Indore Institute of Pharmacy

2.6.1 Programme outcomes (POs) and course outcomes (COs) for all programmes offered by the institution are stated and displayed on website and attainment of POs & COs are evaluated.

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2.6.1. Programme and course outcomes for all Programmes offered by the institution are stated and displayed on the website and communicated to teachers and students.

The institution has well-defined Program Outcomes (POs), Program Specific Outcomes (PSOs) and Course Outcomes (COs). The POs and PEO are indicative of the program outcomes [pharmacy knowledge, planning abilities, problem analysis, modern tool usage, leadership skills, professional identity, pharmaceutical ethics, communication, pharmacist and the society, environment and sustainability, and lifelong learning] and the COs are framed using guideline of affiliating university, PCI, New Delhi .

Dissemination of CO, PO, and PSOs

- The Course outcomes for the specific course are mapped with POs and are communicated and explained by faculty to students when the respective course starts.
- It is uploaded on the College website for information to viewers.
- POs are displayed in the central area, library and institutional website
- PSOs are displayed in central area, Departmental notice boards, library, and institute website.
- CO, PO and PSOs are discussed in the student induction program
- CO, PO and PSOs accomplishment status and the plans for the upcoming academic year have been addressed in faculty meetings.
- CO, PO and PSOs are attached in the course file.

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2.6.1. Programme and course outcomes for all Programmes offered by the institution are stated and displayed on the website and communicated to teachers and students.

The institution has established a well-structured framework for the dissemination and communication of its Program Outcomes (POs), Program Specific Outcomes (PSOs), and Course Outcomes (COs). These outcomes align with the broader educational goals, ensuring that students, faculty, and external stakeholders are well-informed about the expectations and achievements associated with each program, course, and discipline. Below is a detailed overview of how these outcomes are disseminated and integrated:

Dissemination of Program Outcomes (POs), Program Specific Outcomes (PSOs), and Course Outcomes (COs):

1. **Mapping and Communication of COs with POs:**
    - **Course-specific Mapping**: The Course Outcomes (COs) are mapped with the Program Outcomes (POs) to show how each course contributes to the overall educational goals of the program.
    - **Faculty Explanation**: Faculty members clearly communicate and explain the COs in relation to the POs at the beginning of each course. This ensures that students understand the purpose of the course and its relevance to the overall program objectives.
2. **Digital Access and Transparency:**
    - **College Website**: COs, POs, and PSOs are uploaded on the college website to make them accessible to both current and prospective students, as well as other interested parties such as parents and academic peers.
    - **Central Display**: Program Outcomes (POs) and Program Specific Outcomes (PSOs) are prominently displayed in key locations within the institution, including the central area, library, and departmental notice boards. This serves to reinforce the alignment of individual courses with the broader educational outcomes.
3. **Student Induction and Faculty Meetings:**

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- **Induction Program**: During the student induction program, new students are introduced to the institution's COs, POs, and PSOs. This helps them understand how these outcomes guide their academic journey and professional growth.
- **Faculty Discussions**: Faculty meetings involve discussions about the status of attainment for COs, POs, and PSOs. This collaborative approach ensures that the institution is continuously improving its teaching methods and academic planning to meet the desired outcomes.

4. **Course File Documentation:**
   - **Course File Attachment**: For each course, the COs, POs, and PSOs are attached to the course file. This documentation ensures that faculty members have easy access to these outcomes and can refer to them when designing course content, assessments, and teaching strategies.
5. **Institutional Transparency and Engagement:**
   - **Visible Communication**: The communication of POs, PSOs, and COs extends beyond digital and physical displays. They are discussed openly within the institution, ensuring that both faculty and students understand the expectations. The goal is to create an environment of shared understanding and alignment across all academic and administrative activities.

By integrating these approaches, the institution ensures that the program and course outcomes are clearly communicated, understood, and actively pursued by all stakeholders, fostering an environment of continuous improvement and educational excellence.

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Vision

The vision of the Institute is to produce competent pharmacy professionals and value-based future leaders by offering quality education that incorporates training in Holistic Work-Life Management

Mission

The Mission of the Institute is:

- To provide quality education and training to a budding pharmacist who can withstand a transforming healthcare system.
- To bridge the gap between academia and creative professionals for industry 4.2 or 5.0.
- Honing the students' future with the approach to creating emotional quotient with intelligence quotient for holistic development with the aim of know thyself and be thyself willing to evolve.

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D.Pharm

Program Educational Objectives (PEO)

To enable diploma holders practice as chemist, druggists and industry professionals

To make diploma holders proficient in core technical skills who reflect commitment, ethics, and social responsibility

To inculcate lifelong learning habits and entrepreneurship for a successful and productive career

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D.Pharm

Program Specific Outcomes (PSO)

PSO I –Diploma holder shall possess basic and applied knowledge of pharmacy practice and will cater to the ever-evolving healthcare industry thereby serving the society

PSO II – Diploma holders shall possess holistic development which will focus on more than cognitive development, as it incorporates mind, body, spirit, behavior, and social interaction which develops the entrepreneurship skills amongst students.

PSO III: To strengthen the professional and ethical attitude, effective communication skills, teamwork skills and an ability to relate pharmaceutical sciences issues to broader social context.

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D.Pharm

Program Outcomes (PO)

PO1. Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic aspects of hospital pharmacy, drug manufacturing, and chemist as a profession.

PO2.Modern tool usage: Understand the importance and need to use modern pharmacy-related tools and resources with an understanding of the limitations.

PO3. Leadership skills: Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing and serve society.

PO4. Professional Identity: Know the role and responsibility of a pharmacist in society as an educator and health care professional.

PO5.Pharmaceutical Ethics: Honour personal values and apply ethical principles in the pharmacy profession which reflects in behavior and decision-making.

PO6. Communication: Communicate effectively with the pharmacy community and with society at large, via different modes of communication to reflect professional competence

PO7.The Pharmacist and society:Implement the acquired knowledge and information to assess societal, health, safety, and legal issues that are relevant to the professional pharmacy practice.

PO8.Environment and sustainability: Understand the impact of professional pharmacy solutions in societal and environmental contexts, and acknowledge the need for sustainable development.

PO9.Life-long learning: Recognize the need for, and inculcate the ability to engage in independent and life-long learning.

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Course Outcome D.Pharm

D Pharm I Year (PCI)		
Course code/ Course name	**CO Number**	**Course Outcome**
ER20-11T Pharmaceutics – Theory	CO11T.1	Describe about the different dosage forms and their formulation aspects
	CO11T.2	Explain the advantages, disadvantages, and quality control tests of different dosage forms
	CO11T.3	Discuss the importance of quality assurance and good manufacturing practices
ER20-11P Pharmaceutics – Practical	CO11P.1	Calculate the working formula from the given master formula
	CO11P.2	Formulate the dosage form and dispense in an appropriate container
	CO11P.3	Design the label with the necessary product and patient information
	CO11P.4	Perform the basic quality control tests for the common dosage forms
ER20-12T Pharmaceutical Chemistry – Theory	CO12T.1	Describe the chemical class, structure and chemical name of the commonly used drugs and pharmaceuticals of both organic and inorganic nature
	CO12T.2	Discuss the pharmacological uses, dosage regimen, stability issues and storage conditions of all such chemical substances commonly used as drugs
	CO12T.3	Describe the quantitative and qualitative analysis, impurity testing of the chemical substances given in the official monographs
	CO12T.4	Identify the dosage form & the brand names of the drugs and pharmaceuticals popular in the marketplace
ER20-12P Pharmaceutical Chemistry – Practical	CO12P.1	Perform the limit tests for various inorganic elements and report
	CO12P.2	Prepare standard solutions using the principles of volumetric analysis
	CO12P.3	Test the purity of the selected inorganic and organic compounds against the monograph standards
	CO12P.4	Synthesize the selected chemical substances as per the standard synthetic scheme
	CO12P.5	Perform qualitative tests to systematically identify the unknown chemical substances
ER20-13T Pharmacognosy – Theory	CO13T.1	Identify the important/common crude drugs of natural origin
	CO13T.2	Describe the uses of herbs in nutraceuticals and cosmeceuticals
	CO13T.3	Discuss the principles of alternative system of medicines
	CO13T.4	Describe the importance of quality control of drugs of natural origin

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ER20-13P Pharmacognosy – Practical	CO13P.	Identify the given crude drugs based on the morphological characteristics
	CO13P.	Take a transverse section of the given crude drugs
	CO13P.	Describe the anatomical characteristics of the given crude drug under microscopical conditions
	CO13P.	Carry out the physical and chemical tests to evaluate the given crude drugs
ER20-14T Human Anatomy & Physiology – Theory	CO14T.1	Describe the various organ systems of the human body
	CO14T.2	Discuss the anatomical features of the important human organs and tissues
	CO14T.3	Explain the homeostatic mechanisms regulating the normal physiology in the human system
	CO14T.4	Discuss the significance of various vital physiological parameters of the human body
ER20-14P Human Anatomy & Physiology – Practical	CO14P.1	Perform the haematological tests in human subjects and interpret the results
	CO14P.2	Record, monitor and document the vital physiological parameters of human subjects and interpret the results
	CO14P.3	Describe the anatomical features of the important human tissues under the microscopical conditions
	CO14P.4	Discuss the significance of various anatomical and physiological characteristics of the human body
ER20-15T Social Pharmacy – Theory	CO15T.1	Discuss about roles of pharmacists in the various national health programs
	CO15T.2	Describe various sources of health hazards and disease preventive measures
	CO15T.3	Discuss the healthcare issues associated with food and nutritional substances
	CO15T.4	Describe the general roles and responsibilities of pharmacists in public health
ER20-15P Social Pharmacy – Practical	CO15P.1	Describe the roles and responsibilities of pharmacists in various National health programs
	CO15P.2	Design promotional materials for public health awareness
	CO15P.3	Design promotional materials for public health awareness
	CO15P.4	Describe various health hazards including microbial sources
	CO15P.5	Advice on preventive measures for various diseases
	CO15P.6	Provide first aid for various emergency conditions

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Course Outcome Diploma PCI

D Pharm II Year (PCI)		
Course code/ Course name	**CO Number**	**Course Outcome**
ER20-21T Pharmacology – Theory	CO21T.1	Describe the basic concepts of pharmacokinetics and pharmacodynamics
	CO21T.2	Enlist the various classes and drugs of choices for any given disease condition
	CO21T.3	Advice the dosage regimen, route of administration and contraindications for a given drug
	CO21T.4	Describe the common adverse drug reactions
ER20-21P Pharmacology – Practical	CO21P.1	Study and report the local anaesthetic, mydriatic and mitotic effects of the given drug on the rabbit eye
	CO21P.2	Choose appropriate animal experiment model to study the effects of the given drugs acting on the central nervous system and submit the report
	CO21P.3	Perform the effects of given tissues (simulated) on isolated organs / tissues and interpret the results
	CO21P.4	Interpret the dose dependent responses of drugs in various animal experiment models
ER20-22T Community Pharmacy &Management – Theory	CO22T.1	Describe the establishment, legal requirements, and effective administration of a community pharmacy
	CO22T.2	Professionally handle prescriptions and dispense medications
	CO22T.3	Counsel patients about the disease, prescription and or non-prescription medicines
	CO22T.4	Perform basic health screening on patients and interpret the reports in the community pharmacy settings
ER20-22P Community Pharmacy & Management – Practical	CO22P.1	Handle and fill prescriptions in a professional manner
	CO22P.2	Counsel patients on various diseases and minor ailments
	CO22P.3	Counsel patients on prescription and or non-prescription medicines
	CO22P.4	Design and prepare patient information leaflets
	CO22P.5	Perform basic health screening tests
ER20-23T Biochemist	CO23T.1	Describe the functions of biomolecules
	CO23T.2	Discuss the various functions of enzymes in the human system

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ry & Clinical Pathology – Theory	CO23T.3	Explain the metabolic pathways of biomolecules in both physiological and pathological conditions
	CO23T.4	Describe the principles of organ function tests and their clinical significances
	CO23T.5	Determine the biomolecules / metabolites in the given biological samples, both qualitatively and quantitatively
	CO23T.6	Describe the clinical pathology of blood and urine
ER20-23P Biochemistry & Clinical Pathology – Practical	CO23P.1	Qualitatively determine the biomolecules / metabolites in the given biological samples
	CO23P.2	Determine the normal and abnormal constituents in blood and urine samples and interpret the results of such testing
ER20-24T Pharmacotherapeutics – Theory	CO24T.1	Help assessing the subjective and objective parameters of patients in common disease conditions
	CO24T.2	Assist other healthcare providers to analyses drug related problems and provide therapeutic interventions
	CO24T.3	Participate in planning the rational medicine therapy for common diseases
	CO24T.4	Design and deliver discharge counseling for patients
ER20-24P Pharmacotherapeutics – Practical	CO24P.1	Write SOAP (Subjective, Objective, Assessment and Plan) notes for the given clinical cases of selected common diseases
	CO24P.2	Counsel the patients about the disease conditions, uses of drugs, methods of handling and administration of drugs, life-style modifications, and monitoring parameters
ER20-25T Hospital & Clinical Pharmacy – Theory	CO25T.1	Explain about the basic concepts of hospital pharmacy administration
	CO25T.2	Manage the supply chain and distribution of medicines within the hospital settings
	CO25T.3	Assist the other healthcare providers in monitoring drug therapy and address drug related problems
	CO25T.4	Interpret common lab investigation reports for optimizing drug therapy
ER20-25P Hospital & Clinical Pharmacy – Practical	CO25P.1	Professionally handle and answer the drug information queries
	CO25P.2	Interpret the common laboratory reports
	CO25P.3	Report suspected adverse drug reactions using standard procedures

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	CO25P.4	Understand the uses and methods of handling various medical/surgical aids and devices
	CO25P.5	Interpret and report the drug-drug interactions in common diseases for optimizing the drug therapy
ER20-26T Pharmacy Law & Ethics	CO26T.1	Describe the history and evolution of pharmacy law in India
	CO26T.2	Interpret the act and rules regulating the profession and practice of pharmacy in India
	CO26T.3	Discuss the various codes of ethics related to practice standards in pharmacy
	CO26T.4	Interpret the fundamentals of patent laws from the perspectives of pharmacy

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CO-PO Mapping

D Pharm I			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
Course code/ Course name	Course Outcome										
ER20-11T Pharmaceutics – Theory	CO11T.1	Describe about the different dosage forms and their formulation aspects	3	2	1			2			2
	CO11T.2	Explain the advantages, disadvantages, and quality control tests of different dosage forms	3	2	1			2			2
	CO11T.3	Discuss the importance of quality assurance and good manufacturing practices	3	2	1			2			2
ER20-11P Pharmaceutics – Practical	CO11P.1	Calculate the working formula from the given master formula	3	2	1			2			2
	CO11P.2	Formulate the dosage form and dispense in an appropriate container	3	2	1			2			2
	CO11P.3	Design the label with the necessary product and patient information	3	2	1			2			2
	CO11P.4	Perform the basic quality control tests for the common dosage forms	3	2	1			2			2
ER20-12T Pharmaceutical Chemistry – Theory	CO12T.1	Describe the chemical class, structure and chemical name of the commonly used drugs and pharmaceuticals of both organic and inorganic nature	3	2	1			2			2
	CO12T.2	Discuss the pharmacological uses, dosage regimen, stability issues and storage conditions of all such chemical substances	3	2	1			2			2

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CO-PO Mapping

		commonly used as drugs									
	CO12T.3	Describe the quantitative and qualitative analysis, impurity testing of the chemical substances given in the official monographs	3	2	1			2			2
	CO12T.4	Identify the dosage form & the brand names of the drugs and pharmaceuticals popular in the marketplace	3	2	1			2			2
ER20-12P Pharmaceutical Chemistry – Practical	CO12P.1	Perform the limit tests for various inorganic elements and report	3	2	1			2			2
	CO12P.2	Prepare standard solutions using the principles of volumetric analysis	3	2	1			2			2
	CO12P.3	Test the purity of the selected inorganic and organic compounds against the monograph standards	3	2	1			2			2
	CO12P.4	Synthesize the selected chemical substances as per the standard synthetic scheme	3	2	1			2			2
	CO12P.5	Perform qualitative tests to systematically identify the unknown chemical substances	3	2	1			2			2
ER20-13T Pharmacognosy – Theory	CO13T.1	Identify the important/common crude drugs of natural origin	3	2	1			2			2
	CO13T.2	Describe the uses of herbs in nutraceuticals and cosmeceuticals	3	2	1			2			2
	CO13T.3	Discuss the principles of alternative system of medicines	3	2	1			2			2
	CO13T.4	Describe the importance of quality control of drugs of natural origin	3	2	1			2			2

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CO-PO Mapping

ER20-13P Pharmacognosy – Practical	CO13P.	Identify the given crude drugs based on the morphological characteristics	3	2	1			2			2
	CO13P.	Take a transverse section of the given crude drugs	3	2	1			2			2
	CO13P.	Describe the anatomical characteristics of the given crude drug under microscopical conditions	3	2	1			2			2
	CO13P.	Carry out the physical and chemical tests to evaluate the given crude drugs	3	2	1			2			1
ER20-14T Human Anatomy & Physiology – Theory	CO14T.1	Describe the various organ systems of the human body	3	2	1			2			1
	CO14T.2	Discuss the anatomical features of the important human organs and tissues	3	2	1			2			1
	CO14T.3	Explain the homeostatic mechanisms regulating the normal physiology in the human system	3	2	1			2			1
	CO14T.4	Discuss the significance of various vital physiological parameters of the human body	3	2	1			2			1
ER20-14P Human Anatomy & Physiology – Practical	CO14P.1	Perform the haematological tests in human subjects and interpret the results	3	2	1			2			1
	CO14P.2	Record, monitor and document the vital physiological parameters of human subjects and interpret the results	3	2	1			2			1
	CO14P.3	Describe the anatomical features of the important human tissues under the microscopical conditions	3	2	1			2			1

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CO-PO Mapping

	CO14P.4	Discuss the significance of various anatomical and physiological characteristics of the human body	3	2	1			2			1
ER20-15T Social Pharmacy – Theory	CO15T.1	Discuss about roles of pharmacists in the various national health programs	3	2	1		3	2			1
	CO15T.2	Describe various sources of health hazards and disease preventive measures	3	2	1		3	2			1
	CO15T.3	Discuss the healthcare issues associated with food and nutritional substances	3	2	1		3	2			1
	CO15T.4	Describe the general roles and responsibilities of pharmacists in public health	3	2	1		3	2			1
ER20-15P Social Pharmacy – Practical	CO15P.1	Describe the roles and responsibilities of pharmacists in various National health programs	3	2	1		3	2			1
	CO15P.2	Design promotional materials for public health awareness	3	2	1		2	2			1
	CO15P.3	Design promotional materials for public health awareness	3	2	1		3	2			1
	CO15P.4	Describe various health hazards including microbial sources	3	2	1			2			1
	CO15P.5	Advice on preventive measures for various diseases	3	2	1			2			1
	CO15P.6	Provide first aid for various emergency conditions	3	2	1			2			1

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CO-PO Mapping

D Pharm II			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
Course code/ Course name	Course Outcome										
ER20-21T Pharmacology – Theory	CO21T.1	Describe the basic concepts of pharmacokinetics and pharmacodynamics	3	2	1			1	2		2
	CO21T.2	Enlist the various classes and drugs of choices for any given disease condition	3	2	1			1	2		2
	CO21T.3	Advice the dosage regimen, route of administration and contraindications for a given drug	3	2	1			1	2		2
	CO21T.4	Describe the common adverse drug reactions	3	2	1			1	2		2
ER20-21P Pharmacology – Practical	CO21P.1	Study and report the local anaesthetic, mydriatic and mitotic effects of the given drug on the rabbit eye	3	2	1			1	2		2
	CO21P.2	Choose appropriate animal experiment model to study the effects of the given drugs acting on the central nervous system and submit the report	3	2	1			1	2		2
	CO21P.3	Perform the effects of given tissues (simulated) on isolated organs / tissues and interpret the results	3	2	1			1	2		2
	CO21P.4	Interpret the dose dependent responses of drugs in various animal experiment models	3	2	1			1	2		2
ER20-22T Community Pharmacy &Manage	CO22T.1	Describe the establishment, legal requirements, and effective administration of a community pharmacy	3	2	1			1	2		2
	CO22T.2	Professionally handle prescriptions and dispense medications	3	2	1			1	2		2
	CO22T.3	Counsel patients about the disease, prescription and or non-prescription medicines	3	2	1		3		2		2

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CO-PO Mapping

ment – Theory	CO22T.4	Perform basic health screening on patients and interpret the reports in the community pharmacy settings	3	2	1			2	2		2
ER20-22P Community Pharmacy & Management – Practical	CO22P.1	Handle and fill prescriptions in a professional manner	3	2	1		1		2		2
	CO22P.2	Counsel patients on various diseases and minor ailments	3	2	1	3			2		2
	CO22P.3	Counsel patients on prescription and or non-prescription medicines	3	2	1	2			2		2
	CO22P.4	Design and prepare patient information leaflets	3	2	1	1			2		2
	CO22P.5	Perform basic health screening tests	3	2	1	3			2		2
ER20-23T Biochemistry & Clinical Pathology – Theory	CO23T.1	Describe the functions of biomolecules	3	2	1				2		2
	CO23T.2	Discuss the various functions of enzymes in the human system	3	2	1				2		2
	CO23T.3	Explain the metabolic pathways of biomolecules in both physiological and pathological conditions	3	2	1				2		2
	CO23T.4	Describe the principles of organ function tests and their clinical significances	3	2	1				2		2
	CO23T.5	Determine the biomolecules / metabolites in the given biological samples, both qualitatively and quantitatively	3	2	1				2		2
	CO23T.6	Describe the clinical pathology of blood and urine	3	2	1				2		2
ER20-23P Biochemistry & Clinical Pathology	CO23P.1	Qualitatively determine the biomolecules / metabolites in the given biological samples	3	2	1				2		2
	CO23P.2	Determine the normal and abnormal constituents in blood and urine samples and interpret the results of such testing	3	2	1			2			2

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CO-PO Mapping

– Practical											
ER20-24T Pharmacotherapeutics – Theory	CO24T.1	Help assessing the subjective and objective parameters of patients in common disease conditions	3	2	1			2	2		2
	CO24T.2	Assist other healthcare providers to analyse drug related problems and provide therapeutic interventions	3	2	1			2	2		2
	CO24T.3	Participate in planninSg the rational medicine therapy for common diseases	3	2	1			2	2		2
	CO24T.4	Design and deliver discharge counselling for patients	3	2	1			2	2		2
ER20-24P Pharmacotherapeutics – Practical	CO24P.1	Write SOAP (Subjective, Objective, Assessment and Plan) notes for the given clinical cases of selected common diseases	3	2	1			2	2		2
	CO24P.2	Counsel the patients about the disease conditions, uses of drugs, methods of handling and administration of drugs, life-style modifications, and monitoring parameters	3	2	1			2	2		2
ER20-25T Hospital & Clinical Pharmacy – Theory	CO25T.1	Explain about the basic concepts of hospital pharmacy administration	3	2	1			2	2		2
	CO25T.2	Manage the supply chain and distribution of medicines within the hospital settings	3	2	1			2	2		2
	CO25T.3	Assist the other healthcare providers in monitoring drug therapy and address drug related problems	3	2	1			2	2		2
	CO25T.4	Interpret common lab investigation reports for optimizing drug therapy	3	2	1			2	2		2
ER20-25P Hospital &	CO25P.1	Professionally handle and answer the drug information queries	3	2	1			2	2		2

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CO-PO Mapping

Clinical Pharmacy – Practical	CO25P.2	Interpret the common laboratory reports	3	2	1			2	2		2
	CO25P.3	Report suspected adverse drug reactions using standard procedures	3	2	1			2	2		2
	CO25P.4	Understand the uses and methods of handling various medical/surgical aids and devices	3	2	1				2		2
	CO25P.5	Interpret and report the drug-drug interactions in common diseases for optimizing the drug therapy	3	2	1				2		2
ER20-26T Pharmacy Law & Ethics	CO26T.1	Describe the history and evolution of pharmacy law in India	3	2	1				2		2
	CO26T.2	Interpret the act and rules regulating the profession and practice of pharmacy in India	3	2	1				2		2
	CO26T.3	Discuss the various codes of ethics related to practice standards in pharmacy	3	2	1				2		2
	CO26T.4	Interpret the fundamentals of patent laws from the perspectives of pharmacy	3	2	1				2		2

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B. Pharm.

Program Educational Objectives (PEO)

- To prepare graduates as successful pharmacy professionals
- To make graduates competent in core technical skills who reflect commitment, ethics, and social responsibility
- To inculcate lifelong learning habits for highly productive career

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B. Pharm.

Program Specific Outcomes (PSO)

- **PSO I** –Pharmacy graduates will possess basic and applied knowledge of pharmaceutical and allied sciences helping them to become competent industry-ready professionals adapting to the needs of different pharmaceutical areas.
- **PSO II** –Pharmacy graduates shall possess interpersonal skills as leader in team in appreciation of professional ethics and societal responsibilities with the attitude of life-long learning and Moto of know you and will to evolve.
- **PSO III**: To prepare graduate of the program to learn and adapt in a globe of constantly developing trends

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Program Outcomes (PO)

PO1. Pharmacy Knowledge: Possess knowledge and comprehension of the core and applied domains of pharmaceutical sciences, including biomedical sciences, administrative and manufacturing practices with special emphasis on developing soft skills.

PO2. Planning Abilities: Inculcate the ability to arrange the events and meet deadlines as per demand of profession.

PO3.Problem analysis: Inculcate the aptitude and scientific approach to identify the issues during daily practice and address it there and then.

PO4. Modern tool usage: Harness the capability in implementing pharmacy-related instruments, equipment including computing tools with an understanding of the limitations.

PO5. Leadership skills: Learn the quality of an entrepreneur, team-leader, and professional for serving the society.

PO6. Professional Identity: Understand and inculcate habits to earn, preserve and encourage the value of variety of professional roles of a pharmacist in society.

PO7. Pharmaceutical Ethics: Learn to use and apply personal values in professional and social contexts. Apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

PO8.Communication: Develop oral and written communication skills in tune with the professional role of a pharmacist.

PO9.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.

PO10. Environment and sustainability: Acknowledge the need of developing sustainable development in the field of pharmacy.

PO11. Life-long learning: Recognize and understand that learning is the attitude and a lifelong process to keep pace with the latest advancements in the field and society.

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B. Pharmacy I Year / I Sem (Course outcomes)		
Course code/ Course name	**Course outcomes**	
(BP-101T) Human Anatomy and Physiology – I	C101.1	Recall the basics of life processes, structural organization, hemostatic mechanism cellular-level understanding of living beings, and understand the tissue level organization of human being
	C101.2	Explain the gross morphology, structure, and functions of the human integumentary and skeletal system
	C101.3	Summarize the gross morphology, structure, and functions of body fluids and the Lymphatic system.
	C101.4	Explain the morphology, structure, and functions of the peripheral nervous system and sense organs
	C101.5	Summarize the gross morphology, structure, and functions of CVS.
(BP-102T) Pharmaceutical Analysis	C 102.1	Outline the basic concepts and techniques of pharmaceutical analysis
	C102.2	Illustrate the principles and applications of acid-base titrations
	C102.3	Development of analytical skills based on quantitative estimation
	C102.4	Explain the fundamentals of redox titration
	C102.5	Application of various volumetric and electrochemical methods
(BP-103T) Pharmaceutics - I	C 103.1	Outline the history of pharmacy practice and pharmacopoeias
	C103.2	Explain Solid dosage forms
	C103.3	Summarize monophasic and biphasic systems.
	C103.4	Explain and classify the concept of suppositories and pharmaceutical incompatibilities
	C103.5	Summarize the concept of semisolid dosage forms.
(BP-104T) Pharmaceutical Inorganic Chemistry	C 104.1	Outline medicinal and pharmaceutical importance of inorganic compounds
	C104.2	Explain the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals

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	C104.3	Relate the importance of inorganic gastrointestinal agents
	C104.4	Outline the classification and mechanism of action of various inorganic pharmaceuticals
	C104.5	Discuss the various radioisotopes and their pharmaceutical applications
(BP-105T) Communication Skills	C 105.1	Developing all dimensions of personality in terms of communication skills to express, understand and convey the thoughts impressively in a given situation
	C105.2	Construct an understanding of verbal and nonverbal communication and various styles.
	C105.3	Develop better listening skills and written communication.
	C105.4	Develop interview skills and the art of presentation.
	C105.5	Build the ability for group discussion and leadership skills
(BP-106T) Remedial biology	C.106.1	Classify the diversity of the living systems and five kingdoms of life with the morphology of flowering plants like root, stem, and leaf.
	C.106.2	Know various concepts of body fluids and circulation, digestion and absorption, and breathing and respiration.
	C.106.3	Relate basic components of anatomy & physiology of the human body concerning human reproduction, excretion, neural control, and chemical coordination.
	C.106.4	Define basic concepts of plant nutrients and photosynthesis
	C.106.5	Describe plant respiration growth, and development of plant and cell structure and tissue
(BP-106T) Remedial mathematics	C.106M.1	Know the introduction of partial fraction, logarithm, function and limits, and continuity.
	C.106M.2	Solve the different types of problems by applying matrices and determinants.
	C.106M.3	Appreciate and understand the principles and solve the problem related to calculus.
	C.106M.4	Summarize the principle and application of analytical Geometry.
	C.106M.5	Explain the principle of geometry, differential equation, and Laplace transform
(BP-107P) Human Anatomy &	C.107.1	Model physiological processes discussed in theory classes through experiments on normal human beings.
	C.107.2	Study microscopic demonstration of the cells & tissues

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Physiology (Practical)	C.107.3	Identify various systems using charts, modelsl& specimens
	C.107.4	Analyze human blood sample
(BP-108P) Pharmaceutical Analysis (Practical)	C.108.1	Learn the art of performing limit tests of some common impurities
	C.108.2	Demonstrate the art of preparation and standardization of primary and secondary standards
	C.108.3	Perform and learn the technique of assay
	C.108.4	Determine Normality using various electro-analytical methods.
(BP-109P) Pharmaceutics I (Practical)	C.109.1	Understand the basics of different dosage forms and pharmacopoeia
	C.109.2	Formulation and dispensing of liquid dosage forms
	C.109.3	Formulation and dispensing of solid dosage form
	C.109.4	Formulation and dispensing of semi-solid dosage form
(BP-110P) Pharmaceutical Inorganic Chemistry (Practical)	C.110.1	Analyze qualitative determination of impurities via Limit Test
	C.110.2	Learn to identify different inorganic compounds
	C.110.3	Determine the purity of Bentonite, Aluminium Hydroxide Gel, etc.
	C.110.4	Elaborate preparation and use of Boric Acid, Potash Alum, and Ferrous Sulphate
(BP-111P) Communication Skills (Practical)	C.111.1	Identify and learn socializing and etiquette
	C.111.2	Adapting the correct use of pronunciation (Consonantal and vowel sounds)
	C.111.3	Develop the use of narration and figures of speech
	C.111.4	Improve writing skills and e-mail etiquette
	C.111.5	Take part in mock personal interview sessions
	C.111.6	Illustrate presentations
(BP-112P) Remedial Biology (Practical)	C.112.1	Demonstrate the basic concepts of experimental biology
	C.112.2	Discuss the anatomy of the frog through computer-assisted techniques
	C.112.3	Model physiological processes discussed in theory classes through experiments on normal human beings.
	C.112.4	Identification and microscopic study of plant parts

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B. Pharmacy I Year / II Sem		
Course code/ Course name	**Course Outcome**	
(BP-201T) HUMAN ANATOMY AND PHYSIOLOGY	**C201.1**	Explain nervous system organization
	C201.2	Illustrate the anatomy, regulation, and disorders of the Digestive system and energetics.
	C201.3	Make use of knowledge related to the anatomy of the Respiratory system and Urinary system
	C201.4	Relate the interlinked classification, mechanism, and functions of the endocrine system
	C201.5	Explain the anatomy, physiology, and functions of the reproductive system and aspects of genetics.
(BP-202T) PHARMACEUTICAL ORGANIC CHEMISTRY -I	C202. 1	Understand the classification and nomenclature of simple organic compounds
	C202. 1	Explaining the mechanism of various reactions with their orientation
	C202. 3	Determining the reactivity and stability of various organic compounds
	C202. 4	Identification and confirmation of different organic compounds
	C202.5	Evaluating the acidity and basicity of different organic compounds with their uses
(BP203T) BIOCHEMISTRY	C203.1	Demonstrate and define fundamental principles and nature of biomolecules
	C203.2	Outline and relate various metabolic pathways & their regulation in the body
	C203.3	Understanding the metabolism of nutrient molecules in various physiological and pathological conditions
	C203.4	Understand the genetic organization of the mammalian genome and functions of DNA in the synthesis of RNAs and proteins
	C203.5	Discuss the catalytic role and therapeutic and diagnostic applications of enzymes.
(BP-204T) PATHOPHYSIOLOGY	C204.1	Outline principles of cell injury adaptation and explain the basic mechanism involved in the process of inflammation and repair
	C204.2	The student will be able to understand the pathophysiology of cardiovascular, respiratory, and renal system
	C204.3	Classify and understand salient features related to the pathophysiology of hematological diseases, endocrine, nervous and gastrointestinal system
	C204.4	Define the etiology and pathophysiological mechanism of diseases like bones and joint disorder with principles of cancer

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	C204.5	Understand the important complications of infectious and sexually transmitted diseases
(BP-205T) COMPUTER APPLICATION IN PHARMACY	C.205.1	Demonstrate the fundamentals of computer
	C.205.2	Define the web technologies and types of databases
	C.205.3	Explain the application of computers in pharmacy
	C.205.4	Outline the various applications of databases in pharmacy
(BP-206T) ENVIRONMENTAL SCIENCES	C.206.1	Create the awareness about natural sources and associated problem
	C.206.2	Construct basic knowledge about different types and functions of ecosystems
	C.206.3	Develop and learn the concept of environmental pollution
(BP-207P) HUMAN ANATOMY AND PHYSIOLOGY	C.207.1	Take part in the study of physiological processes by using models and specimen so few organ systems of the human body
	C.207.2	Illustrate and experiment with human subjects to understand normal body functioning
	C.207.3	Outline family planning devices and pregnancy diagnostic methods
	C.207.4	Relate the histology of vital organs with the help of slides
	C.207.5	Construct blood report by using a cell analyzer
(BP-208P) PHARMACEUTICAL ORGANIC CHEMISTRY -I	C.208.1	Take part in preliminary testing and functional group testing of organic compounds
	C.208.2	Test for melting point and boiling point of organic compounds
	C.208.3	Create derivatives of organic compounds
	C.208.4	Develop solid derivatives from organic compounds
(BP-209P) BIOCHEMISTRY	C.209.1	Take part in qualitative analysis of biomolecules
	C.209.2	Test for the presence of abnormal constitutes in blood and urine
	C.209.3	Create buffers of various strengths for use in biochemistry practical
	C.209.4	Develop and learn methods for testing enzyme activity
	C.209.5	Demonstrate and related methods used in polymer degradation
(BP-210P) COMPUTER APPLICATION IN PHARMACY	C.210.1	Create HTML web-page
	C.210.2	Design questionnaire, forms, and reports using MS-Access
	C.210.3	Create invoice tables databases using MS-Access
	C.210.4	Develop and learn methods for content export using web-pages
	C.210.5	Demonstrate and relate methods for drug information retrieval using online tools

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B. Pharmacy II Year / III Sem		
Course code/ Course name	**Course Outcome**	
(BP-301T) PHARMACEUTICAL CHEMISTRY –III (ORGANIC CHEMISTRY-III)	C.301.1	Interpret the structure reactions and substituents of Benzene and its derivative
	C.301.2	Explain the methods of preparation, reactions and the type of isomerism of the Phenol, aromatic amines and aromatic acids.
	C.301.3	Elaborate various reactions and properties of fats and oils
	C.301.4	Explain synthesis and uses of polynuclear hydrocarbons
	C.301.5	Label general methods of preparation and reactions of Cylco alkanes compounds
(BP-302T) Physical Pharmaceutics I	C.302.1	Outline solubility and its application in pharmaceuticals
	C.302.2	Explain the basic concept of states of matter with its properties and the Physicochemical properties of drug molecules.
	C.302.3	Explain the role of surfactant, surface tension, interfacial tension, and related properties of the drug during formulation.
	C.302.4	Explain the concept of complexation and protein binding.
	C.302.5	Apply principles of pH, buffers, and isotonic solutions.
(BP-303T) Microbiology	C.303.1	Explain methods of identification, cultivation, and preservation of various microorganisms (Prokaryotes, Eukaryotes, and Bacteria)
	C.303.2	Interpret the importance and implementation of sterilization and aseptic conditions in pharmaceutical processing and industry
	C.303.3	Define fungi and viruses and sterility testing of pharmaceutical products
	C.303.4	Outline the cell culture technology, aseptic area, and methods of standardization.
	C.303.5	Illustrate methods of identification, cultivation, sub culturing, and preservation of various microorganisms, growth of animal cells, and

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		application in the pharmaceutical Industry.
(BP-304T) Pharmaceutical Engineering	C.304.1	Explain various operations of the flow of fluids, size reduction & size separation.
	C.304.2	Relate the principles and operations involved in heat transfer, Evaporation, and Distillation.
	C.304.3	Explain the concept of drying and mixing with the equipment used.
	C.304.4	Outline the concept of Filtration and centrifugation with the equipment used.
	C.304.5	Explain the concept of material of pharmaceutical plant construction, corrosion, and its prevention.
(BP-305P) Pharmaceutic alorganic chemistry (practical)	C.305.1	Apply the common laboratory techniques like recrystallization and steam distillation.
	C.305.2	Demonstrate the significance and process of determination of oil values including acid values, saponification values and iodine value
	C.305.3	Outline the synthesis of basic organic compounds by various reaction mechanisms including nitration, bromination, acetylation
	C.305.4	Outline the synthesis of basic organic compounds by various reaction mechanisms including hydrolysis, oxidation, and some name reactions
(BP-306P) Physical Pharmaceutics I (practical)	C.306.1	Explain a basic understanding of solubility determination.
	C.306.2	Demonstrate the significance and process of determination of pKa and partition coefficient, and surface tension by various methods.
	C.306.3	Determine the stability of the compounds by various methods
	C.306.4	Determination of HLB number and CMC of surfactants.
(BP-307P) Microbiology (practical)	C.307.1	Demonstrate and choose amongst different types of equipment and processing
	C.307.2	Illustrate the art of sterilization of glassware and preparation and sterilization of media.

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	C.307.3	Illustrate the process of culturing, sub-culturing, and multiple streaking methods
	C.307.4	Make use of various staining techniques (simple, grams, and acid-fast staining) and the hanging drop method for determining the motility of microorganisms.
(BP-308P) Pharmaceutical Engineering (practical)	C.308.1	Determine the radiation constant of different materials used in pharmaceutical manufacturing
	C.308.2	Demonstrate the various factors influencing filtration and evaporation rate
	C.308.3	Explain humidity & drying and construct a psychometric chart and drying curve
	C.308.4	Demonstrate the principle and working of ball mill and sieve shaker

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B. Pharmacy III Year / IV Sem		
Course code/ Course name		**Course Outcome**
(BP-401T) PHARMACUETICAL ORGANIC CHEMISTRY	C.401.1	Relate the mechanism of stereoisomerism with organic compounds
	C.401.2	Illustrate basic concepts of Geometrical isomerism of various organic compounds
	C.401.3	Classify and study the nomenclature of heterocyclic compounds
	C.401.4	Summarize the methods of preparation and properties of organic compounds
	C.401.5	Recall reactions of synthetic importance
(BP-402T) MEDICINAL CHEMISTRY	C.402.1	Recall the concept of physiochemical properties of drug molecules in relation to drug activity.
	C.402.2	To assess Structural Activity relationship, mechanism of action, classification, and uses of drugs acting on the Autonomic nervous system.
	C.402.3	To classify sympathetic and parasympathetic agents with SAR of selective drugs
	C.402.4	To extend the knowledge of drugs acting on Central Nervous Systems like sedatives, antipsychotics anticonvulsants etc.
	C.402.5	To explain the Structural Activity relationship, mechanism of action, classification, and uses of General Anesthetics
(BP-403T) PHYSICAL PHARMACEUTICS –II	C.403.1	Classify the types of dispersions such as coarse and colloidal and to discuss their importance and properties and explain Suspension and Emulsion with their properties and evaluation parameters.
	C.403.2	Explain rheology, different flow systems, and their importance in pharmaceuticals.
	C.403.3	Examine the role of surfactant, surface tension, interfacial tension, and related properties of the drug during formulation.
	C.403.4	Illustrate the concept of micromeretics
	C.403.5	Demonstrate the role of various physical and chemical factors in drug stability and reaction kinetics
(BP-404T) PHARMACOLOGY	C.404.1	Infer principle concept of pharmacology
	C.404.2	Relate and develop fundamentals of pharmacokinetics and pharmacodynamics
	C.404.3	explain the pharmacology of drugs acting on the peripheral nervous system

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	C.404.4	Make use of pharmacology to study drug activity in CNS
	C.404.5	Apply basic knowledge of pharmacology in the prevention and treatment of various diseases
(BP-405T) PHARMACOGNOSY and PHYTOCHEMISTRY- I	C405.1	Summarize general introduction of pharmacognosy, classification of crude drugs, and quality control of drugs of natural origin
	C405.2	Explain the cultivation, collection, processing, and storage of drugs of natural origin
	C405.3	Elaborate on the concept of plant tissue culture
	C405.4	Illustrate different systems of medicines and classification of secondary metabolites
	C405.5	Discuss pharmacognostic parameters of primary metabolites, plant products enzymes, proteins, enzymes, and marine drugs
(BP-409P) PHARMACOGNOSY -I	C.409.1	Understand the concept of swelling and foaming index
	C.409.2	Examine the chemical properties of different secondary metabolites
	C.409.3	Estimate different leaf constants
	C.409.4	Appraise the knowledge of quantitative microscopy
	C.409.5	Analyze the crud drugs on basis of physical parameters
(BP-406P) MEDICINAL CHEMISTRY- I	C.407.1	Assess synthesis and characterization of Benzimidazole having antimicrobial property
	C.407.2	Examine the antipyretic property of 1,3-pyrazole with Synthesis and Characterization
	C.407.3	Assess different drugs with Assay
	C.407.4	Estimate partition coefficient of any two drugs
(BP-407P) PHYSICAL PHARMACEUTICS II	C405.1	Summarize general introduction of pharmacognosy, classification of crude drugs, and quality control of drugs of natural origin
	C405.2	Explain the cultivation, collection, processing, and storage of drugs of natural origin

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	C405.3	Elaborate the concept of plant tissue culture
	C405.4	Illustrate different systems of medicines and classification of secondary metabolites
	C405.5	Study of pharmacognostical parameters of primary metabolites, plant products enzymes, proteins, enzymes, and marine drugs
(BP-408P) PHARMACOLOGY	C408.1	Identify and study common laboratory animals
	C408.2	Analyze commonly used instruments in experimental pharmacology
	C408.3	Illustrate the maintenance of laboratory animals
	C408.4	Explain common laboratory techniques like blood withdrawal etc
	C408.5	Estimate the effect of drugs with different animal models

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B. Pharmacy III Year / V Sem		
Course code/ Course name	**Course Outcome**	
Medicinal Chemistry- II (BP 501T)	C 501.1	Summarize the chemistry of antihistaminic, H1 - and H2 antagonists, Gastric Proton pump inhibitors, and antineoplasticdrugs with respect to their pharmacological activity.
	C501.2	Outline the drug metabolic pathway, adverse effects, and therapeutic value of anti-anginal, diuretics, and antihypertensivedrugs with theirstructure-activity relationship.
	C501.3	Know the structure-activity relationship of antiarrhythmic, antihyperlipidemic, coagulant –anticoagulants and drugs used in congestive heart failure
	C501.4	Summarize the synthesis and effects of drugs acting on the endocrine system
	C501.5	Explain the chemistry and physicochemical properties and metabolism of the antidiabetic and local anesthetic drugs.
Industrial Pharmacy- I (BP502T)	C 502.1	Analyze various Pre formulation parameters for different dosage forms (solid, liquid, etc.) including their physical and chemical properties.
	C502.2	Explain formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of tablets, capsules, pellets, and liquid orals.
	C502.3	Outline formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of parenteral and ophthalmic
	C502.4	Formulate various cosmetics preparations like lipsticks, shampoos, cold creams, vanishing creams, etc.
	C502.5	Define, evaluate and perform quality control and stability studies of pharmaceutical aerosols. Explain various pharmaceutical packaging materials, containers, their quality-control tests, and stability aspects
Pharmacology –II (BP503T)	C 503.1	Demonstrate the mechanism of drug action and its relevance in the treatment of the cardiovascular system.
	C503.2	Explain the mechanism of drug action and its relevance in the treatment of the cardiovascular and urinary system.

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	C503.3	Illustrate the correlation of pharmacology with related to Autacoids and related drugs.
	C503.4	Relate and Impart the fundamental knowledge of the various aspect of a drug acting on the endocrine system
	C503.5	Outline and emphasis the basic concept of bioassay.
Pharmacognosy and Phytochemistry-II (BP504T)	C 504.1	Develop the knowledge about secondary metabolites produced in crude drugs. Outline the utilization of radioactive isotopes.
	C504.2	Explain the general introduction, composition, chemistry, therapeutic use, and application of secondary metabolites. Alkaloids, steroids, etc.
	C504.3	How to carry out the identification, isolation and analysis of Phytoconstituents
	C504.4	Relate Industrial production, estimation and utilization of Phytoconstituents
	C504.5	Summarize the basics of phytochemistry and herbal drug technology
Pharmaceutical Jurisprudence (BP505T)	C 505.1	Rephrase and impart the knowledge of the drug and cosmetic act and its rule.
	C505.2	Detail study of the various parameters of the drug and cosmetic act and rules including various schedules, sale of drugs, labeling and packaging of drugs, administration of the act and rules.
	C505.3	Outline Pharmacy act with reference to medicinal and toilet preparation act, Narcotic Drugs and psychotropic substances act.
	C505.4	Summarize the study of salient features of drugs and magic remedies act and its rules, Prevention of cruelty to animal act - 1960 along with National Pharmaceutical pricing authority
	C505.5	Define pharmaceutical legislation, Code of ethics, medical termination of pregnancy act, Right to information act and Introduction to IPR during pharmaceutical practice.
Industrial Pharmacy - I (BP506P)	C 506.1	Explain the preformulation study of paracetamol/ aspirin or any drug
	C5062	Formulate and evaluate solid dosage form (Paracetamol tablet/ Aspirin Tablet/ film coating tablet or granules / Tetracyclines capsules)
	C506.3	Formulate liquid dosage form (Gluconate injection, Ascorbic acid injection and eye drop)
	C506.4	Formulate semisolid dosage form (eye ointment, cold cream and vanishing cream)

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	C506.5	Evaluation of glass test as per IP
Pharmacology –II (BP507P)	C 507.1	Relate the techniques and mechanism DRC of various drugs.
	C507.2	Demonstrate isolation of different organs from the laboratory animal by simulated experiments.
	C507.3	Demonstrate isolation of different tissues from the laboratory animal by simulated experiments.
	C507.4	Demonstrate various receptor actions using isolated tissue preparation
Pharmacognosy and Phytochemistry- II (BP508P)	C 508.1	Evaluate the plants and phytochemicals from plant tissue culture on the basis of morphology, histology and characteristics
	C508.2	Demonstrate isolation and detection of active constituents of various plants.
	C508.3	Demonstrate identification, isolation and analysis of Phytoconstituents
	C508.4	Demonstrate separation and detection of phytoconstituents with the help of TLC and paper chromatography
	C508.5	Analyze the crude drug by chemical test

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B. Pharmacy III Year / VI Sem		
Course code/ Course name	**Course Outcome**	
(BP 601T) Medicinal Chemistry –III	C601.1	Outline the fundaments of medicinal chemistry, SAR and synthesis of classical antibiotics like β lactam antibiotics, aminoglycosides and tetracyclines
	C601.2	Classify, and outline the medicinal chemistry, SAR and synthesis of antibiotics, chemotherapeutic agents like macrolides, anti-malarial and prodrugs.
	C601.3	Elaborate the medicinal chemistry, SAR and synthesis of antiviral, antitubercular drugs and urinary tract anti-infectives.
	C601.4	Explain the medicinal chemistry, SAR and synthesis of antifungal drugs, anthelmintics, antiprotozoal and sulphonamide class of drugs.
	C601.5	Explain the concepts of drug design, QSAR and combinatorial chemistry.
Pharmacology III (BP-602T)	C602.1	Explain the pharmacology of drugs acting on the Respiratory and Gastrointestinal system
	C602.2	Explain the mechanism of drug action and its relevance in the treatment of different infectious diseases and cancer
	C602.3	Describe the chemotherapy of antitubercular agents, antifungal, antiviral, anthelmintics and antiamoebic agents.
	C602.4	Describe the chemotherapy forUTI, STD and immunopharmacology
	C602.5	Comprehend the principles of toxicology and treatment of various types of poisoning and the concept of immunopharmacology and chronopharmacology
Herbal Drug Technology (BP-603T)	C603.1	Impart knowledge of herbs as raw materials, Biodynamic agriculture and the Indian System of Medicine.
	C603.2	Outline the general market, scope, and types of products available in neutraceuticals and herb-drug-food interactions.
	C603.3	Explain the sources of and description of herbal cosmetics, herbal excipients and herbal formulations.

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	C603.4	Analyze and developed Good manufacturing practices (GMP), patenting and regulatory aspects of herbal drugs.
	C603.5	Outline of plant-based industries and institutions involved in work on medicinal and aromatic plants in India along with schedule-T of drugs and cosmetics act.
Biopharmaceutics and Pharmacokinetics (BP-604T)	C604.1	Explain the concepts of biopharmaceutics and their applications in pharmaceutical development.
	C604.2	Describe the kinetics of elimination. Explain the concept of bioavailability and Bioequivalence
	C604.3	Learn the use of plasma-level time data to calculate secondary pharmacokinetic parameters
	C604.4	Explain the concept of multi compartment models.
	C604.5	Appraisenon-linear pharmacokinetics with examples of drugs.
Pharmaceutical Biotechnology (BP-605T)	C605.1	Elaborate on the importance of enzymes biotechnology, Biosensors, Protein Egg, use of microbes in pharmaceutical industries
	C605.2	Learn the use of genetic engineering techniques for the production of pharmaceuticals
	C605.3	outline the concept of Humoral Immunity and cellular immunity
	C605.4	Learn and outline the basic principles of immunology and how it is used for the production of vaccines and blood preservation techniques
	C605.5	Appraise the use of fermentation technology in the pharmaceutical industries
Pharmaceutical Quality Assurance (BP-606T)	C606.1	Outline the cGMP, TQM, QbD, ISO,and NABL accreditation aspects of the pharmaceutical industries
	C606.2	Explain the important aspects of organization and personnel, premises and equipment and raw material.

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	C606.3	Learn and outline the basic principles guidelines issued by various regulatory agencies on quality control and GLP
	C606.4	Appreciate the importance of documentation in the pharmaceutical industry.
	C606.5	Appraise calibration and validation techniques
Medicinal Chemistry –III (Practical) (BP-607P)	C607.1	Design and build drugs along with their intermediates
	C607.2	Perform and understand the assay methods of some important antibiotics
	C607.3	Perform the synthesis of important intermediates and drugs using microwave irradiation methods
	C607.4	Learn how to use the computer programs to draw chemical structures
	C607.5	Learn, apply and appraise Lipinski's rule of five using computer-assisted methods
Pharmacology (Practical) (BP-608P)	C608.1	Outline the concept of dose calculation in pharmacology experiments
	C608.2	Demonstrate the action of drugs on the respiratory and gastrointestinal tract using software
	C608.3	Determine acute toxicity of drugs by given data
	C608.4	Illustrate calculation of Pharmacokinetic parameters
	C608.5	Learn the application of biostatistics methods in experimental pharmacology
Herbal Drug Technology (Practical) (BP-609P)	C609.1	Perform preliminary phytochemical screening of crude drugs
	C609.2	Evaluate the excipients of natural origin
	C609.3	Perform monograph analysis of some pharmacopoeia drugs
	C609.4	Prepare and standardize formulations containing crude drug extracts
	C609.5	Analyze crude drugs for secondary metabolite content

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B. Pharmacy III Year / VII Sem		
Course code/ Course name	**Course Outcome**	
(PY - 701T) Instrumental methods of analysis	C.701.1	Extend knowledge of the introduction, instrumentation and applications of UV Visible Spectroscopy and Fluorimetery.
	C.701.2	Discuss the basic fundamental aspects of quantitative & qualitative analysis of drugs using various analytical instruments like IR Spectroscopy, Flame Photometry, atomic absorption Spectroscopy and Nepheloturbidometery.
	C.701.3	Illustrate the principle and methodology of chromatographic separation by various techniques like Adsorption and partition column chromatography, TLC, Paper chromatography and Electrophoresis with their applications
	C.701.4	Demonstrate the principle, instrumentation and analysis of compounds using GC and HPLC.
	C.701.5	Explain the mechanism, instrumentation and applications of separation techniques i.e, Ion exchange chromatography, Gel chromatography and affinity chromatography.
(PY 702T) Industrial Pharmacy II	C.702.1	Define the process of pilot plant scale-up of techniques
	C.702.2	Outline the process of technology transfer from lab scale to commercial batch.
	C.702.3	Interpret regulatory affairs and regulatory requirements for the approval process of drug products.
	C.702.4	Define quality management and certifications for quality like QbD, OOS, ISO, GLP etc.
	C.702.5	Develop concepts of different Laws and Acts that regulate the pharmaceutical industry as per Indian Regulatory Requirements like CDSCO, COPP etc
(PY 703T) Pharmacy Practice	C.703.1	Outline the organization, layout, and roles of the hospital and hospital pharmacy and community pharmacy. Analyzing the adverse drug reactions and managing them.
	C.703.2	Construct the concepts of drug distribution in hospitals and plan the hospital formulary. Infer the need for TDM and summarizing drug therapy of patient through medication chart review and community pharmacy management.
	C.703.3	Construction of Pharmacy and Therapeutics Committee, Interpretation of the sources of drug information services and prescription orders. Need for patient counseling and Importance of training and education program in hospital, Prescribed medication order and communication skills.
	C.703.4	Plan of budget preparation and its implementation, inclinical pharmacy. Identifying the OTC sales and Rational use of drugs.
	C.703.5	Explain the drug store management and inventory control. Interpretation of laboratory results of specific diseases and summarizing the investigational use of drugs.

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(PY 704T) Novel Drug Delivery System	C.704.1	Relate the principles and rationale of drug delivery with the current and future approaches to controlled drug delivery and drug targeting using Polymers
	C.704.2	Summarize microencapsulation and fabrication of mucosal and implantable drug delivery system
	C.704.3	Demonstrate development of site-specific drug delivery like nasopulmonary, transdermal drug delivery systems, GRDDS
	C.704.4	Illustrate the targeted drug delivery system using liposomes, nanoparticles etc.
	C.704.5	Distinguish site-specific drug delivery like ocular and intrauterine drug delivery systems.
(PY 705P) Instrumental methods of analysis (Practical)	C.705.1	Determination of absorption maxima of various organic compounds
	C.705.2	Perform assay and simultaneous estimation by UV spectroscopy
	C.705.3	Separation of compounds by Paper chromatography and TLC
	C.705.4	Demonstrate the analysis of compounds using spectroscopic methods
	C.705.5	Demonstration of instrumentation of HPLC & Gas Chromatography

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B. Pharmacy IV Year / VIII Sem		
Course code/ Course name	**Course Outcome**	
(BP 801) Biostatistics and Research Methodology	C.801.1	Know the various statistical technique, measures of central tendency, measures of dispersion and correlation
	C.801.2	Solve regression, probability and parametric test
	C.801.3	Appreciate non-parametric test need for research, graph and designing methodology
	C.801.4	Know the operation of regression modeling and practical components of industrial and clinical trial problems
	C.801.5	Know design and analysis of experiment
(BP 802) Social and Preventive Pharmacy	C.802.1	Know the concept of health and disease, health education ,sociology, and hygiene
	C.802.2	Explain preventive medicines
	C.802.3	Outline the National health program, objective, functioning, and outcome
	C.802.4	Outline the National health program with reference to programs for mother and child, family welfare, tobacco control malaria prevention, health care for elderly and the role WHO
	C.802.5	Explain community services in rural, urban, and school health
(BP 809ET) Cosmetic Science	C.809.1	Classify cosmetic and cosmeceutical products
	C.809.2	Explain principles of formulation and building blocks of skincare products, antiperspirants, deodorants, and hair care products
	C.809.3	Explain the role of herbs in cosmetic and analytical cosmetics
	C.809.4	Outline principles of cosmetic evaluations
	C.809.5	Explain problems associated with hair and skin
(BP 812ET)Dietary	C.812.1	Explain functional foods, nutraceuticals, and dietary supplements

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Supplements and Nutraceuticals	C.812.2	Appreciate the components in dietary supplements and the application
	C.812.3	Know about free radicals, its production, and reaction in the diet
	C.812.4	Outline free radicals in various diseases, antioxidants, and functional food for chronic diseases prevention
	C.812.5	appreciate the regularity and commercial aspect of dietary supplements including health claims
(BP805) Practice School	C.805.1	outline the basics of Practices in pharmacy
	C.805.2	Know about E-Medicines in India
	C.805.3	Explain of Arogya and Janaushadhi Scheme of drug distribution.
	C.805.4	Elaborate learning of drug distribution systems of various pharmacies.
	C.805.5	Survey and submit a detailed printed report help in the evaluation of work done.

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Course Outcome-Program Outcome

B. Pharmacy I Year / I Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name	Course outcomes												
(BP-101T) Human Anatomy and Physiology – I	C101.1	Recall the basics of life processes, structural organization, haemostatic mechanism cellular-level understanding of living beings, and understand the tissue level organization of human being	3	2	2	1	1	-	-	2	-	-	2
	C101.2	Explain the gross morphology, structure, and functions of the human integumentary and skeletal system	3	2	2	1	1	-	-	2	-	-	2
	C101.3	Summarize the gross morphology, structure, and functions of body fluids and the Lymphatic system.	3	2	2	1	1	-	-	2	-	-	2
	C101.4	Explain the morphology, structure, and functions of the peripheral nervous system and sense organs	3	2	2	1	1	-	-	2	-	-	2
	C101.5	Summarize the gross morphology, structure, and functions of CVS.	3	1	3	2	1	1	2	2	1	1	3

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Course Outcome-Program Outcome

(BP-102T) Pharmaceutical Analysis	C 102.1	Outline the basic concepts and techniques of pharmaceutical analysis	3	1	3	2	1	1	1	2	1	1	3
	C102.2	Illustrate the principles and applications of acid-base titrations	3	1	-	-	1	-	-	2	1	1	3
	C102.3	Development of analytical skills based on quantitative estimation	3	1	-	-	1	-	-	2	1	1	3
	C102.4	Explain the fundamentals of redox titration	3	1	-	2	1	-	-	2	1	1	3
	C102.5	Application of various volumetric and electrochemical methods	3	3	1		1	2	2	-	2	-	3
(BP-103T) Pharmaceutics - I	C 103.1	Outline the history of pharmacy practice and pharmacopoeias	3	3	1		1	2	2	-	1	-	3
	C103.2	Explain Solid dosage forms	3	3	1		1	2	2	-	2	1	3
	C103.3	Summarize monophasic and biphasic systems.	3	2	1		1	2	2	-	2	1	3
	C103.4	Explain and classify the concept of suppositories and pharmaceutical incompatibilities	3	2	1		1	2	2	-	2	1	3
	C103.5	Summarize the concept of semisolid dosage forms.	3	1	-	-	-	1	-	2	1	1	3
(BP-104T) Pharmaceutical	C 104.1	Outline medicinal and pharmaceutical importance of	3	1	-	-	-	1	-	2	2	1	2

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Inorganic Chemistry		inorganic compounds											
	C104.2	Explain the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals	3	1	-	-	-	1	-	2	-	-	3
	C104.3	Relate the importance of inorganic gastrointestinal agents	3	1	-	-	-	1	-	2	-	-	3
	C104.4	Outline the classification and mechanism of action of various inorganic pharmaceuticals	3	1				1	-	2	-	-	3
	C104.5	Discuss the various radioisotopes andtheir pharmaceutical applications	3	1	0	-	-	1	-	-	-	-	3
(BP-105T) Communication Skills	C 105.1	Developing all dimensions of personality in terms of communication skills to express, understand and convey the thoughts impressively in a given situation	3	1	2	2	2	2	1	3	1	-	2
	C105.2	Construct an understanding of verbal and nonverbal communication and various styles.	3	1	2	2	2	2	1	3	1	-	2
	C105.3	Develop better listening skills and written communication.	3	1	2	2	2	2	1	3	1	-	2
	C105.4	Develop interview skills and the	3	1	2	2	2	2	1	3	1	-	2

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		art of presentation.											
	C105.5	Build the ability for group discussion and leadership skills	3	1	2	2	2	2	1	3	1	-	2
(BP-106T) Remedial biology	C.106.1	Classify the diversity of the living systems and five kingdoms of life with the morphology of flowering plants like root, stem, and leaf.	3	1	2	2	1	-	-	2	-	-	2
	C.106.2	Know various concepts of body fluids and circulation, digestion and absorption, and breathing and respiration.	3	1	2	2	1	-	-	2	-	-	2
	C.106.3	Relate basic components of anatomy & physiology of the human body concerning human reproduction, excretion, neural control, and chemical coordination.	3	1	2	2	1	-	-	2	-	-	2
	C.106.4	Define basic concepts of plant nutrients and photosynthesis	3	1	2	1	-	-	1	2	-	-	2
	C.106.5	Describe plantrespiration growth, and development of plant and cell structure and tissue	3	1	2	1	-	-	1	2	-	-	2
(BP-106T) Remedial mathematics	C.106M.1	Know the introduction of partial fraction, logarithm, function and limits, and continuity.	3	1	2	1	-	-	1	2	-	-	2

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	C.106M.2	Solve the different types of problems by applying matrices and determinants.	3	1	2	1	-	-	1	2	-	-	2
	C.106M.3	Appreciate and understand the principles and solve the problem related to calculus.	3	1	2	1	-	-	1	2	-	-	2
	C.106M.4	Summarize the principle and application of analytical Geometry.	3	1	2	1	-	-	1	2	-	-	2
	C.106M.5	Explain the principle of geometry, differential equation, and Laplace transform	3	1	2	1	-	-	1	2	-	-	2
(BP-107P) Human Anatomy & Physiology (Practical)	C.107.1	Model physiological processes discussed in theory classes through experiments on normal human beings.	3	1	2	1	-	-	1	2	-	-	2
	C.107.2	Study microscopic demonstration of the cells & tissues	3	1	2	1	-	-	1	2	-	-	2
	C.107.3	Identify various systems using charts,modelsl& specimens	3	1	2	1			1	2			2
	C.107.4	Analyze human blood sample	3	1	2	1			1	2			2
(BP-108P) Pharmaceutical Analysis (Practical)	C.108.1	Learn the art of performing limit tests of some common impurities	3	1	2	1			1	2			2
	C.108.2	Demonstrate the art of preparation and standardization of primary and secondary standards	3	2	1	-	3	2	1	1	-	-	2

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	C.108.3	Perform and learn the technique of assay	3	2	1	-	3	2	1	1	-	-	2
	C.108.4	Determine Normality using various electro-analytical methods.	3	2	1	-	3	2	1	1	-	-	2
(BP-109P) Pharmaceutics I (Practical)	C.109.1	Understand the basics of different dosage forms and pharmacopoeia	3	3	1	-	-	2	2	2	-	2	2
	C.109.2	Formulation and dispensing of liquid dosage forms	3	3	1	-	-	2	2	2	-	2	2
	C.109.3	Formulation and dispensing of solid dosage form	3	3	1	-	-	2	2	2	-	2	2
	C.109.4	Formulation and dispensing of semi-solid dosage form	3	3	1	-	-	2	2	2	-	2	2
(BP-110P) Pharmaceutical Inorganic Chemistry (Practical)	C.110.1	Analyse qualitative determination of impurities via Limit Test	3	2	1	-	1	2	1	2	-	-	2
	C.110.2	Learn to identify different inorganic compounds	3	2	1	-	1	2	1	2	-	-	2
	C.110.3	Determine the purity of Bentonite, Aluminium Hydroxide Gel, etc.	3	2	1	-	1	2	1	2	-	-	2
	C.110.4	Elaborate preparation and use of Boric Acid, Potash Alum, and Ferrous Sulphate	3	2	1	-	1	2	1	2	-	-	2
(BP-111P) Communication Skills (Practical)	C.111.1	Identify and learn socializing and etiquette	3	2	1	-	1	1	-	2	-	-	2
	C.111.2	Adapting the correct use of pronunciation (Consonantal and vowel sounds)	3	2	1	-	1	1	-	2	-	-	2

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	C.111.3	Develop the use of narration and figures of speech	3	2	1	-	1	1	-	2	-	-	2
	C.111.4	Improve writing skills and e-mail etiquette	3	2	1	-	1	-	-	2	-	-	2
	C.111.5	Take part in mock personal interview sessions	3	2	1	-	1	-	-	2	-	-	2
	C.111.6	Illustrate presentations	3	2	1	-	1	-	-	2	-	-	2
(BP-112P) Remedial Biology (Practical)	C.112.1	Demonstrate the basic concepts of experimental biology	3	2	1	-	1	-	-	2	-	-	2
	C.112.2	Discuss the anatomy of the frog through computer-assisted techniques	3	2	1	-	1	-	-	2	-	-	2
	C.112.3	Model physiological processes discussed in theory classes through experiments on normal human beings.	3	2	1	-	1	-	-	2	-	-	2
	C.112.4	Identification and microscopic study of plant parts	3	2	1	-	1	-	-	2	-	-	2

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B. Pharmacy I Year / IISem			PO1	PO 2	PO3	PO 4	PO 5	PO6	PO 7	PO8	PO 9	P O 10	PO11
Course code/ Course name	Course Outcome		3	2	1	1	1	-	-	1	-	-	1
(BP-201T) HUMAN ANATOMY AND PHYSIOLOGY	C201.1	Explain nervous system organization	3	2	1	1	1	-	-	1	-	-	1
	C201.2	Illustrate the anatomy, regulation, and disorders of the Digestive system and energetics.	3	2	1	1	1	-	-	1	-	-	1
	C201.3	Make use of knowledge related to the anatomy of the Respiratory system and Urinary system	3	2	1	1	1	-	-	1	-	-	1
	C201.4	Relate the interlinked classification, mechanism, and functions of the endocrine system	3	2	1	1	1	-	-	1	-	-	1
	C201.5	Explain the anatomy, physiology, and functions of the reproductive system and aspects of genetics.	3	2	1	1	1	-	--	1	-	-	13
(BP-202T) PHARMACEUTICAL ORGANIC CHEMISTR	C202. 1	Understand the classification and nomenclature of simple organic compounds	3	2	-	-	-	1	-	2	-	-	3
	C202. 1	Explaining the mechanism of various reactions	3	2	-	-	-	1	-	2	-	-	3

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Y -I		with their orientation											
	C202. 3	Determining the reactivity and stability of various organic compounds	3	2	-	-	-	1	-	2	-	-	3
	C202. 4	Identification and confirmation of different organic compounds	3	2	-	-	-	1	-	2	-	-	
	C202.5	Evaluating the acidity and basicity of different organic compounds with their uses	3	2	-	-	-	1	-	2	-	-	3
(BP203T) BIOCHEMISTRY	C203.1	Demonstrate and define fundamental principles and nature of biomolecules	3	1	-	-	-	1	-	2	1	-	3
	C203.2	Outline and relate various metabolic pathways & their regulation in the body	3	1	-	-	-	1	-	2	1	-	3
	C203.3	Understanding the metabolism of nutrient molecules in various physiological and pathological conditions	3	1	-	-	-	1	-	2	1	-	3
	C203.4	Understand the genetic organization of the mammalian genome and functions of DNA in the synthesis of RNAs and proteins	3	1	-	-	-	1	-	2	1	-	3
	C203.5	Discuss the catalytic role and therapeutic and diagnostic applications of enzymes.	3	1	-	-	-	1	-	2	1	-	3
(BP-204T) PATHOPHYSIOLOGY	C204.1	Outline principles of cell injury adaptation and explain the basic mechanism involved in the process of inflammation and repair	3	1	1	1	1	-	-	1	-	-	1
	C204.2	The student will be able to understand the pathophysiology of cardiovascular, respiratory, and renal system	3	1	1	1	1	-	-	1	-	-	1

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	C204.3	Classify and understand salient features related to the pathophysiology of haematological diseases, endocrine, nervous and gastrointestinal system	3	1	1	1	1	-	-	1	-	-	1
	C204.4	Define the etiology and pathophysiological mechanism of diseases like bones and joint disorder with principles of cancer	3	1	1	1	1	-	-	1	-	-	1
	C204.5	Understand the important complications of infectious and sexually transmitted diseases	3	1	1	1	1	-	-	1	-	-	1
(BP-205T) COMPUTER APPLICATION IN PHARMACY	C.205.1	Demonstrate the fundamentals of computer	1	1	2	2	1	-	-	1	-	-	1
	C.205.2	Define the web technologies and types of databases	3	1	2	2	1	-	-	1	-	-	1
	C.205.3	Explain the application of computers in pharmacy	3	1	2	2	1	-	-	1	-	-	1
	C.205.4	Outline the various applications of databases in pharmacy	3	1	2	2	1	-	-	1	-	-	1
(BP-206T) ENVIRONMENTAL SCIENCES	C.206.1	Create the awareness about natural sources and associated problem	3	1	2	2	1	-	-	1	-	3	3
	C.206.2	Construct basic knowledge about different types and functions of ecosystems	3	1	2	2	1	-	-	1	-	3	3
	C.206.3	Develop and learn the concept of environmental pollution	3	1	2	2	1	-	-	1	-	3	3

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(BP-207P) HUMAN ANATOMY AND PHYSIOLOGY	C.207.1	Take part in the study of physiological processes by using models and specimen sofa few organ systems of the human body	3	1	1	1	1	-	-	1	-	-	1
	C.207.2	Illustrate and experiment with human subjects to understand normal body functioning	3	1	1	1	1	-	-	1	-	-	1
	C.207.3	Outline family planning devices and pregnancy diagnostic methods	3	1	1	1	1	-	-	1	-	-	1
	C.207.4	Relate the histology of vital organs with the help of slides	3	1	1	1	1	-	-	1	-	-	1
	C.207.5	Construct blood report by using a cell analyser	3	1	1	1	1	-	-	1	-	-	1
(BP-208P) PHARMACEUTICAL ORGANIC CHEMISTRY -I	C.208.1	Take part in preliminary testing and functional group testing of organic compounds	3	2	1	-	2	2	1	2	-	-	3
	C.208.2	Test for melting point and boiling point of organic compounds	3	2	1	-	2	2	1	2	-	-	3
	C.208.3	Create derivatives of organic compounds	3	2	1	-	2	2	1	2	-	-	3
	C.208.4	Develop solid derivatives from organic compounds	3	2	1	-	2	2	1	2	-	-	3
(BP-209P) BIOCHEMISTRY	C.209.1	Take part in qualitative analysis of biomolecules	3	2	1	-	2	2	2	2	-	-	2
	C.209.2	Test for the presence of abnormal constitutes in blood and urine	3	2	1	-	2	2	1	2	-	-	2
	C.209.3	Create buffers of various strengths for use in biochemistry practical	3	2	1	-	2	2	1	2	-	-	2

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	C.209.4	Develop and learn methods for testing enzyme activity	3	2	1	-	2	2	1	2	-	-	2
	C.209.5	Demonstrate and related methods used in polymer degradation	3	2	1	-	2	2	-	2	-	-	2
(BP-210P) COMPUTER APPLICATION IN PHARMACY	C.210.1	Create HTML web-page	3	1	1	3	1	1	-	2	1	-	1
	C.210.2	Design questionnaire, forms, and reports using MS-Access	3	1	1	3	1	1	-	2	1	-	1
	C.210.3	Create invoice tables databases using MS-Access	3	1	1	3	1	1	-	2	1	-	1
	C.210.4	Develop and learn methods for content export using web-pages	3	1	1	3	1	1	-	2	1	-	1
	C.210.5	Demonstrate and relate methods for drug information retrieval using online tools	3	1	1	3	1	1	-	2	1	-	1

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B. Pharmacy II Year / III Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name	Course Outcome		3	2	-	-	1	1	-	2	-	-	3
(BP-301T) PHARMACEUTICAL CHEMISTRY –III (ORGANIC CHEMISTRY-III)	C.301.1	Interpret the structure reactions and substituents of Benzene and its derivative	3	2	-	-	1	1	-	2	-	-	3
	C.301.2	Explain the methods of preparation, reactions and the type of isomerism of the Phenol, aromatic amines and aromatic acids.	3	2	-	-	1	1	-	2	-	-	3
	C.301.3	Elaborate various reactions and properties of fats and oils	3	2	-	-	1	1	-	2	-	-	3
	C.301.4	Explain synthesis and uses of poly nuclear hydrocarbons	3	2	-	-	1	1	-	2	-	-	3
	C.301.5	Label general methods of preparation and reactions of Cylco alkanes compounds	3	2	-	-	1	1	-	2	-	-	3
(BP-302T) Physical Pharmaceutics I	C.302.1	Outline solubility and its application in pharmaceuticals	3	2	3	1	-	1	2	1	2	-	2
	C.302.2	Explain the basic concept of states of matter with its properties and the Physicochemical properties of drug	3	2	3	1	-	1	2	1	3	-	2

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		molecules.											
	C.302.3	Explain the role of surfactant, surface tension, interfacial tension, and related properties the of the drug during formulation.	3	2	3	1	-	1	2	1	2	-	2
	C.302.4	Explain the concept of complexation and protein binding.	3	2	3	1	-	1	2	1	1	-	2
	C.302.5	Apply principles of pH, buffers, and isotonic solutions.	3	2	3	1	-	1	2	1	1	--	2
(BP-303T) Microbiology	C.303.1	Explain methods of identification, cultivation, and preservation of various microorganisms (Prokaryotes, Eukaryotes, and Bacteria)	3	2	3	1	-	1	1	1	1	1	3
	C.303.2	Interpret the importance and implementation of sterilization and aseptic conditions in pharmaceutical processing and industry	3	3	3	3	-	1	2	2	1	3	2
	C.303.3	Define fungi and viruses and sterility testing of pharmaceutical products	3	1	1	3	-	1	1	1	2	2	2
	C.303.4	Outline the cell culture technology, aseptic area, and methods of standardization.	3	3	3	3	-	2	1	1	2	3	2

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	C.303.5	Illustrate methods of identification, cultivation, sub culturing, and preservation of various microorganisms, growth of animal cells, and application in the pharmaceutical Industry.	3	3	3	3	-	2	1	1	2	2	2
(BP-304T) Pharmaceutical Engineering	C.304.1	Explain various operations of the flow of fluids, size reduction & size separation.	3	2	1	1	-	1	2	1	2	-	2
	C.304.2	Relate the principles and operations involved in heat transfer, Evaporation, and Distillation.	3	2	1	1	-	1	2	1	3	-	2
	C.304.3	Explain the concept of drying and mixing with the equipment used.	3	2	1	1	-	1	2	1	2	-	2
	C.304.4	Outline the concept of Filtration and centrifugation with the equipment used.	3	2	3	1	-	1	1	1	1	-	2
	C.304.5	Explain the concept of material of pharmaceutical plant construction, corrosion, and its prevention.	3	2	3	1	-	1	1	1	1	-	2
(BP-305P) Pharmaceutical organic chemistry (practical)	C.305.1	Apply the common laboratory techniques like recrystallization and steam distillation.	3	2	1	-	2	2	1	2	-	-	2
	C.305.2	Demonstrate the significance and process of determination of oil values including acid values,	3	2	1	-	2	2	1	2	-	-	2

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		saponification values and iodine value											
	C.305.3	Outline the synthesis of basic organic compounds by various reaction mechanisms including nitration, bromination, acetylation	3	2	1	-	2	2	1	2	-	-	2
	C.305.4	Outline the synthesis of basic organic compounds by various reaction mechanisms including hydrolysis, oxidation, and some name reactions	3	2	1	-	2	2	1	2	-	-	2
(BP-306P) Physical Pharmaceutics I (practical)	C.306.1	Explain a basic understanding of solubility determination.	3	2	3	1	-	1	2	1	2	-	2
	C.306.2	Demonstrate the significance and process of determination of pKa and partition coefficient, and surface tension by various methods.	3	2	3	1	-	1	2	1	3	-	2
	C.306.3	Determine the stability of the compounds by various methods	3	2	3	1	-	1	2	1	2	-	2
	C.306.4	Determination of HLB number and CMC of surfactants.	3	2	3	1	-	1	2	1	1	-	2
(BP-307P) Microbiology (practical)	C.307.1	Demonstrate and choose amongst different types of equipment and processing	3	2	2	3	-	2	2	1	1	2	2

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	C.307.2	Illustrate the art of sterilization of glassware and preparation and sterilization of media.	3	2	2	2	-	1	2	1	1	2	2
	C.307.3	Illustrate the process of culturing, sub-culturing, and multiple streaking methods	3	3	3	3	-	1	1	1	1	1	1
	C.307.4	Make use of various staining techniques (simple, grams, and acid-fast staining) and the hanging drop method for determining the motility of microorganisms.	2	3	3	1	-	1	2	1	1	2	1
(BP-308P) Pharmaceutical Engineering (practical)	C.308.1	Determine the radiation constant of different materials used in pharmaceutical manufacturing	3	2	1	1	-	-	-	1	-	-	1
	C.308.2	Demonstrate the various factors influencing filtration and evaporation rate	3	2	1	1	-	-	-	1	-	-	1
	C.308.3	Explain humidity & drying and construct a psychometric chart and drying curve	3	2	1	1	-	-	-	1	-	-	1
	C.308.4	Demonstrate the principle and working of ball mill and sieve shaker	3	2	1	1	-	-	-	1	-	-	1

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B. Pharmacy III Year / IV Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name		Course Outcome	3	1				1		2			3
(BP-401T) PHARMACEUTICAL ORGANIC CHEMISTRY	C.401.1	Relate the mechanism of stereoisomerism with organic compounds	3	1				1		2			3
	C.401.2	Illustrate basic concepts of Geometrical isomerism of various organic compounds	3	1				1		2			3
	C.401.3	Classify and study the nomenclature of heterocyclic compounds	3	1				1		2			3
	C.401.4	Summarize the methods of preparation and properties of organic compounds	3	1				1		2			3
	C.401.5	Recall reactions of synthetic importance	3	1				1		2			3
(BP-402T) MEDICINAL CHEMISTRY	C.402.1	Recall the concept of physiochemical properties of drug molecules in relation to drug activity.	3	1	1			1		2	2		3
	C.402.2	To assess Structural Activity relationship, mechanism of action, classification, and uses of drugs acting on the Autonomic nervous system.	3	1	1			1		2	2		3
	C.402.3	To classify sympathetic and parasympathetic agents with SAR of selective drugs	3	1	1			1		2	2		3

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	C.402.4	To extend the knowledge of drugs acting on Central Nervous Systems like sedatives, antipsychotics anticonvulsants etc.	3	1	1			1		2	2		3
	C.402.5	To explain the Structural Activity relationship, mechanism of action, classification, and uses of General Anaesthetics	3	1	1			1		2	2		3
(BP-403T) PHYSICAL PHARMACEUTICS –II	C.403.1	Classify the types of dispersions such as coarse and colloidal and to discuss their importance and properties and explain Suspension and Emulsion with their properties and evaluation parameters.	3	2	2	1	1			2			2
	C.403.2	Explain rheology, different flow systems, and their importance in pharmaceuticals.	3	2	2	1	1			2			2
	C.403.3	Examine the role of surfactant, surface tension, interfacial tension, and related properties of the drug during formulation.	3	2	2	1	1			2			2
	C.403.4	Illustrate the concept of micromeretics	3	2	2	1	1			2			2
	C.403.5	Demonstrate the role of various physical and chemical factors in drug stability and reaction kinetics	3	2	2	1	1			2			2
(BP-404T) PHARMACOLOGY	C.404.1	Infer principle concept of pharmacology	3	2	2	1	1			2			2
	C.404.2	Relate and develop fundamentals of pharmacokinetics and pharmacodynamics	3	2	2	1	1			2			2
	C.404.3	explain the pharmacology of drugs acting on the peripheral nervous system	3	2	2	1	1			2			2
	C.404.4	Make use of pharmacology to study drug activity in CNS	3	2	2	1	1			2			2

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	C.404.5	Apply basic knowledge of pharmacology in the prevention and treatment of various diseases	3	1	2	1	1			2			2
(BP-405T) PHARMACOGNOSY and PHYTOCHEMISTRY- I	C405.1	Summarize general introduction of pharmacognosy, classification of crude drugs, and quality control of drugs of natural origin	3	1	1			1	1	2	1	1	2
	C405.2	Explain the cultivation, collection, processing, and storage of drugs of natural origin	3	1	1			1	1	2	1	1	2
	C405.3	Elaborate on the concept of plant tissue culture	3	1	1			1	1	2	1	1	2
	C405.4	Illustrate different systems of medicines and classification of secondary metabolites	3	1	1			1	1	2	1	1	2
	C405.5	Discuss pharmacognostic parameters of primary metabolites, plant products enzymes, proteins, enzymes, and marine drugs	3	1	1			1	1	2	1	1	2
(BP-409P) PHARMACOGNOSY -I	C.409.1	Understand the concept of swelling and foaming index	3	1	1			1					3
	C.409.2	Examine the chemical properties of different secondary metabolites	3	1	1			1					3
	C.409.3	Estimate different leaf constants	3	1	1			1					3
	C.409.4	Appraise the knowledge of quantitative microscopy	3	1	1			1					3

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	C.409.5	Analyse the crud drugs on basis of physical parameters	3	1	1			1					3
(BP-406P) MEDICINAL CHEMISTRY- I	C.407.1	Assess synthesis and characterization of Benzimidazole having antimicrobial property	3	2	2		2	2	1	2	1		2
	C.407.2	Examine the antipyretic property of 1,3-pyrazole with Synthesis and Characterization	3	2	2		2	2	1	2	1		2
	C.407.3	Assess different drugs with Assay	3	2	2		2	2	1	2	1		2
	C.407.4	Estimate partition coefficient of any two drugs	3	2	2		2	2	1	2	1		2
(BP-407P) PHYSICAL PHARMACEUTICS II	C405.1	Summarize general introduction of pharmacognosy, classification of crude drugs, and quality control of drugs of natural origin	3	2	1			1	1	2	1	1	2
	C405.2	Explain the cultivation, collection, processing, and storage of drugs of natural origin	3	2	1			1	1	2	1	1	2
	C405.3	Elaborate the concept of plant tissue culture	3	2	1			1	1	2	1	1	2
	C405.4	Illustrate different systems of medicines and classification of secondary metabolites	3	2	1			1	1	2	1	1	2
	C405.5	Study of pharmacognostical parameters of primary metabolites, plant products enzymes, proteins, enzymes, and marine drugs	3	2	1			1	1	2	1	1	2
(BP-408P) PHARMAC	C408.1	Identify and study common laboratory animals	3	2	1			1	1	2	1	1	2

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OLOGY	C408.2	Analyze commonly used instruments in experimental pharmacology	3	2	1			1	1	2	1	1	2
	C408.3	Illustrate the maintenance of laboratory animals	3	2	1			1	1	2	1	1	2
	C408.4	Explain common laboratory techniques like blood withdrawal etc	3	2	1			1	1	2	1	1	2
	C408.5	Estimate the effect of drugs with different animal models	3	2	1			1	1	2	1	1	2

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Course Outcome-Program Outcome

B. Pharmacy III Year / V Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name	Course Outcome												
Medicinal Chemistry- II (BP 501T)	C 501.1	Summarize the chemistry of antihistaminic, H1 - and H2 antagonists, Gastric Proton pump inhibitors, and antineoplasticdrugs with respect to their pharmacological activity.	3	2	2	1		1	1	2	1		2
	C501.2	Outline the drug metabolic pathway, adverse effects, and therapeutic value of anti-anginal, diuretics, and antihypertensivedrugs with theirstructure-activity relationship.	3	1	2	2		1	1	2	1		2
	C501.3	Know the structure-activity relationship of antiarrhythmic, antihyperlipidemic, coagulant –anticoagulants and drugs used in congestive heart failure	3	2	2	2		1	1	2	1		2
	C501.4	Summarize the synthesis and effects of drugs acting on the endocrine system	3	1		2		1	1	2	1		2
	C501.5	Explain the chemistry andphysicochemicalproperties and metabolism of the antidiabetic and local anesthetic drugs.	3	2		1		2	1	2	1		2

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Industrial Pharmacy- I (BP502T)	C 502.1	Analyze various Pre formulation parameters for different dosage forms (solid, liquid, etc.) including their physical and chemical properties.	3	2	2	2		1	1				2
	C502.2	Explain formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of tablets, capsules, pellets, and liquid orals.	3	1	1	1		2	1				2
	C502.3	Outline formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of parenteral and ophthalmic	3	1	1	1		2	1				2
	C502.4	Formulate various cosmetics preparations like lipsticks, shampoos, cold creams, vanishing creams, etc.	3	1		1		2	1				2
	C502.5	Define, evaluate and perform quality control and stability studies of pharmaceutical aerosols. Explain various pharmaceutical packaging materials, containers, their quality-control tests, and stability aspects	3	1		1		2	1				2
Pharmacology –II (BP503T)	C 503.1	Demonstrate the mechanism of drug action and its relevance in the treatment of the cardiovascular system.	3	1	1	1	1	3	3		2		3
	C503.2	Explain the mechanism of drug action and its relevance in the treatment of the cardiovascular and urinary system.	3	1	1	1	1	3	3		2		3

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	C503.3	Illustrate the correlation of pharmacology with related to Autacoids and related drugs.	3	1	1	1	1	3	3		2		3
	C503.4	Relate and Impart the fundamental knowledge of the various aspect of a drug acting on the endocrine system	3	1	1	1	1	3	3		2		3
	C503.5	Outline and emphasis the basic concept of bioassay.	3	1	1	1	1	3	3		3		3
Pharmacognosy and Phytochemistry-II (BP504T)	C 504.1	Develop the knowledge about secondary metabolites produced in crude drugs. Outline the utilization of radioactive isotopes.	3		2	2		2	2	1	2	2	3
	C504.2	Explain the general introduction, composition, chemistry, therapeutic use, and application of secondary metabolites. Alkaloids, steroids, etc.	3		2			2	2	1	2	2	3
	C504.3	How to carry out the identification, isolation and analysis of Phytoconstituents	3		2	2		2	2	1	2	2	2
	C504.4	Relate Industrial production, estimation and utilization of Phytoconstituents	3		2	2		2	2	1	3	3	3
	C504.5	Summarize the basics of phytochemistry and herbal drug technology	3		2	2		2	2	1	2	3	3
Pharmaceutical	C 505.1	Rephrase and impart the knowledge of the drug and cosmetic act and its rule.	3					3	3	1	3		2

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Jurisprudence (BP505T)	C505.2	Detail study of the various parameter ofthe drug and cosmetic act and rules including various schedules, sale of drugs, labeling and packaging of drugs, administration of the act and rules.	3					3	3	1	3		2
	C505.3	Outline Pharmacy act with reference to medicinal and toilet preparation act, Narcotic Drugs and psychotropic substances act.	3					3	3	1	3		2
	C505.4	Summarize the study of salient features of drugs and magic remedies act and its rules, Prevention of cruelty to animal act - 1960 along with National Pharmaceutical pricing authority	3					3	3	1	3		2
	C505.5	Define pharmaceutical legislation, Code of ethics, medical termination of pregnancy act, Right to information act and Introduction to IPR during pharmaceutical practice.	3					3	3	1	3		2
Industrial Pharmacy - I (BP506P)	C 506.1	Explain the preformulation study of paracetamol/ aspirin or any drug	3	1	2	2	1	2					3
	C5062	Formulate and evaluate solid dosage form (Paracetamol tablet/ Aspirin Tablet/ film coating tablet or granules / Tetracyclines capsules)	3	2	2	3	1	3	2				3
	C506.3	Formulate liquid dosage form (Gluconate injection, Ascorbic acid injection and eye drop)	3	2	2	1	1	3	2				3

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	C506.4	Formulate semisolid dosage form (eye ointment, cold cream and vanishing cream)	3	2	2	1	1	3	1			3
	C506.5	Evaluation of glass test as per IP	3	1	2	1	1	2	2			3
Pharmacology –II (BP507P)	C 507.1	Relate the techniques and mechanism DRC of various drugs.	3	1	2	3	1	3	3	3		3
	C507.2	Demonstrate isolation of different organs from the laboratory animal by simulated experiments.	3	1	2	3	1	3	3	3		3
	C507.3	Demonstrate isolation of different tissues from the laboratory animal by simulated experiments.	3	1	2	3	1	3	3	3		3
	C507.4	Demonstrate various receptor actions using isolated tissue preparation	3	1	2	3	1	3	3	3		3
Pharmacognosy and Phytochemistry- II (BP508P)	C 508.1	Evaluate the plants and phytochemicals from plant tissue culture on the basis of morphology, histology and characteristics	3	1	2	2	1	1	1	2		2
	C508.2	Demonstrate isolation and detection of active constituents of various plants.	3	1	2	2	1	1	1	2		2
	C508.3	Demonstrate identification, isolation and analysis of Phytoconstituents	3	1	2	2	1	1	1	2		2
	C508.4	Demonstrate separation and detection of phytoconstituents with the help of TLC and paper chromatography	3	1	2	2	1	1	1	2		2
	C508.5	Analyze the crude drug by chemical test	3	1	2	2	1	1	1	2		2

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B. Pharmacy III Year / VI Sem			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
Course code/ Course name	**Course Outcome**												
(BP 601T) Medicinal Chemistry –III	C601.1	Outline the fundaments of medicinal chemistry, SAR and synthesis of classical antibiotics like β lactam antibiotics, aminoglycosides and tetracyclines	3	2	1			1		2	1		2
	C601.2	Classify, and outline the medicinal chemistry, SAR and synthesis of antibiotics, chemotherapeutic agents like macrolides, anti-malarial and prodrugs.	3	2	1			1		2	1		2
	C601.3	Elaborate the medicinal chemistry, SAR and synthesis of antiviral, antitubercular drugs and urinary tract anti-infectives.	3	2	1			1		2	1		2
	C601.4	Explain the medicinal chemistry, SAR and synthesis of antifungal drugs, anthelmintics, antiprotozoal and sulphonamide class of drugs.	3	2	1			1		2	1		2

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	C601.5	Explain the concepts of drug design, QSAR and combinatorial chemistry.	3	2	1			1		2	1		2
Pharmacology III (BP-602T)	C602.1	Explain the pharmacology of drugs acting on the Respiratory and Gastrointestinal system	3	1	2		1		1	2	1		1
	C602.2	Explain the mechanism of drug action and its relevance in the treatment of different infectious diseases and cancer	3	1	2		1		1	2	1		1
	C602.3	Describe the chemotherapy of antitubercular agents, antifungal, antiviral, anthelmintics and antiamoebic agents.	3	1	2		1		1	2	1		1
	C602.4	Describe the chemotherapy forUTI, STD and immunopharmacology	3	1	2		1		1	2	1		1
	C602.5	Comprehend the principles of toxicology and treatment of various types of poisoning and the concept of immunopharmacology and chronopharmacology	3	1	2		1		1	2	1		1
Herbal Drug Technology (BP-603T)	C603.1	Impart knowledge of herbs as raw materials, Biodynamic agriculture and the Indian System of Medicine.	3	1	2			2	1	2	2	2	2
	C603.2	Outline the general market, scope, and types of products available in neutraceuticals and herb-drug-food interactions.	3	1	1			2	1	2	2	2	2
	C603.3	Explain the sources of and description of herbal cosmetics, herbal excipients and herbal formulations.	3	1	1			2	1	2	2	1	2

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	C603.4	Analyze and developed Good manufacturing practices (GMP), patenting and regulatory aspects of herbal drugs.	3	2	1			2	1	2	2	1	2
	C603.5	Outline of plant-based industries and institutions involved in work on medicinal and aromatic plants in India along with schedule-T of drugs and cosmetics act.	3	1	1			2	1	2	2	1	2
Biopharmaceutics and Pharmacokinetics (BP-604T)	C604.1	Explain the concepts of biopharmaceutics and their applications in pharmaceutical development.	3	2	2	2		1	1	1			2
	C604.2	Describe the kinetics of elimination. Explain the concept of bioavailability and Bioequivalence	3	1	2	1		2	1	1			2
	C604.3	Learn the use of plasma-level time data to calculate secondary pharmacokinetic parameters	3	1	2	1		1	1	1			2
	C604.4	Explain the concept of multicompartment models.	3	1	2	2		1	1	1			2
	C604.5	Appraisenon-linear pharmacokinetics with examples of drugs.	3	2	2	1		2	1	1			2
Pharmaceutical Biotechnol	C605.1	Elaborate on the importance of enzymes biotechnology, Biosensors, Protein Engg, use of microbes in pharmaceutical industries	3			1	3	1	1	3	1	2	3

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ogy (BP-605T)	C605.2	Learn the use of genetic engineering techniques for the production of pharmaceuticals	3	2	2	3		1	2	1	3	2	2
	C605.3	outline the concept of Humoral Immunity and cellular immunity	3	1	2	3		2	2	1	2	2	2
	C605.4	Learn and outline the basic principles of immunology and how it is used for the production of vaccines and blood preservation techniques	3	3	2	3	1	2	2	3	2	3	2
	C605.5	Appraise the use of fermentation technology in the pharmaceutical industries	3	2	2	3	1	3	2	2	2	3	3
Pharmaceutical Quality Assurance (BP-606T)	C606.1	Outline the cGMP, TQM, QbD, ISO,and NABL accreditation aspects of the pharmaceutical industries	3	2	2			1	2	1			2
	C606.2	Explain the important aspects of organization and personnel, premises and equipment and raw material.	3	2	2			1	2	1			2
	C606.3	Learn and outline the basic principles guidelines issued by various regulatory agencies on quality control and GLP	3	2	2			1	2	1			2
	C606.4	Appreciate the importance of documentation in the pharmaceutical industry.	3	2	2			1	2	1			2
	C606.5	Appraise calibration and validation techniques	3	2	2			1	2	1			2

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Medicinal Chemistry –III (Practical) (BP-607P)	C607.1	Design and build drugs along with their intermediates	3	2	2		2	1	2	2			2
	C607.2	Perform and understand the assay methods of some important antibiotics	3	2	2		2	1	2	2			2
	C607.3	Perform the synthesis of important intermediates and drugs using microwave irradiation methods	3	2	2	2	2	1	2	2			2
	C607.4	Learn how to use the computer programs to draw chemical structures	3	2	2	2	2	1	2	2			2
	C607.5	Learn, apply and appraise Lipinski's rule of five using computer-assisted methods	3	2	2		2	1	2	2			2
Pharmacology (Practical) (BP-608P)	C608.1	Outline the concept of dose calculation in pharmacology experiments	3	2	2	1	1		1	2			2
	C608.2	Demonstrate the action of drugs on the respiratory and gastrointestinal tract using software	3	2	2	1	1		1	2			2
	C608.3	Determine acute toxicity of drugs by given data	3	2	2	1	1		1	2			2
	C608.4	Illustrate calculation of Pharmacokinetic parameters	3	2	2	1	1			2			2
	C608.5	Learn the application of biostatistics methods in experimental pharmacology	3	2	2	1	1			2			2
Herbal Drug	C609.1	Perform preliminary phytochemical screening of crude drugs	3	2	2	1		2	1	2		1	3

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Technology (Practical) (BP-609P)	C609.2	Evaluate the excipients of natural origin	3	2	2	1		2	1	2		1	3
	C609.3	Perform monograph analysis of some pharmacopoeial drugs	3	2	2	2		2	1	2		1	3
	C609.4	Prepare and standardize formulations containing crude drug extracts	3	2	2	2		2	1	2		1	3
	C609.5	Analyze crude drugs for secondary metabolite content	3	2	2	2		2	1	2		1	3

B. Pharmacy III Year / VII Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name	**Course Outcome**												
(PY 701T) Instrumental methods of analysis	C.701.1	Extend knowledge of the introduction, instrumentation and applications of UV Visible Spectroscopy and Fluorimetery.	3	2	2	3	2	1		2	1		3
	C.701.2	Discuss the basic fundamental aspects of quantitative & qualitative analysis of drugs using various analytical instruments like IR Spectroscopy, Flame Photometry, atomic absorption Spectroscopy and Nepheloturbidometery.	3	2	2	3	2	1		2	2		3
	C.701.3	Illustrate the principle and methodology of chromatographic separation by	3	2	3	3	2	1	2	2	1	1	3

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		various techniques like Adsorption and partition column chromatography, TLC, Paper chromatography and Electrophoresis with their applications											
	C.701.4	Demonstrate the principle, instrumentation and analysis of compounds using GC and HPLC.	3	3	3	3	2	2	1	2	1	1	3
	C.701.5	Explain the mechanism, instrumentation and applications of separation techniques i.e, Ion exchange chromatography, Gel chromatography and affinity chromatography.	3	3	3		2	1	1	2	1	1	2
(PY 702T) Industrial Pharmacy II	C.702.1	Define the process of pilot plant scale-up of techniques	3	3	1		1	2	2		2		3
	C.702.2	Outline the process of technology transfer from lab scale to commercial batch.	3	3	1		1	2	2		1		3
	C.702.3	Interpret regulatory affairs and regulatory requirements for the approval process of drug products.	3	2	1		1	2	2		2	1	3
	C.702.4	Define quality management and certifications for quality like QbD, OOS, ISO, GLP etc.	3	2	1		1	2	2		2	1	3
	C.702.5	Develop concepts of different Laws and Acts that regulate the pharmaceutical industry as per Indian Regulatory	3	2	1		1	2	2		2	1	3

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		Requirements like CDSCO, COPP etc											
(PY 703T) Pharmacy Practice	C.703.1	Outline the organization, layout, and roles of the hospital and hospital pharmacy and community pharmacy. Analyzing the adverse drug reactions and managing them.	3	1	1	1	2	3	1	2	3		3
	C.703.2	Construct the concepts of drug distribution in hospitals and plan the hospital formulary. Infer the need for TDM and summarizing drug therapy of patient through medication chart review and community pharmacy management.	3	3	2	2	2	2	1	2	3		3
	C.703.3	Construction of Pharmacy and Therapeutics Committee, Interpretation of the sources of drug information services and prescription orders. Need for patient counseling and Importance of training and education program in hospital, Prescribed medication order and communication skills.	2	1	1	1	2	3		2	3		3
	C.703.4	Plan of budget preparation and its implementation, inclinical pharmacy. Identifying the OTC sales and Rational use of drugs.	2	1	1	1	2	3		2	3		3

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	C.703.5	Explain the drug store management and inventory control. Interpretation of laboratory results of specific diseases and summarizing the investigational use of drugs.	2	1	1	1	2	3		2	3		3
(PY 704T) Novel Drug Delivery System	C.704.1	Relate the principles and rationale of drug delivery with the current and future approaches to controlled drug delivery and drug targeting using Polymers	3	2	1	3	1			1			1
	C.704.2	Summarize microencapsulation and fabrication of mucosal and implantable drug delivery system	3	2	1	3	1			1			1
	C.704.3	Demonstrate development of site-specific drug delivery like nasopulmonary, transdermal drug delivery systems, GRDDS	3	2	1	3	1			1			1
	C.704.4	Illustrate the targeted drug delivery system using liposomes, nanoparticles etc.	3	2	1	3	1			1			1
	C.704.5	Distinguish site-specific drug delivery like ocular and intrauterine drug delivery systems.	3	2	1	3	1			1			1
(PY 705P) Instrumental	C.705.1	Determination of absorption maxima of various organic compounds	3	3	3	3	2	2	1	2			2

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methods of analysis (Practical)	C.705.2	Perform assay and simultaneous estimation by UV spectroscopy	3	3	3	3	2	2	1	2			2
	C.705.3	Separation of compounds by Paper chromatography and TLC	3	3	3	3	2	2	1	2			2
	C.705.4	Demonstrate the analysis of compounds using spectroscopic methods	3	3	3	3	2	2	1	2			2
	C.705.5	Demonstration of instrumentation of HPLC & Gas Chromatography	3	3	3	3	2	2	1	2			2

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Course Outcome-Program Outcome

B. Pharmacy IV Year / VIII Sem			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course code/ Course name	Course Outcome												
(BP 801) Biostatistics and Research Methodology	C.801.1	Know the various statistical technique, measures of central tendency, measures of dispersion and correlation	3	1	3	2	1			1			2
	C.801.2	Solve regression, probability and parametric test	3	1	3	2	1			1			2
	C.801.3	Appreciatenon-parametric test need for research, graph and designing methodology	3	1	3	2	1			1			2
	C.801.4	Know the operation of regression modelling and practical components of industrial and clinical trial problems	3	1	3	2	1			1			2
	C.801.5	Know design and analysis of experiment	3										2
(BP 802) Social and Preventive Pharmacy	C.802.1	Know the concept of health and disease,health education ,sociology, and hygiene	3	1	1	1	1		1	2	3		2
	C.802.2	Explain preventive medicines	3	1	1	1	1		1	2	3		2

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	C.802.3	Outline the National health program, objective, functioning, and outcome	3	1	1	1	1		1	2	3		2
	C.802.4	Outline the National health program with reference to programs for mother and child, family welfare, tobacco control malaria prevention, health care for elderly and the role WHO	3	1	1	1	1		1	2	3		2
	C.802.5	Explain community services in rural, urban, and school health	3	1	1	1		1	1	2	3		2
(BP 809ET) Cosmetic Science	C.809.1	Classify cosmetic and cosmeceutical products	3	1	1			1	2	2	2		2
	C.809.2	Explain principles of formulation and building blocks of skincare products, antiperspirants, deodorants, and hair care products	3	2	2			1	1	2	2		2
	C.809.3	Explain the role of herbs in cosmetic and analytical cosmetics	3	1	2			1	1	2	2		2
	C.809.4	Outline principles of cosmetic evaluations	3	2	2			1	2	2	2		2
	C.809.5	Explain problems associated with hair and skin	3	1	3			2	1	2	1		2
(BP 812ET)Dietary Supplements	C.812.1	Explain functional foods, nutraceuticals, and dietary supplements	3	1	1	1	1			1		1	2

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Course Outcome-Program Outcome

and Nutraceuticals	C.812.2	Appreciate the components in dietary supplements and the application	3	1	1	1	1			1		1	2
	C.812.3	Know about free radicals, its production, and reaction in the diet	3	1	1	1	1			1		1	2
	C.812.4	Outline free radicals in various diseases, antioxidants, and functional food for chronic diseases prevention	3	1	1	1	1			1		1	2
	C.812.5	appreciate the regularity and commercial aspect of dietary supplements including health claims	3	1	1	1	1			1		1	2
(BP 805) Practice School	C.805.1	outline the basics of Practices in pharmacy	3	3	3	3	3	3	3	3	3	3	3
	C.805.2	Know about E-Medicines in India	3	3	3	3	3	3	3	3	3	3	3
	C.805.3	Explain of Arogya and Janaushadhi Scheme of drug distribution.	3	3	3	3	3	3	3	3	3	3	3
	C.805.4	Elaborate learning of drug distribution systems of various pharmacies.	3	3	3	3	3	3	3	3	3	3	3
	C.805.5	Survey and submit a detailed printed report help in the evaluation of work done.	3	3	3	3	3	3	3	3	3	3	3

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M. Pharmacy (PCS) PEO

To make post-graduates working as successful and advanced practitioners of Pharmacy profession

To make them well versed in core technical skills and knowledge with an attitude of service and commitment for social duties.

To develop the urge and inclination for output-oriented research

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M. Pharm (PCS) PSO

PSO I –Create a talent pool that can perform research on various aspects of dosage form design and development and implement the knowledge in formulating the best suitable dosage form to provide high quality medicines to the society

PSO II –Equip the students with strong fundamental concept and high technical competence in novel drug delivery system to serve the need of F&D and Production department of pharmaceutical industry.

PSO-III Able to write, interpret and communicate effectively and scientifically to accomplish the requirements of Research and Development and regulatory department of Pharmaceuticals.

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M. Pharm. (Pharmaceutics) PO

PO1: An ability to independently carry out pharmaceutical research and development work to solve practical problems related to preformulation, formulation design and evaluation, novel drug delivery systems.

PO2: Ability to write and present a research report by conceptualizing research ideas, delivering effective presentations, and its documentation.

PO3: Acquire in-depth knowledge in pharmaceutics with emphasis on preformulation, formulation development and its evaluation, and new drug delivery systems including wider and global perspective, with an ability to discriminate, evaluate, analyze and synthesize existing and new knowledge, and integration of the same for enhancement of knowledge.

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M. Pharma I Year / I Sem		
Course code/ Course name	**Course outcomes**	
MPY 101 Modern Analytical Technique	MPY101.1	Understand the basic knowledge of single and multiple component assay of pharmaceuticals
	MPY 101.2	Developing basic practical skills using instrumentation techniques
	MPY 101.3	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	MPY 101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances
	MPY 101.5	Applying the knowledge learned in developing new procedures and comparing various methods of analysis
MPY 102 Biotechnology and bioinformatics	MPY102.1	Understand the Structure & Function of DNA, DNA Replication & Repair, Expression of Genetic Information, Function of RNA and translation, Post translational modification
	MPY 102.2	Concept of recombinant DNA technology knowledge of Restriction enzymes, Polymerase Chain reaction. Blotting techniques, DNA sequencing, and Pharmaceutical applications.
	MPY 102.3	Understanding the gene therapy and its pharmaceutical significance.
	MPY 102.4	Study of Manufacturing and storage of vaccines. Application of immunology for the development of new

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		vaccines. Gaining knowledge of monoclonal antibodies & hybridoma technology & its Applications.
	MPY 102.5	Study of cell organization and reproduction. Understanding the communication between cell and their environment.
	MPY102.6	Application of knowledge of cancer and its treatment strategies.
	MPY102.7	Understanding the molecular mechanism o disease and in vivo transgenic models, Genomic protein targets and recombinant therapeutics. Its application for rational drug design, Gene therapy & DNA/ RNA targeted therapeutics.
	MPY102.8	Exploration of biological data bases to study Sequence analysis, Protein structure, Genetic and physical mapping and importance in pharmaceutical research.
	MPY102.9	Learning of handling the biological data by descriptive statistics, Normal distribution, Probability distribution and Sampling plans.
MPY 103 Drug Regulatory Affairs, IPR and Quality assurance Techniques	MPY103.1	Understanding of regulatory requirements of pharmaceutical documentation
	MPY103.2	Basics of documentation for pharmaceutical operations
	MPY103.3	Knowledge of documents for R&D and quality operations
	MPY103.4	Understanding of validation documents for non-sterile formulations
	MPY103.5	Well versed with ICH guidelines for pharmaceutical quality system
MPY 104 Product Development	MPY104.1	To obtain knowledge of physical, chemical, and pharmaceutical factors affecting dosage forms .
	MPY104.2	Idea of drug excipient, excipient-excipient interactions affecting formulations

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and Formulation	MPY104.3	Attain knowledge of solubilisation and methods to enhance solubility.
	MPY104.4	To study dissolution apparatus dissolution testing of different types of dosage formulation and in-vitro and in-vivo correlation.
	MPY104.5	To update with latest tablet technology and automation in manufacturing process.
	MPY104.6	To get an insight of recent formulation strategies for parenteral and ophthalmic products.
	MPY104.7	Knowledge of pharmaceutical grade polymers and uses in formulation development.
	MPY104.8	To obtain knowledge of neutraceuticals and their usefulness in prevention of diseases.
	MPY104.9	To Obtain knowledge of different types of packages and their quality tests.
	MPY104.10	To understand importance of stability study programmes for formulations and ICH guidelines for stability.
	MPY104.11	To explore application of computers in drug development process.

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M. Pharma I Year / II Sem (Pharmaceutics)		
Course code/ Course name	**Course outcomes**	
MPY 201Pcs Biopharmaceutics and pharmacokinetics (Ad. Pharmaceutics –I)	MPY201.1	Development of ability to understand the concept of therapeutic response and toxicity, therapeutic index, therapeutic window, factors affecting plasma concentration.
	MPY 201.2	To summarize the basics of Compartment modeling including one, two and multiple compartment models and determination of various pharmacokinetic parameters.
	MPY 201.3	To relate the concept of Non-linear pharmacokinetics and recognition of non-linearity, circadian rhythm and chrono pharmacokinetics, other reasons for non-linearity.
	MPY 201.4	Better explain the concepts physiologic pharmacokinetic model and to define mean time (MRT) statistical moment theory, Mean absorption time (MAT) Mean Dissolution time (MDT).
	MPY 201.5	To recall the concepts of absorption distribution and renal excretion, hepatic clearance and elimination, bioavailability and bioequivalence
MPY 202 Pcs Novel drug Delivery System-I (Ad. Pharmaceutics –II)	MPY202.1	To Obtain knowledge basic concept of novel drug delivery system
	MPY 202.2	To summarize the basic techniques of microencapsulation
	.MPY 202.3	Summarize the study of Transdermal Drug Delivery System (TDDS)
	MPY 202.4	Better explain the Implants and Inserts

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	MPY 202.5	Knowledge of Osmotically Regulated Systems
MPY 203 Pcs Novel drug Delivery System-II (Ad. Pharmaceutics –III)	MPY203.1	Summarize the molecular basis of targeted drug delivery
	MPY 203.2	Development of ability to understand the concept of liposomes, nanoparticles and niosomes in details
	MPY 203.3	To summarize the basic concept Resealed Erythrocytes, Dendrimers and Multiple emulsions?
	MPY 203.4	Better explain Aquasomes, Pharmacosomes and Transfersomes in details
	MPY 203.5	Knowledge of Peptide and Protein drug Delivery
MPY 204 Pcs Pharmaceutical Packaging Technology (Ad. Pharmaceutics – IV)	MPY 204.1	Understand the concept of pharmaceutical packaging and its function.
	MPY 204.2	Importance of documentation.
	MPY 204.3	Understand the scope of quality certifications applicable to pharmaceutical industries
	MPY 204.4	Understand the various quality control tests for packaging material.
	MPY 204.5	Understand the procedure of sterilization and stability of packaging material.
MPY 205 Pcs Lab Work	MPY 205.1	Estimate general considerations, methods of preparation, characterization and applications of Liposomes, Niosomes, Resealed Erythrocytes, Nanoparticles, Solid Lipid Nanoparticles, Dendrimers, Multiple emulsions and Submicron emulsion

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	MPY 205.2	Formulate and evaluate novel drug delivery systems like sustained release matrix tablets, Mucoadhesive tablets, Microencapsules and Trans dermal patches
	MPY 205.3	Perform the Preformulation studies of tablet dosage form and to Perform In –vitro dissolution of novel drug delivery systems like controlled release or sustained release marketed formulation
	MPY 205.4	Determine the effect of process variables and excipients on tablet dosage form
	MPY 205.5	To conduct testing of packaging containers and closers.

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M. Pharma II Year / III Sem (Pharmaceutics)		
Course code/ Course name	**Course outcomes**	
Modulated Release Drug Delivery System (MPY301) ELECTIVE:I	MPY 301.1	Explain the design, fabrication and release mechanism of gastroretentive dosage form.
	MPY 301.2	Demonstrate development of site-specific drug delivery like buccal patch/tablet, lozenges, osmotic tablets.
	MPY 301.3	Illustrate the various novel patented technologies developed for various controlled and sustained/fast release oral drug delivery system like, TIMERx, MASRx, COSRx, TheriForm, etc.
	MPY 301.4	Explain the concept of pelletization technology as a modulated drug delivery system.
	MPY 301.5	Outline the concept of dispersed and colloidal drug delivery system.
PARENTERAL, INHALATION & INTRANASAL DRUG DELIVERY TECHNOLOGY (MPY 302 PCS) ELECTIVE:II	MPY302.1	Explain the basic concept of protein and peptide delivery system with formulation considerations?
	MPY 302.2	Demonstrate development of parenteral controlled drug depot systems
	.MPY 302.3	Illustrate the various the Parenteral implants
	MPY 302.4	Summarize the Inhalation drug delivery systems
	MPY 302.5	Knowing the importance Intranasal drug delivery systems

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M. Pharma 1 Year / I Sem (PHARMACEUTICS) PCI		
Course code/ Course name	**Course outcomes**	
DRUG DELIVERY SYSTEM (MPH 102T)	MPH102.1T	To understand the various approaches for development of sustained and controlled drug delivery systems
	MPH102.2T	Demonstrate development of site-specific drug delivery like buccal patch/tablet, lozenges, osmotic tablets.
	MPH102.3T	Explain the design, fabrication and release mechanism of gastroretentive dosage form.
	MPH102.4T	Explain the concept of pelletization technology as a modulated drug delivery system.
	MPH102.5T	Outline the concept of occular and transdermal drug delivery system.
PHARMACEUTICAL PRACTICALS-I MPH 105 P	MPH105.1	Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
	MPH 105.2	Explore the Experiments based on Gas Chromatography and HPLC
	MPH 105.3	Perform the Preformulation studies of tablet dosage form and to Perform In –vitro dissolution of novel drug delivery systems like controlled release or sustained release marketed formulation
	MPH 105.4	To study Micromeritic properties of powders and granulation.
	MPH 105.5	To study the effect of binders on dissolution of a tablet.

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M. Pharma 1 Year / II Sem (PHARMACEUTICS) PCI		
Course code/ Course name	**Course outcomes**	
MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS) (MPH 201T)	MPH201.1T	To relate the concept of Targeted Drug Delivery Systems
	MPH201.2T	Development of ability to prepare and evaluate nano particles & liposomes
	MPH201.3T	To summarize the basics of preparation and application of Niosomes, Aquasomes, Phytosomes, Electrosomes
	MPH201.4T	To recall the concepts of Pulmonary Drug Delivery Systems
	MPH201.5T	Better explain the concepts of Nucleic acid based therapeutic delivery system.
ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS (MPH 202T)	MPH202.1T	Development of ability to understand the concept of therapeutic response and toxicity, therapeutic index, therapeutic window, factors affecting plasma concentration.
	MPH202.2T	To summarize the basics of Compartment modeling including one, two and multiple compartment models and determination of various pharmacokinetic parameters.
	MPH202.3T	To relate the concept of Non-linear pharmacokinetics and recognition of non linearity, circadian rhythm and chronopharmacokinetics, other reasons for non-linearity.
	MPH202.4T	Better explain the concepts of physiologic pharmacokinetic model and to define mean time (MRT) statistical moment theory, Mean absorption time (MAT) Mean Dissolution time (MDT).
	MPH202.5T	To recall the concepts of absorption distribution and renal excretion, hepatic clearance and elimination, bioavailability and bioequivalence

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COMPUTER AIDED DRUG DESIGN (MPH203T)	MPH203.1T	To understand use of computer in pharmaceutical research and statistical modelling. To understand importance of quality attributes in pharmaceutical industry.
	MPH203.2T	To brief about modelling in drug disposition techniques and transport mechanism
	MPH203.3T	Applications of Computers in pharmaceutical product development and factorial design.
	MPH203.4T	Attain the knowledge of computer aided clinical methodologies used in biopharmaceutical studies and simulation in ADME
	MPH203.5T	Upgradation of the knowledge by studying the use of automation in pharmaceutical industry and applications of artificial intelligence.
COSMETICS AND COSMECEUTICALS (MPH 204T)	MPH204.1T	Understanding of basic of cosmetic products as per Indian regulation.
	MPH204.2T	Define the biological aspects cosmetic in relation skin and hair structure?
	MPH204.3T	Attain the knowledge the formulation consideration of skin care preparations?
	MPH204.4T	Summarize the cosmeceutical products and sunscreen preparations?
	MPH204.5T	Applications of the Herbal Cosmetics
PHARMACEUTICAL PRACTICALS-II MPH 205 P	MPH205.1	Estimate general considerations, methods of preparation, characterization and applications of Liposomes, Niosomes, Alginate beads, albumin microspheres and spherules
	MPH 205.2	Formulate and evaluate Creams, Shampoo and Toothpaste

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	MPH 205.3	Perform the Bioavailability studies of Paracetamol in animals
	MPH 205.4	To explore the knowledge of DoE Using Design Expert® Software
	.MPH 205.5	Protein binding studies of a highly protein bound drug & poorly protein bound drug

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M. Pharma II Year / III Sem (Pharmaceutics)		
Course code/ Course name	**Course outcomes**	
Modulated Release Drug Delivery System (MPY301) ELECTIVE:I	MPY 301.1	Explain the design, fabrication and release mechanism of gastroretentive dosage form.
	MPY 301.2	Demonstrate development of site-specific drug delivery like buccal patch/tablet, lozenges, osmotic tablets.
	MPY 301.3	Illustrate the various novel patented technologies developed for various controlled and sustained/fast release oral drug delivery system like, TIMERx, MASRx, COSRx, TheriForm, etc.
	MPY 301.4	Explain the concept of pelletization technology as a modulated drug delivery system.
	MPY 301.5	Outline the concept of dispersed and colloidal drug delivery system.
PARENTERAL, INHALATION & INTRANASAL DRUG DELIVERY TECHNOLOGY (MPY 302 PCS) ELECTIVE:II	MPY302.1	Explain the basic concept of protein and peptide delivery system with formulation considerations?
	MPY 302.2	Demonstrate development of parenteral controlled drug depot systems
	.MPY 302.3	Illustrate the various the Parenteral implants
	MPY 302.4	Summarize the Inhalation drug delivery systems
	MPY 302.5	Knowing the importance Intranasal drug delivery systems

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Course Outcome-Program Outcome

M.Pharm (PCS)						
Univ. Subject Code	Subject Name	CO		PO1	PO2	PO3
MPH 101T	Modern Pharmaceutical Analytical Techniques	C.MPH101.1	Understand the basic knowledge on single and multiple component assay of pharmaceuticals	3		3
		C.MPH101.2	Developing basic practical skills using instrumentation techniques	3		3
		C.MPH101.3	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals	3		3
		C.MPH101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances	3	3	2
		C.MPH101.5	Applying the knowledge learnt in developing new procedures and comparing various methods of analysis	3	3	2
MPH102T	Drug Delivery Systems	C.MPH102.1T	To understand the various approaches for development of sustained and controlled drug delivery systems	3	2	3
		C.MPH102.2T	Demonstrate development of site-specific drug delivery like buccal patch/tablet, lozenges, osmotic tablets.	3	1	3
		C.MPH102.3T	Explain the design, fabrication and release mechanism of gastroretentive dosage form.	3	1	3

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Course Outcome-Program Outcome

		C.MPH102.4T	Explain the concept of pelletization technology as a modulated drug delivery system.	3	1	3
		C.MPH102.5T	Outline the concept of occular and transdermal drug delivery system.	3	1	3
MPH103T	Modern Pharmaceutics	C.MPH103.1T	To obtain knowledge of physical, chemical, and pharmaceutical factors affecting dosage forms, Preformulation concepts and optimization technique	2	1	3
		C.MPH103.2T	To recall the concept of pharmaceutical validation, scope & merits of validation, Validation and calibration master plan, ICH & WHO guidelines for calibration and validation	2	2	3
		C.MPH103.3T	Attain knowledge of cGMP & Industrial management	2	1	3
		C.MPH103.4T	To update with latest tablet technology and automation in manufacturing process., by understanding compression and compaction study	2	1	3
		C.MPH103.5T	To understand dissolution apparatus and dissolution testing of different types of dosage formulation and in-vitro and in vivo-correlation	3	1	3
MPH104T	Regulatory Affair	C.MPH104.1T	Understand the concept of innovation and drug development process. Regulatory guidelines for filling and approval process. Maintenance of drug approval documentations.	3	1	1
		C.MPH104.2T	Learn the process of global approval documents. Post approval regulatory affairs. ICH guidelines and regulatory requirements of various countries.	3	2	2

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		C.MPH104.3T	To learn process of clinical drug development and global submission of IND,NDA, ANDA.	3	2	3
		C.MPH104.4T	Learn and implement use of clinical trials protocol new requirements to clinical study process.Pharmacovigilance safety monitoring.	2	2	2
MPH105T	Pharmaceutics Practical - I	CO.MPH105.1	Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer	3	2	3
		CO.MPH 105.2	Explore the Experiments based on Gas Chromatography and HPLC	3	2	3
		CO.MPH 105.3	Perform the Preformulation studies of tablet dosage form and to Perform In –vitro dissolution of novel drug delivery systems like controlled release or sustained release marketed formulation	3	2	3
		CO.MPH 105.4	To study Micromeritic properties of powders and granulation.	3	2	3
		CO.MPH 105.5	To study the effect of binders on dissolution of a tablet.	3	2	3
MPH201T	MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS)	C.MPH201.1T	To relate the concept of Targeted Drug Delivery Systems	3	1	3
		C.MPH201.2T	Development of ability to prepare and evaluate nano particles & liposomes	3	1	3
		C.MPH201.3T	To summarize the basics of preparation and	2	1	3

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Course Outcome-Program Outcome

			application of Niosomes, Aquasomes, Phytosomes, Electrosomes			
		C.MPH201.4T	To recall the concepts of Pulmonary Drug Delivery Systems	3	1	3
		C.MPH201.5T	Better explain the concepts of Nucleic acid based therapeutic delivery system.	3	1	3
MPH 202T	ADVANCED BIOPHARMACEUTICS	C.MPH202.1T	Development of ability to understand the concept of therapeutic response and toxicity, therapeutic index, therapeutic window, factors affecting plasma concentration.	2	1	3
		C.MPH202.2T	To summarize the basics of Compartment modeling including one, two and multiple compartment models and determination of various pharmacokinetic parameters.	2	2	3
		C.MPH202.3T	To relate the concept of Non-linear pharmacokinetics and recognition of non linearity, circadian rhythm and chronopharmacokinetics, other reasons for non-linearity.	2	1	3
		C.MPH202.4T	Better explain the concepts of physiologic pharmacokinetic model and to define mean time (MRT) statistical moment theory, Mean absorption time (MAT) Mean Dissolution time (MDT).	2	1	3

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Course Outcome-Program Outcome

	CDDS (MPH203)	C.MPH202.5T	To recall the concepts of absorption distribution and renal excretion, hepatic clearance and elimination, bioavailability and bioequivalence	3	1	3
		C.MPH203.1T	To understand use of computer in pharmaceutical research and statistical modelling. To understand importance of quality attributes in pharmaceutical industry.	3	-	1
		C.MPH203.2T	To brief about modelling in drug disposition techniques and transport mechanism	3	1	3
		C.MPH203.3T	Applications of Computers in pharmaceutical product development and factorial design.	3	1	2
		C.MPH203.4T	Attain the knowledge of computer aided clinical methodologies used in biopharmaceutical studies and simulation in ADME	3	1	3
		C.MPH203.5T	Upgradation of the knowledge by studying the use of automation in pharmaceutical industry and applications of artificial intelligence.	3	1	3
	Cosmetic &Cosmetology (MPH204)	C.MPH204.1T	Understanding of basic of cosmetic products as per Indian regulation.	3	1	3
		C.MPH204.2T	Define the biological aspects cosmetic in relation skin and hair structure?	3	1	3

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Course Outcome-Program Outcome

		C.MPH204.3T	Attain the knowledge the formulation consideration of skin care preparations?	2	1	3
		C.MPH204.4T	Summarize the cosmeceutical products and sunscreen preparations?	3	1	3
		C.MPH204.5T	Applications of the Herbal Cosmetics	3	1	3
MPH 205 P	PHARMACEUTICAL PRACTICALS-II	CO.MPH205.1	Estimate general considerations, methods of preparation, characterization and applications of Liposomes, Niosomes, Alginate beads, albumin microspheres and spherules	3	2	3
		CO.MPH 205.2	Formulate and evaluate Creams, Shampoo and Toothpaste	3	2	3
		CO.MPH 205.3	Perform the Bioavailability studies of Paracetamol in animals	3	2	3
		CO.MPH 205.4	To explore the knowledge of DoE Using Design Expert® Software	3	2	3
		CO.MPH 205.5	Protein binding studies of a highly protein bound drug & poorly protein bound drug	3	2	3
MPH301T	Research Methodology & Biostatic	**C.MPH 301.1**	Identify the overall process of designing and research study from its inception to its report.	3		3
		C.MPH 301.2	Familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research	3	2	3

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Course Outcome-Program Outcome

		C.MPH 301.3	Identify a research problem stated in a study	3	3	3
		C.MPH 301.4	Identify the need for educational research undertaken and the audience that profits from research studies.	3	3	3

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M. Pharmacy (QA) PEO

To make post-graduates working as successful and advanced practitioners of Pharmacy profession

To make them well versed in core technical skills and knowledge with an attitude of service and commitment for social duties.

To develop the urge and inclination for output-oriented research.

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M. Pharm. (QA) PSO

PSO I –Create a talent pool that can be well versed with the application-based Importance of Emerging Quality Building Concepts as per regulatory guidelines to build up the quality in the pharmaceutical product.

PSO-II To be competent in writing, interpreting and communicating scientifically and effectively for fulfilling the desire of quality assurance department of Pharmaceuticals
PSO-3Empower and sensitize the quality assurance professionals to serve the pharmaceutical industry, academia and the society.

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M. Pharm. (QA) PO

PO1: An ability to independently carry out pharmaceutical quality assurance related research development work to solve practical problems in its professional implementation.

PO2: An ability to write and present a research report by conceptualizing research ideas,

PO3: Acquire in-depth knowledge in pharmaceutical quality assurance with special emphasis on pharmaceutical quality systems, cGMP guidelines, documentation, validation strategy, and various protocols for drug regulations including wider and global perspective, with an ability to discriminate, evaluate, analyze and synthesize existing and new knowledge, and integration of the same for enhancement of knowledge

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M. Pharm. (QA) CO (PCI)

Course Code/Course name	Course outcomes	
MPY-101- Modern analytical techniques	MQA101.1	Understand the basic knowledge on single and multiple component assay of pharmaceuticals
	MQA101.2	Developing basic practical skills using instrumentation techniques
	MQA101.3	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	MQA101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances
	MQA101.5	Applying the knowledge learnt in developing new procedures and comparing various methods of analysis
MQA-102T **Quality Management System**	MQA102.1	Understand the quality parameters and quality attribute in Pharmaceutical industry sectors
	MQA102.2	Learning the various tools for quality improvement
	MQA102.3	Knowing the Importance of the quality of medicines in the public.
	MQA102.4	Regulatory body requirements for the import and export pharmaceutical products
	MQA102.5	Knowledge of stability testing of drug and drug substances
MQA103T – Quality Control and Quality Assurance	MQY-103.1	Understand the cGMP aspects in a pharmaceutical industry
	MQY-103.2	Understand GLP and regulatory Affairs
	MQY-103.3	Appreciate the importance of documentation
	MQY-103.4	Understand the responsibilities of QA & QC departments
	MQY-103.5	Appreciate the importance of documentation

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MQA104T – Product Development and Technology Transfer	MQA-104.1	Understand the new product development process
	MQA-104.2	Explain information to transfer technology from R&D to actual manufacturing
	MQA-104.3	Elucidate necessary information to transfer technology of existing products between various manufacturing places
	MQA-104.4	Understand the Quality by design practices of sterile and non-sterile dosage forms
	MQA-104.5	Understand the practices of packaging technology
	MQA-104.6	Understand the Regulatory requirements in drug development stages
MQA105P – Pharmaceutical Quality Assurance Practical – I	MQA-105.1	Estimation of process capability
	MQA-105.2	In process and finished product quality control tests for tablets, capsules, parenteral and semisolid dosage forms
	MQA-105.3	Estimation of drug in pharmaceutical by using modern analytical techniques
	MQA-105.4	Development of Stability study protocol for pharmaceuticals
	MQA-105.5	To carry out preformulation study for successful formulation of pharmaceuticals
MQA201T – Hazards and Safety Management	MQA-201.1	Understand, determine and to take control measures to eliminate or minimize the level of the risks
	MQA-201.2	Support the student to recognize the control measures to eliminate or minimize the level of the risks
	MQA-201.3	Ensure safety standards in pharmaceutical industry
	MQA-201.4	Provide comprehensive knowledge on the safety management

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	MQA-201.5	Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere
MQA202T – Pharmaceutical Validation	MQA202.1	Importance of patent and intellectual property rights
	MQA202.2	Knowledge of qualification aspects of various instruments
	MQA202.3	Understanding of cleaning validation of equipment's employed in the manufacture of pharmaceuticals
	MQA202.4	Theoretical and practical basis of validation of analytical method for estimation of drugs
	MQA202.5	Fundamental aspects of qualification of various equipment's and instruments
MQA203T – Audits and Regulatory Compliance	MQA203.1	To understand the importance of auditing in pharmaceuticals
	MQA203.2	To understand the methodology of auditing for pharmaceutical industry
	MQA203.3	To prepare the check list for auditing
	MQA203.4	To carry out the audit process
MQA204T – Pharmaceutical Manufacturing Technology	MQA204.1	Knowledge of common practice in the pharmaceutical industry developments, plant layout and production planning
	MQA204.2	Knowledge of principles and practices of aseptic process technology, non-sterile manufacturing technology and packaging technology
	MQA204.3	Explaining principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing
	MQA204.4	Understand the practices of packaging technology
	MQA204.5	Understand the practices of aseptic process technology
MQA205P – Pharmaceutical Quality	MQA205.1	Validation of an analytical method for pharmaceuticals
	MQA205.2	Qualification of Pharmaceutical Testing Equipment

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Assurance Practical II	MQA205.3	Design of plant layout: Sterile and non-sterile
	MQA205.4	Case study on application of QbD
	MQA205.5	Identification & estimation of drug in pharmaceuticals & assess the impurities
MRM 301T – Research Methodology and Biostatistics	MRM301.1	Identify the overall process of designing a research study from its inception to its report.
	MRM301.2	Familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research
	MRM301.3	Identify a research problem stated in a study.
	MRM301.4	Why educational research is undertaken and the audiences that profit from research studies.

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Course Outcome-Program Outcome

M.Pharm (QA)						
Univ. Subject Code	**Subject Name**	**CO**		**PO1**	**PO2**	**PO3**
MQA 101T	Modern Analytical Technique	MQA101.1	Understand the basic knowledge on single and multiple component assay of pharmaceuticals	3		3
		MQA101.2	Developing basic practical skills using instrumentation techniques	3		3
		MQA101.3	Skills in selecting suitable techniques for the analysis of drugs and pharmaceuticals	3		3
		MQA101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances	3	3	2
		MQA101.5	Applying the knowledge learned in developing new procedures and comparing various methods of analysis	3		2
MQA102T	Quality Management System	MQA102.1	Understand the quality parameters and quality attribute in Pharmaceutical industry sectors	2		3
		MQA102.2	Learning the various tools for quality improvement	2		3

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Course Outcome-Program Outcome

		MQA102.3	Knowing the Importance of the quality of medicines in the public.	2		3
		MQA102.4	Regulatory body requirements for the import and export pharmaceutical products	2		3
		MQA102.5	Knowledge of stability testing of drug and drug substances	2		3
MQA103T	Quality Control and Quality Assurance	MQY-103.1	Understand the cGMP aspects in a pharmaceutical industry	2		3
		MQY-103.2	Understand GLP and regulatory Affairs	2		3
		MQY-103.3	Appreciate the importance of documentation	2		3
		MQY-103.4	Understand the responsibilities of QA & QC departments	2		3
		MQY-103.5	Appreciate the importance of documentation	2		3
MQA104T	Product Development and Technology Transfer	MQA-104.1	Understand the new product development process	2		3
		MQA-104.2	Explain information to transfer technology from R&D to actual manufacturing	2		3

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Course Outcome-Program Outcome

		MQA-104.3	Elucidate necessary information to transfer technology of existing products between various manufacturing places	2		3
		MQA-104.4	Understand the Quality by design practices of sterile and non sterile dosage forms	2		3
		MQA-104.5	Understand the practices of packaging technology	2		3
MQA105P	Pharmaceutical Quality Assurance Practical-I	MQA-105.1	Estimation of process capability	2		3
		MQA-105.2	In process and finished product quality control tests for tablets, capsules, parenteral and semisolid dosage forms	2		3
		MQA-105.3	Estimation of drug in pharmaceutical by using modern analytical techniques	3		3
		MQA-105.4	Development of Stability study protocol for pharmaceuticals	3		3
		MQA-105.5	To carry out preformulation study for successful formulation of pharmaceuticals	3		3
MQA201T	Hazards and Safety Management	MQA-201.1	Understand, determine and to take control measures to eliminate or minimize the level of the risks	2		3

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Course Outcome-Program Outcome

		MQA-201.2	Support the student to recognize the control measures to eliminate or minimize the level of the risks	2		3
		MQA-201.3	Ensure safety standards in pharmaceutical industry	2		3
		MQA-201.4	Provide comprehensive knowledge on the safety management	2		3
		MQA-201.5	Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere	2		3
MQA202T	Pharmaceutical Validation	MQA202.1	Importance of patent and intellectual property rights	2		3
		MQA202.2	Knowledge of qualification aspects of various instruments	2		3
		MQA202.3	Understanding of cleaning validation of equipments employed in the manufacture of pharmaceuticals	2		3
		MQA202.4	Theoretical and practical basis of validation of analytical method for estimation of drugs	2		3
		MQA202.5	Fundamental aspects of qualification of various equipments and instruments	2		3

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Course Outcome-Program Outcome

MQA203T	Audits and Regulatory Compliance	MQA203.1	To understand the importance of auditing in pharmaceuticals	2		3
		MQA203.2	To understand the methodology of auditing for pharmaceutical industry	2		3
		MQA203.3	To prepare the check list for auditing	2		3
		MQA203.4	To carry out the audit process	2		3
MQA204T	Pharmaceutical Manufacturing Technology	MQA204.1	Knowledge of common practice in the pharmaceutical industry developments, plant layout and production planning	2		3
		MQA204.2	Knowledge of principles and practices of aseptic process technology, non-sterile manufacturing technology and packaging technology	2		3
		MQA204.3	Explaining principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing	2		3
		MQA204.4	Understand the practices of packaging technology	2		3
		MQA204.5	Understand the practices of aseptic process technology	2		3

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Course Outcome-Program Outcome

MQA205P	Pharmaceutical Quality Assurance Practical-II	MQA205.1	Validation of an analytical method for pharmaceuticals	3		3
		MQA205.2	Qualification of Pharmaceutical Testing Equipment	3		3
		MQA205.3	Design of plant layout: Sterile and non-sterile	3		3
		MQA205.4	Case study on application of QbD	3		3
		MQA205.5	Identification & estimation of drug in pharmaceuticals & assess the impurities	2		3
MQA301T	Research Methodology & Biostatic	**C. MQA 301.1**	Identify the overall process of designing and research study from its inception to its report.	3		3
		C. MQA 301.2	Familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research	3	2	3
		C. MQA 301.3	Identify a research problem stated in a study	3	3	3
		C. MQA 301.4	Identify the need for educational research undertaken and the audience that profits from research studies.	3	3	3

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Dissel

Dissemination of Vision Mission

Display of Vision Mission on Ground Floor

Display of Vision Mission on First Floor

Display of Vision Mission on Second Floor

Display of Vision Mission on Third Floor

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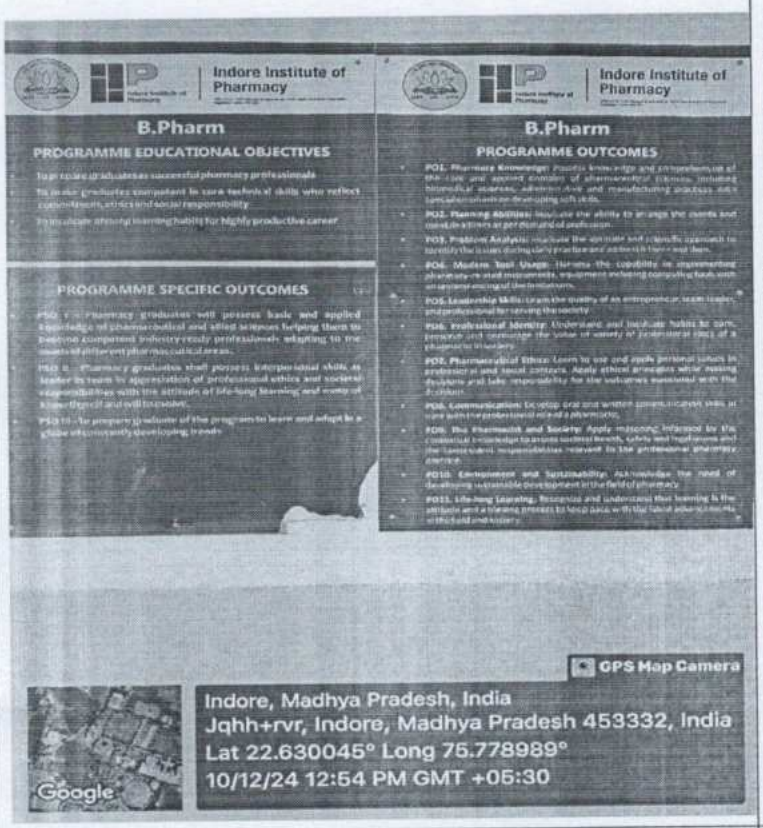
Dissemination of PEO,PSO &PO B.Pharm



Display of PEO,PSO &PO B.Pharm on First Floor

Display of PEO,PSO &PO B.Pharm on Second Floor

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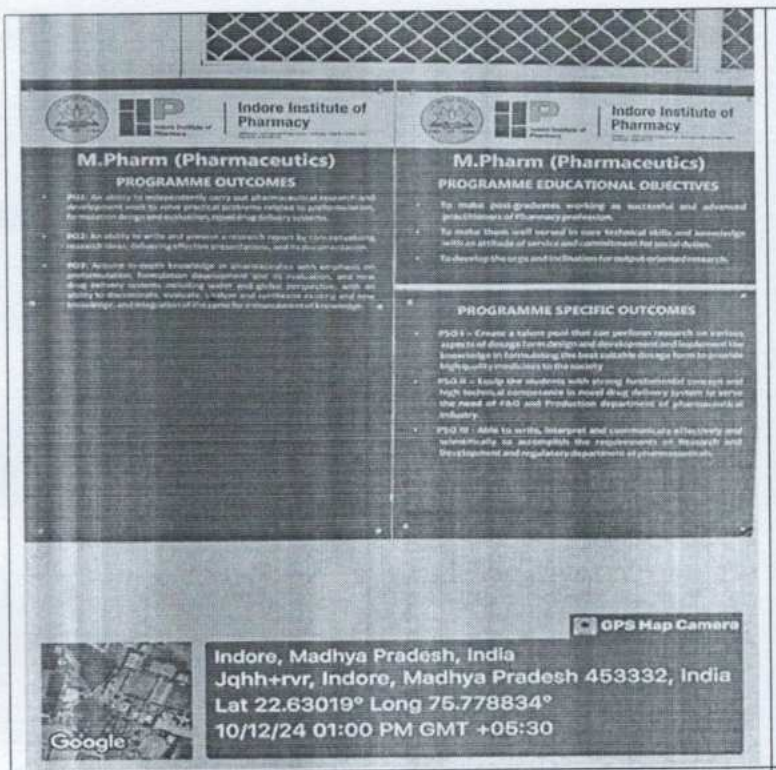	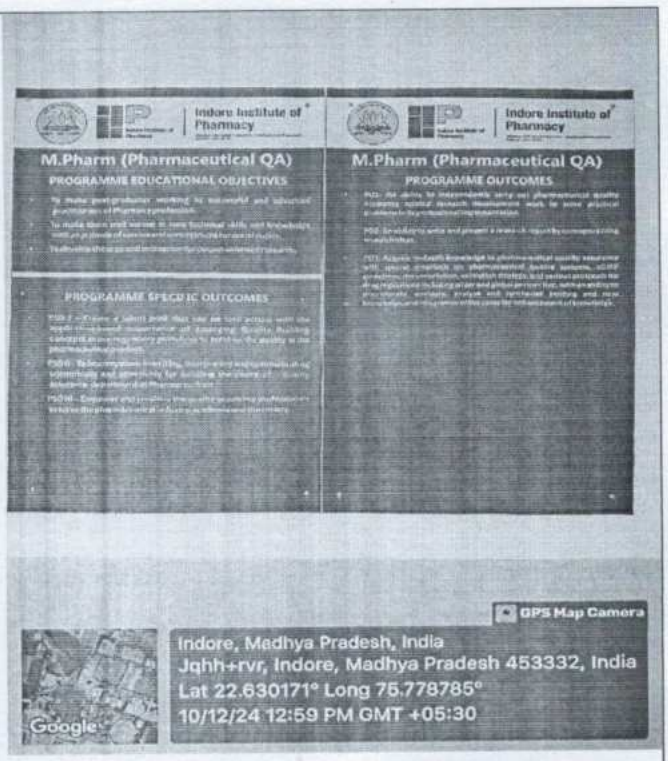
Display of PEO,PSO &PO M.Pharm (PCS) on First Floor	Display of PEO,PSO &PO M.Pharm (QA) on First Floor

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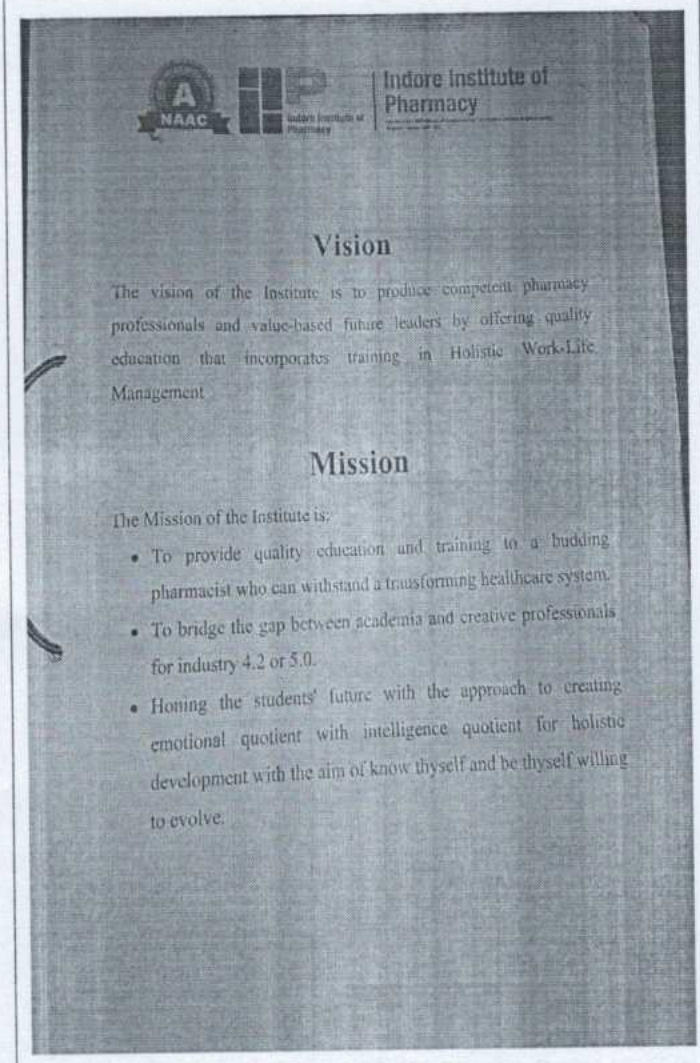
Dissemination of Course File 2023-24



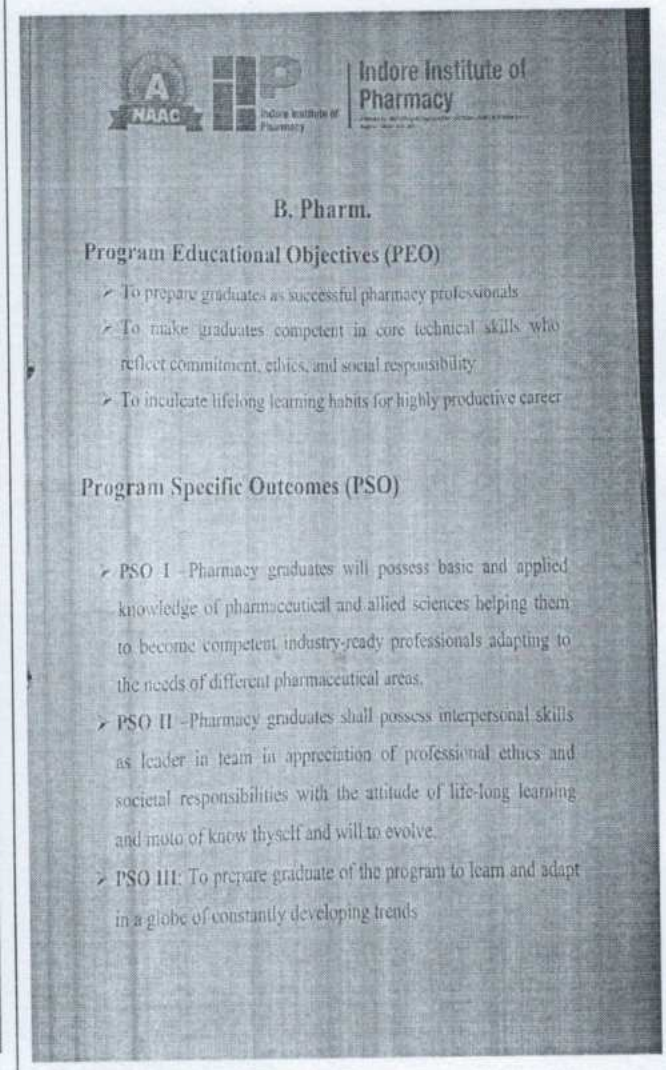
Vision

The vision of the Institute is to produce competent pharmacy professionals and value-based future leaders by offering quality education that incorporates training in Holistic Work-Life Management.

Mission

The Mission of the Institute is:

- To provide quality education and training to a budding pharmacist who can withstand a transforming healthcare system.
- To bridge the gap between academia and creative professionals for industry 4.2 or 5.0.
- Honing the students' future with the approach to creating emotional quotient with intelligence quotient for holistic development with the aim of know thyself and be thyself willing to evolve.



B. Pharm.

Program Educational Objectives (PEO)

- To prepare graduates as successful pharmacy professionals
- To make graduates competent in core technical skills who reflect commitment, ethics, and social responsibility
- To inculcate lifelong learning habits for highly productive career

Program Specific Outcomes (PSO)

- PSO I -Pharmacy graduates will possess basic and applied knowledge of pharmaceutical and allied sciences helping them to become competent industry-ready professionals adapting to the needs of different pharmaceutical areas.
- PSO II -Pharmacy graduates shall possess interpersonal skills as leader in team in appreciation of professional ethics and societal responsibilities with the attitude of life-long learning and motto of know thyself and will to evolve.
- PSO III: To prepare graduate of the program to learn and adapt in a globe of constantly developing trends

Display of Vision Mission ,PEO & PSO in Course File

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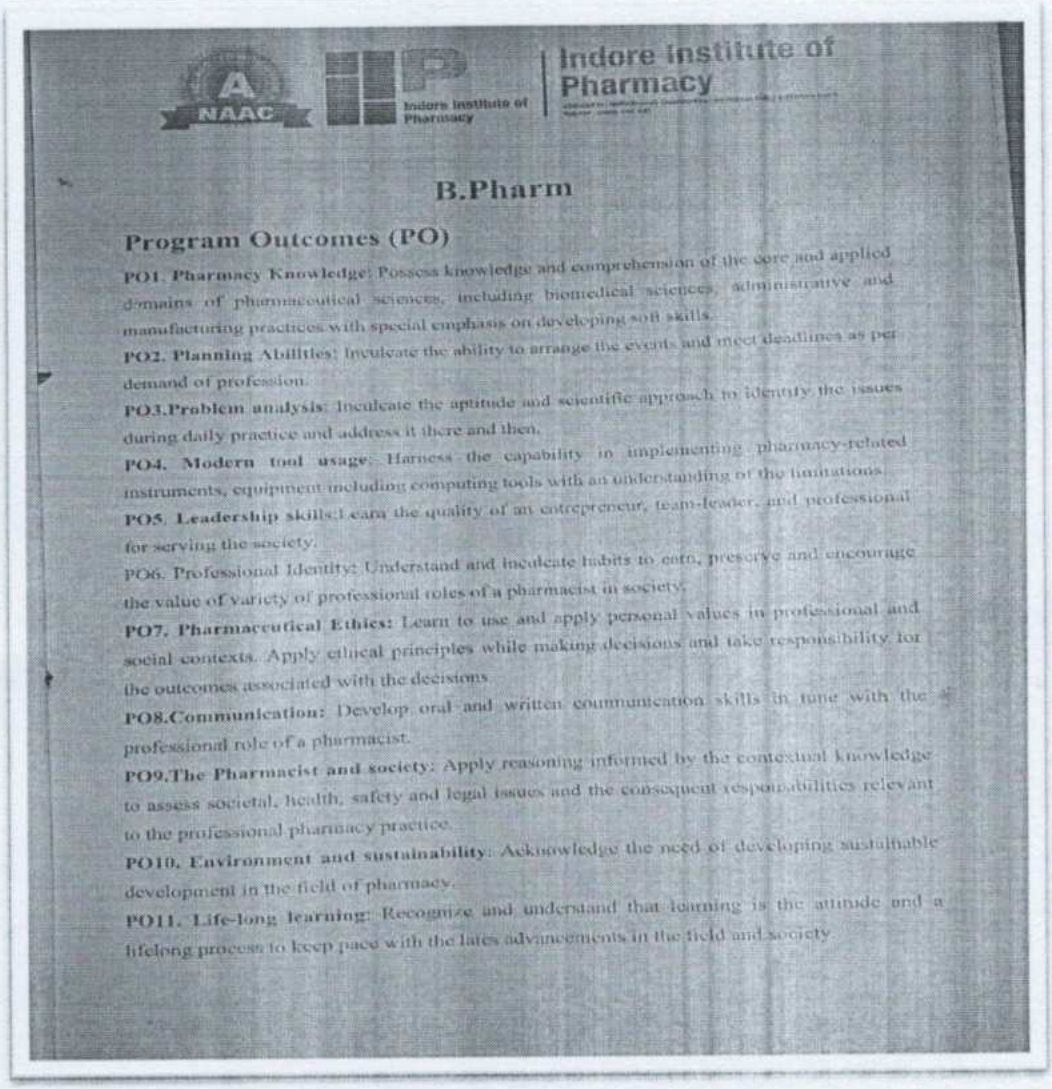
Dissemination of Course File 2023-24



B.Pharm

Program Outcomes (PO)

PO1. Pharmacy Knowledge: Possess knowledge and comprehension of the core and applied domains of pharmaceutical sciences, including biomedical sciences, administrative and manufacturing practices with special emphasis on developing soft skills.

PO2. Planning Abilities: Inculcate the ability to arrange the events and meet deadlines as per demand of profession.

PO3.Problem analysis: Inculcate the aptitude and scientific approach to identify the issues during daily practice and address it there and then.

PO4. Modern tool usage: Harness the capability in implementing pharmacy-related instruments, equipment including computing tools with an understanding of the limitations.

PO5. Leadership skills: Learn the quality of an entrepreneur, team-leader, and professional for serving the society.

PO6. Professional Identity: Understand and inculcate habits to earn, preserve and encourage the value of variety of professional roles of a pharmacist in society.

PO7. Pharmaceutical Ethics: Learn to use and apply personal values in professional and social contexts. Apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

PO8.Communication: Develop oral and written communication skills in tune with the professional role of a pharmacist.

PO9.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.

PO10. Environment and sustainability: Acknowledge the need of developing sustainable development in the field of pharmacy.

PO11. Life-long learning: Recognize and understand that learning is the attitude and a lifelong process to keep pace with the lates advancements in the field and society.

Display of PO in Course File

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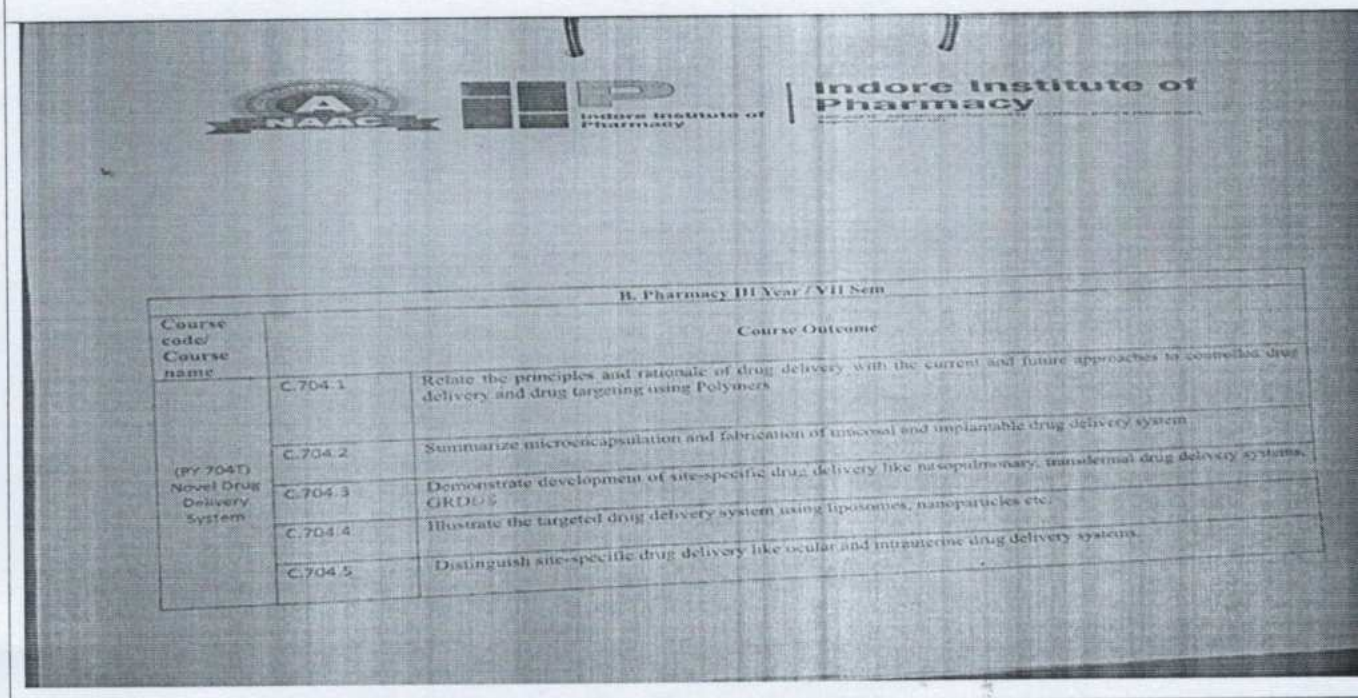
Dissemination of Course File 2023-24



B. Pharmacy III Year / VII Sem

Course code/ Course name	Course Outcome	
(PY 704T) Novel Drug Delivery System	C.704.1	Relate the principles and rationale of drug delivery with the current and future approaches to controlled drug delivery and drug targeting using Polymers
	C.704.2	Summarize microencapsulation and fabrication of mucosal and implantable drug delivery system
	C.704.3	Demonstrate development of site-specific drug delivery like nasopulmonary, transdermal drug delivery systems, GRDDS
	C.704.4	Illustrate the targeted drug delivery system using liposomes, nanoparticles etc.
	C.704.5	Distinguish site-specific drug delivery like ocular and intrauterine drug delivery systems.

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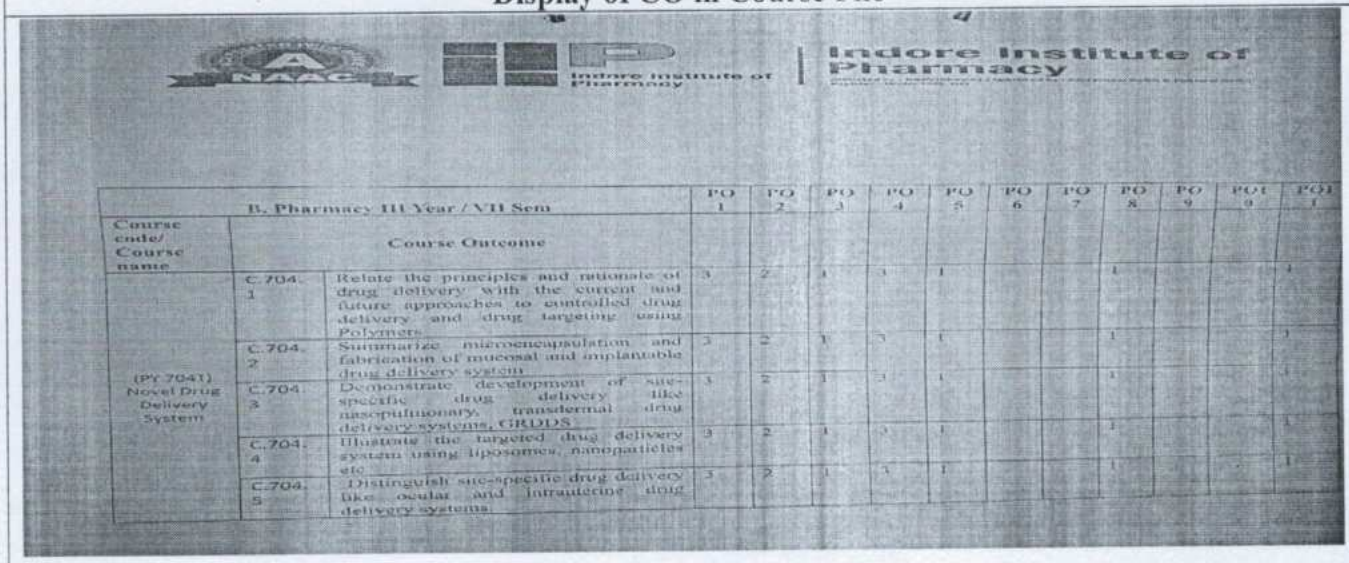

B. Pharmacy III Year / VII Sem

Course code/ Course name	Course Outcome		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
(PY 704T) Novel Drug Delivery System	C.704.1	Relate the principles and rationale of drug delivery with the current and future approaches to controlled drug delivery and drug targeting using Polymers	3	2	1	3	1			1			1
	C.704.2	Summarize microencapsulation and fabrication of mucosal and implantable drug delivery system	3	2	1	3	1			1			1
	C.704.3	Demonstrate development of site-specific drug delivery like nasopulmonary, transdermal drug delivery systems, GRDDS	3	2	1	3	1			1			1
	C.704.4	Illustrate the targeted drug delivery system using liposomes, nanoparticles etc.	3	2	1	3	1			1			1
	C.704.5	Distinguish site-specific drug delivery like ocular and intrauterine drug delivery systems.	3	2	1	3	1			1			1

Display of CO-PO Mapping in Course File

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