CO5	3	–	3	–	–	–	2	–	2	–	2
Avg	3		2.6	2			2		2	2	1.6

Course Name: Physical Pharmaceutics-I (Practical); Course Code:BP306P
After completion of this course, student should be able to

CO	Course Outcome Statement	Mapped POs
BP306P.1	Determine the solubility, pKa value, and partition coefficient of pharmaceutical products using appropriate analytical techniques.	PO1, PO3, PO4
BP306P.2	Analyze surface tension, HLB number, and adsorption constants (Freundlich and Langmuir) to characterize pharmaceutical products and excipients.	PO1, PO3, PO4
BP306P.3	Determine critical micellar concentration (CMC) and donor–acceptor ratio to understand molecular interactions in pharmaceutical complexes.	PO1, PO3, PO11
BP306P.4	Evaluate the miscibility of different liquids to predict formulation compatibility and stability.	PO1, PO3, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		2	2							
CO2	3		2	3							
CO3	3		2								2
CO4	3		2							2	
Avg	3		2	2.5						2	2

Course Name: Pharmaceutical Microbiology (Theory); Course Code: BP303T
After completion of this course, student should be able to

CO	Course Outcome Statement	Mapped POs
BP303T.1	Explain and demonstrate methods for identification, cultivation, and preservation of various microorganisms relevant to pharmaceutical sciences.	PO1, PO3, PO11
BP303T.2	Describe and apply principles and techniques of sterilization in pharmaceutical processing to ensure aseptic conditions and product safety.	PO1, PO4, PO9, PO10
BP303T.3	Perform and interpret sterility testing of pharmaceutical products following standard microbiological protocols and regulatory norms.	PO1, PO3, PO7
BP303T.4	Conduct microbiological standardization and quality assessment of pharmaceuticals to ensure compliance with pharmacopeial standards.	PO1, PO3, PO6, PO7
BP303T.5	Understand and evaluate the applications of cell culture technology in research, biopharmaceutical production, and quality assurance in pharmaceutical industries.	PO1, PO4, PO5, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	2
CO2	3	–	–	2	–	–	–	–	2	1	–
CO3	3	–	2	–	–	–	2	–	–	–	–
CO4	3	–	2	–	–	2	2	–	–	–	–
CO5	3	–	–	2	1	–	–	–	–	–	2
Avg	3		2	2	1	2	2		2	1	2

Course Name: Pharmaceutical Microbiology (Practical); Course Code:BP307P
After completion of this course, student should be able to

CO	Course Outcome Statement	Mapped POs
BP307P.1	Explain the principles and applications of sterilization techniques; perform sterility testing of pharmaceuticals and sterilization of media.	PO1, PO3, PO10
BP307P.2	Prepare and maintain microbial cultures by developing nutrient media, performing sub-culturing techniques, and determining motility of bacteria and fungi.	PO1, PO4, PO2
BP307P.3	Perform microbiological analysis of water and antibiotics to evaluate quality and efficacy parameters.	PO3, PO9, PO7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	1	–
CO2	3	2	–	2	–	–	–	–	–	–	–
CO3	–	–	3	–	–	–	2	–	2	–	–

Course Name: Pharmaceutical Engineering (Theory) Course Code: BP304T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP304T.1	Explain and apply the principles of various unit operations used in pharmaceutical industries to ensure efficient manufacturing practices.	PO1, PO3, PO4
BP304T.2	Demonstrate understanding of material handling systems and equipment used in the pharmaceutical industry for maintaining product quality and process efficiency.	PO1, PO2, PO4
BP304T.3	Execute and analyze different pharmaceutical manufacturing processes, ensuring compliance with standard operating procedures and regulatory norms.	PO1, PO3, PO6
BP304T.4	Evaluate and apply appropriate methods for environmental pollution control to promote sustainable industrial practices in pharmaceutical manufacturing.	PO9, PO10, PO7
BP304T.5	Design and justify a plant layout for optimum utilization of resources, workflow efficiency, and compliance with GMP.	PO2, PO5, PO10
BP304T.6	Recognize and implement corrosion prevention techniques and maintenance protocols to ensure equipment longevity and safety in pharmaceutical plants.	PO1, PO10, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	2	–	–	–	–	–	–	–
CO2	3	2	–	2	–	–	–	–	–	–	–
CO3	3	–	3	–	–	2	–	–	–	–	–
CO4	–	–	2	–	–	–	2	–	2	3	–
CO5	–	3	–	–	2	–	–	–	–	2	–
CO6	3	–	–	–	–	–	–	–	–	2	2
Avg	3	2.5	2.333333	2	2	2	2		2	2.333333	2

Course Name: Pharmaceutical Engineering (Practical) Course Code: BP308P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP308P.1	Analyze and determine the thermal properties of pharmaceutical materials using appropriate experimental methods, correlating their physical characteristics with formulation stability.	PO1, PO3, PO4
BP308P.2	Evaluate the moisture content, loss on drying, and humidity of air to interpret their influence on material handling and stability of pharmaceutical products.	PO1, PO3, PO10
BP308P.3	Perform particle size analysis using sieving techniques and interpret data to assess uniformity and quality attributes of powders and granules.	PO1, PO3, PO4
BP308P.4	Conduct size reduction experiments using various mills and analyze the effect of operational parameters on particle size and surface area.	PO1, PO2, PO4
BP308P.5	Investigate and interpret the effect of time on the rate of crystallization of pharmaceutical substances to understand process optimization and product consistency.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	2	–	–	–	–	–	–	–
CO2	3	–	2	–	–	–	–	–	–	2	–
CO3	3	–	2	3	–	–	–	–	–	–	–
CO4	3	2	2	3	–	–	–	–	–	–	–
CO5	3	–	2	–	–	–	–	–	–	–	2
Avg	3	2	2	2.666667						2	2

Fourth Semester

Course Name: Pharmaceutical Organic Chemistry-III(Theory)Course Code:BP401T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP401T.1	Explain and apply the methods of preparation, physical and chemical properties of various classes of organic compounds.	PO1, PO3
BP401T.2	Analyze and interpret stereochemical aspects of organic compounds and predict outcomes of stereochemical reactions.	PO1, PO3, PO4
BP401T.3	Design and outline synthetic routes for the preparation of organic compounds and their derivatives using appropriate reagents and reaction mechanisms.	PO1, PO3, PO11
BP401T.4	Illustrate and apply the mechanism and significance of important name reactions involved in organic synthesis.	PO1, PO3, PO11
BP401T.5	Identify, synthesize, and evaluate the structure and reactivity of heterocyclic compounds relevant to pharmaceutical agents.	PO1, PO3, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	1
CO2	3	–	3	2	–	–	–	–	–	–	1
CO3	3	–	3	–	–	–	–	–	–	–	2
CO4	3	–	2	–	–	–	1	–	–	–	2
CO5	3	–	2	–	–	–	–	–	2	1	2
Avg	3		2.4	2			1		2	1	1.6

Course Name: Medicinal Chemistry-I(Theory)Course Code:BP402T
After completion of this course, student should be able to

CO No.	Course Outcome (After successful completion of this course, the student will be able to...)	Mapped Program Outcomes (POs)
BP402T.1	Explain the chemical structures, functional groups, and chemical basis of pharmacological activities of various classes of drugs.	PO1, PO3
BP402T.2	Illustrate the metabolic pathways of drugs and correlate them with adverse effects and therapeutic efficacy.	PO1, PO9, PO10
BP402T.3	Analyze and interpret the Structure–Activity Relationship (SAR) of different drug classes to optimize pharmacological action.	PO1, PO3, PO4
BP402T.4	Describe the biosynthetic pathways of important neurotransmitters and their relevance to drug action.	PO1, PO9
BP402T.5	Predict and rationalize the physicochemical properties of drugs influencing their biological activity and pharmacokinetic behavior.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	2	2	-
CO3	3	-	3	2	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	2	-	-
CO5	3	-	2	-	-	-	-	-	-	-	2
Avg	3		2.333333	2					2	2	2

Course Name: Medicinal Chemistry-I (Practical)Course Code:BP406P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP406P.1	Synthesize and characterize intermediate compounds and drugs of medicinal importance by applying principles of organic and medicinal chemistry.	PO1, PO3, PO4
BP406P.2	Perform qualitative and quantitative analysis to assess the purity and quality of drugs in bulk and dosage forms in accordance with pharmacopoeial standards.	PO1, PO3, PO7
BP406P.3	Determine the partition coefficient and interpret its significance in understanding drug solubility, absorption, and formulation behavior.	PO1, PO3, PO10
BP406P.4	Quantify pharmaceutical drug products using analytical techniques with accuracy, precision, and adherence to standard procedures.	PO1, PO2, PO4, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	2	-	-	-	-	-	-	-
CO2	3	-	3	-	-	-	2	-	-	-	-
CO3	3	-	2	-	-	-	-	-	-	2	-
CO4	3	2	2	3	-	-	-	2	-	-	-
Avg	3	2	2.25	2.5			2	2		2	

Course Name: Physical Pharmaceutics-II(Theory); Course Code:BP403T
After completion of this course, student should be able to

Course Outcomes (COs)	**CO Statement**	**Relevant POs**
BP403T.1	Explain the fundamental properties, classification, methods of preparation, and evaluation parameters of pharmaceutical colloids, demonstrating understanding of their applications in drug formulation.	PO1, PO3, PO10
BP403T.2	Analyze and apply the principles of viscosity and rheological behavior in fluids to optimize pharmaceutical formulations and processing parameters.	PO1, PO3, PO4
BP403T.3	Demonstrate understanding of the types, properties, preparation, and evaluation of dispersed systems such as suspensions and emulsions with emphasis on stability considerations.	PO1, PO9 (The Pharmacist and Society), PO10
BP403T.4	Apply principles of powder rheology to evaluate and control the flow properties of powders used in pharmaceutical manufacturing processes.	PO1, PO2 (Planning Abilities), PO4
BP403T.5	Apply the principles of chemical kinetics to predict stability, perform stability testing, and determine the shelf life and expiry period of pharmaceutical formulations.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	-	-	-	-	2	1	-
CO2	3	-	3	2	-	-	-	-	-	-	-
CO3	3	-	2	-	-	-	-	-	2	1	-
CO4	3	2	2	3	-	-	-	-	-	-	-
CO5	3	-	3	2	-	-	-	-	-	-	2
Avg	3	2	2.4	2.333333					2	1	2

Course Name: Physical Pharmaceutics-II (Practical); Course Code:BP407P
After completion of this course, student should be able to

Course Outcomes (COs)	CO Statements	Mapped Program Outcomes (POs)
BP407P.1	Analyze and determine the fundamental and derived properties of pharmaceutical powders to evaluate their significance in formulation development.	PO1, PO3, PO4
BP407P.2	Evaluate the angle of repose and identify factors influencing powder flow properties to optimize manufacturing and processing parameters.	PO1, PO3, PO4
BP407P.3	Assess the viscosity and sedimentation behavior of pharmaceutical dispersions to determine their stability and performance.	PO1, PO3, PO10
BP407P.4	Determine reaction rate constants for first and second order kinetics and perform accelerated stability studies to predict the shelf-life of pharmaceutical formulations.	PO1, PO3, PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	2	–	–	–	–	–	–	–
CO2	3	–	2	2	–	–	–	–	–	–	–
CO3	3	–	2	–	–	–	–	–	–	2	–
CO4	3	–	3	2	–	–	–	–	–	–	2
Avg	3		2.25	2						2	2

Course Name: Pharmacology-I (Theory); Course Code: BP404T
After completion of this course, student should be able to

Course Outcomes (COs)	**Reframed Statements (Aligned to NBA)**	**Mapped Program Outcomes (POs)**
BP404T.1	Comprehend and explain the pharmacological actions of various categories of drugs by integrating core and applied pharmaceutical sciences.	PO1PO3
BP404T.2	Illustrate and interpret the mechanisms of drug action at organ system, subcellular, and macromolecular levels through scientific reasoning and analysis.	PO1PO3 PO4
BP404T. 3	Apply fundamental pharmacological principles in the prevention and treatment of diseases associated with the peripheral nervous system.	PO1PO3 PO9
BP404T.4	Utilize pharmacological understanding to design preventive and therapeutic approaches for diseases related to the central nervous system.	PO1PO2 PO3
BP404T.5	Demonstrate pharmacological insight in addressing, preventing, and managing drug abuse and addiction, while adhering to ethical and societal responsibilities.	PO1PO7 PO9 PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	3	–	3	2	–	–	–	–	–	–	–
CO3	3	–	2	–	–	–	–	–	2	–	–
CO4	3	2	3	–	–	–	–	–	–	–	–
CO5	3	–	–	–	–	–	3	–	3	2	–
Avg	3	2	2.5	2			3		2.5	2	

Course Name: Pharmacology-I (Practical); Course Code:BP408P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP408P.1	Explain and implement the ethical and regulatory guidelines prescribed by CPCSEA for the maintenance, housing, and handling of laboratory animals.	PO1, PO7, PO9
BP408P.2	Perform experimental pharmacological techniques such as blood withdrawal, serum and plasma separation, administration of anesthetics, and euthanasia with precision and adherence to ethical standards.	PO1, PO2, PO3, PO7
BP408P.3	Evaluate the advantages, limitations, and applications of computer-simulated animal experiments in pharmacological research and education.	PO3, PO4, PO10
BP408P.4	Interpret and correlate pharmacological findings with physiological, biochemical, and pathological principles to understand drug actions in living systems.	PO1, PO3, PO6, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	3	–	2	–	–
CO2	3	2	3	–	–	–	3	–	–	–	–
CO3	–	–	2	3	–	–	–	–	–	2	–
CO4	3	–	3	–	–	2	–	–	–	–	2
Avg	3	2	2.666667	3		2	3		2	2	2

Course Name: Pharmacognosy and Phytochemistry-I (Theory);Course Code:BP405T
After completion of this course, student should be able to

CO Code	Course Outcome Statement	Mapped POs
BP405T.1	Classify and explain various techniques involved in cultivation, collection, and production of crude drugs with emphasis on quality control and sustainable practices.	PO1, PO10, PO11
BP405T.2	Compare and differentiate crude drugs based on their botanical source, morphology, chemical constituents, and pharmacological uses.	PO1, PO3
BP405T.3	Explain and apply various evaluation techniques for identification, purity, and quality assurance of herbal drugs using modern tools and scientific methods.	PO1, PO3, PO4
BP405T.4	Correlate Plant Tissue Culture (PTC) techniques with pharmacognostic principles for the production of bioactive compounds and conservation of medicinal plants.	PO1, PO4, PO10
BP405T.5	Evaluate and discuss various traditional systems of medicine with reference to their pharmacognostic relevance, scientific validation, and global significance.	PO1, PO6, PO9, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	3	2
CO2	3	–	3	–	–	–	–	–	–	–	–
CO3	3	–	3	3	–	–	–	–	–	–	–
CO4	3	–	–	3	–	–	–	–	–	2	–
CO4	3	–	–	–	–	2	–	–	2	–	2
CO5	3	–	2	–	–	–	–	–	–	3	2
Avg	3		2.666667	3		2			2	2.5	2

Course Name: Pharmacognosy and Phytochemistry-I (Practical); Course Code: BP409P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP409P.1	Identify and differentiate crude drugs using appropriate chemical tests to establish their authenticity and quality.	PO1, PO3, PO4
BP409P.2	Evaluate key physicochemical parameters such as ash values, extractive values, moisture content, and swelling index to assess the purity and quality of crude drugs.	PO1, PO3, PO10
BP409P.3	Perform microscopical evaluation of crude drugs, determining parameters like stomatal number, vein-islet number, and vein-termination number for proper identification.	PO1, PO3, PO4
BP409P.4	Analyze and determine the dimensions and characteristics of plant fibers such as fiber length and width for pharmacognostic standardization.	PO1, PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	2	-	-	-	-	-	-	-
CO2	3	-	2	-	-	-	-	-	-	2	-
CO3	3	-	2	3	-	-	-	-	-	-	-
CO4	3	-	-	2	-	-	-	-	-	-	2
Avg	3		2	2.333333						2	2

Fifth Semester

Course Name:Medicinal Chemistry-II (Theory); Course Code:BP501T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP501T.1	Explain the chemical basis of drug action by relating structural features with pharmacological activity, demonstrating foundational pharmaceutical knowledge.	PO1, PO3,
BP501T.2	Analyze major drug-metabolic pathways, adverse effects, and therapeutic relevance using scientific reasoning for informed decision-making in pharmacy practice.	PO1, PO3, PO9
BP501T.3	Illustrate mechanisms of action through chemical reactions/structural interpretation using appropriate scientific tools and analytical skills.	PO1, PO3, PO4
BP501T.4	Evaluate the Structure–Activity Relationships (SAR) of various drug classes to understand structural modifications and their impact on activity.	PO1, PO3, PO11
BP501T.5	Demonstrate the ability to write chemical synthesis of selected drug molecules following scientific principles and ethical documentation practices.	PO1, PO4, PO7, PO8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	3	–	3	–	–	–	–	–	2	–	–
CO3	3	–	2	2	–	–	–	–	–	–	–
CO4	3	–	2	–	–	–	–	–	–	–	2
CO5	3	–	–	2	–	–	1	1	–	–	–
Avg	3		2.25	2			1	1	2		2

Course Name: Industrial Pharmacy-I (Theory); Course Code:BP502T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP502T.1	Describe various pharmaceutical dosage forms and outline their manufacturing processes using fundamental pharmaceutical knowledge.	PO1, PO3
BP502T.2	Analyze formulation considerations in developing different dosage forms by applying scientific and problem-solving skills.	PO1, PO3, PO11
BP502T.3	Formulate and evaluate solid, liquid, and semisolid dosage forms using modern tools and techniques to ensure quality standards.	PO1, PO3, PO4, PO10
BP502T.4	Explain formulation principles of cosmetically relevant products such as lipsticks, shampoos, cold creams, and vanishing creams, linking them to societal and professional needs.	PO1, PO6, PO9
BP502T.5	Interpret packaging standards, legal requirements, and stability concerns of pharmaceutical products to ensure safe and compliant product development.	PO1, PO7, PO9, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	3	–	3	–	–	–	–	–	–	–	2
CO3	3	–	3	3	–	–	–	–	–	2	–
CO4	2	–	–	–	–	2	–	–	2	–	–
CO5	3	–	–	–	–	–	2	–	2	2	–
Avg	2.8		2.666667	3		2	2		2	2	2

Course Name: Industrial Pharmacy -I (Practical); Course Code:BP506P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP506P.1	Perform systematic pre-formulation, coating and evaluation of tablets using scientific principles and appropriate analytical methods, demonstrating problem-solving ability and effective application of pharmaceutical knowledge.	PO1, PO3, PO4
BP506P.2	Develop and evaluate semisolid (creams) and parenteral dosage forms by applying modern formulation techniques, ensuring compliance with quality and safety standards through appropriate tool usage and analytical reasoning.	PO1, PO3, PO10
BP506P.3	Conduct quality control testing of marketed tablets and capsules, interpreting results accurately, applying professional ethics, and using modern instrumentation for ensuring product compliance.	PO1, PO3, PO4
BP506P.4	Evaluate pharmaceutical glass containers as per pharmacopeial standards, demonstrating understanding of material suitability, regulatory requirements, and quality assurance principles relevant to patient safety and societal needs.	PO1, PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	2	–	–	–	–	–	1	2
CO2	3	2	3	3	–	–	2	–	2	2	2
CO3	3	1	3	3	–	–	3	–	2	2	2
CO4	2	1	2	2	–	–	2	–	3	2	1
Avg	2.75	1.5	2.75	2.5			2.333333		2.333333	1.75	1.75

Course Name: Pharmacology-II (Theory); Course Code:BP503T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP503T.1	Explain the mechanisms of drug action and correlate them with disease pathophysiology, demonstrating integrated pharmacological knowledge for rational therapeutic decision-making.	PO1, PO3, PO4
BP503T.2	Demonstrate the isolation of organs/tissues through simulated laboratory experiments, showcasing problem analysis, ethical handling of laboratory models, and appropriate use of modern experimental tools.	PO1, PO3, PO10
BP503T.3	Perform simulated experiments to demonstrate receptor actions using isolated tissue preparations, interpreting dose–response relationships and applying scientific reasoning in evaluating pharmacodynamic effects.	PO1, PO3, PO4
BP503T.4	Analyze and appreciate the interrelationship of pharmacology with medical and allied sciences, demonstrating professional identity, communication ability, and contextual application of pharmacological knowledge to healthcare.	PO1, PO4, PO11
BP503T.5	Explain the principles and applications of bioassay**,** demonstrating analytical skills, ethical considerations, and systematic decision-making in quantifying drug activity using scientific methods.	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	–	–	2	–	2	2	1	3
CO2	3	–	3	3	–	–	2	–	1	–	2
CO3	3	–	3	3	–	–	2	–	1	–	2
CO4	3	–	2	–	–	3	–	3	2	1	3
CO5	3	–	3	2	–	–	2	2	1	–	3
Avg	3		2.8	2.666667		2.5	2	2.333333	1.4	1	2.6

Course Name: Pharmacology-II(Practical); Course Code:BP507P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP507P.1	Demonstrate the effects of drugs on isolated organs/tissues using simulated experimental models by applying fundamental pharmacology knowledge and appropriate modern laboratory tools.	PO1, PO4
BP507P.2	Perform and interpret various bioassay techniques to quantify drug responses, applying scientific enquiry and analytical problem-solving skills.	PO3, PO1
BP507P.3	Determine PA_2, PD_2 values and evaluate the effects of spasmogens, spasmolytics, anti-inflammatory and analgesic agents using standard experimental procedures in an ethical and responsible manner.	PO7, PO1, PO3
BP507P.4	Summarize, interpret, and present experimental outcomes effectively while correlating them with theoretical pharmacological concepts to develop scientific communication and professional competence.	PO8, PO11, PO6

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2	3	–	–	–	1	–	–	1
CO2	3	1	3	2	–	–	–	1	–	–	1
CO3	3	–	3	2	–	–	3	–	–	–	1
CO4	2	1	2	–	–	2	–	3	–	–	3
Avg	2.75	1	2.5	2.333333		2	3	1.666667			1.5

Course Name: Pharmacognosy and Phytochemistry-II(Theory); Course Code:BP504T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP504T.1	Classify and explain the major metabolic pathways operating in higher plants, demonstrating foundational biomedical and phytochemical knowledge.	PO1
BP504T.2	Describe the composition, chemistry, biosources, and functional significance of primary and secondary plant metabolites with analytical clarity.	PO1, PO3
BP504T.3	Explain and apply principles involved in the isolation, purification, and identification of phytoconstituents using appropriate scientific methods and tools.	PO3, PO4
BP504T.4	Summarize the industrial methods for large-scale production, standardization, and estimation of phytoconstituents, integrating scientific, regulatory, and sustainability considerations.	PO9, PO10, PO1
BP504T.5	Understand and compare modern extraction technologies, selecting suitable techniques based on plant material, targeted compounds, and industrial feasibility.	PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	1
CO2	3	–	2	–	–	–	–	–	–	–	1
CO3	3	–	3	3	–	–	–	–	–	–	1
CO4	3	1	2	1	–	–	–	–	2	2	1
CO5	2	–	2	3	–	–	–	–	–	1	3

Course Name: Pharmacognosy and Phytochemistry-II(Practical); Course Code:BP508P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP508P.1	Analyse crude drugs using morphological and microscopical evaluation techniques to identify diagnostic characters.	PO1, PO3, PO4
BP508P.2	Demonstrate the processes of isolation, detection, and characterization of active phytoconstituents from crude drugs.	PO1, PO3, PO4
BP508P.3	Perform qualitative and quantitative evaluation of phytoconstituents using paper and thin-layer chromatographic methods.	PO1, PO3, PO4
BP508P.4	Execute the extraction and distillation procedures for isolating volatile oils from medicinal plants with adherence to laboratory safety norms.	PO1, PO2, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	2	–	–	–	–	–	–	–
CO2	3	–	2	3	–	–	–	–	–	–	–
CO3	3	–	2	3	–	–	–	–	–	–	–
CO4	3	2	–	1	–	–	–	–	–	2	–

Course Name:Pharmaceutical Jurisprudence (Theory); Course Code:BP505T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP505T.1	Explain the importance of pharmaceutical legislations and their impact on drug development, manufacturing, and marketing in India.	PO1, PO9
BP505T.2	Describe key provisions, requirements, and applications of major Indian pharmaceutical Acts and Laws governing the profession.	PO1, PO7, PO9
BP505T.3	Discuss the structure, functions, and regulatory roles of national and international authorities overseeing the manufacture, distribution, and sale of pharmaceuticals.	PO1, PO6, PO9
BP505T.4	Explain ethical principles, codes of conduct, and professional responsibilities applicable to pharmaceutical practice.	PO6, PO7, PO11
BP505T.5	Interpret ethical dilemmas and professional responsibilities in pharmacy practice and justify decisions using ethical frameworks.	PO3, PO7, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	–	–	3	–	1
CO2	3	–	–	–	–	–	3	–	3	–	–
CO3	3	–	–	–	–	2	–	–	3	–	–
CO4	2	–	–	–	–	2	3	–	–	–	2
CO5	–	–	3	–	–	2	3	–	2	–	2

Sixth Semester

Course Name: Medicinal Chemistry-III (Theory); Course Code:BP601T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP601T.1	Explain the significance of drug design and compare different rational drug-design strategies to address therapeutic challenges.	PO1, PO3
BP601T.2	Analyze the chemistry–biological activity relationship of drugs to understand their pharmacodynamic and pharmacokinetic behavior.	PO1, PO3
BP601T.3	Evaluate drug metabolism pathways, adverse reactions, and therapeutic utility to support safe and effective clinical use.	PO1, PO9
BP601T.4	Interpret structure–activity relationships (SAR) of antibiotics and antimicrobial agents to predict modifications for improved therapeutic efficacy.	PO1, PO3, PO11
BP601T.5	Apply medicinal chemistry principles in the rational development of newer therapeutic agents using scientific reasoning and analytical skills.	PO1, PO3, PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	3	–	2	–	–	–	–	–	–	–	–
CO3	3	–	–	–	–	–	–	–	2	–	–
CO4	3	–	2	–	–	–	–	–	–	–	1
CO5	3	–	3	2	–	–	–	–	–	–	2

Course Name: Medicinal Chemistry-III (Practical); Course Code:BP607P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP607P.1	**Demonstrate laboratory skills in synthesizing medicinally important compounds and documenting their chemical characteristics** with accuracy.	PO1, PO2, PO5
BP607P.2	**Perform qualitative and quantitative analysis to assess the purity of bulk drugs and formulations** using standard laboratory procedures.	PO1, PO3, PO9
BP607P.3	**Utilize drug-design software and modern analytical tools to determine physicochemical properties of drug molecules.**	PO1, PO4
BP607P.4	**Interpret the relationship between chemical structure and pharmacological activity** of synthesized or studied compounds based on experimental findings.	PO1, PO3, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	–	–	1	–	–	–	–	–	–
CO2	3	1	2	–	–	–	–	–	2	–	–
CO3	2	–	–	3	–	–	–	–	–	–	1
CO4	3	–	2	–	–	–	–	–	–	–	2

Course Name: Pharmacology-III (Theory);Course Code:BP602T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP602T.1	Explain the mechanisms of drug action and justify their therapeutic application in managing infectious diseases.	PO1, PO9
BP602T.2	Discuss toxicological principles and recommend evidence-based treatment strategies for various poisoning conditions.	PO1, PO3, PO9
BP602T.3	Evaluate the interrelationship of pharmacology with medicine and related sciences to support integrated healthcare decision-making.	PO1, PO6
BP602T.4	Describe the pharmacology of immunosuppressants and immunostimulants, emphasizing their mechanisms and clinical relevance.	PO1, PO9
BP602T.5	Analyze the adverse effects, mechanisms, and therapeutic uses of chemotherapeutic and hormonal agents to support rational drug therapy.	PO1, PO3, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	–	–	2	–	–
CO2	3	–	2	–	–	–	–	–	3	–	–
CO3	3	–	–	–	–	2	–	–	–	–	–
CO4	3	–	–	–	–	–	–	–	2	–	–
CO5	3	–	2	–	–	–	–	–	2	–	–

Course Name: Pharmacology-III (Practical); Course Code:BP608P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP608P.1	Demonstrate the pharmacodynamic actions of agonists and antagonists using simulated experimental models, applying scientific reasoning for interpretation.	PO1, PO3
BP608P.2	Evaluate and interpret the toxicity profiles of drugs and related substances in virtual laboratory simulations using ethical and safety considerations.	PO1, PO9, PO7
BP608P.3	Calculate and analyze pharmacokinetic parameters and pharmacological responses using biostatistics tools such as ANOVA and modern computational methods.	PO4, PO3, PO11
BP608P.4	Summarize, present, and scientifically justify experimental observations using effective written and oral communication.	PO8, PO6

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	–	–	–	–	–	–	–	–
CO2	3	–	2	–	–	–	2	–	3	–	–
CO3	–	–	3	3	–	–	–	–	–	–	2
CO4	–	–	–	–	–	2	–	3	–	–	–

Course Name: Herbal Drug Technology (Theory); Course Code: BP603T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP603T.1	Explain and summarize the processing, standardization, and quality control of herbal raw materials.	PO1, PO3
BP603T.2	Classify and justify the role of nutraceuticals in health promotion and disease management.	PO1, PO9
BP603T.3	Identify and analyze herb–drug and herb–food interactions for ensuring patient safety and rational use of herbal medicines.	PO3, PO9, PO7
BP603T.4	Compare WHO and ICH quality guidelines to evaluate herbal drugs and interpret global regulatory expectations.	PO1, PO10, PO11
BP603T.5	Relate the objectives and provisions of Schedule T for Good Manufacturing Practices of herbal formulations.	PO9, PO1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	2	–	–	–	–	–	–	–	2	–	–
CO3	–	–	3	–	–	–	2	–	3	–	–
CO4	3	–	–	–	–	–	–	–	–	2	2
CO5	3	–	–	–	–	–	–	–	2	–	–

Course Name: Herbal Drug Technology (Practical); Course Code:BP609P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP609P.1	Perform phytochemical screening of crude drugs to identify major groups of secondary metabolites.	PO1, PO3
BP609P.2	Examine and evaluate natural excipients for their functional characteristics and suitability in herbal formulations.	PO1, PO3
BP609P.3	Determine the alcohol content of traditional Ayurvedic preparations such as Asava and Arista using standard analytical methods.	PO1, PO4
BP609P.4	Formulate herbal creams, lotions, shampoos, syrups, mixtures, and tablets in accordance with Pharmacopoeial standards.	PO1, PO2, PO5
BP609P.5	Estimate aldehyde content, phenol content, and total alkaloids in herbal formulations using standard quantitative techniques.	PO4; PO3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	2	–	–	–	–	–	–	–	–
CO2	3	–	2	–	–	–	–	–	–	–	–
CO3	3	–	–	3	–	–	–	–	–	–	–
CO4	3	2	–	–	2	–	–	–	–	–	–
CO5	–	–	3	3	–	–	–	–	–	–	–

Course Name: Biopharmaceutics and Pharmacokinetics (Theory); Course Code:BP604T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP604T.1	Explain fundamental concepts of biopharmaceutics and pharmacokinetics and interpret their significance in drug action and therapy.	PO1, PO3, PO9, PO11
BP604T.2	Analyze plasma drug concentration–time data using appropriate scientific and computational tools to determine key pharmacokinetic parameters related to ADME.	PO1, PO3, PO4, PO11
BP604T.3	Describe and evaluate concepts of bioavailability and bioequivalence and explain their relevance in ensuring therapeutic performance of dosage forms.	PO1, PO3, PO9, PO10
BP604T.4	Interpret various pharmacokinetic parameters, justify their significance, and apply them to optimize dosage regimens.	PO1, PO3, PO4, PO9, PO11
BP604T.5	Differentiate pharmaceutical dosage forms based on their biopharmaceutical and pharmacokinetic characteristics to support rational formulation and therapeutic decisions.	PO1; PO3, PO6; PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	-	-	-	-	2	1	2
CO2	3	-	3	3	-	-	-	-	1	-	3
CO3	3	-	2	1	-	1	-	-	2	2	1
CO4	3	-	3	3	-	-	-	-	2	1	3
CO5	3	-	2	1	-	2	-	-	2	1	-

Course Name: Pharmaceutical Biotechnology (Theory); Course Code:BP605T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP605T.1	Explain the principles, scope, and applications of pharmaceutical biotechnology in the discovery and development of modern therapeutics.	PO1, PO6, PO11
BP605T.2	Describe genetic engineering, fermentation, and biotechnology-based production processes by applying scientific and analytical principles.	PO1, PO3, PO4, PO11
BP605T.3	Illustrate and analyze the manufacturing and purification processes of recombinant biopharmaceuticals such as insulin, vaccines, and monoclonal antibodies.	PO1, PO3, PO4, PO9
BP605T.4	Evaluate and justify the role of microorganisms in fermentation technology for the production of biopharmaceutical products.	PO1, PO3, PO9, PO10
BP605T.5	Explain the industrial importance of immobilized enzymes and assess their applications in pharmaceutical processes.	PO1; PO3, PO4; PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	1	-	-	2	-	-	1	1	3
CO2	3	-	3	3	-	-	-	-	1	1	3
CO3	3	-	3	3	-	-	-	-	2	2	2
CO4	3	-	2	1	-	-	-	-	2	3	1
CO5	3	-	2	3	-	-	-	-	1	3	1

Course Name: Pharmaceutical Quality Assurance (Theory); Course Code:BP606T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP606T.1	Explain the concept, objectives, and relevance of quality assurance and quality control in ensuring safety and efficacy of pharmaceutical products.	PO1, PO3, PO9, PO10
BP606T.2	Interpret and apply the principles and regulatory requirements of GMP, GLP, and related quality standards in pharmaceutical operations.	PO1, PO3, PO9, PO10
BP606T.3	Recognize and evaluate the importance of documentation as an essential component of quality assurance and regulatory compliance.	PO1, PO8, PO9
BP606T.4	Explain the scope and significance of national and international quality certifications applicable to the pharmaceutical industry.	PO1, PO6, PO9, PO10
BP606T.5	Apply quality management systems, documentation practices, and validation techniques to improve pharmaceutical manufacturing processes.	PO1; PO2, PO3; PO4, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	3	-	-	-	-	-	3	3	-
CO2	3	-	3	1	-	-	-	-	3	3	-
CO3	2	-	1	-	-	-	-	3	3	1	-
CO4	3	-	2	-	-	2	-	-	2	3	-
CO5	3	2	3	3	-	-	-	-	3	2	1

Seventh Semester

Course Name: Instrumental Methods of Analysis (Theory); Course Code:BP701T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP701T.1	*Explain* the fundamental principles and operational mechanisms of major analytical instruments used in pharmaceutical analysis, integrating core pharmacy knowledge	PO1
BP701T.2	*Describe* the theory, instrumentation, and pharmaceutical applications of UV–Visible, IR, and Flame Photometry techniques, demonstrating structured scientific understanding	PO1, PO3
BP701T.3	*Illustrate* the principles and working of chromatographic techniques such as HPLC, HPTLC, and Gas Chromatography for drug analysis using modern analytical tools	PO1, PO4
BP701T.4	*Apply* spectroscopic and chromatographic methods for qualitative and quantitative analysis of pharmaceutical substances, ensuring scientific accuracy	PO3, PO4
BP701T.5	*Analyze* experimental data generated from instrumental methods to assess drug quality and purity, making defensible scientific decisions	PO3; PO4
BP701T.6	*Evaluate* the advantages, limitations, and validation parameters of instrumental analytical techniques used in pharmaceutical industries, upholding professional standards and regulatory expectations	PO1, PO7, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	1	–	–	–	–	–	–	–	–
CO2	3	–	2	–	–	–	–	–	–	–	–
CO3	3	–	1	3	–	–	–	–	–	–	–
CO4	2	–	3	3	–	–	–	–	–	–	–
CO5	2	–	3	3	–	–	–	–	–	–	–
CO6	2	–	2	2	–	–	2	–	–	–	2

Course Name:Instrumental Methods of Analysis (Practical); Course Code:BP705P
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP705P.1	*Demonstrate* correct operation, calibration, and handling of analytical instruments used in pharmaceutical laboratories, following professional and safety standards	PO1, **PO4, PO7**
BP705P.2	*Estimate* drug content in pharmaceutical formulations using colorimetric, UV-Visible, and fluorometric techniques with accuracy and precision	PO3, PO4
BP705P.3	*Determine* ions through flame photometry and nepheloturbidometry by selecting appropriate analytical procedures and interpreting outputs	PO3, PO4
BP705P.4	*Perform and evaluate* separation of natural products using paper, TLC, and column chromatography, applying analytical skills and modern laboratory tools	PO1, PO3, PO4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	1	3	–	–	2	–	–	–	–
CO2	2	–	2	3	–	–	–	–	–	–	–
CO3	2	–	2	3	–	–	–	–	–	–	–
CO4	3	–	2	3	–	–	–	–	–	–	–

Course Name:Industrial Pharmacy-II(Theory); Course Code:BP702T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP702T.1	*Explain* the principles, objectives, and significance of pilot plant scale-up in ensuring successful transition from laboratory development to commercial manufacturing	PO1, PO2
BP702T.2	*Understand and outline* the structured process of technology transfer from lab scale to industrial-scale batches, demonstrating planning abilities	PO2, PO9
BP702T.3	*Illustrate* pilot plant equipment, layout designs, and process optimization parameters relevant to different dosage forms, integrating pharmaceutical engineering knowledge	PO1, PO4
BP702T.4	*Apply* concepts of Quality Management Systems—GMP, GLP, ISO standards, and QbD—to improve pharmaceutical manufacturing processes	**PO5, PO7, PO9**
BP702T.5	*Analyze* the Indian pharmaceutical regulatory framework, focusing on CDSCO and DCGI roles in approval and compliance	PO9; PO10
BP702T.6	*Evaluate* international regulatory guidelines (ICH, WHO, USFDA, EMA) and their significance in global product development, quality assurance, and marketing	PO9, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	–	–	–	–	–	–	–	–	–
CO2	–	3	–	–	–	–	–	–	2	–	–
CO3	3	2	–	2	–	–	–	–	–	–	–
CO4	–	–	–	–	2	–	3	–	3	–	–
CO5	–	–	–	–	–	–	–	–	3	3	–
CO6	–	–	–	–	–	–	–	–	3	–	3

Course Name: Pharmacy Practice (Theory); Course Code:BP703T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP703T.1	*Explain* the different drug distribution systems practiced in hospitals, emphasizing safe and effective medication management	PO1, PO9
BP703T.2	*Apply* principles of pharmacy store management and inventory control to ensure efficient, cost-effective healthcare delivery	PO2, PO6, PO10
BP703T.3	*Monitor* patient drug therapy through medication chart review and clinical evaluation, exercising critical thinking and professional responsibility	PO3, PO7, PO09
BP703T.4	*Conduct* medication history interviews and *counsel* patients effectively using professional communication skills	**PO8, PO6, PO7**
BP703T.5	*Identify and classify* drug-related problems by integrating clinical reasoning and pharmaceutical care principles	**PO3, PO9, PO7**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	–	–	3	–	–
CO2	–	3	–	–	–	2	–	–	2	2	–
CO3	2	–	3	–	–	–	3	–	3	–	–
CO4	–	–	–	–	–	3	2	3	2	–	–
CO5	–	–	3	–	–	–	3	–	3	–	–

Course Name:Novel Drug Delivery Systems (Theory); Course Code:BP704T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP704T.1	*Describe* the concepts, objectives, and therapeutic advantages of novel drug delivery systems compared to conventional dosage forms	PO1, PO10
BP704T.2	*Differentiate* between controlled, sustained, and targeted delivery approaches based on design and release mechanisms, demonstrating analytical understanding	PO1, PO3
BP704T.3	*Demonstrate* formulation strategies and characterization techniques for liposomes, niosomes, nanoparticles, and microspheres, utilizing modern tools	PO1, PO4
BP704T.4	*Examine* design principles and evaluation parameters of transdermal, ocular, nasal, and implantable drug delivery systems, considering patient and product attributes	PO1, PO9, PO10
BP704T.5	*Assess* physicochemical, biological, and polymer-related factors influencing performance, safety, and efficacy of NDDS formulations	PO3; PO10
BP704T.6	*Justify* the regulatory, stability testing, and innovation requirements in developing advanced drug delivery systems, ensuring compliance with ethical and global standards	PO7, PO9, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	–	–	–	–	–	–	–	3	–
CO2	3	–	2	–	–	–	–	–	–	–	–
CO3	3	–	–	3	–	–	–	–	–	–	–
CO4	2	–	–	–	–	–	–	–	2	3	–
CO5	2	–	3	–	–	–	–	–	2	3	–
CO6	–	–	–	–	–	–	2	–	3	2	3

Semester eighth

Course Name: Biostatistics and research methodology (Theory); Course Code:BP801T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP801T.1	Apply fundamental statistical principles to pharmaceutical experiments for accurate data interpretation.	PO1, PO3
BP801T.2	Select and employ appropriate statistical techniques to analyze and solve pharmaceutical data-related problems.	PO1, PO3, PO4
BP801T.3	Evaluate pharmaceutical datasets using advanced statistical reasoning to support evidence-based decision-making.	PO3, PO11
BP801T.4	Demonstrate proficiency in modern statistical software tools such as MS Excel, SPSS, R/Minitab, and DoE for data analysis and visualization.	PO4, PO2
BP801T.5	Interpret and apply different statistical designs and mapping techniques in pharmaceutical research and development.	PO1, PO3; PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	–	3	–	–	–	–	–	–	–	–
CO2	3	–	3	3	–	–	–	–	–	–	–
CO3	–	–	3	–	–	–	–	–	–	–	3
CO4	–	2	–	3	–	–	–	–	–	–	–
CO5	3	–	3	–	–	–	–	–	–	2	–

Course Name: Social and Preventive Pharmacy (Theory); Course Code:BP802T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP802T.1	Analyze national and global health issues and their implications on pharmaceutical and public health systems.	PO9, PO10
BP802T.2	Demonstrate critical thinking and evidence-based reasoning when evaluating emerging trends in healthcare.	PO3, PO11
BP802T.3	Assess and propose rational solutions for public health and pharmaceutical problems using a multidisciplinary approach.	PO3, PO9
BP802T.4	Communicate principles of hygiene and public health effectively to individuals and communities.	PO8, PO6
BP802T.5	Explain various government-led national health programs and their relevance to public health outcomes.	PO9, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	–	–	–	–	–	–	–	–	3	3	–
CO2	–	–	3	–	–	–	–	–	–	–	3
CO3	–	–	3	–	–	–	–	–	3	–	–
CO4	–	–	–	–	–	2	–	3	–	–	–
CO5	–	–	–	–	–	–	–	–	3	2	–

Course Name: Pharmamarketing Management (Theory); Course Code:BP803ET
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP803ET.1	Explain marketing concepts, strategies, and their application in pharmaceutical product promotion and brand positioning.	PO6, PO5
BP803ET.2	Describe the functions and managerial responsibilities involved in pharmaceutical product management.	PO2, PO6
BP803ET.3	Analyze online promotional strategies and digital marketing approaches for OTC and pharmaceutical products.	PO4, PO6
BP803ET.4	Explain the structure, roles, and functioning of pharmaceutical marketing channels to support effective product distribution.	PO2, PO6
BP803ET.5	Examine the regulatory mechanisms under DPCO and the role of NPPA in pricing and ensuring access to essential medicines	PO7, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	–	–	–	–	2	3	–	–	–	–	–
CO2	–	3	–	–	–	2	–	–	–	–	–
CO3	–	–	–	3	–	2	–	–	–	–	–
CO4	–	2	–	–	–	3	–	–	–	–	–
CO5	–	–	–	–	–	–	3	–	3	–	–

Course Name: Pharmacovigilance (Theory); Course Code:BP805T
After completion of this course, student should be able to

CO	CO Statement	Mapped POs
BP805T.1	Understand and explain the principles, scope, and significance of pharmacovigilance in ensuring patient safety.	PO9, PO10
BP805T.2	Describe various types of adverse drug reactions and their clinical relevance in therapeutic decision-making.	PO1, PO3
BP805T.3	Evaluate strategies and regulatory processes involved in vaccine safety surveillance.	PO9, PO10
BP805T.4	Interpret safety data requirements, reporting processes, and ICH guidelines applicable to pharmacovigilance practices.	PO1, PO7, PO11
BP805T.5	Explain the roles and responsibilities of CDSCO and CIOMS in national and international pharmacovigilance frameworks.	PO7, PO9

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	–	–	–	–	–	–	–	–	3	2	–
CO2	3	–	2	–	–	–	–	–	–	–	–
CO3	–	–	–	–	–	–	–	–	3	3	–
CO4	3	–	–	–	–	–	3	–	–	–	2
CO5	–	–	–	–	–	–	3	–	2	–	–