COURSE OUTCOMES B-PHARM FIRST YEAR SEM I

BP101T Human Anatomy and Physiology I– Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP101T.1 K	Explain the gross morphology, structure and functions of cell and different tissues
BP101T.2 K	Illustrate the various homeostatic mechanisms and their imbalances.
BP101T.3 K	Enlist the features and functions of skeletal system and joints
BP101T.4 K	Explain body fluid composition, structure and functions blood cells
BP101T.5 K	classify and explain peripheral nervous system. Illustrate spinal and cranial nerves and special senses
BP101T.6 K	Explain the anatomy and physiology of cardiovascular system

BP102T Pharmaceutical Analysis I – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP102T.1 S	Explain and classify the methods, errors and techniques of volumetric analysis.
BP102T.2 S	Discuss theoretical considerations of aqueous and non-aqueous acid base titrations.
BP102T.3 S	Explain different methods & principles of precipitation, complexometric titrations and gravimetric analysis.
BP102T.4 S	Understand the basic concepts of redox titration.
BP102T.5 S	Describe and classify different electrodes used in electrochemical methods of analysis and refractometry.

BP103T Pharmaceutics I – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –

BP 103T.1K	illustrate the history of profession of pharmacy, basic introduction of different dosage form, identification and analyzing the professional way of handling the prescription and posology concept to determine the dose of drug based on different factors for to understand the pharmacy
BP 103T.2K	Select learning different concept of weighing and measuring pharmaceuticals calculation, pharmaceuticals powders or mixtures and liquid dosage form intended to used internally & externally,
BP 103T.3K	Make use of preparation of monophasic and biphasic liquid formulation preparation
BP 103T.4K	Inspect Semisolid Suppositories prepation, evaluation and learn associated various pharmaceutical incompability in formulation.
BP 103T.5K	Recommend different excipient used in semisolid formulation and understand mechanisms associated influencing factors for penetration of drug and develop different semisolid dosage form

BP 104 Pharmaceutical Inorganic Chemistry – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 104T.1K	Know about pharmacopoeias and learn impurity identification
BP 104T.2K	Describe buffers for analytical and pharmaceutical purposes , explain major extra and intracellular electrolytes and dental roducts
BP 104T.3K	Explain buffers for analytical and pharmaceutical purposes using the knowledge of dissociation constant, buffer capacity, NaCl equivalence and freezing point depression and pharmacopeia.
BP 104T.4K	Explain basic understanding of GIT disease formation and mechanism of action of gastro intestinal agents inorganic drugs.
BP 104T.5K	Discuss disease aetiology and properties of inorganic compound and mechanism of drug action for expectorants, emetics, haematinics, antidotes and astringents
BP 104T.6K	Explain and apply radiopharmaceuticals

BP105T Communication skills – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP105T.1K	Develop the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
BP105T.2K	Adapt communicating effectively Verbal as well Non Verbal
BP105T.3K	Build the qualities to effectively manage the team as a team player

BP105T.4 K	Develop interview skills
BP105T.5 K	Develop Leadership qualities and essentials

BP106RMT Remedial Mathematics – Theory*

CO Number	**Course Outcomes:** Upon completion of course students will be able to –
BP106RM T.1K	Demonstrate the theory and their application in Pharmacy
BP106RM T.2K	Solve the different types of problems by applying theory
BP106RM T.3K	Appraise the important application of mathematics in Pharmacy
BP106RM T.4K	Outline the Partial fraction, Logarithm, matrices and Determinant, Analytical geometry
BP106RM T.5K	Estimate, differential equation and Laplace transform

BP106RBT Remedial Biology

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP106RBT .1 K	Explain the classification and salient features of five kingdoms of life.Monera, Potista, Fungi, Animalia and Plantae, Virus
BP106RBT .2 K	Elaborate the basic components of anatomy & physiology of plant
BP106RBT .3 K	Elaborate the basic components of anatomy & physiology of animal with special reference to human.
BP106RBT .4 K	Explain about plant tissues, photosynthesis process, respiration process of plants and plant growth.
BP106RBT .5 K	Explain about cell organelles and tissues in human body.

BP107P Human Anatomy and Physiology – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 107 P.1S	Relate cancept of the Human Anatomy physiology
BP 107 P.2S	Adapt knowledge about Human anatomy and Physiology

BP 107 P.3S	Analyze the physiological processes discussed in theory classes through experiments on living tissue
BP 107 P.4S	Examine the physiological processes discussed in theory classes through experiments on human beings
BP 107 P.5S	Identify Human skeletal system, Summarize knowledge about skeletal system.
BP 107 P.6S	Apply knowledge about Human Systems

BP108P Pharmaceutical Analysis I – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP108T.1 S	Prepare and determine normality of various secondary solutions.
BP108T.2 S	Perform and Calculate percentage purity of some compounds (Assay).
BP108T.3 S	Calibrate conductometer, potentiometer & determine normality by electroanalytical methods.
BP108T.4 S	Calibrate refractometer and evaluate refractive index of differnet samples

BP109P Pharmaceutics I – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP109P.1S	Tell acquired skill for prepartion of monophasic liquid preparation of syrup,elixer,linctus,solution
BP109P.2S	Classify biphasic liquid preparation and understand intended used internal and external preparation of emulsion
BP109P.3S	Make use of powder and granules for various therapeutic and general use in preparation
BP 103P.4S	Categorize semisolid prearation and aquired skill for preparation of gel,ointment and learn technique suppository preparation using different bases
BP 103P.5S	Compare Mouthwash and Gargles preparation for oral cavity preparation

BP110P Pharmaceutical Inorganic Chemistry – Practical

CO Number	**Course Outcomes:** Upon completion of course students will be able to –
BP110P.1S	Find impurites present in pharmaceutial compounds
BP110P.2S	Identify the given sample of pharmaceuticals by carrying out identifcation tests

BP110P.3S	Estimate the Swelling power, Acid neutralizing capacity of inorganic pharmaceuticals
BP110P.4S	repare medicinally important iorganic compounds

BP111P Communication skills – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP111P.1S	outline basic communication
BP111P.2S	summarize pronunciation and nouns
BP111P.3S	identify the characteristics of Listening and Comprehending
BP111P.4S	outline the structure of an Interview and its Handling Skills
BP111P.5S	explain the Presentation Skills

BP112RBP Remedial Biology – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP112RBP .1S	Study and explain about microscope its parts and working. Perform section cutting and permenent slide preparation.
BP112RBP .2S	Perform microscopic study and identification of various plant tissues and cell organelles.
BP112RBP .3S	Experiment with computer model of frog for detailed study.
BP112RBP .4S	Apply knowledge for identification of bones
BP112RBP .5S	Measure blood pressure and tial volume and determine blood group.

B-PHARM FIRST YEAR SEM II

BP201T Human Anatomy and Physiology II – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 201T T. 1K	Elaborate the pharmacology of drugs acting on endocrine system and its relevance in the treatment of different disease.
BP 201T T. 2K	Justify the significance of chronopharmacology in various diseases.
BP 201T T. 3K	Classify drugs acting on GIT with respect to mechanism of action and its relevance in the treatment .
BP 201T T.	Discuss in detail Chemotherapy in infectious diseases and disorders of immune

4K	origin.
BP 201T T. 5K	Relate the role of Free radicals and antioxidants in various diseases. .
BP 201T T. 6K	Discuss Recent Advances in Treatment of Alzheimer's disease, Parkinson's disease, Cancer, Diabetes mellitus.

BP202T Pharmaceutical Organic Chemistry I – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 202T T. 1K	Understand and explain Basic Principles of Organic Chemistry
BP 202T T. 2K	Classify of organic compounds, To understand and apply IUPAC nomenclature rules for naming organic compoundse and to draw structure
BP 202T T. 3K	Discuss Preparation methods of of Alkanes, Alkenes and Conjugated dienes , To study reactions and uses of Alkanes, Alkenes and Conjugated dienes
BP 202T T. 4K	Explain preparation methods, reactions, qualitative tests and uses of Alkyl halide and Alcohol compounds
BP 202T T. 5K	Explain Preparation methods, reactions, qualitative tests and uses of Carbonyl compound
BP 202T T. 6K	Explain Preparation methods, reactions, qualitative tests for carboxylic acids and amines. Compare acidity of Carboxylic acid and basicity of Aliphatic amines

BP203T Biochemistry – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP203T.1 S	Describe the importance of nutrient molecules in physiological and pathological conditions alongwith the numerous metabolic cycles of carbohydrates.
BP203T.2 S	Elaborate and classify importance of biological oxidation and bioenergetics.
BP203T.3 S	Discuss and outline different metabolic pathways and its disorders of bio molecules viz., lipids, amino acids, proteins.
BP203T.4 S	Illustrate the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins with metabolic pathways.
BP203T.5 S	Explain and classify the catalytic role of enzymes and importance of enzyme in biochemical process.

BP204T Pathophysiology – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**

BP 204T.1K	Outline Basic principles of Cell injury and Adaptation, mechanism involved in the process of inflammation and repair
BP 204T.2K	Classify various cardiovascular, respiratory and renal diseases and interpret its pathophysiology
BP 204T.3K	Illustrate pathophysiology of Haematological Diseases, Endocrine Diseases
BP 204T.4K	Explain pathophysiology of Nervous system diseases and gastrointestinal diseases
BP 204T.5K	Outline pathophysiology of Cancer, Diseases of bones and joints
BP 204T.6K	Illustrate pathophysiology of Infectious diseases and Sexually transmitted diseases

BP205T Computer Applications in Pharmacy – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP205 T.1K	Use the Appropriate method on Number system to solve the given problem.
BP205 T.2K	Apply the various tags in Web Technology to design a program.
BP205 T.3K	Use the appropriate system and application of computers in pharmacy.
BP205 T.4K	Apply the concepts of Bioinformatics in pharmacy.

BP206T Environmental sciences – Theory *

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP206T.1 K	Create the awareness about environmental problems among learners and impart basic knowledge about the environment and its allied problems.
BP206T.2 K	Develop an attitude of concern for the environment and motivate learner to participate in environment protection and environment improvement.
BP206T.3 K	Acquire skills to help the concerned individuals in identifying and solving environmental problems and strive to attain harmony with Nature

BP207P Human Anatomy and Physiology II –Practical

CO	**Course Outcomes: Upon completion of course students will be able to –**

Number	
BP 207 P.1S	Relate cancept of the Human Anatomy physiology
BP 207 P.2S	Analyze the physiological processes discussed in theory classes through experimentson living tissue
BP 207 P.3S	Adapt knowledge about Human anatomy and Physiology
BP 207 P.4S	Examine the Human Body System through the Model and Chart
BP 207 P.5S	Analyze the physiological processes discussed in theory classes through experimentson Human beings
BP 207 P.6S	Apply knowledge about Human Systems

BP208P Pharmaceutical Organic Chemistry I– Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 208P.1S	understand Basic Safety measures in an organic laboratory
BP 208P.2S	apply basic laboratory techniques: Calibration of thermometer,melting point, boiling point, distillation, and crystallization
BP 208P.3S	perform Systematic qualitative analysis and analyze of unknown organic compounds
BP 208P.4S	prepare derivetives for various organic compound functional groups
BP 208P.5S	demonstrate Building of molecular models of structures containing various functional groups

BP209P Biochemistry – Practical

CO number	**Course Outcomes-Upon completion of course students will be able to**
BP205P.1S	identify carbohydrates, amino acids and proteins
BP205P.2S	test for abnormal constituents in urine
BP205P.3S	analyze quantitatively blood sugar, cholesterol,creatinine and proteins
BP205P.4S	measure the pH of the prepared buffer solution
BP205P.5S	demonstrate salivary amylase activity under various conditions

BP210P Computer Applications in Pharmacy – Practical*

CO number	**Course Outcomes-**Upon completion of course students will be able to

BP210P.1S	Use the appropriate tags and design web technology program.
BP210P.2S	Design and implement database using MS Access.
BP210P.3S	Generate and print reports on database.
BP210P.4S	Exporting Tables, Queries, Forms and Reports to web pages and XML pages.

B-PHARM SECOND YEAR SEM III

BP301T Pharmaceutical Organic Chemistry II – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP301T .1K	Understand chemistry and reactivity of Benzene
BP301T .2K	Explain chemistry, synthesis and uses of phenols ,amines
BP301T .3K	Explain and apply concept of stereochemistry
BP301T .4K	Describe reactivity, stability, uses of Polynuclear compounds
BP301T .5K	Discuss reactivity, stability of cycloalkanes
BP301T .6K	Understand chemistry of Fats and Oils

BP302T Physical Pharmaceutics I – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP302T.1 K	Elaborate factors affecting solubility of drugs
BP302T.2 K	Study solid state and distinguish between amorphous and crystalline solids and elucidate physical properties of drugs
BP302T.3 K	Explain significance of surface and interfacial phenomena
BP302T.4 K	Describe complexes and their pharmaceutical applications
BP302T.5 K	Explain about pH and role of buffers in formualtions and of biological buffers

BP303T Pharmaceutical Microbiology – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**

BP 303T .1K	To describe basic knowledge of bacteria, it's structure, cultivation, preservation and microscopy
BP 303T .2K	To identify few bacteria and methods of microbial control
BP 303T .3K	To explain the structure and method of replication of viruses and to analyse the methods of sterility testing.
BP 303T .4K	To assess the antibiotics by invitro microbiological methods and to outline different sources of contamination in an aseptic area
BP 303T .5K	To explain types of spoilage of pharmaceutical products and its prevention

BP304T Pharmaceutical Engineering – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP304T.1 K	Discuss Flow of fluids: Classify manometers, Explain Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pilot tube and Rotameter.
BP304T.2 K	Classify size reduction mills with their construction, working and applications. Classify size separators with their construction, working and applications.
BP304T.3 K	Discuss the theory of heat transfer. Classify and explain heat exchangers with their construction, working and applications. Classify evaporators with their construction, working and applications
BP304T.4 K	Discuss the theory of distillation. Classify and explain distillation equipments with their construction, working and applications. Construct Mc Cabe Thiele's curve. Discuss the theory of drying. Classify and explain dryers with their construction, working and applications.
BP304T.5 K	Discuss the theory of Mixing. Classify and explain mixers with their construction, working and applications. Discuss the theory of filtration. Classify and explain filtration equipments with their construction, working and applications.
BP304T.6 K	Discuss the theory of centrifugation. Classify and explain centrifuges with their construction, working and applications. Classify and explain Materials of pharmaceutical plant construction. Classify and explain Corrosion and its prevention.

BP305P Pharmaceutical Organic Chemistry II – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP305P .1S	Apply recrytallisation and distillation techniques
BP305P .2S	Perform and analyse Binary mixture separation
BP305P	Estimate the Saponification value

.3S	
BP305P .4S	Prepare synthetic compounds

BP306P Physical Pharmaceutics I – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP306P.1S	Perform solubility analysis, evaluate factors affecting solubility, study thermodynamics, explain concept of partition coefficient
BP306P.2S	Evaluate physicochemical properties of drug like pKa and refractive index
BP306P.3S	Apply knowledge of interfacial properties in dosage design
BP306P.4S	Measure properties of complexes

BP307P Pharmaceutical Microbiology – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 307P .1S	apply usage of equipments in microbiology lab for sterilization of material
BP 307P .2S	distinguish the morphology of different organisms by microscopy
BP 307P .3S	analyze various antibiotics for their microbiological efficacy
BP 307P .4S	inspect the microbiological quality of sterile products
BP 307P .5S	examine the microbiological quality of water
BP 307P .6S	identify a microorganism by biochemical test.

BP 308P Pharmaceutical Engineering –Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP308 P.1S	Construction of drying curves (for calcium carbonate and starch),Determination of moisture content and loss on drying.
BP308 P.2S	Determination of humidity of air - i) From wet and dry bulb temperatures -use of Dew point method, and critical speed of Ball Mill
BP308 P.3S	To describe Construction, working and application of any two Pharmaceutical Machinery such as Rotary tablet Machine, capsule filling machine, tablet coating machine, autoclave, oven and dehumidifier.Demonstration of any two equipments such as colloid mill, planetary mixer, fluidized bed dryer, Spray dryer Laminar Air

	Flow, Ball Mill and such other major equipments.
BP308 P.4S	To study Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity).
BP308 P.5S	To evaluate Size analysis by sieving -To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic and logarithmic probability plots.

B-PHARM SECOND YEAR SEM IV

BP401T:Pharm.organic chemistry -III

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP401T .1K	Discuss reactions of chiral molecules, racemic mixture modification and asymmetric synthesis
BP401T .2K	Apply conformational analysis and mechanism of stereochemical reactions
BP401T .3K	Understand and apply IUPAC rules to heterocyclic compounds
BP401T .4K	Discuss medicinal uses ,synthesis ,chemistry of heterocyclic compounds and their derivatives
BP401T .5K	To understand and implement the synthetic name reactions in synthesis

BP402T Medicinal Chemistry I – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP402T,1 K	Identify Structure, IUPAC and stereochemistry of classes of drugs belonging to CNS, ANS and Analgesic Drugs.
BP402T.2 K	Describe the MOA of classes of drugs belonging to CNS, ANS and Analgesic Drugs.
BP402T.3 K	Discuss the SAR of all the classes of CNS, ANS and Analgesic Drugs.
BP402T.4 K	Understand the schematic metabolic pathway for any given drug.
BP402T.5 K	Outline the synthesis, chemical reactions of CNS, ANS and Analgesic Drugs.

BP403T Physical Pharmaceutics II – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP403T.1 K	Understand properties and stability of colloids
BP403T.2 K	Explain behaviour of liquids and semisolids in response to shear stress and apply knowledge to dosage design
BP403T.3 K	Formulate suspensions and emulsions along with study of their stability, types, evaluation,preservation and apply the concept of HLB for formulation of emulsions.
BP403T.4 K	Evaluate properties of solids and apply to design of solid dosage forms
BP403T.5 K	Distinguish principles of kinetic in stability testing

BP404T Pharmacology I – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 404T. 1K	**Summarize basic Cancept of Pharmacology**
BP 404T. 2K	**Analyze the pharmacological actions of different categories of drugs**
BP 404T.3K	**Analyze mechanism of drug action, at organ system/sub cellular/macromolecular levels.**
BP 404T.4K	**Apply the basic pharmacological knowledge in the prevention and treatment of various diseases**
BP 404T.5K	**Utilize knowledge about Pharmacology ,Adapt knowledge about recent development in pharmacology**
BP404T.6 K	**Construct correlation of pharmacology with other bio medical sciences**

BP405T Pharmacognosy and Phytochemistry I– Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 405 T.1K	To recall the history, scope and development of pharmacognosy with different sources of crude drugs and also classify them accordingly, also evaluate the crude drugs by quantitative and qualitative evaluation methods.
BP 405 T. 2K	To illustrate students about cultivation, collection, processing and storage of crude drugs and the applications of advanced technologies like polyploidy, mutation and hybridization in medicinal plants.
BP 405 T. 3K	To elaborate the applications of plant tissue culture in medicinal plants.
BP 405 T. 4K	To remember different morphological and microscopical characteristic features of crude drugs parts root, leaf, Stem, Flower, Fruits etc and their nature of chemical constituents and distinguish them by Chemical test for different category of crude drugs.
BP 405 T. 5K	To plan systematic pharmacognostic study of primary metabolites (carbohydrates, proteins, lipid), marine drugs and teratogens, hallucinogen, natural allergans and fibers

BP406P Medicinal Chemistry I – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP406P.1S	Apply recrystallization and Column Chromatography techniques.
BP406P.2S	Utilize TLC for reaction monitoring.
BP406P.3S	Prepare drugs and intermediates.
BP406P.4S	Estimate Partition coefficient and Ionisation constants.

BP407P Physical Pharmaceutics II – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP407P.1S	Examine properties of surfactants and stability of colloids
BP407P.2S	Demonstrate rheological properties of liquids and understand liquid behavior
BP407P.3S	Evaluate stability of suspensions and emulsions.
BP407P.4S	Elaborate powder properties and apply knowledge to dosage design
BP407P.5S	Understand kinetics of 1st and 2nd order reactions, study principles of shelf life through accelerated stability studies

BP408P Pharmacology I – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 408 P.1S	Summarize basic Cancept of Pharmacology
BP 408 P.2S	Demonstrate the effect of drugs on animals by using simulated experiments
BP 408 P.3S	Adapt knowledge about recent development in pharmacology
BP 408 P.4S	Relate the in vivo and in vitro experiments, use of software for the study of experiments.
BP 408 P.5S	Examine the effect of drugs on animals by using simulated experiments
BP 408 P.6S	Construct correlation of pharmacology with other bio medical sciences

BP409P Pharmacognosy and Phytochemistry I – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 408 P.1S	To remember different morphological and microscopical characteristic features of crude drugs.
BP 408 P.2S	To understand the cellular structure of crude drugs.
BP 408 P.3S	To evaluate the crude drugs by quantitative evaluation methods.
BP 408 P.4S	To evaluate the crude drugs by physical methods of evaluation.
BP 408 P.5S	To evaluate the crude drugs by chemical methods of evaluation.

B-PHARM THIRD YEAR SEM V

BP501T Medicinal Chemistry II – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 501T.1K	Relate chemistry of drugs to biological activity
BP 501T.2 K	Analyze drug metabolic pathways, adverse effects and therapeutic uses of drugs
BP 501T.3 K	Learn chemical synthesis pathways of drugs

BP 501T.4 K	Classify various enzyme inhibitors as drugs.
BP 501T.5 K	Interpret Structural Activity Relationship of different class of drugs

BP502T Formulative Pharmacy– Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP502T.1 K	Define preformulation and decide which preformulation studies are required in development of a dosage form.
BP502T.2 K	Select excipients & formulation procedure; decide equipments, evaluate quality and analyze defects for tablets and liquid oral dosage forms.
BP502T.3 K	Select excipients & formulation procedure; decide equipments, evaluate quality and analyze defects for capsule and pellet dosage forms.
BP502T.4 K	Explain & select formulation ingredients, undestand production facilities and controls, filling and sealing operations and evaluate quality for various injectables.
BP502T.5 K	Outline components, types and evaluation of aerosols, formulation of cosmetics and will be able to decide choice of packaging material and perform quality control of packaging material.

BP503T Pharmacology II – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP503T. 1K	Classify the drugs acting on cardiovascular system . Detail about the mechanism of drug action and its relevance in the treatment of different disease.
BP503T. 2K	Categories the pharmacology of drugs acting on urinary system and evaluate diuretic activity of drugs and description of drug used in therapy of shock, Anticoagulant, Anti-platelet drugs.
BP503T. 4K	Elaborate the pharmacology of drugs acting on endocrine system and its relevance in the treatment of different diseases.
BP503T. 3K	Distinguish the different autacoids' and classified Non steroid anti-inflammatory drug , Anti-gout drug , and Anti rheumatic drugs.
BP503T 5K	Appreciate correlation of pharmacology with related medical science. And pharmacology of drugs acting on endocrine system Estrogen , progesterone and oral contraceptive
BP503T 6K	Demonstrate and analyses different types of bioassays of different drugs effect.

BP504T Pharmacognosy and Phytochemistry II– Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP504.1K	illustrate the metabolic pathways in formation of secondary metabolites through biogenetic pathways .
BP504.2K	elaborate application of biogenetic studies through tracer techniques.
BP504.3K	Summarize pharmacognostic profile chemistry & chemical classes and commercial applications of secondary metabolites.
BP504.4K	evaluate Phytoconstituents chemically and Analytically by isolations process
BP504.5K	To utilization methods to produce phytoconstituents industrially.
BP504.6K	To Explain the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents

BP505T Pharmaceutical Jurisprudence – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 505 T.1K	Relate the significance of Drugs and cosmetics act 1940 and its rules 1945 in relation to import and manufacture of drugs
BP 505 T.2K	Apply the knowledge on schedules pertaining to Drugs and cosmetics act 1940 and its rules 1945 and also administration of the act and rules
BP 505 T.3K	Extend the functions of pharmacy councils and implementation of education regulations in pharmacy and the importance of medicinal and toilet preparations act and narcotic drugs and psychotropic substances act and rules
BP 505 T.4K	Discuss the salient features of drugs and magic remedies act, prevention of cruelty to animals act and drugs price control order.
BP 505 T.5K	Recall the pharmaceutical legislations, ethics, right to information, medical termination of pregnancy and intellectual property rights

BP506P Formulative Pharmacy – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP506P.1 S	Examine preformulation studies of Tablet
BP506P.2 S	Formulate preparation of tablet and evaluate IQAC Test along wit its coating
BP506P.3 S	Formulate preparation of capsule and evaluate QC Test as per IP.

BP506P.4 S	U tilize technique in preparation of injections and opthalmic dosage form and determine quality control of glass container as per IP
BP506P.5 S	Experiment with different types of cream

BP507P Pharmacology II – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP507 P.1S	Outline to in-vitro pharmacology and demonstrate the effects of drugs on heart and blood pressure by simulated experiments.
BP507P.2S	Optimize diuretic activity of drugs. And Show the DRC of acetylcholine.
BP507P 3S	Demonstrate the bioassays of different drugs.
BP507P 4.S	Demonstrate the isolation of different drug from the laboratory animals.
BP507P 5.S	Demonstrate the Various receptor actions using isolated tissue preparation.
BP507P 6.S	demonstrate anti inflammatory and analgesic activity.

BP508P Pharmacognosy and Phytochemistry II – Practical

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 508 P.1 S	to demostrate section cutting and and identify crude drugs in syllabus based on Morphological , Microscopical evaluation
BP 508 P.2 S	Isolation & detection of active principles from crude drugs mentioned in syllabus
BP 508 P.3 S	To illustrate TLC and Paper Chromatography techniques
BP 508 P.4 S	To illustrate isolation of volatile oil from different sources
BP 508 P.5 S	Toidentify crude drugs by performng phytochemical screening

B-PHARM THIRD YEAR SEM VI

BP601T Medicinal Chemistry III – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 601T.1K	Relate chemistry of drugs to biological activity
BP 601T.2 K	Discuss SAR of drugs
BP 601T.3 K	Apply chemistry of agonists and antagonists to study their MOA
BP 601T.4 K	Identify and analyze drug metabolic pathways, adverse effect and
BP 601T.5 K	Apply physicochemical parameters in QSAR studies

BP602T Pharmacology III – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 602T . 1K	Classify drugs acting on Respiratory system and detail about the mechanism of action and its relevance in the treatment and to analyze the pharmacological actions of different categories of drugs
BP 602T . 2K	Classify drugs acting on GIT with respect to mechanism of action and its relevance in the treatment .
BP602T . 3K	Discuss in detail Chemotherapy in infectious diseases .
BP 602T . 4K	Simplify the principles of toxicology .and treatment of various poisonings and appreciate correlation of pharmacology with related medical sciences
BP 602 T. 5K	Elaborate treatment of various poisonings and appreciate correlation of pharmacology with related medical sciences
BP 602T . 6K	Interprit definition of rhythm and cycles. and elaborate biological clock and their significance leading to chronotherapy

BP603T Herbal Drug Technology – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP603T.1 K	evaluate TSM formulation
BP603T.2 K	Evaluation of excipients of natural origin
BP603T.3 K	develop cosmetic and herbal formulation using standardized extract
BP603T.4 K	perform Monograph analysis of herbal drugs from recent Pharmacopoeias
BP603T.5	determine various secondary metabolites using analytical method

K	

BP604T Biopharmaceutics and Pharmacokinetics – Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP604T.1 K	Explain the process of drug absorption. Explain factors affecting drug absorption.Discuss distribution, tissue permeability of drugs, binding of drugs, apparent, volume of drug distribution, plasma and tissue protein binding of drugs, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding of drug
BP604T.2 K	Explain Elimination. Describe drug metabolism. Classify metabolic pathways renal excretion of drugs, interpret and summarize factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion
BP604T.3 K	Define Bioavailability and bioequivalence Summarize Objectives of bioavailability, explain absolute and relative bioavailability, elaborate measurement of bioavailability, discuss in-vitro drug dissolution models, in-vitro-in-vivo correlations, compare bioequivalence studies, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs
BP604T.4 K	Definition and introduction to Pharmacokinetics, Explain and classify Compartment models
BP604T.5 K	Explain Multicompartment models: Two compartment open model. Discuss IV bolus Kinetics of multiple dosing, assess steady state drug levels, determine loading and maintenance doses and their significance.
BP604T.6 K	Define Nonlinear Pharmacokinetics. Explain Factors causing Non-linearity. Michaelis-menton method of estimating parameters, Explanation with example of drugs.

BP605T Pharmaceutical Biotechnology – Theory

CO Number	**Course Outcomes:** Upon completion of course students will be able to –
BP 605 T.1K	summarize the methods of immobilization of enzymes and list the application.
BP 605T.2K	interpret the tools and techniques in genetic engineering and compile the applications
BP 605T.3K	The students will be able to relate immunological response and outline the methods for production of vaccines and monoclonal antibodies.
BP 605 T.4K	Illustrate the immunoblotting techniques and transfer of genetic material in biological species
BP 605 T.5K	explain the fermentation methods and its application.

BP606T Quality Assurance –Theory

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP606T.1 K	Define Quality control, Quality assurance and GMP; discuss Regulatory agencies like CDSCO, USFDA, WHO, PIC/S; utilize ICH guidelines; apply TQM and QbD; compare ISO standards and explain NABL accreditation.
BP606T.2 K	Explain the guidelines of Organization and personnel, premises, select equipments and raw materials; plan and design the plant layout for same.
BP606T.3 K	Evaluate Quality Control of Packaging material, outline the role of CPCSEA and adapt good laboratory practices.
BP606T.4 K	Classify Complaints and evaluate the same; and summarize handling of return good, recalling and waste disposal; elaborate on Batch Formula Record, Master Formula Record, SOP, distribution records.
BP606T.5 K	Distinguish between calibration and validation; apply general principles of calibration, qualification and validation; understand importance and scope of validation; classify validation; list general principles of Analytical method Validation; apply good warehousing practice; and choose materials for its management.

BP607P Medicinal chemistry III – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 607.1S	Apply skills to synthesize compounds by conventional and Microwave irradiation technique
BP 607.2S	Utilize software like Chem draw for drawing of chemical structures and to design reactions.
BP 607.3 S	Utilize drug design software to analyse physicochemical properties
BP 607.4 S	Utilize drug design software to analyse ADME properties

BP608P Pharmacology III – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 608P.. 1S	Estimate concentration by using bioassay of serotonin using rat fundus strip by three point bioassay and bioassay of acetylcholine using rat ileum/colon by four point bioassay and Study of mydriatic and miotic effects on rabbit eye.

BP 608P. 2S	Study of effect of drugs on gastrointestinal motility and Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
BP608P .3S	Examine the effects of drugs on animal by simulated experiments and Determine of acute oral toxicity (LD50) of a drug from a given data.
BP 608P .4S	Experiment with Biostatistics methods in experimental pharmacology(student‟s t test, ANOVA) ,Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test) .
BP 608P. 5S	Determine acute skin irritation of a test substance.
BP 608P . 6S	Determine acute eye irritation of a test substance.

BP609P Herbal Drug Technology – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP603P.1 S	To evaluate TSM formulation
BP603P.2 S	Evaluation of excipients of natural origin
BP603P.3 S	To develop cosmetic and herbal formulation using standardized extract
BP603P.4 S	to perform Monograph analysis of herbal drugs from recent Pharmacopoeias
BP603P.5 S	To determine various secondary metabolites using analytical method

B-PHARM FINAL YEAR SEM VII

BP701T Instrumental Methods of Analysis – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP701T.1 K	illustrate the interaction of matter with electromagnetic radiations and justify its applications in drug analysis
BP701T.2 K	summarize IR spectroscopy & outline atomic spectroscopy
BP701T.3 K	classify the chromatographic separation methods and explain appropriate technique for analysis of drugs
BP701T.4 K	categorize column chromatographic techniques and interpret chromatographs
BP701T.5	outline Ion exchange chromatography and Gel Chromatography.

K	

BP702T Industrial Pharmacy – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP702T.1 K	Outline Pilot plant scale up techniques
BP702T.2 K	Outline Technology development and transfer:
BP702T.3 K	Explain Regulatory requirements for drug approval:
BP702T.4 K	Outline Indian Regulatory Requirements:
BP702T.5 K	Expalin Quality management systems:

BP703T Pharmacy Practice – Theory

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 703T. 1K	Discuss the role of the Hospital, Hospital pharmacy and Community Pharmacist
BP 703T. 2K	Assessment of Adverse drug reactions and drug interactions
BP 703T. 3K	explain the various drug distribution systems in Hospitals, understand vital aspects of medication adherence, medication history interview and therapeutic drug monitoring.
BP 703T 4K	Apply principles of good communication for patient counseling and prescription interpretation
BP 703T. 5k	Support drug therapy monitoring of patient through medication chart review and clinical Review.
BP 703T. 6k	Plan the various components required in a Hospital Pharmacy Budget and Drug store management

BP704T Novel Drug Delivery System – Theory

CO Number	**Course Outcomes:** Upon completion of course students will be able to **–**

BP704.1 TK	Expalin the Fundamental Concept of controlled Drug delivery systems, Drug Release and Pre requisites of drug candidates, along with various approaches and classification and illustrate the Polymers classification, types, selection, application and examples to apply for development of novel drug delivery systems
BP704T .2K	Classify various technologies like concept of microencapsulation, merits, demerits and application, Types of Microencapsulation and Evaluation of microcapsules
BP704T .3K	Identify and develop novel drug delivery systems like Mucosal and implantable drug delivery
BP704T .4K	Identify and develop novel Systems for delivery by topical route as transdermal drug delivery, oral route as Gastroprotective and pulmonary route as Nasopulmonary
BP704T .5K	Apply knowledge of concepts to develop, targeted Drug Delivery systems like liposomes, niosomes, nanaoparticles, and monoclonal antibodies
BP704T .6K	Identify and develop devices like intraocular and intrauterine

BP705P Instrumental Methods of Analysis – Practical

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP705P.1S	summarize significance of weights and measures in analysis
BP705P.2S	demonstrate and apply UV-Vis Spectroscopy in pharmaceutical analysis
BP705P.3S	determine quantity of drugs in samples by fluorimetry
BP705P.4S	apply chromatographic methods to separate components
BP705P.5S	explain, interpret and analyze IR spectrum & outline atomic spectroscopy

BP706PS Practice School*

BP810ET Experimental Pharmacology

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP706PS.1 KS	Relate and interpret the regulations and ethical requirement for the usage of laboratory animals and their handling, drug administration, surgical, blood withdraw and euthanasia techniques
BP706PS.2 KS	Recall basic parameters including haematological, biochemical and physiological parameters
BP706PS.3 KS	Perform the biochemical assay for estimation of serum glucose, cholesterol etc using appropriate kits
BP706PS.4 KS	Understand the basic mechanism involved in free radicals generation and scavenging processes and perform basic assays for free radical scavenging and peroxidation

BP706PS.5 KS	Understand the principles of various invitro assays used for screening of metabolic disorders and perform simple assays
BP706PS.6 KS	Perform different ex vivo bioassays using chick ileum

BP806 ETQuality control and standardization of Herbals

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP 806 ET.1KS	To recall the WHO guidelines for the quality control of herbal drugs.
BP 806 ET.2KS	To illustrate and outline the quality assurance in traditional system of medicine including cGMP, GAP, GMP and GLP.
BP 806 ET.3KS	To compare the quality control parameters of drugs according to European union (EU) and ICH guidelines.
BP 806 ET.4KS	To make use of research guidelines for evaluation of safety and efficiency of herbal medicine.
BP 806 ET.5KS	To apply the knowledge of chromatography in standardization of herbal drugs and to perform the stability studies.
BP 806 ET.6KS	To improve the knowledge on regulatory issues for herbal medicine including GMP, WHO guidelines on safety monitoring of herbal medicine in Pharmacovigilance.

BP809ETCosmetic Science

CO Number	**Course Outcomes:** Upon completion of course students will be able to –
BP706PS .1KS	Define cosmetics and explain cosmetcis used for skin hair and oral cavity and illustrate various excipients used in the same
BP706PS.2 KS	Application of various excipients in formulating skin, hair and oral care cosmetics
BP706PS 3KS	cosmetic excipients, basic structure, functions and common problems associated with hair
BP706PS.4 KS	understand the principles of formulation and building blocks of various hair care products.
BP706PS.5 KS	Design and formulate Skin cosmetic and colour cosmetics,
BP706PS.6 KS	Elaborate on Regulatory guidlnies of Cosmetics

BP706T Pharmaceutical Marketing

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP 803 T.1KS	Outline the marketing concepts
BP 803 T.2KS	Develop techniques and their applications in the pharmaceutical industry.
BP 803 T.3KS	Classify product design, explain product life cycle
BP 803 T.4KS	Explain various channels of marketing, describe qualities of a profesional service representative
BP 803 T.5KS	To identify marketing mix for pharmaceutical products.
BP 803 T.6KS	To compare pricing of the pharmaceutical products.

B-PHARM FINAL YEAR SEM VIII

BP801T Biostatistics and Research Methodology

CO Number	Course Outcomes: Upon completion of course students will be able to –
BP801T.1K	Solve basic statistical problems with respect to measures of central tendency, dispersion, correlation of data and regression equations
BP801T.2K	Describe concepts related to probability, sample, population, hypothesis and error
BP801T.3K	Explain the various statistical techniques to solve statistical problems (parametric and non parametric)
BP801T.4K	Design experimental/research methodology from preparation of protocol to writing of report
BP801T.5K	Summarize the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of experiment)
BP801T.6K	Discuss about Factorial design and Response Surface methodology

BP802T Social and Preventive Pharm

CO Number	Course Outcomes: Upon completion of course students will be able to –

BP802T. 1K	Asset high consciousness or realization of current issues related to health and prevent disease and socio problems related health and disease
BP802T. 2K	How to prevent and control of disease
BP802T. 3K	Apply National health programs, its objectives, functioning and outcome of the programs
BP802T. 4K	Discuss different National health programs and current healthcare development
BP802T. 5K	To Develop a way of thinking based on rural, urban , school helath and any healthcare development.

BP811ET Advanced Instrumentation Techniques

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP811ET.1 K	express the principle of the advanced instruments like NMR and Mass Spectroscopy and justify its applications in drug analysis
BP811ET.1 K	explain the principles of thermal methods of analysis and its application in analysis of drugs
BP811ET.3 K	explain the importance and methods for the calibration of various analytical instruments
BP811ET.4 K	formulate and justify techniques for the analysis of drugs
BP811ET.5 K	outline significance of hyphenated techniques of analysis

BP812 ET. Dietary Supplements and Nutraceuticals (Theory)

CO Number	**Course Outcomes: Upon completion of course students will be able to –**
BP812ET.1 K	define, classify and understand the functional foods,Nutraceuticals and dietary supplements.
BP812ET.2 K	remember the sources, chemical nature, medicinal uses and health benefits of Nutraceuticals and functional foods.
BP812ET 3K	explain basics of free radicals, dietary fibers and carbohydrates
BP812ET.4 K	understand role of free radicals in different diseases and to classify antioxidants.
BP812ET.5 K	Analyse Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals and illustrate Regulatory Aspects and and apply Pharmacopoeial Specifications for dietary supplements and nutraceuticals

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