



DEVI AHILYA VISHWAVIDYALAYA, INDORE
SCHOOL OF PHARMACY

Takshashila Campus, Khandwa Road (Ring Road) Indore-452001, India

E-mail: sopdavv@gmail.com

Site: www.dauniv.ac.in, www.pharmacy.dauniv.ac.in



COURSE OUTCOME: B.PHARM. PCI Scheme (w.e.f.-2016-17)
B.PHARM. I SEMESTER

Course code	Name of the course	Course Outcome
BP101T	Human Anatomy and Physiology-I (Theory)	This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. Upon completion of this course the student should be able to explain the gross morphology, structure and functions of various organs of the human body. It also helps in understanding various homeostatic mechanisms and their imbalances. They would be able to identify the various tissues and organs of different systems of human body, perform the various experiments related to special senses and nervous system. Besides, they would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting
BP107P	Human Anatomy and Physiology (Practical)	Practicals of physiology allow the clear understanding of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight of the subject.
BP102T	Pharmaceutical Analysis I (Theory)	The subject content would help to understand the fundamental of analytical chemistry electrochemical analytical techniques. Upon completion of the course student shall be able to understand the principles of volumetric and electro chemical analysis, carryout various volumetric and electrochemical titrations. It would help to develop analytical skills.
BP108P	Pharmaceutical Analysis I – Practical	Upon completion of course, students would be able to deals with the principles of electrochemical analysis of drugs and techniques to perform the estimation of different category drugs.

BP103T	Pharmaceutics I (Theory)	Upon completion of this course the students would know the history of profession of pharmacy, the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations. The content would provide basic understanding of the professional way of handling the prescription and preparation of various conventional dosage forms.
BP109P	Pharmaceutics I – Practical	Practical Pharmaceutics would impart a fundamental knowledge on the formulation of the different conventional dosage forms.
BP104T	Pharmaceutical Inorganic Chemistry (Theory)	Upon completion of course student shall be able to know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals. They would have understanding of the medicinal and pharmaceutical importance of inorganic compound.
BP110P	Pharmaceutical Inorganic Chemistry –	Practicals would provide insight of the monographs of inorganic drugs and pharmaceuticals along with their testing.
BP105T	Communication skills – (Theory)	Upon completion of the course the student shall be able to communicate effectively (Verbal and Non Verbal) and manage the team as a team player. These all would add value to the pharmaceutical business.
BP111P	Communication skills – Practical	Practical would prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers.

BP 106RBT	Remedial Biology Theory	The course, would provide the insight of salient features of five kingdoms of life and the basic components of anatomy & physiology of plant. They would know about cell biology (Basic Nature of Plant cell and Animal cell), classification system of both Plants & Animals, tissue system and organ system in plant and animals.
BP 106RMT	Remedial Mathematics (Theory)	Upon completion, students would have learnt application of mathematical concepts and principles to perform computations for pharmaceutical sciences. They would be able to create, use and

		analyze mathematical representations and mathematical relationships.
BP112RBP	Remedial Biology – Practical	Upon completion of course, student would have understanding of experimental biology including basics of microscope and microscopic studies of cell and its inclusion and plants.

B.PHARM.II SEMESTER

Course code	Name of the	Course Outcome
BP201T	Human Anatomy and Physiology II - Theory	Upon completion of this course the student Students would have studied the gross morphology, structure and functions of various organs of the human body, various homeostatic mechanisms and their imbalances, identification of various tissues and organs of different systems of human body. They would be able to erform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume. They would have insight of working pattern of different organs of each sy stem in coordination.
BP207P	Human Anatomy and Physiology II -Practical	Practical physiology would allow the students to understand physiological processes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.
BP202T	Pharmaceutical Organic Chemistry I- Theory	Upon completion of the course the student would have the understanding of the structure, name and the type of isomerism of the organic compound. They would be able to understand the reaction, name the reaction and orientation of reactions. They shall be able to identify/confirm the identification of organic compound.
BP208P	Pharmaceutical Organic Chemistry I- Practical	Practicals would allow students to perform Systematic qualitative analysis of unknown organic compounds, preparation of suitable solid derivatives from organic compounds and construction of molecular models.

BP203T	Biochemistry- Theory	Upon completion of course student shall be able to understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes. They would have learnt the metabolism of nutrient molecules in physiological and pathological conditions. Also, they would be able to understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
BP209P	Biochemistry- Practical	The student would be able to determine qualitatively/ quantitatively sugars, starch, carbohydrates and protein.
BP204T	Pathophysiology- Theory	Upon completion of the subject student shall be able to describe the etiology and pathogenesis of the selected disease states; name the signs and symptoms of the diseases and to mention the complications of the diseases.
BP205T	Computer Applications in Pharmacy- Theory	On completion of this course, the students will be able to apply the fundamentals of computer application in pharmacy. They would have knowledge of various database and their application in pharmacy.
BP210P	Computer Applications in Pharmacy- Practical	Practical would provide experimental skills to create, store and retrieve various database.
BP206T	Environmental sciences-Theory	This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment and Motivate learner to participate in environment protection and environment improvement.

B.PHARM.III SEMESTER

Course code	Name of the course	Course Outcome
BP301T	Pharmaceutical Organic Chemistry II- Theory	Upon completion of the course the student would have the understanding of the structure, name and the type of isomerism of the organic compound. They would be able to understand the reaction, name the reaction and orientation of reactions. They shall be able to identify/confirm the identification of organic compound and prepare organic compounds
BP305P	Pharmaceutical Organic Chemistry II-Practical	Practicals would allow students to prepare organic compounds and to determine oil values.
BP302T	Physical Pharmaceutics I- Theory	Upon the completion of the course students would have the understanding of physicochemical properties of drug molecules like solubility, distribution, adsorption, and stability for application in dosage forms designing. They would know the role of surfactants, interfacial phenomenon and thermodynamics. Also, the principles of protein binding and its significance.
BP306P	Physical Pharmaceutics I- Practical	Practicals in Physical Pharmacy would help the to understand the concepts of partition coefficient, phase diagram, adsorption isotherm and surfactants.
BP303T	Pharmaceutical Microbiology-Theory	Upon completion of the subject student shall know methods of identification, cultivation and preservation of various microorganisms. They would understand the importance and implementation of sterilization in pharmaceutical processing and industry. They shall have the knowledge of microbiological standardization of Pharmaceuticals, the cell culture technology and its applications in pharmaceutical industries.
BP307P	Pharmaceutical Microbiology – Practical	They would have knowledge of basic principles involved in sterility testing, microbiological assay, staining and culture media.
BP304T	Pharmaceutical Engineering – Theory	Upon completion of the course student would know various unit operations used in Pharmaceutical industries, the material

		handling techniques and various processes involved in pharmaceutical manufacturing. They would understand and comprehend significance of plant lay out design for optimum use of resources. Also, they would know the various preventive methods used for corrosion control in Pharmaceutical Industries.
BP 308P	Pharmaceutical Engineering –Practical	Practicals of Engineering would impart practical application of concepts and equipments in pharmaceutical industries.

B.PHARM. IV SEMESTER

Course code	Name of the course	Course Outcome
BP401T	Pharmaceutical Organic Chemistry III– Theory	Upon completion of the course, the student shall know the methods of preparation and properties of organic compounds. They would have the knowledge of stereo chemical aspects of organic compounds and stereo chemical reactions. Also, they shall know the medicinal uses and other applications of organic compounds
BP402T	Medicinal Chemistry I – Theory	Upon completion of the course the student shall be able to understand the chemistry of drugs with respect to their pharmacological activity, the drug metabolic pathways, adverse effect and therapeutic value of drugs. They will know the Structural Activity Relationship (SAR) of different class of drugs and would have learnt the chemical synthesis of some drugs
BP406P	Medicinal Chemistry I – Practical	The students would able to synthesis drugs/intermediates and also could perform assay of drugs
BP403T	Physical Pharmaceutics II – Theory	Upon the completion of the course student shall be able to understand various physicochemical properties of drug molecules in the designing the dosage forms, the principles of chemical kinetics and their application in formulation development and evaluation of dosage forms.
BP407P	Physical Pharmaceutics II- Practical	Practicals in Physical Pharmacy would help the to understand the applications of theoretical concepts experimentally in dosage form design.

BP404T	Pharmacology I-Theory	Upon completion of this course the students would know the pharmacological actions of different categories of drugs, the mechanism of drug action at organ system/sub cellular/macromolecular levels. They shall be able to apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
BP408P	Pharmacology I – Practical	Students would know the basics of experimental pharmacology. They would be able to correlate their theoretical knowledge with the pharmacological data obtained from various experiments.
BP405T	Pharmacognosy and Phytochemistry I– Theory	Upon completion of the course, the student shall be able to know the techniques in the cultivation and production of crude drugs , the crude drugs, their uses and chemical nature. They would know the evaluation techniques for the herbal drugs and the microscopic and morphological evaluation of crude drugs.
BP409P	Pharmacognosy and Phytochemistry I – Practical	The students would know the determination of various pharmacognostic parameters like stomatal index, swelling index, stomatal number, etc.

B.PHARM. V SEMESTER

Course code	Name of the course	Course Outcome
BP501T	Medicinal Chemistry II-Theory	At the end of the course, students shall be able to understand the chemistry and pharmacological activity of various class of drugs, their metabolic pathways, adverse effect, the Structural Activity Relationship of different class of drugs and chemical synthesis of selected drugs.
BP502T	Industrial Pharmacy I-Theory	Students shall have understanding of various pharmaceutical dosage forms and their manufacturing techniques. Various considerations in development of pharmaceutical dosage forms.
BP506P	Industrial Pharmacy I-Practical	Students shall be able to formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.
BP503T	Pharmacology II - Theory	Students shall know the mechanism of drug action and its relevance in the treatment of different diseases. They would be able to correlate pharmacology with related medical sciences.

BP507P	Pharmacology II - Practical	Students would have the understanding of isolation of different organs/tissues from the laboratory animals by simulated experiments.
BP504T	Pharmacognosy II-Theory	Upon completion of the course, the students would know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents. They shall have understanding of the herbal drug interactions.
BP 508P	Pharmacognosy II-Practical	Students shall have learnt the preparation and development of herbal formulation to carryout isolation and identification of phytoconstituents.
BP505T	Pharmaceutical Jurisprudence-Theory	Upon completion of the course, the student shall be able to understand the code of ethics during the pharmaceutical practice, the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals, various Indian pharmaceutical Acts and Laws. They shall be able to know various regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals in India.

B.PHARM. VI SEMESTER

Course code	Name of the course	Course Outcome
BP601T	Medicinal Chemistry III-Theory	Upon completion of the course student shall be able to understand the importance of drug design and different techniques of drug design, the chemistry of drugs with respect to their biological activity. They shall know the metabolism, adverse effects and therapeutic value of drugs. Also, they would have knowledge of structural activity relationship.
BP607P	Medicinal chemistry III-Practical	Students shall know the structure of drugs and drug design. They shall know the synthesis, assay and determination of various physicochemical properties of drugs.
BP602T	Pharmacology III – Theory	Students shall know the mechanism of drug action and its relevance in the treatment of different diseases. They would be able to correlate pharmacology with related medical sciences.
BP608P	Pharmacology III- Practical	Students would have the understanding of isolation of different organs/tissues from the laboratory animals by simulated experiments.

		They shall know application of biostatics, calculation of dose and pharmacokinetic parameters.
BP603T	Herbal Drug Technology-Theory	Upon completion of this course the student should be able to understand raw material as source of herbal drugs, know the WHO and ICH guidelines for evaluation of herbal drugs. They shall know the herbal cosmetics, natural sweeteners, nutraceuticals and procedures for patenting of herbal drugs.
BP609P	Herbal Drug Technology-Practical	They shall know the preliminary screening of crude drugs, formulation of various dosage form using herbal extract and analysis of herbal drugs as per pharmacopoeia.
BP 604 T	Biopharmaceutics and Pharmacokinetics -Theory	Upon completion of the course student shall be able to understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance. They shall know significance of plasma drug concentration-time curve, to calculate the pharmacokinetic parameters and their application. They shall have understanding of bioavailability and bioequivalence of drug products and their significance.
BP605T	Pharmaceutical Biotechnology-Theory	Upon completion of the subject student shall be able to understand the importance and application of Immobilized enzymes, genetic engineering, fermentation techniques and monoclonal antibodies in production in pharmaceutical industry.
BP606T	Quality Assurance-Theory	Upon completion of the course student shall be able to understand the importance of cGMP, documentation aspects and the responsibilities of QA & QC departments in a pharmaceutical industry.

B.PHARM. VII SEMESTER

Course code	Name of the course	Course Outcome
BP701T	Instrumental Methods of Analysis-Theory	Upon completion of the course the student shall be able to understand the interaction of matter with electromagnetic radiations and its applications in drug analysis. They shall understand the chromatographic separation and analysis of drugs.
BP705P	Instrumental Methods of Analysis-Practical	They shall know the quantitative & qualitative analysis of drugs using various analytical instruments.
BP702T	Industrial Pharmacy II-Theory	Upon completion of the course, the student shall be able to know the pilot plant and scale up technology, used in formulation of

		pharmaceutical dosage forms used in technology transfer from lab scale to commercial batch. They would also know different Laws and Acts and approval processes required for drug products.
BP703T	Pharmacy Practice-Theory	Upon completion of the course, the student shall know various drug distribution methods in a hospital, stores management and inventory control in hospital pharmacy. They would be able to understand monitoring of drug therapy of patient through medication chart review and clinical review. They would know to counsel the patients and detect and assess adverse drug reactions. They would have the insight of hospital pharmacy in pharmaceutical care services.
BP704T	Novel Drug Delivery System- Theory	Upon completion of the course student shall be able various approaches in development of novel drug delivery system, criteria for selection of drugs and polymers along with evaluation of novel drug delivery systems.

B.PHARM.VIII SEMESTER

Course code	Name of the course	Course Outcome
BP801T	Biostatistics and Research Methodology	Upon completion of the course the student shall be able to Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment) and various other statistical techniques to solve statistical problems
BP802T	Social and Preventive Pharmacy	The student shall be able to acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide. They would gain a critical way to think and evaluate alternative ways of solving problems related to health and pharmaceutical issues.
BP803ET	Pharma Marketing Management	Students shall have an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.
BP804ET	Pharmaceutical Regulatory Science	Upon completion of the subject student shall be able the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals. Also, they would know various regulatory approval process and their registration in Indian and

		international markets.
BP805ET	Pharmacovigilance	Upon completion of course, students shall know importance of drug safety monitoring, pharmacovigilance, detection of new adverse drug reactions and their assessment, methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle. They shall also have knowledge of ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning and CIOMS requirements for ADR reporting.
BP806ET	Quality Control and Standardization of Herbals	Upon completion of the subject student shall be able to know WHO guidelines for quality control of herbal drugs, quality assurance in herbal drug industry. They shall know the regulatory approval process and their registration in Indian and international markets.
BP807ET	Computer Aided Drug Design	Upon completion of the course, the student shall be able to understand Design and discovery of lead molecules, its role in drug design, QSAR and docking and various strategies to develop new drug like molecules.
BP808ET	Cell and Molecular Biology	Upon completion of the subject student shall have knowledge of cell and molecular biology history, cellular functioning and composition, protein structure and function and basic of molecular genetic mechanisms.
BP809ET	Cosmetic Science	Upon completion of course, student shall be able to know regulatory aspect of cosmetic preparation in India and worldwide. They would have understanding of fundamentals of skins, teeth, hairs and their related problems. They shall know the composition, excipients used in formulation of various cosmetic preparations and their evaluation.
BP810ET	Experimental Pharmacology	Upon completion of the course the student shall know the applications of various commonly used laboratory animals, various screening methods used in preclinical research, the importance of biostatistics and research methodology and would be able to design and execute a research hypothesis independently.

BP811T	Advanced Instrumentation Techniques	Upon completion of the course the student shall be able to understand the advanced instruments used and its applications in drug analysis, the chromatographic separation of drugs and analysis of drugs using various analytical instruments.
BP812ET	Dietary Supplements and Nutraceuticals	By the end of the course, students should be able to understand the need of supplements by the different group of people to maintain healthy life and the regulatory and commercial aspects of dietary supplements including health claims.