



SHIVLINGESHWAR COLLEGE OF PHARMACY

Almalta Tq. Ausa Dist. Latur - 413 520, Maharashtra, India
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2.6.1 Course outcomes for all Programmes offered by the institution



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B.Pharm I year

S. N.	COURSE	COURSE CODE	COURSE OUTCOMES	
1	Human Anatomy and Physiology I-	BP101T	BP101T.1	Students would have studied about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body
			BP101T.2	They would have understood the various homeostatic mechanisms and their imbalances.
			BP101T.3	Students would able to identify the different types of bones in human body.
			BP101T.4	Students would be able to identify the various tissues of different systems of human body.
			BP101T.5	Students would learn about the various experimental techniques related to physiology.
			BP101T.6	They would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting.
2	Pharmaceutical Analysis I	BP102T	COURSE OUTCOME	
			BP102T.1	To perform the volumetric analysis of the chemical substance.
			BP102T.2	To describe the sources of error commonly developed during drug analysis and method to minimize them.
			BP102T.3	To Understand the basic concepts and titrimetric, gravimetric and electrochemical analysis.
			BP102T.4	To develop analytical skills
			BP102T.5	To discuss the technique of conductometry, potentiometry and polarography and their application in the analysis of pharmaceuticals.
3	Pharmaceutics I	BP103T	COURSE OUTCOME	
			BP103T.1	Know the history of profession of pharmacy.
			BP103T.2	Understand the basics of different dosage forms, pharmaceutical incompatibilities and Pharmaceutical calculations.
			BP103T.3	Understand the professional way of handling the prescription.
			BP103T.4	Know the Preparation of various conventional dosage forms.
4	Pharmaceutical Inorganic Chemistry	BP104T	COURSE OUTCOME	
			BP104T.1	Explain about impurities and pharmacopoeia.
			BP104T.2	Explain the principle and procedure involved in limit tests.
			BP104T.3	Describe the method of preparation, assay procedure, properties and medicinal uses inorganic compounds.
			BP104T.4	Define and explain classes of inorganic compounds like acids, bases & buffers, GIT, Radiopharmaceuticals, Dental products, major extra and intracellular electrolytes and miscellaneous.



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5	Communication skills	BP105T	COURSE OUTCOME	
			C0205.1	Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation.
			C0205.2	Communicate effectively (Verbal and Non-Verbal)
			C0205.3	Effectively manage the team as a team player.
			C0205.4	Develop interview skills.
			C0205.5	Develop Leadership qualities and essentials.
6	Remedial Biology	BP106RBT	COURSE OUTCOME	
			BP106RBT.1	Understand Cell biology (Basic Nature of Plant cell and Animal cell)
			BP106RBT.2	Remember Classification System of both Plants & Animals
			BP106RBT.3	Understand Various tissue system and organ system in plant and animals
			BP106RBT.4	Relate Theory of evolution
			BP106RBT.5	Describe Anatomy and Physiology of plants and animals
7	Remedial Mathematics	BP106RMT	COURSE OUTCOME	
			BP106RMT.1	Utilise mathematical concepts and principles to perform computations for Pharmaceutical Sciences.
			BP106RMT.2	Generate, use and analyse mathematical representations and mathematical relationships.
			BP106RMT.3	Elaborate mathematical knowledge and understanding to help in the field of Clinical Pharmacy
8	Human Anatomy and Physiology – I Practical	BP107P	COURSE OUTCOME	
			BP107P.1	Effectively use the microscope for microscopic study of various tissues.
			BP107P.2	Identify axial and appendicular bones of human skeleton.
			BP107P.3	Explain the gross morphology, structure and functions of various organs of human body.
			BP107P.4	Identify different tissues and organs of different systems of human body.
			BP107P.5	Perform the haematological test like blood cell count, haemoglobin estimation, bleeding/clotting time, etc.
			BP107P.6	Record the blood pressure, heart rate, pulse rate and respiratory volume.
9	Pharmaceutical Analysis I – Practical	BP108P	COURSE OUTCOME	
			BP108P.1	Able to predict the level of specific impurities in the given inorganic comps by performing different limit test.
			BP108P.2	Prepare primary and secondary standard solution.
			BP108P.3	Perform standardization of secondary standard solution.



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			BP108P.4	Determine percentage purity of given pharmaceutical drugs by titrimetric analysis.
10	Pharmaceutics I – Practical	BP109P	COURSE OUTCOME	
			BP109P.1	To understand the principles used in the preparation of solid, liquid and semi-solid dosage forms.
			BP109P.2	To experiment with monophasic liquid dosage forms for internal and external administration.
			BP109P.3	To prepare biphasic liquid dosage forms.
			BP109P.4	To design and prepare powders, granules, semi-solid dosage forms.
			BP109P.5	To formulate suppositories
11	Pharmaceutical Inorganic Chemistry – Practical	BP110P	COURSE OUTCOME	
			BP110P.1	Perform limit test for various impurities.
			BP110P.2	Perform identification test for given substance.
			BP110P.3	Perform test for purity.
			BP110P.4	Prepare inorganic compounds.
12	Communication skills – Practical*	BP106RBT	COURSE OUTCOME	
			BP106RBT.1	Understand the behavioral needs for pharmacist to function effectively in areas of pharmaceutical operations
			BP106RBT.2	Communicate effectively (Verbal and NonVerbal)
			BP106RBT.3	Effectively manage the team as a team player
			BP106RBT.4	To Develop interview skills
			BP106RBT.5	Develop Leadership qualities and essentials communication skills.
			BP106RBT.6	Helps in understanding English language properly and presentation effectively.
13	Remedial Biology – Practical*	BP112RBP	COURSE OUTCOME	
			BP112RBP.1	Explain functioning of different types of Microscopes
			BP112RBP.2	Describe the function of cell and tissues.
			BP112RBP.3	Introduction to various equipments and techniques use to check different body part functions.
14	Human Anatomy and Physiology II – Theory	BP201T	COURSE OUTCOME	
			BP201T.1	Students would have studied about the gross morphology, structure and functions of nervous, respiratory, urinary and reproductive systems in the human body.
			BP201T.2	They would have studied in detailed about energy and metabolism.
			BP201T.3	Students would able to identify the various organs of different systems of human body.



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			BP201T.4	They would have performed and learnt about the experiments like neurological reflex, body temperature measurement.
			BP201T.5	They would have studied elaborate on interlinked mechanisms in the maintenance of normal functioning of human body.
			BP201T.6	They would have learnt and performed the experiments like Olfaction, gustation reflex and eye sight.
15	Pharmaceutical Organic Chemistry I – Theory	BP202T	COURSE OUTCOME	
			BP202T.1	Write the structure, name and types of isomerism and/or organic compounds.
			BP202T.2	Write the reaction, name the reaction and orientation of reactions.
			BP202T.3	Account for reactivity/stability of compounds
			BP202T.4	Identify/ confirm the identification of compound.
			BP202T.5	Write uses of mentioned organic compound.
			BP202T.6	Give general methods of preparation and chemical properties of compounds.
16	Biochemistry – Theory	BP203T	COURSE OUTCOME	
			BP203T.1	Identify the classes of Biomolecules with concept of cell metabolism.
			BP203T.2	Explain how the metabolism of glucose leads ultimately to the generation of large quantities of ATP.
			BP203T.3	Understand the metabolism of nutrient molecules in physiological and pathological condition.
			BP203T.4	Understand the genetic organization of mammalian genome and function of DNA in the synthesis of RNA and protein
			BP203T.5	Understand the catalytic role of enzyme importance of enzyme inhibitors in design of new drugs therapeutic and diagnostic application of enzymes.
17	Pathophysiology – Theory	BP204T	COURSE OUTCOME	
			BP204T.1	Understand the knowledge of diseases
			BP204T.2	To inculcate knowledge of causes, mechanism, diagnosis, prevention and treatment of diseases
			BP204T.3	To understand pathogenesis of diseases
			BP204T.4	To understand applications of disease knowledge
			BP204T.5	Safe, effective and rationale use of medicines
18	Computer Applications in Pharmacy – Theory	BP205T	COURSE OUTCOME	
			BP205T.1	To apply the knowledge of mathematics and computing fundamentals to pharmaceutical applications for any given requirement.
			BP205T.2	To Design and develop solutions to analyze pharmaceutical problems using computers.



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			BP205T.3	To integrate and apply efficiently the contemporary IT tools to all Pharmaceutical related activities
			BP205T.4	To solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to Pharmacy.
19	Environmental sciences – Theory	BP206T	COURSE OUTCOME	
			BP206T.1	Understand and explain multidisciplinary nature of environmental sciences
			BP206T.2	Understand the different concepts, structure and functions of various ecosystem.
			BP206T.3	Understand types of pollution and their control.
			BP206T.4	Create and awareness about environmental problems , develop an attitude towards concerns of environment.
			BP206T.5	Understand what different factors can make impact on human being and environment
20	Human Anatomy and Physiology II –Practical	BP207P	COURSE OUTCOME	
			BP207P.1	Record the body temperature.
			BP207P.2	Identify axial and appendicular bones of human skeleton and joints.
			BP207P.3	Explain the gross morphology, structure and functions of various organs of human body.
			BP207P.4	Identify different tissues and organs of different systems of human body.
			BP207P.5	Perform urine analysis for normal and abnormal constituents.
			BP207P.6	Demonstrate the muscle curve using computer software.
21	Pharmaceutical Organic Chemistry I– Practical	BP208P	COURSE OUTCOME	
			BP208P.1	Identify unknown organic compound.
			BP208P.2	Perform common laboratory techniques like filtration, recrystallization, reflux etc.
			BP208P.3	Prepare suitable solid derivatives of organic compounds
			BP208P.4	Construct molecular models.
22	Biochemistry – Practical	BP209P	COURSE OUTCOME	
			BP209P.1	Detect and identify protein , Amino acids and carbohydrates by various qualitative as well as quantitative tests
			BP209P.2	Detect and identify abnormal constituents of urine by various qualitative tests.
			BP209P.3	Detect presence of some serum constituents like creatinine , sugar and total cholesterol and study its significance.
			BP209P.4	Demonstrate action of salivary amylase on starch and understand denaturation of enzymes along with enzymatic hydrolysis effect of temperature and substrate concentration.



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23	Computer Applications in Pharmacy – Practical*	BP210P	COURSE OUTCOME	
			BP210P.1	To create HTML web page to show personal information.
			BP210P.2	To generate label in MS WORD
			BP210P.3	To generating report and printing the report from patient database.
			BP210P.4	Creating and working with queries in MS Access.
B.Pharm II Year				
24	Pharmaceutical Organic Chemistry II – Theory	BP301T	COURSE OUTCOME	
			BP301T.1	Acquiring knowledge in basic organic chemistry.
			BP301T.2	To synthesize the organic compounds, and to have thorough knowledge of chemical reactions.
			BP301T.3	Orientation studies of functional groups over the aromatic compounds during reactions.
			BP301T.4	To study electron donating and withdrawing effects for reactivity and stability of compounds.
			BP301T.5	To write the structures, and possible isomers of various organic compounds.
25	Physical Pharmaceutics I – Theory	BP302T	COURSE OUTCOME	
			BP302T.1	To learn basic concept of different state of mater along with their physical and chemical properties and its importance in pharmaceutical products.
			BP302T.2	To explain properties of solution and its analytical methods for determination.
			BP302T.3	To explain concepts of protein binding and Complexation.
			BP302T.4	To utilization of knowledge to drug designing.
			BP302T.5	To correlate principles of Physical Pharmacy in preparation of dosage form.
			BP302T.6	To know the drug absorption in Vivo and inVitro.
26	Pharmaceutical Microbiology – Theory	BP303T	COURSE OUTCOME	
			BP303T.1	To explain the basic knowledge about field of Microbiology scope and its importance and the detailed information regarding bacteria morphology and cultivation and differrent types of microscopes.
			BP303T.2	Explain the identification techniques of bacteria and mererits and demerits of various sterilization techniques.
			BP303T.3	Explain the morphology and cultivation of virus and fungi and describe diflerent types of disinfectants used in the pharmaceutical industry and their evaluation techniclues and sterility testing as per various pharmacopoeia.
			BP303T.4	Describe the aseptic techniques, microbiology assay of antibiotics, vitamins tInd amino acids.
			BP303T.5	Explain the factors affecting microbiological spoilage in pharmaceutical products and evaluation of preservatives and details of cell culture techniqes and the application in prtrarmaceuticals.



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27	Pharmaceutical Engineering – Theory	BP304T	COURSE OUTCOME	
			BP304T.1	To discuss various unit operation used in Pharmaceutical industries.
			BP304T.2	To acknowledge the materials handling techniques.
			BP304T.3	To know about principle, construction, working of various equipments involved in manufacturing of dosage form.
			BP304T.4	To study industrial hazards developed during performing these operations & their safety measures required.
			BP304T.5	Necessity of unit operation in design & manufacturing of dosage form.
28	Pharmaceutical Organic Chemistry II – Practical	BP305P	COURSE OUTCOME	
			BP305P.1	Write the structure, name and the type of isomerism of the organic compound.
			BP305P.2	Write the reaction, name the reaction and orientation of reactions.
			BP305P.3	Account for reactivity/stability of compounds.
			BP305P.4	Identify/confirm the identification of organic compound.
			BP305P.5	Prepare Organic Compounds.
29	Physical Pharmaceutics I – Practical	BP306P	COURSE OUTCOME	
			BP306P.1	To find out density of the material.
			BP306P.2	To determine surface tension for liquid drug design.
			BP306P.3	To select proper emulsifying agent.
			BP306P.4	To understand concept of CMC.
			BP306P.5	To understand concept of Solubility.
			BP306P.6	To know the solute-solvent interaction.
30	Pharmaceutical Engineering – Practical	BP 308P	COURSE OUTCOME	
			BP 308P.1	Understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying.
			BP 308P.2	Demonstrate and explain about the construction, working and applications of pharmaceutical equipments such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer.
			BP 308P.3	Experiment with the process variables of filtration, evaporation etc.
			BP 308P.4	Determine radiation constant of brass, iron, unpainted and painted glass.
			BP 308P.5	Determine overall heat transfer coefficient by heat exchanger and calculate the



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				efficiency of steam distillation.
			BP 308P.6	Estimate moisture content, loss on drying and construct drying curves for calcium carbonate and starch.
31	Pharmaceutical Organic Chemistry III-Theory	BP401T	COURSE OUTCOME	
			BP401T.1	To implement the knowledge to understand various methods of preparation and various properties of organic compounds.
			BP401T.2	To acquire knowledge about reactions and chemistry of important heterocyclic compounds.
			BP401T.3	To learn the stereo chemical aspects of organic compounds and stereo chemical reactions.
			BP401T.4	To correlate medicinal uses, synthetic importance of organic compounds
			BP401T.5	To implement knowledge in pharmaceutical formulations in correlation with various physicochemical properties.
32	Medicinal Chemistry I – Theory	BP402T	COURSE OUTCOME	
			BP402T.1	Understand the chemistry of drugs with respect to their pharmacological activity.
			BP402T.2	Understand the drug metabolic pathway, adverse effects and therapeutic value of drugs.
			BP402T.3	Know the structure activity relationship of different class of drugs
			BP402T.4	Study the chemical synthesis of selected drugs.
33	Physical Pharmaceutics II – Theory	BP403T	COURSE OUTCOME	
			BP403T.1	To understand fundamentals of rheology and to find out rheological aspects of raw material
			BP403T.2	To analyze properties of powdered drug and excipients in manufacturing of different dosage form.
			BP403T.3	To analyze stability problem and its prevention for pharmaceutical product.
			BP403T.4	To familiar with drug design models.
			BP403T.5	To understand particle-particle interaction.
34	Pharmacology I – Theory	BP404T	COURSE OUTCOME	
			BP404T.1	Able to understood the account of pharmacology of the drugs.
			BP404T.2	Able to understood the account the MOA of the drugs.
			BP404T.3	Able to understood the organization and function of the system.
			BP404T.4	Able to understood the drug interaction.



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			BP404T.5	Able to understand the algorithm of the various diseases
35	Pharmacognosy and Phytochemistry I – Theory	BP405T	COURSE OUTCOME	
			BP405T.1	Discuss the definition, history, scope and development of pharmacognosy.
			BP304T.2	Describe the techniques in the cultivation, processing, storage and production of crude drugs of natural origin.
			BP304T.3	Describe fundamental aspects of plant tissue culture.
			BP304T.4	Describe different types of secondary metabolites, their general properties, classification, and their test for identification.
			BP304T.5	Describe the sources, chemical constituents and uses of plants products containing plant fibers, hallucinogens teratogens, and natural allergens & Describe novel medicinal agents from marine sources.
			BP304T.6	Describe the pharmacognosy and chemistry of primary metabolites (carbohydrates, lipids, proteins) and elaborate on their sources & Describe the role of Pharmacognosy in allopathy and traditional system of medicine.
36	Medicinal Chemistry I – Practical	BP406P	COURSE OUTCOME	
			BP406P.1	To know and Synthesize medicinal compounds.
			BP406P.2	To understand Estimation of partition coefficient of drugs.
			BP406P.3	To perform purity of drug in dosage form.
37	Physical Pharmaceutics II – Practical	BP407P	COURSE OUTCOME	
			BP407P.1	To estimate particle size.
			BP407P.2	To determine flow properties of powder.
			BP407P.3	To find out viscosity of the liquids.
			BP407P.4	To explain stability of dosage form.
			BP407P.5	To study drug degradation
38	Pharmacology I – Practical	BP408P	COURSE OUTCOME	
			BP408P.1	Able to understand the account of pharmacology of the drugs.



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			BP408P.2	Able to understand the account the MOA of the drugs.
			BP408P.3	Able to understand instrument in experimental pharmacology.
			BP408P.4	Able to understand the different root of drug administration in mice and rat..
			BP408P.5	Able to understand the local anaesthesia in different root
39	Pharmacognosy and Phytochemistry I – Practical	BP409P	COURSE OUTCOME	
			BP409P.1	Students will be able to analyse the crude drug by chemical tests .
			BP409P.2	Students will be able to perform microscopic evaluation parameters..
			BP409P.3	Students will be able to determine ash value and extractive value of crude drugs
			BP409P.4	Students will be able to perform evaluation parameters like moisture content and swelling index.
B.Pharm III Year				
40	Medicinal Chemistry II – Theory	BP501T	COURSE OUTCOME	
			BP501T.1	Understand the concept and chemical classification of different therapeutic agents.
			BP501T.2	Understand the fundamental structure, IUPAC name and chemistry of drugs.
			BP501T.3	Know the mechanism of action and therapeutic value of drugs.
			BP501T.4	Know the Structural Activity Relationship of different class of drugs.
			BP501T.5	Study the chemical synthesis of selected drugs.
41	Industrial Pharmacy – Theory	BP502T	COURSE OUTCOME	
			BP502T.1	To understand the formulation of different pharmaceutical dosage form.
			BP502T.2	To perform the evaluation of different pharmaceutical dosage form.
			BP502T.3	To inspect the evaluation on material used for packaging such as glass, plastic, rubber, tin etc.
			BP502T.4	To explain various applications of preformulation considerations in development of pharmaceutical dosage forms
42	Pharmacology II – Theory	BP503T	COURSE OUTCOME	
			BP503T.1	Students would have understood the mechanism of drug action and its relevance in the treatment of different diseases
			BP503T.2	They would be trained with isolation of different organs/tissues from the laboratory animals by simulated experiments
			BP503T.3	They would have observed the various receptor actions using isolated tissue preparation



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			BP503T.4	Students would appreciate the correlation of pharmacology with related medical sciences
			BP503T.5	They would have understood the cell communication mechanism.
			BP503T.6	They would appreciate the newer targets of several disease conditions for treatment
43	Pharmacognosy and Phytochemistry II– Theory	BP504T	COURSE OUTCOME	
			BP504T.1	Students will be able to know modern extraction techniques, charactritiaon and identification of herbal drugs and phytoconstituents.
			BP504T.2	Students will be able to understand the preparation and development of herbal formulation
			BP504T.3	Students will be able to understand the herbal drug interactions
			BP504T.4	Students will be able to carry out isolation and identification of phytoconstituents
44	Pharmaceutical Jurisprudence – Theory	BP505T	COURSE OUTCOME	
			BP505T.1	Understand the pharmaceutical legislation and implications in the development and marketing of pharmaceuticals.
			BP505T.2	Know Different Pharmaceutical acts, laws and rules
			BP505T.3	Know the regulatory and administrative authorities, agencies governing manufacture and sale of pharmaceuticals
			BP505T.4	Understand the CPSCEA guidelines for Prevention of cruelty to animals act and the concept of medical termination of pregnancy act
			BP505T.5	Understand the concept of Intellectual property rights and Right to information act
BP505T.6	Know the codes of Pharmaceutical ethics during the pharmaceutical practice			
45	Industrial Pharmacyl – Practical	BP506P	COURSE OUTCOME	
			BP506P.1	To understand the formulation of different pharmaceutical dosage form.
			BP506P.2	To perform the evaluation of different pharmaceutical dosage form.
			BP506P.3	To inspect the evaluation on material used for packaging such as glass, plastic, rubber, tin etc.
			BP506P.4	To explain various applications of preformulation considerations in development of pharmaceutical dosage forms
BP506P.5	To prepare and evaluate various cosmetics formulation, parenteral & ophthalmic preparation.			
46	Pharmacology II – Practical	BP507P	COURSE OUTCOME	
			BP507P.1	They would be trained with isolation of different organs/tissues from the laboratory animals by simulated



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			experiments
		BP507P.2	They would have observed the various receptor actions using isolated tissue preparation
		BP507P.3	They would have understood the cell communication mechanism.
47	Pharmacognosy and Phytochemistry II – Practical	BP507P	COURSE OUTCOME
		BP507P.1	Students will be able to understand characteristic, histology, extraction and detection of phytoconstituents of crude drugs.
		BP507P.2	Students will be able to exercise isolation and detection of active constituents from crude drugs.
		BP507P.3	Students will be able to perform separation techniques
		BP507P.4	Students will be able to analyse the crude drugs by performing chemical tests.
48	Medicinal Chemistry III – Theory	BP601T	COURSE OUTCOME
		BP601T.1	Understand the concept and chemical classification of different therapeutic agents.
		BP601T.2	Understand the fundamental structure, IUPAC name and chemistry of drugs.
		BP601T.3	Know the mechanism of action and therapeutic value of drugs.
		BP601T.4	Know the Structural Activity Relationship and chemical synthesis of different class of drugs.
		BP601T.5	To explain the concept of prodrugs and their importance.
		BP601T.6	To discuss the approaches in drug design including QSAR, pharmacophore modeling, docking and combinatorial chemistry
49	Pharmacology III – Theory	BP602T	COURSE OUTCOME
		BP602T.1	The students would have extensively studied the mechanisms of drug action and its importance in treating various infectious diseases.
		BP602T.2	They would have gained an understanding of the principles of toxicology and the treatment of different types of poisonings.
		BP602T.3	The students would have been introduced to various methods of conducting toxicity studies.
		BP602T.4	They would have learned about the symptoms associated with various poisonings.



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			BP602T.5	Additionally, the students would have studied the treatment options for different types of poisonings.
			BP602T.6	The students would have comprehensively understood the toxicity profile of each drug.
50	Herbal Drug Technology – Theory	BP603T	COURSE OUTCOME	
			BP603T.1	Explain method for identification and authentication of herbal drugs.
			BP603T.2	Explain methods for selection and processing of herbal drugs as raw materials for herbal drug preparation.
			BP603T.3	Explain methods of good agricultural practices for medicinal plants like organic farming and using biopesticides for pest control.
			BP603T.4	Explain basic principles of traditional medicinal systems with method of preparation and standardization of ayurvedic formulations.
			BP603T.5	Describe benefits of various plants as nutraceuticals in ailments and also the herb-food interaction of various plant drugs
			BP603T.6	Describe about herbs or natural origin drugs as raw materials for preparation of cosmetics, excipients, conventional herbal formulation and novel dosage forms like phytosomes.
51	Biopharmaceutics and Pharmacokinetics – Theory	BP604T	COURSE OUTCOME	
			BP604T.1	Understand basic concepts of pharmacokinetics of drugs.
			BP604T.2	Know the mechanisms, interpret various factors affecting drug absorption, distribution, metabolism and excretion of drugs.
			BP604T.3	Study the pharmacokinetic models for the determination of pharmacokinetic parameters.
			BP604T.4	Explore the bioavailability of a drug and to compare the bioequivalence between drug products.
			BP604T.5	Evaluate various pharmacokinetic parameters.
52	Pharmaceutical Biotechnology – Theory	BP605T	COURSE OUTCOME	
			BP605T.1	To Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
			BP605T.2	To study Genetic engineering applications in relation to production of pharmaceuticals products.



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			BP605T.3	To Appreciate the use of microorganisms in fermentation technology
			BP605T.4	To Importance of Monoclonal antibodies in Industries
			BP605T.5	To design gene genome activity along with gene therapy and recombinant technology.
53	Quality Assurance –Theory	BP606T	COURSE OUTCOME	
			BP606T.1	Students will be able to understand responsibilities of QA and QC dept.
			BP606T.2	Students will be able to Understand GMP and cGMP aspects of pharmaceutical industry.
			BP606T.3	Students will be able to understand importance of GLP.
			BP606T.4	Student will be able to appreciate in importance of documentation in industry.
			BP606T.5	Stuedents will be able to understand scope of quality certification and audit in pharmaceutical industry.
54	Medicinal chemistry III – Practical	BP607P	COURSE OUTCOME	
			BP607P.1	To know the importance of drug design and different techniques of drug design.
			BP607P.2	To understand the chemistry of drugs with respect to their biological activity.
			BP607P.3	To understand the metabolism, adverse effects and therapeutic value of drugs.
			BP607P.4	To perform the synthesis of reactions and chemical structures with the help of software.
55	Pharmacology III – Practical	BP608P	COURSE OUTCOME	
			BP608P.1	The students would have extensively studied the mechanisms of drug action and its importance in treating various infectious diseases.
			BP608P.2	They would have gained an understanding of the principles of toxicology and the treatment of different types of poisonings.
			BP608P.3	The students would have been introduced to various methods of conducting toxicity studies.
			BP608P.4	They would have learned about the symptoms associated with various poisonings.
			BP608P.5	Additionally, the students would have studied the treatment options for different types of poisonings.
56	Herbal Drug Technology – Practical	BP609P	COURSE OUTCOME	



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			BP609P.1	Understand and study of phytochemical screening of crude drugs
			BP609P.2	Study to different methods for preparation of different Herbal formulations
			BP609P.3	Analyze different methods for selection, identification and authentication of herbal materials
B.Pharm IV Year				
			COURSE OUTCOME	
57	Instrumental Methods of Analysis – Theory	BP701T	BP701T.1	To identify unknown compound and its analytical methods for determination.
			BP701T.2	To learn basic concept of different separation technique of mixture of component and its importance in pharmaceutical products.
			BP701T.3	To correlate principles of the interaction of matter with electromagnetic radiations and its Applications in drug analysis
			BP701T.4	To Perform quantitative & qualitative analysis of drugs using various analytical Instruments
			BP701T.5	To identify impurities in compound by chromatographic and spectrophotometric techniques and its analytical methods for determination
			COURSE OUTCOME	
58	Industrial PharmacyII – Theory	BP702T	BP702T.1	Know the process of pilot plant and scale up of pharmaceutical dosage forms.
			BP702T.2	Understand the process of technology transfer from lab scale to commercial batch.
			BP702T.3	Know different Laws and Acts that regulate pharmaceutical industry.
			BP702T.4	Understand the approval process and regulatory requirements for drug products.
			COURSE OUTCOME	
59	Pharmacy Practice – Theory	BP703T	BP703T.1	Students will be able to know drug distribution method in hospital
			BP703T.2	Students will be to know monitoring drug therapy of patient through medication chart review and clinical revies.
			BP703T.3	Students will be able to identify drug related problems.
			BP703T.4	Students will be able to know pharmaceutical care services.
			BP703T.5	Stuedents will be able to appreciate concept of rationel drug therapy



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60	Novel Drug Delivery System – Theory	BP704T	COURSE OUTCOME	
			BP704T.1	To implement the knowledge in development of various novel pharmaceutical formulations.
			BP704T.2	To acquire knowledge about physicochemical properties of drugs and various biological fluids.
			BP704T.3	To learn the criteria for selection and application of various excipients like polymers in pharmaceutical formulations.
			BP704T.4	To correlate the various pharmacokinetic and pharmacodynamics aspects of drug in pharmaceutical formulations.
			BP704T.5	To design pharmaceutical formulations in correlation with various routes and sites for drug administration.
61	Instrumental Methods of Analysis – Practical	BP705P	COURSE OUTCOME	
			BP705P.1	To identify unknown compound and its analytical methods for determination.
			BP705P.2	To learn basic concept of different separation technique of mixture of component and its importance in pharmaceutical products.
			BP705P.3	To correlate principles of the interaction of matter with electromagnetic radiations and its Applications in drug analysis
			BP705P.4	To Perform quantitative & qualitative analysis of drugs using various analytical Instruments
			BP705P.5	To identify impurities in compound by chromatographic and spectrophotometric techniques and its analytical methods for determination
62	Biostatistics and Research Methodology	BP801T	COURSE OUTCOME	
			BP801T.1	Relating the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
			BP801T.2	Associate the various statistical techniques to solve statistical problems.
			BP801T.3	Correlating statistical techniques in solving the problems.
63	Social and Preventive Pharmacy	BP802T	COURSE OUTCOME	
			BP802T.1	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
			BP802T.2	Plan thinking based on current healthcare development & preventive medicines.
			BP802T.3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues.



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			BP802T.4	Evaluate National health programme & community services.
64	Pharma Marketing Management	BP803ET	COURSE OUTCOME	
			BP803ET.1	Provide an understanding of marketing concepts and techniques.
			BP803ET.2	Provide their applications in the pharmaceutical industry.
			BP803ET.3	Provide Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Product management
65	Cosmetic Science	BP809ET	COURSE OUTCOME	
			BP809ET.1	Classify and define Cosmetics and Cosmeceuticals as per Indian and EU regulations
			BP809ET.2	Describe the role of cosmetic excipients and building blocks in the formulation of cosmetics
			BP809ET.3	Explain the structure and function of the skin, hair, teeth and gums
			BP809ET.4	Describe the fundamentals of sun protection and the formulation of Sunscreens, antiperspirants and deodorants
			BP809ET.5	Formulate and design cosmetics for skin care and hair care as well as dental and oral care
BP809ET.6	Evaluate cosmetics for various physico-chemical properties.			



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Pharm D I Year

S.N.	COURSE	COURSE CODE	COURSE OUTCOMES	
1	Human Anatomy and Physiology	PD1.1T	PD1.1T.1	Define the basic concepts in Human Anatomy & Physiology.
			PD1.1T.2	Apply concepts and knowledge of Human Anatomy & Physiology to clinical scenarios.
			PD1.1T.3	Explain how the separate systems interact to yield integrated physiological responses.
			PD1.1T.4	Link the physiology and pathophysiology of several diseases.
			PD1.1T.5	Critically interpret the common laboratory values in medicine.
			PD1.1T.6	Use scientific laboratory equipment in order to gather and analyze data on human anatomy and physiology.
2	Pharmaceutics	PD1.2T	COURSE OUTCOME	
			PD1.2T.1	Understand the basic knowledge on the various formulation's aspects.
			PD1.2T.2	Know the parts of prescription and handling of prescription.
			PD1.2T.3	To get familiar with the dose calculation using different formulas.
			PD1.2T.4	Formulate the different type of dosage form.
			PD1.2T.5	Use of knowledge in the field of incompatibility and method to overcome.
3	Medicinal Biochemistry	PD1.3T	COURSE OUTCOME	
			PD1.3T.1	Define the basic concepts in medicinal biochemistry and clinical chemistry.
			PD1.3T.2	Apply concepts and knowledge of medicinal biochemistry to clinical scenarios.
			PD1.3T.3	Critically interpret how the biomolecules acts on the body and its mechanisms.
			PD1.3T.4	Link the biochemical reaction and pathways of several diseases.



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			PD1.3T.5	Explain the common laboratory values in clinical chemistry.
4	Pharmaceutical organic Chemistry	PD1.4T	COURSE OUTCOME	
			PD1.4T.1	Write the structure, name and the type of isomerism of the organic compound.
			PD1.4T.2	Write the reaction, name the reaction and orientation of reactions.
			PD1.4T.3	Account for reactivity/stability of compounds.
			PD1.4T.4	Identify/confirm the identification of organic compound.
5	Pharmaceutical Inorganic Chemistry	PD1.5T	COURSE OUTCOME	
			PD1.5T.1	To perform the volumetric analysis of the chemical substance.
			PD1.5T.2	To describe the sources of error commonly developed during drug analysis and method to minimize them.
			PD1.5T.3	To Understand the basic concepts and titrimetric, gravimetric and electrochemical analysis.
			PD1.5T.4	To develop analytical skills
			PD1.5T.5	To discuss the technique of conductometry, potentiometry and polarography and their application in the analysis of pharmaceuticals.
6	Remedial Biology	PD1.6T	COURSE OUTCOME	
			PD1.6T.1	Understand Cell biology (Basic Nature of Plant cell and Animal cell)
			PD1.6T.2	Remember Classification System of both Plants & Animals
			PD1.6T.3	Understand Various tissue system and organ system in plant and animals
			PD1.6T.4	Relate Theory of evolution
			PD1.6T.5	Describe Anatomy and Physiology of plants and animals



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7	Remedial Mathematics	PD1.7T	COURSE OUTCOME	
			PD1.7T.1	Utilise mathematical concepts and principles to perform computations for Pharmaceutical Sciences.
			PD1.7T.2	Generate, use and analyse mathematical representations and mathematical relationships.
			PD1.7T.3	Elaborate mathematical knowledge and understanding to help in the field of Clinical Pharmacy
8	Human Anatomy and Physiology – Practical	PD1.1P	COURSE OUTCOME	
			PD1.1P.1	Demonstrate the principle and working of various instruments used in HAP.
			PD1.1P.2	Identify of microscopical features of various types of cells and tissues.
			PD1.1P.3	Identify gross anatomy and physiology of various bones.
			PD1.1P.4	Perform hematological tests and also record BP, heart rate & pulse.
			PD1.1P.5	Appreciate coordinated working pattern of different organs of each system.
9	Pharmaceutics Practical	PD1.2P	COURSE OUTCOME	
			PD1.2P.1	Understanding the basic knowledge in the formulation aspects of different dosage forms.
			PD1.2P.2	Formulate the different dosage forms.
			PD1.2P.3	Use of practical knowledge in the field of incompatibility and method to overcome.
10	Medicinal Biochemistry Practical	PD1.3P	COURSE OUTCOME	
			PD1.3P.1	Identify the carbohydrates samples by qualitative analysis
			PD1.3P.2	Identify and detect the biomolecule protein and amino acids.
			PD1.3P.3	Identify the lipids samples by qualitative analysis.
			PD1.3P.4	Analyze, determine and estimate normal and abnormal constituents of urine sample.
PD1.3P.5	Analyze, determine and estimate normal and abnormal constituents of blood sample.			



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11	Pharmaceutical Organic Chemistry Practical	PD1.4P	COURSE OUTCOME	
			PD1.4P.1	Write the structure, name and the type of isomerism of the organic compound.
			PD1.4P.2	Write the reaction, name the reaction and orientation of reactions.
			PD1.4P.3	Account for reactivity/stability of compounds.
			PD1.4P.4	Identify/confirm the identification of organic compound.
			PD1.4P.5	Understand the methods of preparation and properties of organic compounds.
		PD1.4P.6	Explain the stereo chemical aspects of organic compounds and stereo chemical reactions.	
12	Pharmaceutical Inorganic Chemistry– Practical	PD1.5P	COURSE OUTCOME	
			PD1.5P.1	Able to predict the level of specific impurities in the given inorganic comps by performing different limit test.
			PD1.5P.2	To determine percentage purity of given pharmaceutical drugs by titrimetric analysis.
			PD1.5P.3	To perform identification test for pharmaceutical compound.
			PD1.5P.4	To perform Preparation of pharmaceutical Compound.
13	Remedial Biology – Practical	PD1.6P	COURSE OUTCOME	
			PD1.6P.1	Explain functioning of different types of Microscopes
			PD1.6P.2	Describe the function of cell and tissues.
			PD1.6P.3	Introduction to various equipments and techniques use to check different body part functions.
PHARM D II Year				
14	Pathophysiology	PD2.1T	COURSE OUTCOME	
			PD2.1T.1	Explain the pathogenesis and morphology of reversible and irreversible cell injury; enumerate various lipoproteins and describe lipoproteins disorders.



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			PD2.1T.2	Illustrate events involved in acute and chronic inflammation.
			PD2.1T.3	Recognize the biological significance of various hypersensitivity disorders
			PD2.1T.4	Understand the mechanism involved in autoimmune disease and allograft rejection.
			PD2.1T.5	Understand etiopathogenesis of selected disorders.
			PD2.1T.6	Describe the general biology of cancer, mechanism of shock and effects of radiation exposure.
15	Pharmaceutical Microbiology	PD2.2T	COURSE OUTCOME	
			PD2.2T.1	understand the world of Microbiology; identify the microorganism based on the morphology & structure and growth and nutritional requirements of the organism
			PD2.2T.2	Identify the microorganism based on staining techniques and biochemical reactions
			PD2.2T.3	Recognize the importance of sterilization and disinfectants process and aseptic conditions
			PD2.2T.4	Realize the role of immune system in keep individual healthy and identify the disease by performing various diagnostic tests
			PD2.2T.5	Describe how the microorganisms play a key role in assay of vitamins and antibiotics
			PD2.2T.6	Describe various diseases – etiology, pathology, diagnosis and treatment
16	Pharmacognosy & Phytopharmaceuticals	PD2.3T	COURSE OUTCOME	
			PD2.3T.1	Understand the term Pharmacognosy, history, scope and basic principles of cultivation, collection, extraction, identification and Storage of crude drugs
			PD2.3T.2	Know the source, active constituents and uses of crude drugs and their adulterants



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			PD2.3T.3	Understand the evaluation characteristics of plant drugs
			PD2.3T.4	appreciate the applications of primary and secondary metabolites.
			PD2.3T.5	understand about sutures and ligatures used in surgical dressing..
17	Pharmacology-I	PD2.4T	COURSE OUTCOME	
			PD2.4T.1	To describe Pharmacology along with its branches and routes of drug administration.
			BP304T.2	To classify drugs according to system of body.
			BP304T.3	To explain the mode of action of drugs along with its interaction and adverse effects.
			BP304T.4	To examine the effect of drugs on animals or on their isolated body parts or tissue.
18	Community Pharmacy	PD2.5T	COURSE OUTCOME	
			PD2.5T.1	Examine the pharmaceutical care services
			PD2.5T.2	Outline the business and professional practice management skills in community pharmacies
			PD2.5T.3	Construct patient counselling and provide health screening services to public in community pharmacy
			PD2.5T.4	Identify minor ailments and design appropriate medications
			PD2.5T.5	Recommend the concept of rational drug therapy
19	Pharmacotherapeutics-I	PD2.6T	COURSE OUTCOME	
			BP306P.1	Students will be able to describe the pathophysiology and management of cardiovascular, respiratory and endocrine diseases.
			BP306P.2	Students will be developing Patient case based Assessment Skills
			BP306P.3	Students will be able to describe the quality use of medicines issues surrounding the therapeutic agents in the treatment of these diseases
			BP306P.4	Students will have developed clinical skills in the therapeutic management of these conditions
			BP306P.5	Continue to develop communication skills.



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			BP306P.6	Students will provide patient – centred care to diverse patients using the evidence based medicine.
20	Pharmaceutical Microbiology – Practical	PD2.2P	COURSE OUTCOME	
			PD2.2P.1	Know microorganism growth multiplication and their industrial usage.
			PD2.2P.2	Able to identify specific organism by using morphological, cultural and biochemical test
			PD2.2P.3	To validate the efficiency of sterilization techniques and disinfection procedures
			PD2.2P.4	To make the environment free of microorganism by aseptic techniques
			PD2.2P.5	Critically interpret all the assessment methods to validate the disinfection and sterilization
21	Pharmacognosy & Phytopharmaceuticals– Practical	PD2.3P	COURSE OUTCOME	
			PD2.3P.1	Understand the Pharmacognosy laboratory and experiments
			PD2.3P.2	Carry out the transverse section of plant parts to understand the arrangement of cells and tissues
			PD2.3P.3	Compare the tissue system and to understand the purity of the drugs
			PD2.3P.4	Carry out the chemical tests to determine the purity of drugs and to understand the nature of chemical constituents present
			PD2.3P.5	Know the different evaluation methods for the drugs
22	Pharmacology-I- Practical	PD2.4P	COURSE OUTCOME	
			PD2.4P.1	To compose basic need of Pharmacology Laboratory
			PD2.4P.2	To handle the animals and instruments of Pharmacology Laboratory
			PD2.4P.3	To analyse the potency and efficacy of drugs
			PD2.4P.4	To evaluate effect of drugs directly on animals or on isolated tissue or organ.
23	Pharmacotherapeutics-I Practical	PD2.6P	COURSE OUTCOME	
			PD2.4P.1	Students will be able to describe the pathophysiology and management of cardiovascular, respiratory and endocrine diseases.



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			PD2.4P.2	Students will be developing Patient case based Assessment Skills
			PD2.4P.3	Students will have developed clinical skills in the therapeutic management of these conditions
			PD2.4P.4	Continue to develop communication skills.
			PD2.4P.5	Students will provide patient – centred care to diverse patients using the evidence based medicine.
Pharm D III Year				
			COURSE OUTCOME	
24	Pharmacology-II	PD3.1T	PD3.1T.1	To classify drugs and study Pharmacological account of diuretics and drugs acting on blood
			PD3.1T.2	To evaluate the effect of chemotherapeutic drugs for treatment of disease.
			PD3.1T.3	To understand the terminology related to immunity with the help of effect of drugs.
			PD3.1T.4	To explain dynamic cell and its related activities
			PD3.1T.5	To design gene genome activity along with gene therapy and recombinant technology.
			COURSE OUTCOME	
25	Pharmaceutical Analysis	PD3.2T	PD3.2T.1	To learn basic concept of different separation technique of mixture of component and its importance in pharmaceutical products.
			PD3.2T.2	To identify unknown compound and its analytical methods for determination.
			PD3.2T.3	To identify impurities in compound by chromatographic and spectrophotometric techniques and its analytical methods for determination
			PD3.2T.4	To correlate principles of the interaction of matter with electromagnetic radiations and its applications in drug analysis.
			PD3.2T.5	To Perform quantitative & qualitative analysis of drugs using various analytical



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		Instruments		
26	Pharmacotherapeutics-II	PD3.3T	COURSE OUTCOME	
			PD3.3T.1	Explain the etiopathogenesis of selected infectious diseases, musculoskeletal and renal disorders
			PD3.3T.2	Discuss the principles of cancer therapy and dermatological disorders
			PD3.3T.3	Identify the patient-specific parameters relevant in initiating and monitoring drug therapy and adverse effects
			PD3.3T.4	Discuss the therapeutic approach in the management of selected diseases and controversies in drug therapy
			PD3.3T.5	Prepare individualized therapeutic plans based on diagnosis
			PD3.3T.6	Recognise the role of pharmacist in essential and rational drug use
27	Pharmaceutical Jurisprudence	PD3.4T	COURSE OUTCOME	
			PD3.4T.1	To to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act.
			PD3.4T.2	To Know Different Pharmaceutical acts, laws and rules.
			PD3.4T.3	Know the regulatory and administrative authorities, agencies governing manufacture and sale of pharmaceuticals.
			PD3.4T.4	know the Drug policy, DPCO, Patent and design act.
			PD3.4T.5	Understand the concept of Intellectual property rights and Right to information act
			PD3.4T.6	Know the codes of Pharmaceutical ethics during the pharmaceutical practice
28	Medicinal Chemistry	PD3.5T	COURSE OUTCOME	
			PD3.5T.1	Understand the concept and different techniques of drug design.
			PD3.5T.2	Understand the structure, IUPAC name, mechanism of action and therapeutic uses of drugs.
			PD3.5T.3	Know the Structural Activity Relationship of different class of drugs.
			PD3.5T.4	Study the chemical synthesis of important drugs.
			PD3.5T.5	Classify different classes of drugs on the basis of chemical nature.
29	Pharmaceutical	PD3.6T	COURSE OUTCOME	



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	Formulations		
		PD3.6T.1	Understand the principle involved in formulation of various pharmaceutical dosage forms.
		PD3.6T.2	Prepare various pharmaceutical formulations
		PD3.6T.3	Perform evaluation of pharmaceutical dosage forms.
		PD3.6T.4	Understand and appreciate the concept of bioavailability and bioequivalence, their role in clinical situations.
30	Pharmacology II – Practical	PD3.1P	COURSE OUTCOME
		PD3.1P.1	To recommend Preclinical drug evaluation.
		PD3.1P.2	To handle the animals and instruments of Pharmacology Laboratory.
		PD3.1P.3	To analyse the potency and efficacy of drugs.
		PD3.1P.4	To evaluate the effect of drugs on animals.
31	Pharmaceutical Analysis Practical	PD3.2P	COURSE OUTCOME
		PD3.2P.1	To identify unknown compound and its analytical methods for determination
		PD3.2P.2	To understand handling and demonstration of analytical instrument
		PD3.2P.3	To develop the analytical skill and understand how to perform analysis on different instrument.
		PD3.2P.4	To correlate principles of the interaction of matter with electromagnetic radiations and its Applications in drug analysis.
		PD3.2P.5	To demonstrate quantitative & qualitative analysis of drugs using various analytical Instruments like UV, HPLC, GC etc.
32	Pharmacotherapeutics-II Practical	PD3.3P	COURSE OUTCOME



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			PD3.3P.1	Identify drug interactions and rationalize the prescription
			PD3.3P.2	Discuss the therapeutic approach to management of selected diseases
			PD3.3P.3	Prepare individualized therapeutic plans based on diagnosis
			PD3.3P.4	Perform patient counseling
		PD3.3P.5		Conduct planned experiments and prepares laboratory report in a standard format
33	Medicinal chemistry – Practical	PD3.5P	COURSE OUTCOME	
			PD3.5P.1	Nomenclature of simple organic compounds in different classes and make 3D Stereomodels to learn easily.
			PD3.5P.2	Determination of some important physical properties like m.pt, b.pt, solubility, etc
			PD3.5P.3	Purification of Organic compounds
			PD3.5P.4	Synthesis of organic compounds and study about principles, reactions and mechanism.
			PD3.5P.5	Synthesis of organic compounds with named reactions and study about mechanisms.
			PD3.5P.6	Systemic qualitative analysis of some unknown organic compounds
34	Pharmaceutical Formulations Practical	PD3.6P	COURSE OUTCOME	
			PD3.6P.1	Understand the principle involved in formulation of various pharmaceutical dosage forms.
			PD3.6P.2	Understand the concept & skills of handling of different instrument required for preparation of dosage form.
			PD3.6P.3	Prepare various pharmaceutical formulations.



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			PD3.6P.4	Perform evaluation of pharmaceutical dosage forms.
			PD3.6P.5	Understand the concept of solubility, sterility, bioavailability and bioequivalence, their role in clinical situations.
		Pharm D IV Year		
35	Pharmacotherapeutics-III	PD4.1T	COURSE OUTCOME	
			PD4.1T.1	Etiopathogenesis and pharmacotherapy of various diseases.
			PD4.1T.2	Diagnosis of various diseases.
			PD4.1T.3	Treatment algorithms of various diseases.
			PD4.1T.4	Risk factor and complications of various diseases.
36	Hospital Pharmacy	PD4.2T	COURSE OUTCOME	
			PD4.2T.1	An ability to monitor a patient medication history.
			PD4.2T.2	Identify the different pharmaceutical preparation.
			PD4.2T.3	To apply the knowledge on maintenance of purchase & inventory control of drug store & Drug distribution
			PD4.2T.4	To compose the professional practice management skills in hospital pharmacies & hospital drug policy.
			PD4.2T.5	To analyse hospital drug policy.
37	Clinical Pharmacy	PD4.3T	COURSE OUTCOME	
			PD4.3T.1	Define the role of clinical pharmacist at various healthcare settings
			PD4.3T.2	Monitor drug therapy of the patient through medication chart review and clinical review
			PD4.3T.3	Conduct the medication history interview and counsel the patients.
			PD4.3T.4	Detect, assess and monitor adverse drug reactions (ADR)
			PD4.3T.5	Provide drug / poison information services by retrieving, analyzing, interpreting and formulate drug and medicine information by utilizing various databases and software's.
			PD4.3T.6	To know information regarding clinical laboratory tests used in evaluation of disease



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			states & interpretation of test results.	
38	Biostatistics & Research Methodology	PD4.4T	COURSE OUTCOME	
			PD4.4T.1	Relating the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
			PD4.4T.2	Associate the various statistical techniques to solve statistical problems.
			PD4.4T.3	Correlating statistical techniques in solving the problems.
39	Biopharmaceutics & Pharmacokinetics	PD4.5T	COURSE OUTCOME	
			PD4.5T.1	To know the basics of Bio pharmaceuticals and pharmacokinetics and their role in clinical studies.
			PD4.5T.2	To acquire the knowledge of mechanism and factors affecting drug absorption, distribution, biotransformation and excretion.
			PD4.5T.3	To study different parameters involved in compartmental Modeling.
			PD4.5T.4	To solve problems associated with rate process in compartment & Non compartmental modeling.
			PD4.5T.5	To learn parameters & skills involved in Nonlinear Pharmacokinetics.
			PD4.5T.6	To utilize modern technique for the study of factors associated with drug bioavailability and drug interaction
40	Clinical Toxicology	PD4.6T	COURSE OUTCOME	
			PD4.6T.1	Handle acute poisoning caused by various toxic drug with help of general principles of management
			PD4.6T.2	Understand importance of supportive care in management of any clinical toxicology by toxicants.
			PD4.6T.3	Handle any case studies caused due to poisoning.
			PD4.6T.4	Study the toxicokinetics and toxicodynamics toxicologic application method
			PD4.6T.5	Understand various abuse substance and their poisoning treatment
			PD4.6T.6	Carry out various treatment of poisoning and management of clinical toxicological cases



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41	Pharmacotherapeutics-III Practical	PD4.1P	COURSE OUTCOME	
			PD4.1P.1	The principles and practice involved in ward round participation
			PD4.1P.2	Diagnosis of various diseases.
			PD4.1P.3	Treatment algorithms of various diseases.
			PD4.1P.4	Clinical discussion on selection of drug therapy
			PD4.1P.5	Therapeutic drug monitoring of various disease treatment.
42	Hospital Pharmacy Practical	PD4.2P	COURSE OUTCOME	
			PD4.2P.1	An ability to monitor a patient medication history.
			PD4.2P.2	Identify the different pharmaceutical preparation.
			PD4.2P.3	To apply the knowledge on maintenance of purchase & inventory control of drug store & Drug distribution
			PD4.2P.4	To compose the professional practice management skills in hospital pharmacies & hospital drug policy.
			PD4.2P.5	To analyse hospital drug policy.
43	Clinical Pharmacy Practical	PD4.3P	COURSE OUTCOME	
			PD4.3P.1	Answering drug information questions
			PD4.3P.2	Patient medication counselling
			PD4.3P.3	Case study on different diseases
			PD4.3P.4	Case studies related to laboratory investigations
			PD4.3P.5	Patient medication history interview
44	Biopharmaceutics & Pharmacokinetics Practical	PD4.5P	COURSE OUTCOME	
			PD4.5P.1	To know the basics of biopharmaceutics, protein drug binding, pharmacokinetics and their role in clinical studies.
			PD4.5P.2	To acquire the knowledge of improvement of solubility of a drug in different cosolvent using different apparatus.



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			PD4.5P.3	To Perform practical knowledge on dissolution and bioavailability study of a drug.
			PD4.5P.4	To utilize modern technique for the study of rate of release, dissolution and bioavailability, bioequivalence study of a drug.
			PD4.5P.5	To solve problems by using graphical method associated with compartment modeling.
			PD4.5P.6	To study urinary excretion and plasma drug concentration in humans this helps in pharmacokinetics.
45	Pharmacotherapeutics-I&II	PDB1.1T	COURSE OUTCOME	
			PDB1.1T.1	Etiopathogenesis and pharmacotherapy of various diseases.
			PDB1.1T.2	Diagnosis of various diseases.
			PDB1.1T.3	Treatment algorithms of various diseases.
			PDB1.1T.4	Risk factor and complications of various diseases.
PDB1.1T.5	Detection, assessment, and management of drug related problems such Adverse effects			
46	Pharmacotherapeutics-I&II Practical	PDB1.1P	COURSE OUTCOME	
			PDB1.1P.1	The principles and practice involved in ward round participation
			PDB1.1P.2	Diagnosis of various diseases.
			PDB1.1P.3	Treatment algorithms of various diseases.
			PDB1.1P.4	Clinical discussion on selection of drug therapy
PDB1.1P.5	Therapeutic drug monitoring of various disease treatment.			
Pharm D V Year				
47	Clinical Research	PD5.1T	COURSE OUTCOME	
			PD5.1T.1	Understand the pharmacological and toxicological consideration in process of development of new drugs.
			PD5.1T.2	Understand the principles and phases in clinical trial of drugs.
			PD5.1T.3	Explain the guidelines for ethics and safe monitoring in clinical trial of drugs.
			PD5.1T.4	Explain the guidelines for ethics and safe monitoring in clinical trial of drugs.
PD5.1T.5	Understand the guidelines of national and international regulatory bodies for clinical			



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			trials.	
		PD5.1T.6	Recognize differing roles and obligations of the investigators, sponsors and institutional review board	
48	Pharmacoepidemiology and Pharmacoeconomics	PD5.2T	COURSE OUTCOME	
			PD5.2T.1	Understand various aspects of pharmacoepidemiological study
			PD5.2T.2	Understand needs of pharmacoepidemiological study in various region population
			PD5.2T.3	Understand the different methods of evaluation of pharmacoepidemiological study
			PD5.2T.4	Help in formulary decision making process in pharmacoeconomical study
			PD5.2T.5	Handle and manage any ADR caused due to drug use in population
			PD5.2T.6	Helps to control cost of drug by study various evaluation methods and use of software application.
49	Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring	PD5.3T	COURSE OUTCOME	
			PD5.3T.1	Design the dosage regimen for the given drug based on the pharmacokinetic principles and route of administration
			PD5.3T.2	Individualize the dosage regimen for the patients with altered pharmacokinetics viz. renal / hepatic impairment, pediatrics, geriatrics, etc.
			PD5.3T.3	Intervene the potential drug-drug interactions in a given case with appropriate recommendations for dosage adjustments
			PD5.3T.4	Associate the genetic polymorphisms of the patients, if any with the clinical outcomes of the patients
			PD5.3T.5	Formulate protocol(s) for the therapeutic drug monitoring of drug(s) and initiate the service in collaboration with other healthcare team members
			PD5.3T.6	Interpret the results of therapeutic drug monitoring services of various drugs and give required recommendations for the dosage adjustment of those drugs, if required towards optimizing the treatment outcome



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M.PHARM (Pharmaceutics)

S.N.	COURSE	COURSE CODE	COURSE OUTCOMES
1	Modern Pharmaceutical Analytical Techniques	MPH101T	MPH101T.1 Explain general principles and theory of spectroscopy
			MPH101T.2 Understand the basic instrumentation of HPTLC, HPLC, GC for identification, and characterization of compounds
			MPH101T.3 Understand the basic concept and instrumentation of Chromatographic techniques
			MPH101T.4 Learn various separation techniques by employing chromatographic methods
			MPH101T.5 Understand the basic principles and instrumentation of fluorimeter and atomic absorption spectrometer
			MPH101T.6 Learn general principles and instrumentation of ion selective electrodes.
			MPH101T.7 Identify organic compounds by -X-ray crystallography
			MPH101T.8 Explain Instrumentation, separation and identification of compounds by electrophoresis technique.
2	Drug Delivery System	MPH102T	COURSE OUTCOME
			MPH102T.1 The basic concepts of Sustained release and Controlled formulations.
			MPH102T.2 The various approaches for development of novel drug delivery systems
			MPH102T.3 The criteria for selection of drugs and polymers for the development of delivering system
			MPH102T.4 The formulation and evaluation of Novel drug delivery systems.



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3	Modern Pharmaceutics	MPH103T	COURSE OUTCOME	
			MPH103T.1	Understand the concept and importance of preformulation parameters and Have optimization techniques and their applications in pharmaceutical industries.
			MPH103T.2	Know the compression and consolidation parameters for powders and granules in tablet development.
			MPH103T.3	Apply the statistical design in the development of different formulations.
			MPH103T.4	Know the scope and merits of validation and different types of validation
			MPH103T.5	Understand the importance of industrial management principles, materials management and GMP Considerations.
			MPH103T.6	Know the ICH and WHO guidelines for calibration and validation of equipments
4	Regulatory Affair	MPH104T	COURSE OUTCOME	
			MPH104T.1	To recall the concepts of drug product development, innovator and generic products, their drug master file.
			MPH104T.2	To outline the scale up post approval changes, post marketing surveillance and outsourcing of bioavailability studies to CRO.
			MPH104T.3	To apply the regulatory agencies like USFDA, EU, MHRA, TGA and ROW countries for product approval.
			MPH104T.4	To contrast CTD and eCTD format for combination products and medical devices.
			MPH104T.5	To compare the submission process of IND, NDA, ANDA and preparation of Medicinal Products Dossier.
			MPH104T.6	To build the ability to develop clinical trial protocol, pharmacovigilance and safety monitoring in clinical trials.
5	Pharmaceutics Practical I	MPH105P	COURSE OUTCOME	
			MPH105P.1	To recall the basic principles of analytical techniques and their instrumentation used for drug analysis.
			MPH105P.2	To summarize the preformulation studies and basic excipients used for various controlled/sustained drug delivery systems



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			MPH105P.3	To make use of various analytical instruments for estimation of drugs in various formulations.
			MPH105P.4	To simplify the formulation techniques, prepare matrix tablets, floating tablets and cosmetics.
			MPH105P.5	To assess the drug release from sustained and controlled drug delivery systems.
			MPH105P.6	To evaluate the dosage forms, construct kinetic plots and determine similarity factor.
6	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	MPH201T	COURSE OUTCOME	
			MPH201T.1	The basic concepts of Nano Technology and Targeted drug delivery systems.
			MPH201T.2	The various approaches for development of novel drug delivery systems
			MPH201T.3	The formulation and evaluation of Novel drug delivery systems.
			MPH201T.4	Nucleic acid based therapeutic drug delivery, Bio-distribution and Pharmacokinetics.
7	Advanced Biopharmaceutics & Pharmacokinetics	MPH202T	COURSE OUTCOME	
			MPH202T.1	To know the basics of Bio pharmaceutics and pharmacokinetics and their role in clinical studies.
			MPH202T.2	To acquire the knowledge of drug absorption in GIT.
			MPH202T.3	To study Biopharmaceutic consideration in drug product design.
			MPH202T.4	To solve problems associated with rate process in compartment & Non compartmental modeling.
			MPH202T.5	To learn parameters such drug product performance In vivo & skills involved in drug bioavailability.
			MPH202T.6	To study applications of pharmacokinetics Principles.
8	Computer Aided Drug Delivery System	MPH203T	COURSE OUTCOME	
			MPH203T.1	History of Computers in Pharmaceutical Research and Development.
			MPH203T.2	Computational Modeling of Drug Disposition.
			MPH203T.3	Computers in Preclinical Development.
			MPH203T.4	Optimization Techniques in Pharmaceutical Formulation.
			MPH203T.5	Computers in Market Analysis and Clinical Development.
			MPH203T.6	Artificial Intelligence (AI) and Robotics. and CFD
9	Cosmetic and Cosmeceuticals	MPH204T	COURSE OUTCOME	
			MPH204T.1	Key ingredients used in cosmetics and cosmeceuticals.



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			MPH204T.2	Key building blocks for various formulations.
			MPH204T.3	Current technologies in the market.
			MPH204T.4	Various key ingredients and basic science to develop cosmetics and cosmeceuticals.
			MPH204T.5	Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.
10	Pharmaceutics Practical II	MPH205P	COURSE OUTCOME	
			MPH205P.1	To recall the basic techniques for preparation of microspheres, liposomes, niosomes and solid dispersions.
			MPH205P.2	To compare the dissolution studies of various marketed products.
			MPH205P.3	To develop various novel drug delivery systems.
			MPH205P.4	To test for drug binding characteristics, cell permeation and bioavailability of the formulations.
			MPH205P.5	To evaluate the novel drug delivery systems.
			MPH205P.6	To design formulations by QbD concept, use simulations for estimation of pharmacokinetics and pharmacodynamics.



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M.PHARM (Pharmaceutical Chemistry)

S.N.	COURSE	COURSE CODE	COURSE OUTCOMES
1	Modern Pharmaceutical Analytical Techniques	MPC101T	MPC101T.1 Explain general principles and theory of spectroscopy
			MPC101T.2 Understand the basic instrumentation of HPTLC, HPLC, GC for identification, and characterization of compounds
			MPC101T.3 Understand the basic concept and instrumentation of Chromatographic techniques
			MPC101T.4 Learn various separation techniques by employing chromatographic methods
			MPC101T.5 Understand the basic principles and instrumentation of fluorimeter and atomic absorption spectrometer
			MPC101T.6 Learn general principles and instrumentation of ion selective electrodes.
			MPC101T.7 Identify organic compounds by –X-ray crystallography
			MPC101T.8 Explain Principle, Instrumentation, of Thermal Techniques
2	Advanced Organic Chemistry -I	MPC102T	COURSE OUTCOME
			MPC102T.1 To describe mechanisms for reactions in organic chemistry, polymer chemistry and biochemistry
			MPC102T.2 To develop synthetic route for small molecules.
			MPC102T.3 To apply the structure and theory to the study of organic reaction mechanisms
			MPC102T.4 To apply all the naming reactions in multistep process in manufacturing of drugs and drug intermediates special reactive intermediates including carbenes, carbanions and free radicals
			MPC102T.5 Will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
			MPC102T.6 To carry out an organic reaction, including isolating, purifying, and characterizing the product
3	Advanced Medicinal chemistry	MPC103T	COURSE OUTCOME



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			MPC103T.1	Learn the different stages of drug discovery & Role of medicinal chemistry in drug research
			MPC103T.2	Learn different techniques for drug discovery
			MPC103T.3	Understand various strategies to design and develop a new drug like molecules for biological targets
			MPC103T.4	Explain drug receptor concept
			MPC103T.5	Elaborate prodrug development and applications
			MPC103T.6	Learn the structural activity relationship of the important class of drugs
			MPC103T.7	Explain types of Enzyme inhibition and its application in medicine
			MPC103T.8	Discuss peptidomimetics approach and applications
4	Chemistry of Natural Products	MPC104T	COURSE OUTCOME	
			MPC104T.1	Describe the importance of natural products as lead molecule for new drug discovery.
			MPC104T.2	Explain the different types of alkaloids, flavonoids and steroids etc and their chemistry and medical importance.
			MPC104T.3	Discuss the different types of terpenoids and vitamins with their chemistry and physiological importance.
			MPC104T.4	Elaborate DNA technology tools for new drug discovery and their constituents present in crude drugs responsible for antidiabetic activity
			MPC104T.5	Learn advanced methods of structural elucidation of compounds of natural origin and also characterization of simple constituents from the natural sources.
5	Pharmaceutical Chemistry Practical I	MPC105P	COURSE OUTCOME	
			MPC105P.1	Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer, RNA & DNA estimation.
			MPC105P.2	Simultaneous estimation of multi component containing formulations by spectrophotometry.
			MPC105P.3	Experiments based on chromatography.
6	Advanced Spectral Analysis	MPC201T	COURSE OUTCOME	



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			MPC201T.1	Student will learn the various hyphenated analytical instrumental techniques
			MPC201T.2	Student will deals with different analytical data from diffent principle instrument. The fellow student will gain the interpretation skills
			MPC201T.3	Student will expose to different analytical data like LC-MS, GC-MS, ATR-IR, DSC etc. theoretically and practically.
			MPC201T.4	Fellow student will able to handle different analytical data to predict the unknown structures
			MPC201T.5	At the end of the course student should know to handle different hyphenated instruments data
7	Advanced Organic Chemistry -II	MPC202T	COURSE OUTCOME	
			MPC202T.1	To utilize green chemistry concepts and to be the effective substitute for conventional chemistry.
			MPC202T.2	To apply all the catalysis in single & multistep process in manufacturing of drugs and drug intermediates
			MPC202T.3	To synthesize novel peptidomimetics using peptide chemistry.
			MPC202T.4	Stereo-chemical features including conformation and stereo electronic effects; reaction dynamics, and photochemical reactions
			MPC202T.5	To acquire knowledge in the field of sonochemistry
			MPC202T.6	to apply a detailed organic structure analysis.
8	Computer Aided Drug Design	MPC203T	COURSE OUTCOME	
			MPC203T.1	Explain the Role of CADD in drug discovery
			MPC203T.2	Understand the physicochemical Properties and the techniques involved in QSAR
			MPC203T.3	Learn the concept of molecular and quantum mechanics
			MPC203T.4	Learn the working with molecular modeling softwares to design new drug molecules
			MPC203T.5	Understand in silico virtual screening protocols
			MPC203T.6	Explain pharmacophore concept and the techniques involved in modeling
			MPC203T.7	Learn various structure based drug design methods (Denovo drug design, fragment based drug design)
			MPC203T.8	Elaborate homology modelling and its experimental procedures



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9	Pharmaceutical Process Chemistry	MPC204T	COURSE OUTCOME	
			MPC204T.1	To develop synthetic routes that is safe, cost-effective, environmentally friendly, and efficient.
			MPC204T.2	To impart knowledge on the development and optimization of a synthetic route/s.
			MPC204T.3	The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phase.
			MPC204T.4	To create and carry out work up and separation procedure.
			MPC204T.5	To predict the outcome of organic reactions using a basic understanding of the general reactivity of functional groups and mechanism.
			MPC204T.6	The principles and applications of modern chemical instrumentation, experimental design, and data analysis.
10	Pharmaceutical Chemistry Practical II	MPC205P	COURSE OUTCOME	
			MPC205P.1	Synthesis of organic compounds by adapting different approaches
			MPC205P.2	Comparative study of synthesis of APIs/intermediates
			MPC205P.3	Interpretation of organic compounds by differant analytical approches.
			MPC205P.4	Calculation of ADMET properties of drug molecules and its analysis using differant tools.