

### B. Pharm. Course Outcomes

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

	C104.4	Outline the classification and mechanism of action of various inorganic pharmaceuticals
	C104.5	Discuss the various radioisotopes and its pharmaceutical applications
(BP-105T) Communication Skills	C 105.1	Developing all dimensions of personality in terms of communication skill to express, understand and convey the thoughts impressively in a given situation
	C105.2	Construct understanding of verbal and non-verbal communication and various styles.
	C105.3	Develop better listening skills and written communication.
	C105.4	Develop interview skills and the art of presentation.
	C105.5	Build the ability for group discussion and leadership skills
(BP-106 RBT) Remedial biology	C.106.1	Classify the diversity of living system and five kingdoms of life with morphology of flowering plants like root, stem and leaf.
	C.106.2	Know various concepts of body fluids and circulation, digestion and absorption and breathing and respiration.
	C.106.3	Relate basic components of anatomy & physiology of human body with reference to human reproduction, excretion, neural control and chemical coordination.
	C.106.4	Define basic concepts of plant nutrient and photosynthesis
	C.106.5	Describe plant respiration, growth and development of plant and cell structure and tissue
(BP-106 RMT) Remedial mathematics	C.106M.1	Know the introduction of partial fraction, logarithm, function and limits and continuity.
	C.106M.2	Solve the different types of problems by applying matrices and determinant.
	C.106M.3	Appreciate and understand the principles and solve the problem related to calculus.
	C.106M.4	Summarize the principal and application of analytical Geometry
	C.106M.5	Explain the principle of geometry, differential equation and Laplace transform
(BP-107P) Human Anatomy & Physiology (Practical)	C.107.1	Model physiological processes discussed in theory classes through experiments on normal human beings.
	C.107.2	Study microscopic demonstration of the cells & tissues
	C.107.3	Identify various systems using chart, model & specimens
	C.107.4	Analyse human blood samples for normal and abnormal contents
(BP-108P) Pharmaceutical Analysis (Practical)	C.108.1	Learn the art of performing limit tests of some common impurities
	C.108.2	Demonstrate the art of preparation and standardization of primary and secondary standards

	C.108.3	Perform and learn the technique of assay
	C.108.4	Determine Normality using various electro-analytical methods.
(BP-109P) Pharmaceutics I (Practical)	C.109.1	Make use of different techniques learned in theory to prepare and dispense various dosage form
	C.109.2	Formulation of official liquid dosage forms
	C.109.3	Formulation and dispensing of solid dosage form
	C.109.4	Formulation and dispensing of semi-solid dosage form
(BP-110P) Pharmaceutical Inorganic Chemistry (Practical)	C.110.1	Analyse qualitative determination of impurities via Limit Test
	C.110.2	Learn to identify different inorganic compounds
	C.110.3	Determine the purity of Bentonite, Aluminium Hydroxide Gel etc.
	C.110.4	Elaborate preparation and use of Boric Acid, Potash Alum and Ferrous Sulphate
(BP-111P) Communication Skills (Practical)	C.111.1	Identify and learn socializing and etiquettes
	C.111.2	Adapting the correct use of pronunciation (Consonantal and vowel sounds)
	C.111.3	Develop the use of narration and figures of speech
	C.111.4	Improve writing skills and e-mail etiquettes
	C.111.5	Take part in mock personal interview sessions
	C.111.6	Illustrate presentations
(BP-112P) Remedial Biology (Practical)	C.112.1	Demonstrate the basic concepts of experimental biology
	C.112.2	Discuss the anatomy of frog by computer assisted techniques
	C.112.3	Model physiological processes discussed in theory classes through experiments on normal human beings.
	C.112.4	Identification and microscopic study of plant parts
<b>B. Pharmacy I Year / II Sem</b>		
(BP-201T) Human Anatomy and Physiology	C201.1	Explain nervous system organization
	C201.2	Illustrate the anatomy, regulation and disorders of Digestive system and energetics.
	C201.3	Make use of knowledge related to anatomy of Respiratory system and Urinary system
	C201.4	Relate the interlinked classification, mechanism and functions of endocrine system
	C201.5	Explain the anatomy, physiology and functions of reproductive system and aspects of genetics.
(BP-202T) Pharmaceutical Organic Chemistry -I	C202.1	Understand the classification and nomenclature of simple organic compounds
	C202.2	Explaining the mechanism of various reactions with its orientation
	C202.3	Determining the reactivity and stability of various organic compounds
	C202.4	Identification and confirmation of different organic compounds

	C202.5	Evaluating the acidity and basicity of different organic compound with its uses
(BP203T) Biochemistry	C203.1	Demonstrate and define fundamental principles and nature of biomolecules
	C203.2	Outline and relate various metabolic pathways & their regulation in the body
	C203.3	Understanding the metabolism of nutrient molecule in various physiological and pathological condition
	C203.4	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins
	C203.5	Discuss the catalytic role, therapeutic and diagnostic applications of enzymes.
(BP-204T) Pathophysiology	C204.1	Outline principles of cell injury adaptation and explain the basic mechanism involved in the process of inflammation and repair
	C204.2	Student will be able to understand the pathophysiology of cardiovascular, respiratory and renal system
	C204.3	Classify and understand salient features related to pathophysiology of haematological diseases, endocrine, nervous and gastrointestinal system
	C204.4	Define the etiology and pathophysiological mechanism of diseases like bones and joint disorder with principles of cancer
	C204.5	Understand the importance complications of infectious and sexually transmitted diseases
(BP-205T) Computer Applications In Pharmacy	C.205.1	Demonstrate the fundamentals of computer
	C.205.2	Define the web technologies and types of databases
	C.205.3	Explain the application of computer in pharmacy
	C.205.4	Outline the various applications of databases in pharmacy
(BP-206T) Environmental Sciences	C.206.1	Create the awareness about natural sources and associated problem
	C.206.2	Construct basic knowledge about different types and functions of ecosystems
	C.206.3	Develop and learn the concept of environmental pollution
	C.206.4	Motivate learner to participate in environment protection and improvement
	C.206.5	Strive to attain harmony with nature
(BP-207P) Human Anatomy and Physiology -II	C.207.1	Take part in study of physiological processes by using models and specimens of few organ systems of the human body
	C.207.2	Illustrate and experiment with human subjects to understand normal body functioning
	C.207.3	Outline family planning devises and pregnancy diagnostic methods
	C.207.4	Relate the histology of vital organs with the help of slides
	C.207.5	Construct blood report by using cell analyzer
(BP-208P)	C.208.1	Take part in preliminary testing and functional group testing of

Pharmaceutical Organic Chemistry -I		organic compounds
	C.208.2	Test for melting point and boiling point of organic compounds
	C.208.3	Create derivatives of organic compounds
	C.208.4	Develop solid derivatives from organic compounds
	C.208.5	Construct molecular models of organic compounds
(BP-209P) Biochemistry	C.209.1	Take part in qualitative analysis of biomolecules
	C.209.2	Test for presence of abnormal constituents in blood and urine
	C.209.3	Create buffers of various strength for use in biochemistry practical
	C.209.4	Develop and learn methods for testing of enzyme activity
	C.209.5	Demonstrate and relate methods used in polymer degradation
(BP-210P) Computer Applications In Pharmacy	C.210.1	Create HTML web-page
	C.210.2	Design questionnaire, forms and reports using MS-Access
	C.210.3	Create invoice tables databases using MS-Access
	C.210.4	Develop and learn methods for content export using web-pages
	C.210.5	Demonstrate and relate methods for drug information retrieval using online tools
<b>B. Pharmacy II Year / III Sem</b>		
(BP-301T) Pharmaceutical Chemistry –III (Organic Chemistry-III)	C.301.1	Interpret the structure, reactions and substituents of Benzene and its derivative
	C.301.2	Explain the methods of preparation, reactions and the type of isomerism of the Phenol, aromatic amines and aromatic acids.
	C.301.3	Elaborate various reactions and properties of fats and oils
	C.301.4	Explain synthesis and uses of polynuclear hydrocarbons
	C.301.5	Label general methods of preparation and reactions of Cyclo alkanes compounds
(BP-302T) Physical Pharmaceutics I	C.302.1	Outline solubility and their application in pharmaceuticals
	C.302.2	Explain basic concept of states of matter with its properties and Physicochemical properties of drug molecules.
	C.302.3	Explain the role surfactant, surface tension, interfacial tension and related properties of drug during formulation.
	C.302.4	Explain the concept of complexation and protein binding.
	C.302.5	Apply principles of pH, buffers and isotonic solutions.
(BP-303T) Pharmaceutical Microbiology	C.303.1	Explain methods of identification, cultivation and preservation of various microorganisms (Prokaryotes, Eukaryotes and Bacteria)
	C.303.2	Interpret the importance and implementation of sterilization and aseptic conditions in pharmaceutical processing and industry
	C.303.3	Define fungi and viruses and sterility testing of pharmaceutical products
	C.303.4	Outline the cell culture technology, aseptic area, and methods of standardization.

	C.303.5	Illustrate methods of identification, cultivation, sub culturing and preservation of various microorganisms, growth of animal cell and application in pharmaceutical Industry.
(BP-304T) Pharmaceutical Engineering	C.304.1	Explain various operations of flow of fluids, size reduction & size separation.
	C.304.2	Relate the principles and operations involved in heat transfer, Evaporation and Distillation.
	C.304.3	Explain the concept of drying and mixing with their equipment used.
	C.304.4	Outline the concept of Filtration and centrifugation with their equipment used.
	C.304.5	Explain the concept of material of pharmaceutical plant construction, corrosion and its prevention.
(BP-305P) Pharmaceutical Organic Chemistry-II (Practical)	C.305.1	Apply the common laboratory techniques like recrystallization and steam distillation.
	C.305.2	Demonstrate the significance and process of determination of oil values including acid values, saponification value and iodine value
	C.305.3	Outline the synthesis of basic organic compounds by various reaction mechanisms including nitration, bromination, acetylation
	C.305.4	Outline the synthesis of basic organic compounds by various reaction mechanisms including hydrolysis, oxidation and some name reactions
(BP-306P) Physical Pharmaceutics I (Practical)	C.306.1	Explain a basic understanding of solubility determination.
	C.306.2	Demonstrate the significance and process of determination of pKa and partition coefficient, and surface tension by various methods.
	C.306.3	Determine stability of the compounds by various methods
	C.306.4	Determination of HLB number and CMC of surfactants.
(BP-307P) Pharmaceutical Microbiology (Practical)	C.307.1	Demonstrate and choose amongst different equipment and processing
	C.307.2	Illustrate the art of sterilization of glassware and preparation and sterilization of media.
	C.307.3	Illustrate the process of culturing, sub-culturing and multiple streaking methods
	C.307.4	Make use of various staining techniques (simple, grams and acid-fast staining) and hanging drop method for determining motility of microorganisms.
(BP-308P) Pharmaceutical Engineering (Practical)	C.308.1	Determine radiation constant of different materials used in pharmaceutical manufacturing
	C.308.2	Demonstrate the various factors influencing filtration and evaporation rate

	C.308.3	Explain humidity & drying and construct psychometric chart and drying curve
	C.308.4	Demonstrate the principle and working of ball mill and sieve shaker
<b>B. Pharmacy III Year / IV Sem</b>		
(BP-401T) Pharmaceutical Organic Chemistry-III	C.401.1	Relate the mechanism of stereo isomerism with organic compounds
	C.401.2	Illustrate basic concepts of Geometrical isomerism of various organic compounds
	C.401.3	Classify and study the nomenclature heterocyclic compounds
	C.401.4	Summarize the methods of preparation and properties of organic compounds
	C.401.5	Recall reactions of synthetic importance
(BP-402T) MEDICINAL CHEMISTRY-I	C.402.1	Recall the concept of physio chemical properties of drug molecules in relation to drug activity.
	C.402.2	To assess Structural Activity relationship, mechanism of action, classification and uses of drugs acting on Autonomic nervous system.
	C.402.3	To classify sympathetic and parasympathetic agents with SAR of selective drugs
	C.402.4	To extend the knowledge of drugs acting on Central Nervous Systems like sedatives, antipsychotics anticonvulsants etc.
	C.402.5	To explain the Structural Activity relationship, mechanism of action, classification and uses of General Anesthetics
(BP-403T) Physical Pharmaceutics –II	C.403.1	Classify the types of dispersions such as coarse and colloidal and to discuss their importance and properties and explain Suspension and Emulsion with their properties and evaluation parameters.
	C.403.2	Explain rheology, different flow systems and their importance in pharmaceuticals.
	C.403.3	Examine the role surfactant, surface tension, interfacial tension and related properties of drug during formulation.
	C.403.4	Illustrate the concept of micromeritics
	C.403.5	Demonstrate the role of various physical and chemical factors in drug stability and reaction kinetics
(BP-404T) Pharmacology-I	C.404.1	Infer principle concept of pharmacology
	C.404.2	Relate and develop fundamental of pharmacokinetics and pharmacodynamics
	C.404.3	explain the pharmacology of drugs acting on peripheral nervous system

	C.404.4	Make use of pharmacology to study drug activity on CNS
	C.404.5	Apply basic knowledge of pharmacology in prevention and treatment of various disease
(BP-405T) Pharmacognosy-I	C405.1	Summarize general introduction of pharmacognosy, classification of crude drugs and quality control of drugs of natural origin
	C405.2	Explain the cultivation, collection, processing and storage of drugs of natural origin
	C405.3	Elaborate the concept of plant tissue culture
	C405.4	Illustrate different systems of medicines and classification of secondary metabolites
	C405.5	Discuss of pharmacognostic parameters of primary metabolites, plant products enzymes, proteins, enzymes and marine drugs
(BP-406P) Medicinal Chemistry- I (Practical)	C.406.1	Assess synthesis and characterization of Benzimidazole having antimicrobial property
	C.406.2	Examine antipyretic property of 1,3-pyrazole with Synthesis and Characterization
	C.406.3	Assess different drugs with Assay
	C.406.4	Estimate partition coefficient of any two drugs
(BP-407P) Physical Pharmaceutics II (Practical)	C407.1	
	C407.2	
	C407.3	
	C407.4	
	C407.5	
(BP-408P) Pharmacology-I (Practical)	C408.1	Identify and study common laboratory animals
	C408.2	Analyse commonly used instruments in experimental pharmacology
	C408.3	Illustrate the maintenance of laboratory animals
	C408.4	Explain common laboratory techniques like blood withdrawal etc
	C408.5	Estimate the effect of drugs with different animal models
(BP-409P) Pharmacognosy – I (Practical)	C.409.1	Understand the concept of swelling and foaming index
	C.409.2	Examine the chemical properties of different secondary metabolites
	C.409.3	Estimate different leaf constants
	C.409.4	Appraise the knowledge of quantitative microscopy
	C.409.5	Analyze the crude drugs on basis of physical parameters

**B. Pharmacy III Year / V Sem**



(BP 501T) Medicinal Chemistry- II	C501.1	Summarize the chemistry of antihistaminic, H1 - and H2 antagonist, Gastric Proton pump inhibitors and antineoplastic drugs with respect to their pharmacological activity.
	C501.2	Outline the drug metabolic pathway, adverse effect and therapeutic value of anti-anginal, diuretics, anti-hypertensive drug with its structure activity relationship.
	C501.3	Know the structure activity relationship of antiarrhythmic, antihyperlipidemic, coagulant –anticogulants and drugs used in congestive heart failure
	C501.4	Summarize synthesis and effects of drugs acting on endocrine system
	C501.5	Explain chemistry and physicochemical properties and metabolism of the antidiabetic and local anesthetic drugs.
(BP502T) Industrial Pharmacy- I	C 502.1	Analyse various Preformulation parameters for different dosage forms (solid, liquid etc.) including their physical and chemical properties.
	C502.2	Explain formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of tablets, capsules, pellets and liquid orals.
	C502.3	Outline formulation considerations (selection of excipients and their role in formulation) and evaluation parameters of parenterals and ophthalmics
	C502.4	Formulate various cosmetics preparations like lipsticks, shampoos, cold cream, vanishing creams etc.
	C502.5	Define, evaluate and perform quality control and stability studies of pharmaceutical aerosols. Explain various pharmaceutical packaging materials, containers, their quality control tests and stability aspects
(BP503T) Pharmacology –II	C 503.1	Demonstrate the mechanism of drug action and its relevance in the treatment of cardiovascular system.
	C503.2	Explain the mechanism of drug action and its relevance in the treatment of cardiovascular and urinary system.
	C503.3	Illustrate correlation of pharmacology with related to Autacoids and related drugs.
	C503.4	Relate and Impart the fundamental knowledge of various aspect of drug acting on endocrine system
	C503.5	Outline and emphasis basic concept of bio assay.
(BP504T) Pharmacognosy and Phytochemistry- II	C 504.1	Develop the knowledge about secondary metabolites produce in crude drugs. Outline the utilization of radioactive isotopes.
	C504.2	Explain the general introduction, composition, chemistry, therapeutic use and application of secondary metabolites. Alkaloids, steroids etc.
	C504.3	How to carry out the identification, isolation and analysis of Phytoconstituents
	C504.4	Relate Industrial production, estimation and utilization of Phytoconstituents

	C504.5	Summarize the basics of phytochemistry and herbal drug technology
(BP505T) Pharmaceutical Jurisprudence	C 505.1	Rephrase and impart the knowledge of drug and cosmetic act and its rule.
	C505.2	Detail study of the various parameter of drug and cosmetic act and rules including various schedules, sale of drugs, labelling and packaging of drugs, administration of act and rules.
	C505.3	Outline Pharmacy act with reference to medicinal and toilet preparation act, narcotic Drugs and psychotropic substances act.
	C505.4	Summarize the study of salient features of drugs and magic remedies act and its rules, Prevention of cruelty to animal act - 1960 along with National Pharmaceutical pricing authority
	C505.5	Define pharmaceutical legislation, Code of ethics, Medical termination of pregnancy act, Right to information act and Introduction to IPR during pharmaceutical practice.
(BP506P) Industrial Pharmacy- I (Practical)	C 506.1	Explain preformulation study of paracetamol/ aspirin or any drug
	C506.2	Formulate and evaluate solid dosage form (Paracetamol tablet/ Aspirin Tablet/ film coating tablet or granules / Tetracyclines capsules)
	C506.3	Formulate liquid dosage form (Gluconate injection, Ascorbic acid injection and eye drop )
	C506.4	Formulate semisolid dosage form (eye ointment, cold cream and vanishing cream)
	C506.5	Evaluation of glass test as per IP
(BP507P) Pharmacology –II (Practical)	C 507.1	Relate the techniques and mechanism DRC of various drugs.
	C507.2	Demonstrate isolation of different organs from the laboratory animal by simulated experiments.
	C507.3	Demonstrate isolation of different tissues from the laboratory animal by simulated experiments.
	C507.4	Demonstrate various receptor action using isolated tissue preparation
(BP508P) Pharmacognosy and Phytochemistry- II (Practical)	C 508.1	Evaluate the plants and phytochemicals from plant tissue culture on the basis of morphology, histology and characteristics
	C508.2	Demonstrate isolation and detection of active constituents of various plants.
	C508.3	Demonstrate identification, isolation and analysis of Phytoconstituents
	C508.4	Demonstrate separation and detection of phytoconstituents with the help of TLC and paper chromatography
	C508.5	Analyse the crude drug by chemical test
<b>B. Pharmacy III Year / VI Sem</b>		
(BP 601T) Medicinal Chemistry –III	C601.1	Outline the fundamentals of medicinal chemistry, SAR and synthesis of classical antibiotics like $\beta$ lactam antibiotics, aminoglycosides and tetracyclines

	C601.2	Classify, and outline the medicinal chemistry, SAR and synthesis of antibiotics, chemotherapeutic agents like macrolides, anti-malarials and prodrug.
	C601.3	Elaborate the medicinal chemistry, SAR and synthesis of antiviral, antitubercular drugs and urinary tract anti-infectives.
	C601.4	Explain the medicinal chemistry, SAR and synthesis of antifungal drugs, anthelmintics, antiprotozoal and sulphonamide class of drugs.
	C601.5	Explain the concepts of drug design, QSAR and combinatorial chemistry.
(BP-602T) Pharmacology III	C602.1	Explain the pharmacology of drugs acting on Respiratory and Gastrointestinal system
	C602.2	Explain the mechanism of drug action and its relevance in the treatment of different infectious diseases and cancer
	C602.3	Describe the chemotherapy of antitubercular agents, antifungal, antiviral, anthelmintics and anti-amoebic agents.
	C602.4	Describe the chemotherapy of UTI, STD and immunopharmacology
	C602.5	Comprehend the principles of toxicology and treatment of various types of poisoning and concept of immunopharmacology and chronopharmacology
(BP-603T) Herbal Drug Technology	C603.1	Impart knowledge of herbs as raw materials, Biodynamic agriculture and Indian System of Medicine.
	C603.2	Outline general market, scope and types of products available in nutraceuticals and herb-drug-food interactions.
	C603.3	Explain the sources of and description of herbal cosmetics, herbal excipients and herbal formulations.
	C603.4	Analyse and developed Good Manufacturing Practices (GMP), patenting and regulatory aspects of herbal drugs.
	C603.5	Outline of plant-based industries and institutions involved in work on medicinal and aromatic plants in India along with schedule-T of drugs and cosmetics act.
(BP-604T) Biopharmaceutics and Pharmacokinetics	C604.1	Explain the concepts of biopharmaceutics and their applications in pharmaceutical development.
	C604.2	Describe the kinetics of elimination. Explain the concept of bioavailability and Bioequivalence
	C604.3	Learn the use of plasma-level time data to calculate secondary pharmacokinetic parameters
	C604.4	Explain the concept of multicompartment models.
	C604.5	Appraise non-linear pharmacokinetics with example of drugs.
(BP-605T) Pharmaceutical Biotechnology	C605.1	Elaborate the importance of enzymes biotechnology, Biosensors, Protein Engg, use of microbes in pharmaceutical industries
	C605.2	Learn the use of genetic engineering techniques for production of pharmaceuticals

	C605.3	outline the concept of Humoral Immunity and cellular immunity
	C605.4	Learn and outline the basic principles of immunology and how it is used for production of vaccines and blood preservation techniques
	C605.5	Appraise the use of fermentation technology in pharmaceutical industries
(BP-606T) Pharmaceutical Quality Assurance	C606.1	Outline the cGMP , TQM, QbD, ISO and NABL accreditation aspects of pharmaceutical industries
	C606.2	Explain the importance aspects of organization and personnel, premises and equipment and raw material.
	C606.3	Learn and outline the basic principles guidelines issued by various regulatory agencies on quality control and GLP
	C606.4	Appreciate the importance of documentation in pharmaceutical industries.
	C606.5	Appraise calibration and validation techniques
(BP-607P) Medicinal Chemistry –III (Practical)	C607.1	Design and build drugs along with their intermediates
	C607.2	Perform and understand the assay methods of some important antibiotics
	C607.3	Perform the synthesis of important intermediates and drugs using microwave irradiation methods
	C607.4	Learn how to use the computer programs to draw chemical structures
	C607.5	Learn, apply and appraise Lipinski’s rule of five using computer assisted methods
(BP-608P) Pharmacology-III (Practical)	C608.1	Outline the concept of dose calculation in pharmacology experiments
	C608.2	Demonstrate the action of drugs on respiratory and gastrointestinal tract using software
	C608.3	Determine acute toxicity of drugs by given data
	C608.4	Illustrate calculation of Pharmacokinetic parameters
	C608.5	Learn application of biostatistics methods in experimental pharmacology
(BP-609P) Herbal Drug Technology (Practical)	C609.1	Perform preliminary phytochemical screening of crude drugs
	C609.2	Evaluate the excipients of natural origin
	C609.3	Perform monograph analysis of some Pharmacopoeial drugs
	C609.4	Prepare and standardize formulations containing crude drug extracts
	C609.5	Analyse crude drugs for secondary metabolite content
<b>B. Pharmacy III Year / VII Sem</b>		
(BP 701T) Instrumental Methods of Analysis	C.701.1	Extend knowledge of the introduction, instrumentation and applications of UV Visible Spectroscopy and Fluorimetry.
	C.701.2	Discuss the basic fundamental aspects of quantitative & qualitative analysis of drugs using various analytical instruments like IR Spectroscopy, Flame Photometry, atomic absorption Spectroscopy and Nepheloturbidometry.

	C.701.3	Illustrate the principle and methodology of chromatographic separation by various techniques like Adsorption and partition column chromatography, TLC, Paper chromatography and Electrophoresis with their applications
	C.701.4	Demonstrate the principle, instrumentation and analysis of compounds using GC and HPLC.
	C.701.5	Explain the mechanism, instrumentation and applications of separation techniques i.e, Ion exchange chromatography, Gel chromatography and affinity chromatography.
(BP 702) Industrial Pharmacy II	C.702.1	Define the process of pilot plant scale up of techniques
	C.702.2	Outline the process of technology transfer from lab scale to commercial batch.
	C.702.3	Interpret regulatory affairs and regulatory requirements for the approval process of drug products.
	C.702.4	Define quality management and certifications for quality like QbD, OOS, ISO, GLP etc.
	C.702.5	Develop concepts of different Laws and Acts that regulate pharmaceutical industry as per Indian Regulatory Requirements like CDSCO, COPP etc
(BP 703T) Pharmacy Practice	C.703.1	Outline the organization, layout, roles of the hospital and hospital pharmacy and community pharmacy. Analysing the adverse drug reactions and managing them.
	C.703.2	Construct the concepts of drug distribution in hospitals and planning the hospital formulary. Infer the need of TDM and summarizing drug therapy of patient through medication chart review and community pharmacy management.
	C.703.3	Construction of Pharmacy and Therapeutic Committee, Interpretation of the sources of drug information services and prescription orders. Need of patient counselling and Importance of training and education program in hospital. Prescribed medication order and communication skills.
	C.703.4	Plan of budget preparation and its implementation, in clinical pharmacy. Identifying the OTC sales and Rational use of drugs.
	C.703.5	Explain the drug store management and inventory control. Interpretation of laboratory results of specific diseases and summarizing the investigational use drugs.
(BP704) Novel Drug Delivery System	C.704.1	Relate the principles and rationale of drug delivery with the current and future approaches to controlled drug delivery and drug targeting using Polymers
	C.704.2	Summarize microencapsulation and fabrication of mucosal and implantable drug delivery system
	C.704.3	Demonstrate development of site specific drug delivery like nasopulmonary, transdermal drug delivery systems, GRDDS
	C.704.4	Illustrate targeted drug delivery system using liposomes, nanoparticles etc.

	C.704.5	Distinguish site specific drug delivery like ocular and intrauterine drug delivery system.
(BP705) Project Work	C. 705.1	Inculcate the process of project design and development
	C.705.2	Organization of project work and formulation of problem statement
	C. 705.3	Ability to propose and execute plan of work
	C. 705.4	Ability to work as a team and when required lead a team
	C. 705.5	Learn research writing
(BP701P) Instrumental methods of analysis (Practical)	C.701.11	Determination of absorption maxima of various organic compounds
	C.701.12	Perform assay and simultaneous estimation by UV spectroscopy
	C.701.13	Separation of compounds by Paper chromatography and TLC
	C.701.14	Demonstrate the analysis of compounds using spectroscopic methods
	C.701.15	Demonstration of instrumentation of HPLC & Gas Chromatography
<b>B. Pharmacy IV Year / VIII Sem</b>		
(BP 801T) Biostatistics and Research Methodology	C.801.1	Know the various statistical technique, measures of central tendency, measures of dispersion and correlation
	C.801.2	Solve regression, probability and parametric test
	C.801.3	Appreciate non parametric tests, need for research, graph and designing methodology
	C.801.4	Know the operation of regression modelling and practical components of industrial and clinical trial problems
	C.801.5	Know design and analysis of experiment
(BP 802 T) Social and Preventive Pharmacy	C.802.1	Know concept of health and disease, health education, sociology and hygiene
	C.802.2	Explain preventive medicines
	C.802.3	Outline the National health program, objective, functioning and outcome
	C.802.4	Outline the National health program with reference to programme for mother and child, family welfare, tobacco control malaria prevention, health care for elderly and role WHO
	C.802.5	Explain community services in rural, urban and school health
(BP 809ET) Elective I C-Cosmetic Science	C.809.1	Classify cosmetic and cosmeceutical products
	C.809.2	Explain principles of formulation and building blocks of skin care products, antiperspirants, deodorants and hair care products
	C.809.3	Explain role of herb in cosmetic and analytical cosmetics
	C.809.4	Outline principles of cosmetic evaluations
	C.809.5	Explain problems associated with hair and skin
(BP 812ET) Elective II E-Dietary	C.812.1	Explain functional foods, nutraceuticals and dietary supplements
	C.812.2	Appreciate the components in dietary supplements and the application

Supplements and Nutraceuticals	C.812.3	Know about free radicals, its production and reaction in the diet
	C.812.4	Outline free radical in various diseases, antioxidants and functional food for chronic diseases prevention
	C.812.5	Appreciate the regularity and commercial aspect of dietary supplement including health claims
(BP 805P) Practice School (Practical)	C.805.1	Outline and learn about Pharmacy Practices
	C.805.2	Know about e-Medicines in India
	C.805.3	Understand the functioning of Arogya and Janaushadhi Scheme of drug distribution.
	C.805.4	Elaborate learning of drug distribution systems of various pharmacies.
	C.805.5	Learn and execute a market survey

