



Shri Wagheshwar Gramvikas Pratishthan's
**LOKNETE SHRI DADAPATIL PHARATE COLLEGE OF
PHARMACY**



Hon. Mr. R. V. Pharate
Founder President

A/p-Mandavgan Pharata, Tal-Shirur, Dist-Pune, 412211.

Hon. Mrs. M. R. Pharate
Founder Secretary

Dr. H. V. Kamble
Principal

2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

The course outcomes (COs) were created for each course, or subject, by taking into account the curriculum provided by Savitribai Phule Pune University, together with the PEOs, the institute's vision and mission statement, and the program results that the NBA had in mind. The course objectives are derived from every concept-based syllabus unit. The subject teachers outline the four to six points for each topic's course outcomes (both theoretical and practical).

Program and course outcomes are listed and shown on the institution website for programs such as the B. Pharmacy, M. Pharmacy. offered by the institution. Teachers and students are informed about the program and course outcomes for Programs.

The institute's vision and objective, together with program and course outcomes, are stated in laboratory manuals for students' information. For the benefit of all parties involved, the institution has made the program outcomes and course results clear and visible on its website.

The eleven POs are assigned for B. Pharmacy programme, eight to ten POs assigned for M Pharmacy programme and eight POs are assign for Pharm D programme, and then each PO is calculated on the scale of 1 to3 (slight to high) for preparation of CO-PO matrix of all the courses of all years of study. This desired course outcomes are made average for each PO.

The steps in the CO-PO mapping are as follows:

Every CO is tied to every course unit.

Every PO is mapped to every course unit.

Take into account the actual number of hours assigned to each syllabus unit.

Figuring out how many contact hours a certain CO needs

proportion of contact hours provided for a particular PO calculated

obtain the CO-PO percentage. Relationships

CO-PO mapping strength, or Strong – 3, Medium – 1, is taken into consideration.

The course outcome and programme outcome is available on below link
<https://dpcop-edu.org/course>

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**Teachers and students are aware of the stated Programme and course outcomes of the
Programmes offered by the institution, -2.6.1**

Sr no	Course outcome	Document			
1	B PHARMACY	SEM 1	SEM 2	SEM 3	SEM 4
		VIEW DOC	VIEW DOC	VIEW DOC	VIEW DOC
		SEM 5	SEM 6	SEM 7	SEM 8
		VIEW DOC	VIEW DOC	VIEW DOC	VIEW DOC
2	M PHARMACY	SEM 1	SEM 2	SEM 3	SEM 4
3	chemistry department	VIEW DOC	VIEW DOC	VIEW DOC	VIEW DOC
4	Pharmaceutics department	VIEW DOC	VIEW DOC	VIEW DOC	
5	Pharmacology department	VIEW DOC	VIEW DOC	VIEW DOC	
Programme outcome					
	B pharmacy	VIEW			
	M Pharmacy	CHEMISTRY VIEW	PHARMACEUTICS VIEW	PHARMACOLOGY VIEW	



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**TEACHERS AND STUDENTS ARE AWARE OF THE STATED PROGRAMME AND COURSE
OUTCOMES OF THE PROGRAMMES OFFERED BY THE INSTITUTION.**

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Loknete Shri Dadapatil College Of Pharmacy Mandavgan Pharata			
At.post –Mandavgan ,Tel-shirur, Dist - Pune-412207			
COURSE OUTCOMES AS PER 2019 PATTERN (SPPU)			
COURSE OUTCOMES F.Y.B.PHARM			
Academic Year 2022-23			
SEMESTER-I			
Course	Course Code	CO Number	Course Outcome
Human Anatomy and Physiology-I (Theory)	BP101T		Upon completion of the course student will be able to
		1	Demonstrate understanding of the structure and functions of the various systems of the human body.
		2	Describe the various homeostatic mechanisms and their imbalances
		3	Explain the gross morphology, structure and functions of various organs of the human body.
		4	Demonstrate understanding of coordinated working pattern of different organs of each system.
		5	Explain the different types of tissues and importance of the blood.
Human Anatomy and Physiology-I (Practical)	BP107P		Upon completion of the course student will be able to
		1	Demonstrate skills for handling compound microscope
		2	Identify the various tissues and organs of different systems of human body.
		3	Perform the various experiments related to special senses and nervous system.
		4	Record body temperature
		5	Detail Experiments about Haemocytometer
		6	Clarify significance of bleeding time, clotting time, detection of blood group, haemoglobin detection, W.B. C. count, R.B. C. count of blood sample and blood pressure determination.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutic-al Analysis (Theory)	BP102T		Upon completion of the course student will be able to
		1	Explain different techniques of analysis, methods of expressing concentration, primary and secondary standards
		2	Explain sources of errors, types of errors, methods of minimizing errors

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		3	Explain accuracy, precision and significant figures
		4	To understand the different terms, types and basic principles of redox titration
		5	To understand the difference between precipitation and gravimetric analysis
		6	Demonstrate understanding of the principles of volumetric and electro chemical analysis
Pharmaceutical Analysis (Practical)	BP108P	Upon completion of the course student will be able to	
		1	Prepare and standardize various molar and normal solutions
		2	Carryout various volumetric and electrochemical titrations
		3	Demonstrate analytical skills required for volumetric analysis and electrochemical titrations
		4	To study how to calibrate pH meter
		5	Determination of purity of Pharmaceutical substances by potentiometric titrations
		6	To study how to calibrate conductmeter
		7	To determine purity of some pharmaceutical substances by conduct metric titrations
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutics-I (Theory)	BP103T	Upon completion of the course student will be able to	
		1	Describe the history of profession of pharmacy
		2	Demonstrate Understanding of the basics of different dosage forms (powders, liquid dosage forms, monophasic & biphasic liquids, suppositories & Semisolid dosage forms)
		3	Demonstrate Understanding of the basics of Pharmaceutical incompatibilities and Pharmaceutical calculations
		4	Summarize the factors influencing formulation of various dosage form like solution
		5	Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
		6	Demonstrate Understanding of the professional way of handling the prescription
Pharmaceutics-I (Practical)	BP109P	Upon completion of the course student will be able to	
		1	Prepare various conventional dosage forms such as powders, liquid dosage forms, monophasic & biphasic liquids
		2	Prepare various conventional dosage forms such as suppositories & Semisolid dosage forms
		3	Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
		4	Understand the professional way of handling the prescription
		5	Summarize the factors influencing formulation of various dosage form like solution
		6	Describe the history of pharmacy, development of pharmacy profession and industry in India
		7	Describe various routes of drug administration, concept of dosage forms, unit operations involved in preparation of these dosage forms





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Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Inorganic Chemistry (Theory)	BP104T		Upon completion of the course student will be able to
		1	Explain the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
		2	Explain buffers in pharmaceutical systems, their preparation, stability, buffered isotonic solution, measurements calculation and methods of adjusting isotonicity
		3	Explain functions of major physiological ions, electrolytes used in the replacement therapy. Explain dentifrices', role of fluorides in dental caries and desensitizing agents
		4	Describe Ganstrointertinal agents: Acidifiers, Antacids, Cathartics and antimicrobials
		5	Explain role of inorganic compounds as expectorant, emetic, hematinic, astringent and as poison and antidote
		6	Explain radioactivity, measurement of radioactivity, properties of radiations and storage conditions, precautions and pharmaceutical application of radioactive substances.
Pharmaceutical Inorganic Chemistry (Theory)	BP110P		Upon completion of the course student will be able to
		1	Perform limit test for chlorides, sulphates, iron, heavy metal, lead and arsenic
		2	Perform identification test for magnesium hydroxide, ferrous sulphate, sodium bicarbonate, calcium gluconate and copper sulphate
		3	To prepare the inorganic compounds
		4	To identify the purity of compound by performing identification tests
		5	To know the standardization of compound
		6	To know the physical/ chemical properties, storage and uses of important inorganic substances used for pharmaceutical purpose
Course	Course Code	Course Outcome Number	Course Outcome
Communication Skills (Theory)	BP105T		Upon completion of the course student will be able to
		1	Explain the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
		2	Communicate effectively (Verbal and Non Verbal)
		3	Demonstrate qualities to manage the team as a team player, leadership qualities and essentials
		4	Demonstrate understanding of Do and Don't's of interview, group discussion, and presentation skills.
		5	To develop skill in the preparation of scientific/technical report.
		6	To bring out creativity and other talents with proper goal setting so that self- esteem gets enhanced
Communication Skills (Practical)	BP111P		Upon completion of the course student will be able to
		1	Demonstrating understanding basic communication like meeting people, asking questions, Do and Don't's etc.
		2	Explain consonant sounds and vowel sounds



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Course	Course Code	Course Outcome Number	Course Outcome
		3	Demonstrate understanding of listening comprehension, effective writing skills, interview handling skills and presentation skills
Remedial Biology (Theory)	BP106RB T		Upon completion of the course student will be able to
		1	know the classification and salient features of five kingdoms of life
		2	Explain the basic components of anatomy & physiology of plant
		3	know the basic components of anatomy & physiology animal with special reference to human
Remedial Biology (Practical)	BP112RB P		Upon completion of the course student will be able to
		1	Handle microscope independently
		2	Demonstrate understanding of section cutting techniques, mounting and staining, permanent slide preparation. Identify tissues by microscopic study
		3	Explain stem, root, leaf and its modification
		4	Determine Blood Group, Blood Pressure and Tidal Volume
		5	Study of various Bioassays, Drug antagonism by using computerised simulated software
Course	Course Code	Course Outcome Number	Course Outcome
Remedial Mathematics (Theory)	BP106RM T		Upon completion of the course student will be able to
		1	Know the theory and their application in Pharmacy
		2	Solve the different types of problems by applying theory
		3	Appreciate the important application of mathematics in Pharmacy
		4	To remember the important applications of mathematics in pharmacy
SEMESTER-II			
Course	Course Code	Course Outcome Number	Course Outcome
Human Anatomy and Physiology-II (Theory)	BP201T		Upon completion of the course student will be able to
		1	Explain the gross morphology, structure and functions of various organs of the human body.
		2	Describe the various homeostatic mechanisms and their imbalances.
		3	Identify the various tissues and organs of different systems of human body.
		4	Explain physiology of cardiovascular, digestive, respiratory, urinary and reproductive system.
		5	Understand genetics and energetics
		6	Explain role of different endocrine glands and their hormones which will be helpful for them to understand the endocrine pharmacology
Human Anatomy and Physiology-II (p)	BP207P		Upon completion of the course student will be able to
		1	Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.

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		2	Explain working pattern of different organs of each system
		3	Describe the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
		4	Demonstrate of total blood count by cell analyser.
		5	Understand the concept of family planning devices and pregnancy diagnosis test
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Organic Chemistry-I (Theory)	BP202T		Upon completion of the course student will be able to
		1	write the structure, name and the type of isomerism of the organic compound
		2	write the reaction, name the reaction and orientation of reactions
		3	account for reactivity/stability of compounds,
		4	Identify/confirm the identification of organic compound
Pharmaceutical Organic Chemistry-I (Practical)	BP208P		Upon completion of the course student will be able to
		1	identify/confirm the identification of organic compound
		2	Explain construction of molecular models
		3	Account for reactivity/stability of compounds
		4	Identify/confirm the identification of organic compound
		5	Explain General methods of preparation and reactions of compounds
Course	Course Code	Course Outcome Number	Course Outcome
Biochemistry (Theory)	BP203T		Upon completion of the course student will be able to
		1	Explain the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
		2	Describe the metabolism of nutrient molecules in physiological and pathological conditions.
		3	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins
		4	To understand the concept of bioenergetics
		5	To study and understand biomolecules.
Biochemistry (Practical)	BP209P		Upon completion of the course student will be able to
		1	Perform Qualitative analysis of carbohydrates, reducing sugars and Proteins, urine for abnormal constituents
		2	Determine Blood creatinine, sugar, cholesterol
		3	Prepare buffer solution and measure pH
		4	Estimate Salivary Amylase activity and study different factors like temperature, substrate.
		5	Detect presence of some serum constituents like creatinine, sugar and total cholesterol and study its significance.

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		6	Demonstrate action of salivary amylase on starch and understand denaturation of enzymes along with enzymatic hydrolysis, effect of temperature and substrate concentration
Course	Course Code	Course Outcome Number	Course Outcome
Pathophysiology	BP204T		Upon completion of the course student will be able to
		1	Describe the etiology and pathogenesis of the selected disease states
		2	Name the signs and symptoms of the diseases pertaining to CVS, Endocrine system, Nervous system, GI system, Respiratory system, Renal system, bones joints, cancer, Haematological diseases, sexually transmitted diseases, infectious diseases.
		3	Describe the complications of the diseases
		4	To understand definition, epidemiology, etiology, clinical manifestations, pathophysiology, complications, diagnosis & plan of treatment for Endocrine system disorders and Reproductive system disorders
		5	To understand definition, epidemiology, etiology, clinical manifestations, pathophysiology, complications, diagnosis & plan of treatment for Immunological disorders and Musculoskeletal and connective tissue disorders, Hematological disease
		6	To understand baseline knowledge required to practice medicine safely.
Course	Course Code	Course Outcome Number	Course Outcome
Computer Applications in Pharmacy (Theory)	BP205T		Upon completion of the course student will be able to
		1	know the various types of application of computers in pharmacy
		2	know the various types of databases
		3	know the various applications of databases in pharmacy
		4	To create data bases using MS Access, SQL
		5	To identify the role of computers for data analysis in the field of preclinical development.
		6	To study number system
Computer Applications in Pharmacy (P)	BP210P		Upon completion of the course student will be able to
		1	Design a questionnaire using a word processing package to gather information about a particular disease.
		2	Create a HTML web page to show personal information.
		3	Retrieve the information of a drug and its adverse effects using online tools
		4	Create mailing labels Using Label Wizard , generating label in MS WORD
		5	Create a database in MS Access to store the patient information with the required fields Using access. Generating report and printing the report from patient database
		6	Design a form in MS Access to view, add, delete and modify the patient record in the database
7	Creating invoice table, Drug information storage and retrieval, Creating and working with queries using MS Access		

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		8	Exporting Tables, Queries, Forms and Reports to web pages and XML pages
Course	Course Code	Course Outcome Number	Course Outcome
Environmental Science (Theory)	BP206T		Upon completion of the course student will be able to
		1	Create the awareness about environmental problems among learners
		2	Impart basic knowledge about the environment and its allied problems
		3	Demonstrate an attitude of concern for the environment
		4	Motivate learner to participate in environment protection and environment improvement.
		5	Demonstrate skills to help the concerned individuals in identifying and solving environmental problems
		6	Strive to attain harmony with Nature
COURSE OUTCOMES S. Y. B.PHARM			
Pattern: 2019 (Semester-III and IV)			
SEMESTER-III			
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Organic Chemistry II – Theory	BP301T		Upon completion of the course student will be able to
		1	Write the structure, name and the type of isomerism of the organic compound
		2	Write the reaction, name the reaction and orientation of reactions
		3	Account for reactivity/stability of compounds. Prepare small organic compounds
		4	Student shall be able to account for reactivity/stability of compounds
Pharmaceutical Organic Chemistry II – Practical	BP305P		Upon completion of the course student will be able to
		1	To learn preparation of organic compound, recrystallisation and filtration method.
		2	Determination of saponification value of oil samples
		3	Experiments involving Separation of Binary mixtures.
		4	Student shall be able to synthesize the organic compound
		5	Student shall be able to Calculate % practical yield of synthesized organic compound
Course	Course Code	Course Outcome Number	Course Outcome
Physical Pharmaceutics I – Theory	BP302T		Upon completion of the course student will be able to
		1	Investigate and apply various theories, laws and equations related to different states of matter





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		2	Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant.
		3	Demonstrate use of physicochemical properties of drugs in the formulation development and evaluation of dosage forms.
		4	To classify complexes and to understand its applications.
		5	To infer about the pH determination and implementation of buffers in pharmaceutical and biological systems.
Physical Pharmaceutics I P	BP306P		Upon completion of the course student will be able to
		1	Determination the solubility of drug at room temperature, pKa value by Half Neutralization/ Henderson Hassel Balch equation. Partition co- efficient, surface tension, HLB number.
		2	Determination of Freundlich and Langmuir constants using activated char coal. Determination of critical micellar concentration of surfactants
		3	To Determine of stability constant and donor acceptor ratio by solubility and pH titration method
		4	To determine the critical micelles concentration of surfactant
		5	To determine thermodynamic parameters by using solubility studies
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Microbiology – Theory	BP303T T		Upon completion of the course student will be able to
		1	Understand methods of identification, cultivation and preservation of various Microorganism
		2	To understand the importance and implementation of sterilization in pharmaceutical processing and industry. Learn sterility testing of pharmaceutical products.
		3	Carried out microbiological standardization of Pharmaceuticals. Understand the cell culture technology and its applications in pharmaceutical industries
		4	To study mechanism of action and effectiveness of various sterilization processes and implementation of sterilization methods in pharmaceutical industry including sterility testing of pharmaceutical products.
		5	To study designing of aseptic area and clean area classification
		6	To study disinfectants with respect to mechanism of action, its evaluation and to study importance of microbial limit tests
Pharmaceutical Microbiology (Practical)	BP307P P		Upon completion of the course student will be able to
		1	Introduction and study of different equipment's and processing, Sterilization, Nutrient stabs and slants preparations.
		2	Staining methods-, Microbiological assay of antibiotics by cup plate method and other methods
		3	Motility determination, Sterility testing, Bacteriological analysis of water, Biochemical test of any one microorganism.



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		4	To study biochemical tests of different microorganism.
		5	To observe motility of bacteria by hanging drop technique and to execute morphology bacteria by simple staining, negative staining & gram staining.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Engineering – Theory	BP304T T		Upon completion of the course student will be able to
		1	To know various unit operations used in Pharmaceutical industries.
		2	To understand the material handling techniques.
		3	To perform various processes involved in pharmaceutical manufacturing process.
		4	To carry out various test to prevent environmental pollution.
		5	To appreciate and comprehend significance of plant lay out design for optimum use of resources.
		6	To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries
Pharmaceutical Engineering – (Practical)	BP 308P		Upon completion of the course student will be able to
		1	Determination of radiation constant, heat transfer coefficient by heat exchanger, moisture content and loss on drying.
		2	Construction of drying curves, Construction, working and application of any two Pharmaceutical Machinery.
		3	To study effect of time on the Rate of Crystallization.
SEMESTER-IV			
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Organic Chemistry III– Theory	BP401T		Upon completion of the course student will be able to
		1	Understand the methods of preparation and properties of organic compounds.
		2	Explain the stereo chemical aspects of organic compounds and stereo chemical reactions.
		3	Know the medicinal uses and other applications of organic compounds
		4	Understand various molecular representations and their interconversions
		5	Explain mechanism and applications of rearrangement of electron deficient & electron rich systems.
Course	Course Code	Course Outcome Number	Course Outcome
Medicinal Chemistry I – Theory	BP402T.		Upon completion of the course student will be able to
		1	Understand the chemistry of drugs with respect to their pharmacological activity.
		2	Understand the drug metabolic pathways, adverse effect and therapeutic value of Drugs.
		3	Know the Structural Activity Relationship (SAR) of different class of drugs.

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		4	Design of scheme of synthesis of essential drugs
		5	Understanding uses, adverse effects of Drugs
Medicinal Chemistry I – Practical	BP406P		Upon completion of the course student will be able to
		1	To Synthesis medicinally important compounds / drug intermediates with Recrystallization of compound and monitoring reactions with TLC
		2	To understand and execute stereomodel construction
		3	To obtain data through MP, BP, TLC etc
		4	To purify compound by recrystallisation.
Course	Course Code	Course Outcome Number	Course Outcome
Physical Pharmaceutics II – Theory	BP 403 T		Upon completion of the course student will be able to
		1	Relate various physicochemical properties of drug and excipient molecules in designing the dosage forms
		2	Distinguish the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
		3	Demonstrate the behaviour and mechanism of drugs and excipients in the formulation development and evaluation of dosage forms.
		4	Understand the physical properties of solutions, buffers, isotonicity, disperse systems and rheology.
		5	Understand of physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
Physical Pharmaceutics II – Practical	BP407P		Upon completion of the course student will be able to
		1	Determination of particle size, bulk density, true density and porosity, angle of repose and influence of lubricant on angle of repose, reaction rate constant first order, Cloud point and Krafft point of given surfactant.
		2	Determination of viscosity of liquid using Ostwald's viscometer, of viscosity of semisolid by using Brookfield viscometer,
		3	To determine the critical micelles concentration of surfactant
		4	To determine thermodynamic parameters by using solubility studies
		5	To determine thermodynamic parameters by using solubility studies
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacology I – Theory	BP 404 T		Upon completion of the course student will be able to
		1	Understand the pharmacological actions of different categories of drugs.
		2	Explain the mechanism of action at organ system/sub cellular/macromolecular levels.
		3	Observe the effects of drugs on animal by simulated experiments.
		4	Understand the relative roles of passive diffusion, facilitated diffusion and active transport in, and how physicochemical properties

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			affect, the movement of drugs in the body.
		5	Explain the importance of receptors, enzymes and ion channels as drug targets
		6	To know in detail about neurotransmitters involved in autonomic nervous system, their synthesis and metabolism
Pharmacology I – Practical	BP408P		Upon completion of the course student will be able to
		1	To learn Commonly used instruments in experimental pharmacology.
		2	To study Effect of hepatic microsomal enzyme inducers, drugs on ciliary motility of frog oesophagus
		3	Study of stereotype and anti-catastrophic activity of drugs on rats/mice.
		4	Study of anxiolytic activity of drugs using rats/mice. Study of local anaesthetics by different methods
		5	To learn Maintenance of laboratory animals as per CPCSEA guidelines.
		6	To Study of different routes of drugs administration in mice/rats.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacognosy and Phytochemistry I – Theory	BP 405T		Upon completion of the course student will be able to
		1	To know the techniques in the cultivation and production of crude drugs
		2	To know the crude drugs, their uses and chemical nature
		3	Know the evaluation techniques for the herbal drugs. microscopic and morphological evaluation of crude drugs
Pharmacognosy and Phytochemistry I – Practical	BP409P		Upon completion of the course student will be able to
		1	Determination of Ash value , Extractive values of crude drugs , moisture content of crude drugs ,swelling index and foaming index
		2	Determination of stomatal number and index ,vein islet number,size of starch grains, calcium oxalate crystals by eye piece micrometer , Fiber length and width , starch grains by Lycopodium spore method
		3	To study determination of physical evaluation of crude drugs.
		4	To study determination of size of starch grains, calcium oxalate crystals and Fiber length and width
		5	To understand and explain morphology and anatomy of different plant parts.
		6	To Comprehend & explain primary metabolites comprehensively from source to their Pharmaceutical & industrial applications.
COURSE OUTCOMES T.Y.B.PHARM			
2022-23 (Semester V)			
SEMESTER-V			
Course	Course Code	Course Outcome Number	Course Outcome
Medicinal	BP501T		Upon completion of the course student will be able to





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Chemistry II – Theory		1	Demonstrate the understanding of concept, types, pharmacopoeial specifications, techniques & equipments used in tablet coating.
		2	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
		3	Know the Structural Activity Relationship of different class of drugs
		4	Study the chemical synthesis of selected drugs
		5	Idea about structure and Biological activity
Course	Course Code	Course Outcome Number	Course Outcome
Industrial Pharmacy-I– Theory	BP502TT		Upon completion of the course student will be able to
		1	illustrate various pharmaceutical dosage forms and their manufacturing techniques.
		2	describe various factors to be considered in development of pharmaceutical dosage forms
		3	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
		4	Understand the basic principles of formulation and development of Parenteral and cosmetic dosage form.
		5	Understand the basic principles of formulation and development of Parenteral and cosmetic dosage form.
Industrial Pharmacy-I– Practical	BP506P		Upon completion of the course student will be able to
		1	Preformulation studies on paracetamol/asparin/or any other drug Preparation and evaluation of Paracetamol tablets
		2	Quality control test of (as per IP) marketed tablets and capsules
		3	Preparation of Creams (cold / vanishing cream)
		4	Understand the basic principles of formulation and development of Parenteral and cosmetic dosage form.
		5	Understand the basic principles of formulation and development of Parenteral and cosmetic dosage form.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacology II – Theory	BP503T T		Upon completion of the course student will be able to
		1	Understand the mechanism of drug action and its relevance in the treatment of different diseases
		2	Appreciate correlation of pharmacology with related medical sciences
		3	Demonstrate the various receptor actions using isolated tissue preparation.
		4	Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
		5	They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases.
		6	They would get an idea about correlation of pharmacology with other

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			bio medical sciences.
Pharmacology II – Practical	BP507P		Upon completion of the course student will be able to
		1	Introduction to in-vitro pharmacology and physiological salt solutions. Effect of drugs on isolated frog heart.
		2	Effect of drugs on blood pressure and heart rate of dog. Study of diuretic activity of drugs using rats/mice.
		3	DRC of acetylcholine using frog rectus abdominis muscle. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus
		4	Bioassay of histamine using guinea pig ileum by matching method. Bioassay of oxytocin using rat uterine horn by interpolation method.
		5	They would have understood the signal transduction mechanism of various receptors
		6	They would have understood the experiments related with bioassay. They also have understood calculations of determination of PA2 and PD2 values.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacognosy and Phytochemistry II– Theory	BP504T T		Upon completion of the course student will be able to
		1	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
		2	To understand the production of Phytoconstituents /herbal formulation.
		3	To carryout isolation and identification of phytoconstituents
		4	To understand the metabolic pathways in formation of secondary metabolites and application of biogenetic studies.
		5	To carryout isolation and identification of phytoconstituents
		6	To know the characterization and identification of the herbal drugs and phytoconstituents
Pharmacognosy and Phytochemistry II – Practical	BP508P P		Upon completion of the course student will be able to
		1	Distillation of volatile oils and detection of phytoconstituents by TLC
		2	Analysis of crude drugs by chemical tests: (i) Asafoetida (ii) Benzoin (iii) Colophony
		3	Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander
		4	To understand how phytoconstituents are identified by TLC
		5	To know the various chemical parameters for identification of various crude drugs
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical Jurisprudence –	BP505T		Upon completion of the course student will be able to
		1	The Pharmaceutical legislations and their implications in the





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Theory			development and marketing of pharmaceuticals.
		2	Various Indian pharmaceutical Acts and Laws
		3	The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
		4	The code of ethics during the pharmaceutical practice
Semester - VI			
Course	Course Code	Course Outcome Number	Course Outcome
Medicinal Chemistry III – Theory	BP601T		Upon completion of the course student will be able to
		1	Understand the importance of drug design and different techniques of drug design.
		2	Understand the chemistry of drugs with respect to their biological activity.
		3	Know the metabolism, adverse effects and therapeutic value of drugs.
		4	Know the importance of SAR of drugs.
		5	To know the various chemical parameters for identification of various crude drugs
Medicinal chemistry III – Practical	BP607P		Upon completion of the course student will be able to
		1	Preparation of drugs and intermediates
		2	Preparation of medicinally important compounds or intermediates by Microwave synthesis
		3	Determination of physicochemical properties such as logP, clogP, MR, Molecular weight
		4	Drawing structures and reactions using Chem draw®
		5	To know the various chemical parameters for identification of various crude drugs
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacology III – Theory	BP602 T		Upon completion of the course student will be able to
		1	Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
		2	Comprehend the principles of toxicology and treatment of various poisonings and appreciate correlation of pharmacology with related medical sciences.
		3	
		4	
Pharmacology III – Practical	BP608P P		Upon completion of the course student will be able to
		1	Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.





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		2	Study of effect of drugs on gastrointestinal motility. Effect of agonist and antagonists on guinea pig ileum. Bioassay of serotonin using rat fundus strip by three point bioassay.
		3	Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
		4	Understand the use and applications of bio-statistics and its role in Pharmacology
		5	Understand the use and applications of bio-statistics and its role in Pharmacology
Course	Course Code	Course Outcome Number	Course Outcome
Herbal Drug Technology – Theory	BP 603 T		Upon completion of the course student will be able to
		1	understand raw material as source of herbal drugs from cultivation to herbal drug product
		2	know the herbal cosmetics, natural sweeteners, nutraceuticals
		3	Know the WHO and ICH guidelines for evaluation of herbal drugs. Appreciate patenting of herbal drugs, GMP.
		4	To know the herbal cosmetics, natural sweeteners, nutraceuticals
		5	To Understand patenting of herbal drugs
Herbal Drug Technology – Practical	BP609P		Upon completion of the course student will be able to
		1	To perform preliminary phytochemical screening of crude drugs.
		2	Determination of the alcohol content of Asava and Arista
		3	Evaluation of excipients of natural origin
		4	Determination of Aldehyde content Phenol content total alkaloids
		5	Understand the use and applications of bio-statistics and its role in Pharmacology
		6	Understand the use and applications of bio-statistics and its role in Pharmacology
		7	Understand the use and applications of bio-statistics and its role in Pharmacology
Course	Course Code	Course Outcome Number	Course Outcome
Biopharmaceutics and Pharmacokinetics – Theory	BP 604 T		Upon completion of the course student will be able to
		1	Understand the basic concepts in bio pharmaceutics and pharmacokinetics and their significance
		2	Use plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
		3	Understand the concept of dissolution and application of in vitro in vivo correlation in drug product development.
		4	To Understand patenting of herbal drugs
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutical	BP 605 T.		Upon completion of the course student will be able to





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Biotechnology – Theory		1	Biotechnology has a long promise to revolutionize the biological sciences and technology.
		2	Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting.
		3	Biotechnology has already produced transgenic crops and animals and the future promises lot more.
		4	It is basically a research-based subject.
		5	To illustrate use of fermenter for production of fermentation products and information about their purification by downstream process, state the application of Fermenter process in production of vitamins and antibiotics
		6	To understand the concept of immunology including types of immunity, antigen, antibody and their various types of reactions
Course	Course Code	Course Outcome Number	Course Outcome
Quality Assurance – Theory	BP 606T		Upon completion of the course student will be able to
		1	Understand the cGMP aspects in a pharmaceutical industry
		2	Appreciate the importance of documentation
		3	Understand the scope of quality certifications applicable to pharmaceutical industries
		4	Understand the responsibilities of QA & QC departments
		5	Understand the scope of quality certifications applicable to pharmaceutical industries
COURSE OUTCOMES Final Year B.PHARM			
Academic Year 2022-23			
Semester-VII			
Course	Course Code	Course Outcome Number	Course Outcome
Instrumental Methods of Analysis – Theory	BP701T		Upon completion of the course student will be able to
		1	interaction of matter with electromagnetic radiations and justify its applications in drug analysis
		2	Classify the chromatographic separation methods and choose appropriate technique for analysis of drugs.
		3	Design methods for performing quantitative & qualitative analysis of drugs using various analytical instruments.
		4	Appraise general characteristics of analytical method used in drug analysis.





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Instrumental Methods of Analysis – Practical	BP705P		Upon completion of the course student will be able to
		1	Determination of absorption maxima and effect of solvent on absorption maxima of organic compounds
		2	Assay of Drug product as per IP (Assay of Paracetamol tablet by UV Spectrophotometry)
		3	Assay of Drug product by Calibration curve method
		4	Take appropriate safety measures while handling the instruments.
		5	Understand the interpretation of data obtained through experimentation and report the result as per the regulatory requirements.
		6	Employ the knowledge of sophisticated instrumental techniques in advance pharmaceutical research.
Course	Course Code	Course Outcome Number	Course Outcome
Industrial Pharmacy II – Theory	BP702T		Upon completion of the course student will be able to
		1	TO Know the process of pilot plant and scale up of pharmaceutical dosage forms
		2	Understand the process of technology transfer from lab scale to commercial batch Know different Laws and Acts that regulate pharmaceutical industry
		3	Understand the approval process and regulatory requirements for drug products
		4	Understand the approval process and regulatory requirements for drug products
		5	Describe the organization and responsibilities of national and state licensing authority.
		6	Describe the common measure use in quality.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacy Practice – Theory	BP703T		Upon completion of the course student will be able to
		1	To know various drug distribution methods in a hospital
		2	To monitor drug therapy of patient through medication chart review and clinical review and obtain medication history interview and counsel the patients.
		3	To detect and assess adverse drug reactions, interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states.
		4	To do patient counseling in community pharmacy
		5	To understand the concept of Rational drug therapy
		6	To understand the pharmacy stores management and inventory control
Course	Course Code	Course Outcome Number	Course Outcome

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Novel Drug Delivery System – Theory	BP704T		Upon completion of the course student will be able to
		1	To understand various approaches for development of novel drug delivery systems.
		2	To understand the criteria for selection of drugs and polymers for the development of novel drug delivery systems, their formulation and evaluation.
		3	The need, concept, design and evaluation of various customized, Novel Drug Delivery Systems
		4	Identify various approaches for controlled release formulations based on diffusion, dissolution and ion exchange principles.
		5	Describe and select polymer for controlled release formulations
		6	Understand mucoadhesion, microencapsulation and osmotic system
		7	Apply the concept of nanotechnology for targeted drug delivery
		8	Understanding concept of transdermal drug delivery, gastro retentive and nasopulmonary drug delivery systems
		9	Explain the concept behind Ophthalmic drug delivery and Intrauterine drug delivery
Course	Course Code	Course Outcome Number	Course Outcome
Practice School*	BP706P S		Upon completion of the course student will be able to
		1	To know how to prepare research paper.
		2	To understand what is review paper and research paper.
		3	To learn manuscript, plagiarism checking and narrative writing.
		4	To do patient counseling in community pharmacy
		5	To understand the concept of Rational drug therapy
		6	To understand the pharmacy stores management and inventory control
Semester-VIII			
Course	Course Code	Course Outcome Number	Course Outcome
Biostatistics and Research Methodology	BP801T		Upon completion of the course student will be able to
		1	Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
		2	Know the various statistical techniques to solve statistical problems
		3	Appreciate statistical techniques in solving the problems.
		4	Upon completion of the course the student shall be able to Know the various statistical techniques to solve statistical problems
		5	To Appreciate statistical techniques in solving the problems.
		6	To Know the operation of M.S. Excel, SPSS, R and MINITAB
7	To know the basic concept of research methodology and implement it in their project work		



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Course	Course Code	Course Outcome Number	Course Outcome
Social and Preventive Pharmacy	BP802T		Upon completion of the course student will be able to
		1	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
		2	Develop a critical way of thinking based on current health care development
		3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues.
		4	To facilitate information about various National health programs.
		5	To assess a critical way of thinking based on current healthcare development.
		6	To manage Community services in rural, urban and school health.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacovigilance	BP805ET		Upon completion of the course student will be able to
		1	To comprehend the background of pharmacovigilance, adverse drug reactions, and basic terminology
		2	To make utilisation of diverse drug disease classifications, drug dictionaries and drug information assets in pharmacovigilance.
		3	To describe several pharmacovigilance techniques and the communication mechanism involved in ADR reporting.
		4	To evaluate pharmacovigilance safety data production and ICH guidelines.
		5	To assess the process of medical and material vigilance, as well as the safety of drugs and vaccines in specific populations.
		6	Enhancing the ability to submit ADR reports using several ADR reporting forms
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Instrumentation Techniques	BP811ET		Upon completion of the course student will be able to
		1	Express the principle of the advanced instruments used and justify its applications in drug analysis
		2	Understand the principles of analytical techniques and its application in analysis of drugs
		3	Understand analytical data and its interpretation.
		4	Explain the importance and methods for the calibration of various analytical instruments
		5	Formulate and justify techniques for the analysis of drugs using various analytical instruments.
		6	Employ the knowledge of sophisticated instrumental techniques in advance pharmaceutical research

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COURSE OUTCOMES .M.PHARM

Academic Year 2022-23

SEMESTER-I CHEMISTRY DEPARTMENT

Course	Course Code	Course Outcome Number	Course Outcome
Modern Pharmaceutical Analytical Techniques (Theory)	MPA 101T		Upon completion of the course student will be able to
		1	Understanding and demonstrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		3	Analysis of Various single and in combination dosage form.
		4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		5	Able to understand theoretical and Practical Skill of the instruments
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Organic Chemistry – I	MPC 102T		Upon completion of the course student will be able to
		1	The mechanism & applications of various named reactions
		2	The concept of disconnection to develop synthetic routes for small target molecule
		3	The various catalysts used in organic reactions
		4	The chemistry of heterocyclic compounds
		5	The principles and applications of reterosynthesis
		6	Compile the principle, process and applications of Synthon approach and retrosynthesis
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Medicinal Chemistry	MPC 103T		Upon completion of the course student will be able to
		1	Different stages of drug discovery
		2	Role of medicinal chemistry in drug research
		3	Different techniques for drug discovery
		4	Various strategies to design and develop new drug like molecules for biological targets
		5	Elaborate prodrug and Analog development along with its applications

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Course	Course Code	Course Outcome Number	Course Outcome
		6	Interpret techniques of combating drug resistance
			Upon completion of the course student will be able to
Chemistry of Natural Products	MPC 104T	1	Different types of natural compounds and their chemistry and medicinal importance
		2	The importance of natural compounds as lead molecules for new drug discovery
		3	The concept of rDNA technology tool for new drug discovery
		4	General methods of structural elucidation of compounds of natural origin
		5	Summarise general and advanced methods of structural elucidation of compounds of natural origin
		6	Describe isolation, purification and characterization of simple chemical constituents from the natural source.
Course	Course Code	Course Outcome Number	Course Outcome
			Upon completion of the course student will be able to
Pharmaceutical Chemistry Practical I	MPC 105P	1	Some typical degradation reactions to be carried on selected plant constituents
		2	Synthesis of medicinally important compounds involving more than one step along with purification and Characterization using TLC, melting point and IR spectroscopy
		3	Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer, RNA & DNA estimation
		4	Estimation of elements and functional groups in organic natural compounds
		5	Estimation of sodium/potassium by flame photometry, fluorimetry
SEMESTER-II			
Course	Course Code	Course Outcome Number	Course Outcome
			Upon completion of the course student will be able to
Advanced Spectral Analysis	MPC 201T	1	Interpretation of the NMR, Mass and IR spectra of various organic compounds
		2	Theoretical and practical skills of the hyphenated instruments
		3	Identification of organic compounds
		4	Discuss structural elucidation of organic and natural compounds by IR, NMR and MASS spectral data



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Course	Course Code	Course Outcome Number	Course Outcome
Advanced Organic Chemistry –II	MPC 202T		Upon completion of the course student will be able to
		1	The principles and applications of Green chemistry
		2	The concept of peptide chemistry
		3	The various catalysts used in organic reactions
		4	The concept of stereochemistry and asymmetric synthesis.
		5	Discuss the principles of different types of pericyclic reactions.
		6	Explain the applications of various catalysis used in the reaction
Course	Course Code	Course Outcome Number	Course Outcome
Computer Aided Drug Design	MPC 203T		Upon completion of the course student will be able to
		1	Role of CADD in drug discovery
		2	Different CADD techniques and their applications
		3	Various strategies to design and develop new drug like molecules.
		4	Working with molecular modeling software's to design new drug molecules
		5	Discuss history and development of QSAR
		6	Apply statistically QSAR based applications.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutica I Process Chemistry	MPC 204T		Upon completion of the course student will be able to
		1	The strategies of scale up process of apis and intermediates
		2	The various unit operations and various reactions in process chemistry
		3	Create and carry out work up and separation procedure
		4	Predict the outcome of organic reactions using a basic understanding of the general reactivity of functional groups and mechanism.
		5	Explain principles and applications of modern chemical instrumentation, experimental design, and data analysi
		6	Discuss pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phase.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutica -I Chemistry Practical II	MPC 205P		Upon completion of the course student will be able to
		1	Synthesize organic compounds by adapting different approaches
		2	Interpretation and identification of organic compounds by various analytical technique
		3	Perform synthesis of organic compounds by various synthetic





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Principal

			route as well as technique
		4	Apply software's for physicochemical and ADMET properties of drug molecules
		5	Perform experiments based on various computer aided drug design techniques
		6	Reflect the requirement of API through case studies as per regulatory guidelines Department of Ph
		8	Docking study based experimen
SEMESTER III			
Course	Course Code	Course Outcome Number	Course Outcome
Research methodology	301T		Upon completion of the course student will be able to
		1	To learn General Research Methodology , Biostatistics , Medical Research
		2	To understand complete CPCSEA guidelines for laboratory animal facility.
		3	TO understand History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care
SEMESTER I PHARMACEUTICS DEPARTMENT			
Course	Course Code	Course Outcome Number	Course Outcome
Modern Pharmaceutical Analytical Techniques	MPAT 101T		Upon completion of the course student will be able to
		1	Understanding and demonstrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		3	Analysis of Various single and in combination dosage form.
		4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		5	Able to understand theoretical and Practical Skill of the instruments
Course	Course Code	Course Outcome Number	Course Outcome
Drug Delivery System	MPH 102T		Upon completion of the course student will be able to
		1	The various approaches for development of novel drug delivery systems
		2	The criteria for selection of drugs and polymers for the development of

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			delivering system
		3	The formulation and evaluation of Novel drug delivery systems
		4	Evaluate novel drug delivery systems.
		5	Develop new technologies utilized for development of new dosage forms.
		6	Defend the recent developments for drug delivery, as per industry need.
Course	Course Code	Course Outcome Number	Course Outcome
Modern Pharmaceutics	MPH 103T		Upon completion of the course student will be able to
		1	The elements of preformulation studies.
		2	The Active Pharmaceutical Ingredients and Generic drug Product development
		3	Industrial Management and GMP Considerations
		4	Optimization Techniques & Pilot Plant Scale Up Techniques
		5	Stability Testing, sterilization process & packaging of dosage forms
		6	Estimate dissolution, diffusion and pharmacokinetic parameters from Pharmaceuticals point of view.
Course	Course Code	Course Outcome Number	Course Outcome
Regulatory Affair	MPH 104T		Upon completion of the course student will be able to
		1	To know the approval process of
		2	To know the chemistry, manufacturing controls and their regulatory importance
		3	To learn the documentation requirements for
		4	To learn the importance and
		5	Elaborate pharmacovigilance and process of monitoring in clinical trials
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutics Practical I	MPH 105P		Upon completion of the course student will be able to
		1	Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
		2	Experiments based on HPLC ,Gas Chromatography , fluorimetry, flame photometry ,
		3	Formulation and evaluation of sustained release matrix tablets, osmotically controlled DDS, Floating DDS– hydro dynamically balanced DDS
		4	To study the effect of compressional force on tablets disintegration time ,Micromeritic properties of powders and granulation
		5	Demonstrate the effect of the physico-chemical properties on pharmaceutical systems

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SEMISTER II			
Course	Course Code	Course Outcome Number	Course Outcome
Molecular Pharmaceutics (Nano Tech and Targeted DDS)	MPH 201T		Upon completion of the course student will be able to
		1	The various approaches for development of novel drug delivery systems
		2	The criteria for selection of drugs and polymers for the development of NTDS
		3	The formulation and evaluation of novel drug delivery systems.
		4	Appraising the need of pulmonary system, differentiate, formulate and evaluate nasal drug delivery system.
		5	Summarize nucleic acid based therapeutic delivery system
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Biopharmaceutics & Pharmacokinetics	MPH 202T		Upon completion of the course student will be able to
		1	The basic concepts in biopharmaceutics and pharmacokinetics.
		2	The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
		3	The critical evaluation of biopharmaceutic studies involving drug product equivalency.
		4	The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters
		5	Estimate the applications of pharmacokinetics and pharmacodynamics of biotechnology drugs.
Course	Course Code	Course Outcome Number	Course Outcome
Computer Aided Drug Development	MPH 203T		Upon completion of the course student will be able to
		1	To learn Computational Modeling of Drug Disposition
		2	To learn Computers in Preclinical Development
		3	To learn Optimization Techniques in Pharmaceutical Formulation
		4	To learn Computers in Market Analysis
		5	To learn Computers in Clinical Development
		6	To learn Artificial Intelligence (AI) and Robotics
7	To learn Computational fluid dynamics(CFD)		
Course	Course Code	Course Outcome Number	Course Outcome
Cosmetic & Cosmeceuticals	MPH 204T		Upon completion of the course student will be able to
		1	Describe the regulatory provisions related to the import and manufacture of cosmetics as per the Drugs and Cosmetics Act 1940 and the Rules 1945
		2	Discuss key building blocks for various formulations.

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		3	Explain the various problems related to the skin and hair.
		4	Design cosmeceuticals for various skin, hair and dental problems.
		5	Describe the guidelines for the regulation of herbal cosmetics used in private bodies.
		6	Design cosmetics and cosmeceuticals of desired safety, stability and efficacy with technologies involved in their manufacturing
Course	Course Code	Course Outcome Number	Course Outcome
Pharmaceutics Practical II	MPH 205P		Upon completion of the course student will be able to
		1	Elaborate the technique and apply skills in formulating dosage and cosmetic forms.
		2	Apply software to get the formulation of desired characteristics.
		3	Interpret scientific data, represent the data in a tabular and/or graphical form.
		4	Interpret Pharmacokinetic and pharmacodynamics data perform data analysis using computer Softwares and give conclusion.
		5	Perform Pharmacokinetics studies in-vitro
		6	Compare between marketed formulations for drug release
SEMESTER III			
Course	Course Code	Course Outcome Number	Course Outcome
Research methodology	301T		Upon completion of the course student will be able to
		1	To learn General Research Methodology , Biostatistics , Medical Research
		2	To understand complete CPCSEA guidelines for laboratory animal facility.
		3	To understand History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care
PHARMACOLOGY DEPARTMENT SEMESTER I			
Course	Course Code	Course Outcome Number	Course Outcome
Modern Pharmaceutical Analytical Techniques	MPAT 101T		Upon completion of the course student will be able to
		1	Understanding and demonstrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectrofluorimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.

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		2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		3	Analysis of Various single and in combination dosage form.
		4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		5	Able to understand theoretical and Practical Skill of the instruments
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Pharmacology - I	MPL 102T		Upon completion of the course student will be able to
		1	Discuss the pathophysiology and pharmacotherapy of certain diseases
		2	Explain the mechanism of drug actions at cellular and molecular level
		3	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases
		4	Describe mechanism and pharmacology of prototype drugs acting on CVS disorders and explain their clinical use
		5	Illustrate feedback mechanism using mechanism and pharmacological action of hormones, autocooids and their antagonists.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacological and Toxicological Screening Methods-I	MPL 103T		Upon completion of the course student will be able to
		1	Describe the various animals used in the drug discovery process..
		2	Explain good laboratory practices in maintenance and handling of experimental animals.
		3	Appraise the regulations and ethical requirement for the usage of experimental animals.
		4	Discuss the various preclinical in-vitro, in-vivo and other possible animal alternative models for the screening various pharmacological activities.
		5	Elaborate general principles and evaluation of Immunoassay methods.
Course	Course Code	Course Outcome Number	Course Outcome
Cellular and Molecular Pharmacology	MPL 104T		Upon completion of the course student will be able to
		1	Explain the receptor signal transduction processes.
		2	Explain the molecular pathways affected by drugs
		3	Appreciate the applicability of molecular pharmacology and biomarkers





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			in drug discovery process.
		4	Demonstrate molecular biology techniques as applicable for pharmacology.
		5	Interpret the concept of Immunotherapeutic
		6	Interpret various Cell culture techniques.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacology Practical I	MPL 105P		Upon completion of the course student will be able to
		1	Analysis of pharmacopoeial compounds & their formulations by UV Vis spectrophotometer.
		2	Simultaneous estimation of multi component containing formulations by UV Spectrophotometry
		3	Experiments based on HPLC.
		4	Experiments based on Gas Chromatography.
		5	Estimation of riboflavin/quinine sulphate by Fluorimetry.
		6	Estimation of sodium/potassium by flame photometry
SEMISTER II			
Course	Course Code	Course Outcome Number	Course Outcome
Advanced Pharmacology II	MPL 201T		Upon completion of the course student will be able to
		1	Explain the mechanism of drug actions at cellular and molecular level.
		2	Discuss the pathophysiology and pharmacotherapy of certain diseases.
		3	Understand the adverse effects, contraindications and clinical uses of drugs used in the treatment of diseases
		4	Relate significance of rhythm, cycles and biological clock for application of chronotherapy in various disease conditions
		5	Explain antioxidant scavenging effects on free radicalsto cure diabetes, neurodegenerative diseases and cancer etc.
		6	Conclude the recent advances in the treatment of Alzhemier's disease, Parkinson's disease, cancer and diabetes mellitus.
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacologic al and Toxicological Screening Methods-II	MPL 202T		Upon completion of the course student will be able to
		1	• Explain the various types of toxicity studies.
		2	Appreciate the importance of ethical and regulatory requirements for toxicity studies.
		3	Demonstrate the practical skills require conducting the preclinical toxicity studies.
		4	Describe the significance of IND enabling studies and safety pharmacology studies.

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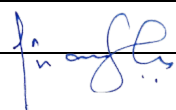
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		5	Recognize the importance and applications of toxicokinetics studies and alternative methods to animal toxicity testing.
		6	Demonstrate the practical skills require for conducting the preclinical toxicity studies.
Course	Course Code	Course Outcome Number	Course Outcome
Principles of Drug Discovery	MPL 203T		Upon completion of the course student will be able to
		1	• Explain the various stages of drug discovery.
		2	Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery.
		3	Explain various targets, biomarkers and in vitro screening techniques for drug discovery
		4	Explain various lead seeking method and lead optimization
		5	Appreciate the importance of the role of computer aided drug design in drug discovery
Course	Course Code	Course Outcome Number	Course Outcome
Clinical Research and Pharmacovigilance	MPL204T		Upon completion of the course student will be able to
		1	Explain the regulatory requirements for conducting clinical trial.
		2	Demonstrate the types of clinical trial designs.
		3	Explain the responsibilities of key players involved in clinical trials.
		4	Execute safety monitoring, reporting and close-out activities.
		5	Explain the principles of Pharmacovigilance.
		6	Detect new adverse drug reaction and their assessment.
7	Perform the adverse drug reaction reporting systems and communication in Pharmacovigilance		
Course	Course Code	Course Outcome Number	Course Outcome
Pharmacology Practical II	MPL 205P		Upon completion of the course student will be able to
		1	Demonstrate the determination of unknown concentration of sample by Bioassay method using chicken ilium preparation.
		2	Illustrate the drug effect on rat BP, heart rate and ECG using computer simulation techniques
		3	Study the acute oral toxicity, dermal toxicity, repeated dose toxicity studies and drug mutagenicity study as per OECD guidelines.
		4	Assess the ADR reporting and monitoring protocol.
		5	Design the protocol for Clinical trial studies.

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		6	Evaluate the efficacy of drugs using In-silico studies like docking studies; Pharmacophore based screening and QSAR studies.
SEMESTER III			
Course	Course Code	Course Outcome Number	Course Outcome
Research Methodology & Biostatistics	MRM 301T		Upon completion of the course student will be able to
		1	To learn General Research Methodology , Biostatistics , Medical Research
		2	To understand complete CPCSEA guidelines for laboratory animal facility.
		3	TO understand History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care.
SEMESTER IV			
Course		Course outcome number	Course of study for M. Pharm. IV Semester (Common for All Specializations)
			Upon completion of the course student will be able to
JOURNAL CLUB		1	To learn research based work
		2	To understand various method of research
		3	To learn thesis writing
		4	To understand how to do literature survey

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PROGRAM OUTCOME B PHARMACY

Sr. No.	Type	ID	Program Outcome
1.	PO	PO1	Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2.	PO	PO2	Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3.	PO	PO3	Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4.	PO	PO4	Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5.	PO	PO5	Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
6.	PO	PO6	Professional Identity: Understand, analyze and communicate the value of their professional roles in society(e.g. health care professionals, promoters of health, educators, managers, employers, employees)
7.	PO	PO7	Pharmaceutical Ethics: Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8.	PO	PO8	Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions
9.	PO	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
10.	PO	PO10	Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11.	PO	PO11	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

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PROGRAM OUTCOME M PHARMACY M (CHEMISTRY)

Sr. No.	Type	ID	Program Outcome
1.	PO	PO1	Chemistry Knowledge: Acquire knowledge on design, development, synthesis, purification, characterization and biological evaluation of new molecules
2.	PO	PO2	Planning Abilities: Demonstrate effective planning abilities, develop and implement plans and organize work to meet deadlines
3.	PO	PO3	Problem Solving: To utilize the principles of synthetic techniques with clear and critical thinking, while solving problems and making decisions. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4.	PO	PO4	Modern Techniques: To learn, choose and apply appropriate spectroscopic, Insilco study, hyphenated methods and related computing tools with thoughtfulness of their applications
5.	PO	PO5	Experimental Ethics: Honor personal values and apply ethical principles in professional and social contexts
6.	PO	PO6	Interdisciplinary Commitment: To acquire skill oriented practical ability and utilize the needs of pharmaceutical chemistry in all other programs to emerge as potent researcher
7.	PO	PO7	Professional Identity: Understand, analyze and communicate the role of pharmaceutical chemist in society.
8.	PO	PO8	Rational Flexibility: To engage in critical and logical thinking and to gain an overall knowledge in developing newer methods, impurity profiling and validation protocols those are useful in routine and laboratory purpose
9.	PO	PO9	Environment and Sustainability: To understand and develop green chemistry approach.
10.	PO	PO10	Lifelong Learning: Understand and apply the concepts in day to day life activities for the benefit of self and for the welfare of society



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PROGRAM OUTCOME B PHARMACY (Pharmaceutics)

Sr. No.	Type	ID	Program Outcome
1.	PO	PO1	Scientific knowledge: To apply the scientific and technological principles to design, develop pharmaceutical dosage forms and drug delivery systems for better therapeutic results.
2.	PO	PO2	Technological applications: To utilize technical knowledge and identify any factors affecting the quality of Pharmaceutical manufacturing processes.
3.	PO	PO3	Modern tool usage: Learn, select, and apply appropriate methods, procedures, resources, and modern computing tools with an understanding of the limitations for formulation development.
4.	PO	PO4	Entrepreneurship: To understand the basics of establishing and management of pharmaceutical enterprise and manufacturing
5.	PO	PO5	Practical skills: To gain practical expertise in formulating and evaluating various user-friendly drug delivery systems for minor ailments to major diseases
6.	PO	PO6	Applied science: To employ contemporary scientific knowledge viz., pharmacology, biotechnology for designing patient-centric pharmaceuticals.
7.	PO	PO7	Computational and statistical methodologies: Applying and utilizing the statistical tools with the aid of computer software to optimize the formulation development process
8.	PO	PO8	To respect personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural, personal variability in values, Communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions
9.	PO	PO9	Environment and sustainability: To understand, protect and cooperate environmental concerns for sustaining biodiversity in pharmaceutical product development
10.	PO	PO10	Life-long learning: To develop the habit of updating knowledge from time to time to meet industrial demands and social needs for having a fruitful career in Pharmacy



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PROGRAM OUTCOME M PHARMACY (PHARMACOLOGY)

Sr. No.	Type	ID	Program Outcome
1.	PO	PO1	Drug Expertise: Acquire knowledge on various classes of drugs and their mode of actions to unveil the remedies for many ailments.
2.	PO	PO2	Analytical Reasoning: Identify assumptions and reveal the evidence based reason for the disease or disorder take place, to select the type of relevant treatment.
3.	PO	PO3	Experimental Ethics: Consider and follow ethics and guidelines specified by the authorities of various agencies and Government of India for animal congenial laboratory practice.
4.	PO	PO4	Interdisciplinary engagement: Obtain skill oriented practical proficiency by exposing and utilizing the needs of pharmacy in all disciplines to emerge as potent researcher.
5.	PO	PO5	Professional Identity : Be committed and responsible person to play a proactive role with fidelity to community and empower society
6.	PO	PO6	Statistical Skills: Apply and analyze quantitative metrics to gain safety data on dosage, also to compare the effectiveness among experimental groups.
7.	PO	PO7	Intellectual Flexibility: Engage in critical thinking and gain insight to identify, design and formulate pharmaceutical products that are in need of current aspects by using material from natural sources.
8.	PO	PO8	Lifelong learning: Understand and apply the concepts in day to day life activities for the benefit of self and for the welfare of society and its concerns.



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