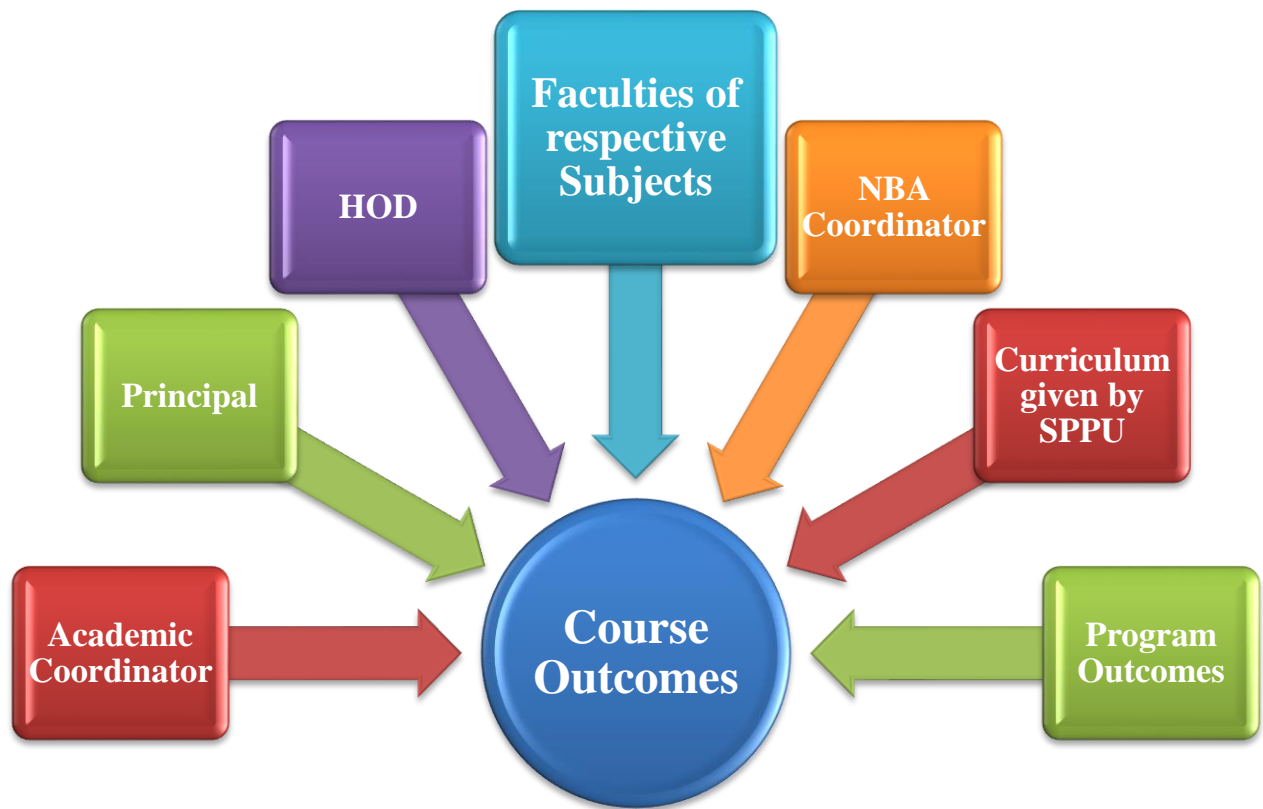


Course Outcomes

(2018 & 2019 Pattern)

Process of defining course outcomes



**Defining of Outcome for each topic
from curriculum(T&P)**



**Defining of COs from LOS and
gap identified (T&P)**



**Defining of Combined COs form
Theory and Practical as applicable**



Dr. D. Y. Patil Pratishthan's
Dr. D. Y. Patil College of Pharmacy,
Akurdi, Pune-411044

B. PHARM COURSE OUTCOMES

Course	Outcomes
Semester-I	
BP101T Human Anatomy and Physiology –I	BP101T(1): Memorize the concepts about cell, tissues and human body.
	BP101T(2): Interpret the skeletal system of human body.
	BP101T(3): Appraise the concepts of sense organs.
	BP101T(4): Differentiate the concepts of blood and lymph.
	BP101T(5): Demonstrate the anatomy and physiology of blood and lymph.
	BP101T(6): Investigate the mechanisms of cardiovascular system.
BP107P Human Anatomy and Physiology –I	BP107P(1): Explain the gross morphology, structure and functions of various organs of the human body.
	BP107P(2): Investigate the parameters of human blood.
	BP107P(3): Differentiate and identify various tissues and organs of different systems of human body.
	BP107P(4): Examine blood pressure and heart rate.
	BP107P(5): Appreciate coordinated working pattern of different organs of each system.
	BP107P(6): Operate instruments for analyzing human physiology
BP102T Pharmaceutical Analysis-I	BP102T (1) Elaborate scope, different techniques of Pharmaceutical analysis.
	BP102T (2) Illustrate different types of errors and methods of minimizing errors.
	BP102T (3) Explain concept of different types of volumetric titrations.
	BP102T (4) Summarize concept of gravimetric analysis.
	BP102T (5) Explain principle, construction and applications of different types of electrochemical methods of analysis.
	BP102T (6) Discuss principle, construction and applications of refractometry.
BP108P Pharmaceutical Analysis-I	BP108P (1) Demonstrate preparation and standardization of primary standards
	BP108P (2) Analyze inorganic compounds by volumetric titration methods.
	BP108P (3) Predict normality of different solutions by electro-analytical methods.

	<p>BP108P (4) Interpret refractive index of different samples by refractometry.</p> <p>BP108P (5) Develop analytical skills.</p>
<p>BP103T Pharmaceutics-I</p>	<p>BP103T (1) Discuss history of profession of Pharmacy in India & Pharmacopeia and its development.</p>
	<p>BP103T (2) Explain parts and handling of prescription, posology & dose calculation of drug in children. Different types of dosage form.</p>
	<p>BP103T (3) Elaborate different pharmaceutical calculation involved in formulation.</p>
	<p>BP103T (4) Illustrate basic requirement and formulation of powder and liquid (monophasic & biphasic) dosages form.</p>
	<p>BP103T (5) Summarise type of Pharmaceutical incompatibility.</p>
	<p>BP103T (6) Explain formulation and evaluation of semisolid preparations.</p>
<p>BP109P Pharmaceutics-I</p>	<p>BP109 (1) Formulate and evaluate Pharmaceutical solutions.</p>
	<p>BP109(2) Evaluate formulated pharmaceutical dispersed system.</p>
	<p>BP109 (3) Formulate and evaluate semi-solid dosage form.</p>
	<p>BP109(4) Evaluate formulated pharmaceutical Powders.</p>
<p>BP104T Pharmaceutical Inorganic Chemistry</p>	<p>BP104T (1) Define and differentiate between pharmacopeias based on tests mention in it for all compounds.</p>
	<p>BP104T (2) Summarise buffers with respect to tonicity adjustment and based on different acid base theories.</p>
	<p>BP104T (3) Signify the role of electrolytes in maintaining physiological balance and dental hygiene.</p>
	<p>BP104T (4) Discuss classification function mechanism of action of various inorganic compounds based on their pharmacological action.</p>
	<p>BP104T (5) Argue on applications of inorganic agents in pharmaceuticals.</p>
<p>BP110P Pharmaceutical Inorganic Chemistry</p>	<p>BP110P (1) Apprise basic of apparatus, instruments and their calibration.</p>
	<p>BP110P (2) Investigate the given inorganic compounds by various quality control tests like limit tests, swelling power and neutralizing capacity.</p>
	<p>BP110P (3) Predict various acidic and basic radicals from given unknown inorganic binary mixture.</p>
	<p>BP110P (4) Prepare inorganic Pharmaceuticals.</p>
	<p>BP110P (5) Develop analytical skills in data interpretation and calculations</p>
<p>BP105T Communication</p>	<p>BP105T (1) Elaborate the elements, styles and barriers of communication and methods to overcome them.</p>

skills	BP105T (2) Reflect communication etiquettes and excellent presentation skills.
	BP105T (3) Demonstrate the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation through effective communication
	BP105T (4) Develop interview skills, Leadership qualities and essentials of group discussions.
	BP105T (5) Practice good writing skills.
	BP105T (6) Identify, classify and apply relevant soft skills
BP111P Communication skills	BP111P(1) Develop Basic communication skills
	BP111P(2) Practice various types of Pronunciations
	BP111P(3) Demonstrate the behavioral needs for a Pharmacist to function in pharmaceutical operation through effective communication
	BP111P(4) Develop interview skills, Leadership qualities and essentials of group discussions.
	BP111P(5) Practice good writing skills.
	BP111P(6) Apply relevant soft skills.
Semester-II	
BP201T Human Anatomy and Physiology-II	BP201T (1) Critique the concepts and mechanism related to nervous system.
	BP201T (2) Investigate the anatomy and physiology of digestive system.
	BP201T (3) Appraise the concepts of respiratory system.
	BP201T (4) Construct the anatomy and physiology of urinary system.
	BP201T (5) Demonstrate the anatomy and physiology of Endocrine system.
	BP201T (6) Differentiate the concepts related to reproductive system and investigate the mechanisms involved in genetics.
BP207P Human Anatomy and Physiology-II	BP207P (1) Explain the gross morphology, structure and functions of various organs of the human body.
	BP207P (2) Investigate the parameters of human blood.
	BP207P (3) Differentiate and identify various tissues and organs of different systems of human body.
	BP207P (4) Examine neurological reflexes & visual activity.
	BP207P (5) Appreciate coordinated working pattern of different organs of each system.
	BP207P (6) Operate instruments for analyzing human physiology
BP202T Pharmaceutical Organic Chemistry-I	BP202T (1) Elaborate basic concept of organic compounds and its significance.
	BP202T (2) Identify the IUPAC nomenclature of organic chemistry.

	BP202T (3) Describe significance of reagent used in reactions for inorganic compounds.
	BP202T (4) Argue between SN1 and SN2 reaction with respect to factors affecting and alkyl halide role.
	BP202T (5) Predict the reactions of organic compounds based on different functional groups and their identification by qualitative analysis.
	BP202T (6) Elaborate properties and application of various active pharmaceutical ingredients synthesized from various functional groups.
BP208P Pharmaceutical Organic Chemistry-I	BP208P (1) Identify unknown organic sample.
	BP208P (2) Illustrate the Synthesize organic compounds.
	BP208P (3) Determine melting point of organic compounds.
	BP208P (4) Demonstrate molecular models.
	BP208P (5) Develop analytical skills.
BP203T Biochemistry	BP203T (1) Elaborate classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.
	BP203T (2) Summarize the metabolism of nutrient molecules in physiological and pathological conditions.
	BP203T (3) Explain concepts in biological oxidation and bioenergetics.
	BP203T (4) Explain the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
	BP203T (5) Elaborate catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
BP209P Biochemistry	BP209P (1) Identify carbohydrates, amino acids and Proteins.
	BP209P (2) Analyze urine for abnormal constituents.
	BP209P (3) Analyze blood for different constituents.
	BP209P (4) Analyze proteins and reducing sugars.
	BP209P (5) Evaluate effects of different factors on enzyme activity.
	BP209P (6) Formulate buffer solution and measure pH.
BP204T Pathophysiology	BP204T (1) Describe the etiology and pathogenesis of the selected disease states.
	BP204T (2) Illustrate Basic principles of Cell injury Adaptation and explain the concept of inflammation and repair.
	BP204T (3) Classify autoimmune diseases in man and discuss mechanism of autoimmunity, allograft, and graft rejection, mechanism AIDS, amyloidosis.
	BP204T (4) Explain the etiology and pathogenesis of Infectious diseases Sexually transmitted diseases.

	BP204T (5) Classify and explain the etiology and pathogenesis of cancer.
	BP204T (6) Discuss signs and symptoms of the various diseases.
BP205T Computer applications in Pharmacy	BP205T (1) Apply the knowledge of mathematics and computing fundamentals to pharmaceutical applications for any given requirement.
	BP205T (2) Design and develop solutions to analyses pharmaceutical problems using computers.
	BP205T (3) Integrate and apply efficiently the contemporary IT tools to all Pharmaceutical related activities.
	BP205T (4) Solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to Pharmacy.
BP210P Computer applications in Pharmacy	BP210P (1) Demonstrate the use of MS Word to create questionnaires and other documentation related to pharmacy.
	BP210P (2) Discuss use of MS Access to modify the data bases created.
	BP210P (3) Operate web and XML pages to export table, forms and queries.
	BP210P (4) Explain generation of report, work with queries on MS Access.
	BP210P (5) Prepare database, HTML web page.
BP206T Environmental Sciences	BP206T (1) Create the awareness about the environmental studies.
	BP206T (2) Discuss basic knowledge about the environment and its allied problems.
	BP206T (3) Develop an attitude of concern for the environment.
	BP206T (4) Motivate learner to participate in environment protection and environment improvement.
	BP206T (5) Acquire skills to help the concerned individuals in identifying and solving environmental problems.
	BP206T (6) Strive to attain harmony with nature.
Semester-III	
BP301T Pharmaceutical Organic Chemistry-II	BP301T (1) Explain the basic concept along with structure and uses of the organic compounds.
	BP301T (2) Summarise the chemical reaction, reaction orientation, principle, mechanism of organic compounds.
	BP301T (3) Elaborate the reactivity and stability of organic compounds includes cycloalkanes.
	BP301T (4) Discuss the preparation of organic compounds.
	BP301T (5) Revise the chemistry, chemical reactions and analytical constant of fats and oils.
BP305P Pharmaceutical Organic Chemistry-II	BP305P (1) Experiment involving laboratory techniques such as crystallization, Distillation.
	BP305P (2) Separate Binary mixtures and perform their analysis.

	<p>BP305P (3) Determine saponification value of given oil samples.</p> <p>BP305P (4) Synthesize medicinally important compounds and their intermediates and perform their characterization.</p> <p>BP305P (5) Prepare chemical compounds based on some typical type of reactions.</p>
<p>BP302T Physical Pharmaceutics-I</p>	<p>BP302T (1) Investigate and apply various theories, laws & equation related to different states of matter.</p> <p>BP302T (2) Distinguish the principles of complexation /Protein binding and to use them for calculation of drug release and stability constant.</p> <p>BP302T (3) Demonstrate use of physicochemical properties of drug in formulation development and evaluation of dosage form.</p> <p>BP302T (4) Signify the importance of buffer, pH & isotonic solutions in pharmaceutical & biological system.</p> <p>BP302T (5) Evaluate different physicochemical properties of drug molecule.</p> <p>BP302T (6) Differentiate between ideal and real solutions with respect to their colligative properties.</p>
<p>BP306P Physical Pharmaceutics-I</p>	<p>BP306P (1) Apply the knowledge of various theories, laws & equation in evaluation of physicochemical properties.</p> <p>BP306P (2) Operate different pharmaceutical laboratory instruments used in evaluation of various physicochemical properties.</p> <p>BP306P (3) Calculate critical solution temperature & effect of addition of electrolyte on CST of phenol-water system.</p> <p>BP306P (4) Determine stability constant of chemical complexes by various methods.</p> <p>BP306P (5) Predict solubility, partition coefficient, pKa of given compound.</p> <p>BP306P (6) Evaluate thermodynamic parameters using solubility studies and Interpret scientific data, represent in a tabular and/or graphical form.</p>
<p>BP303T Pharmaceutical Microbiology</p>	<p>BP303T (1) Explain in detail role of microbiology in pharmaceutical sector.</p> <p>BP303T (2) Compare the various structural features, biology and characteristics of microbes.</p> <p>BP303T (3) Discuss and apply principles, application of sterilization, disinfection and demonstrate the various techniques used for microbial estimation.</p> <p>BP303T (4) Summarize the concept of Animal cell culture.</p>
<p>BP307P</p>	<p>BP307P (1) Explain the principle, construction and working of various instruments and perform their operations.</p>

Pharmaceutical Microbiology	BP307P (2) Illustration of sterilization, preparation of various media and isolation techniques of microorganism.
	BP307P (3) Examine motility of bacteria by hanging drop technique.
	BP307P (4) Discuss morphology of bacteria by staining techniques and sterility test.
BP304T Pharmaceutical Engineering	BP304T (1) Apply basic concepts of physics and chemistry in various mass and heat transfer processes.
	BP304T (2) Identify the various unit operations used in Pharmaceutical industries.
	BP304T (3) Outline the working principles of various machines used in pharmaceutical manufacturing process.
	BP304T (4) Discuss the laws and develop different equations that govern the various mass and heat transfer processes.
	BP304T (5) Apply knowledge to the solution of a real-life research, plant operational problem.
	BP304T (6) Summarize about hazards and safety aspects in industrial environment.
BP308P Pharmaceutical Engineering	BP308P (1) Explain the construction and operation of various equipments used in pharmaceutical processes
	BP308P (2) Operate equipments used in the manufacturing of pharmaceutical products
	BP308P (3) Experiment with engineering principles to address issues in various pharmaceutical processes
	BP308P (4) Construct graphical representations for various unit operations
	BP308P (5) Illustrate the material and energy requirements for optimizing the pharmaceutical unit processes.
	BP308P (6) Discover technological advancements in the pharmaceutical industries.
Semester-IV	
BP401T Pharmaceutical Organic Chemistry-III	BP401T (1) Explain nomenclature, properties and methods of preparation of heterocyclic compounds.
	BP401T (2) Elaborate the fundamentals of stereo chemical aspects.
	BP401T (3) Discuss medicinal uses and other applications of organic compounds.
	BP401T (4) Appraise role of stereo isomerism in biphenyl compounds (atropisomerism) and conditions for optical activity.
	BP401T (5) Explain reactions and synthetic importance of metal hydride reduction, Clemmensen reduction, Oppenauer oxidation and Beckmann rearrangement.
	BP401T (6) Discuss optical isomerism, optical activity, enantiomerism, diastereoisomerism and meso compounds.

BP402T Medicinal Chemistry-I	BP402T (1) Explain the various physicochemical properties in relation to biological activity.
	BP402T (2) Discuss drug metabolism.
	BP402T (3) Illustrate chemistry, SAR of medicinally important drug classes and mode of action at molecular level.
	BP402T (4) Describe pharmacological action of different drug classes and their Side effects.
	BP402T (5) Outline synthetic route of the important class of compounds.
BP406P Medicinal Chemistry-I	BP406P (1) Synthesize, recrystallize and understand reaction mechanisms involved in synthesis of medicinally important organic compounds and evaluate their physicochemical properties.
	BP406P (2) Develop the skill involved in thin layer chromatography techniques and purification of synthesized compounds by various techniques.
	BP406P (3) Develop the skill involved in column chromatography techniques and purification of synthesized compounds by various techniques.
	BP406P (4) Justify the use of physicochemical properties of drugs in pharmaceutical and biological system.
	BP406P (5) Interpret the importance of ionization constant and partition coefficient in pharmaceutical and biological system.
BP403T Physical Pharmaceutics-II	BP403T (1) Relate various physicochemical properties of drug and excipient molecules in designing the dosage forms.
	BP403T (2) Discuss various theories, laws & equation related to physicochemical properties of drug.
	BP403T (3) Compare various properties, formulation, and evaluation of dispersion systems.
	BP403T (4) Distinguish the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.
	BP403T (5) Explain rheological properties and their methods for measurement.
	BP403T (6) Demonstrate the behavior and mechanism of drugs and excipients in the formulation development and evaluation of dosage forms.
BP407P Physical Pharmaceutics-II	BP407P (1) Evaluate various rheological properties.
	BP407P (2) Analyze micromeretic properties of powder samples.
	BP407P (3) Calculate rate of reaction, energy of activation and order of any reaction
	BP407P (4) Appraise the concept of Accelerated stability studies
	BP407P (5) Determine stability of dispersions

	BP407P (6) Interpret scientific data, represent in a tabular and/or graphical form.
BP404T Pharmacology-I	BP404T (1) Discuss the pharmacological actions of different categories of drugs.
	BP404T (2) Explain the mechanism of action at organ system/sub cellular/macromolecular levels.
	BP404T (3) Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
	BP404T (4) Observe the effects of drugs on animal by simulated experiments.
	BP404T (5) Appraise correlation of pharmacology with other bio medical sciences.
BP408P Pharmacology-I	BP408P (1) Describe pharmacology of prototype drug of General anesthetic, Anti-epileptic, Anti- depression, Anti-Psychosis, Anti-parkinsonism etc.
	BP408P (2) Recognize the clinical significance of various pharmacokinetics and pharmacodynamics parameters.
	BP408P (3) Explain preclinical screening of drugs using computer simulation and its interpretation.
	BP408P (4) Demonstrate bioassay methods using suitable isolated tissue preparations.
	BP408P (5) Analyse GABA-benzodiazepines receptor-chloride channel complex as neurological disorder target
	BP408P (6) Relate concept of central nervous system with its receptors. i.e dopaminergic and opioid receptor etc.
BP405T Pharmacognosy and Phytochemistry-I	BP405T (1) Discuss the definition, history, scope and development of Pharmacognosy.
	BP405T (2) Describe the techniques in the cultivation, processing, storage and production of crude drugs of natural origin.
	BP405T (3) Explain fundamental aspects of plant tissue culture.
	BP405T (4) Elaborate different types of secondary metabolites, their general properties, classification, and their test for identification.
	BP405T (5) Discuss the sources, chemical constituents and uses of plants products containing plant fibers, hallucinogens teratogens, and natural allergens.
	BP405T (6) Describe the pharmacognostic aspects and chemistry of primary metabolites and their sources.
BP409P Pharmacognosy and Phytochemistry-I	BP409P (1) Identify crude drugs using morphological, microscopical, physical characteristics & chemical tests.
	BP409P (2) Demonstrate skill of plant material sectioning, staining, mounting & determine quantitative microscopic features by drawing microscopical diagrams.

	<p>BP409P (3) Develop skill to analyse and evaluate crude drug material by conducting various physico-chemical parameters</p> <p>BP409P (4) Prepare brief report of field visit</p>
Semester-V	
<p>BP501T Medicinal Chemistry-II</p>	BP501T (1) Discuss physicochemical properties of drugs.
	BP501T (2) Illustrate chemistry, SAR of medicinally important drug classes and mode of action at molecular level.
	BP501T (3) Describe pharmacological action of different drug classes.
	BP501T (4) Explain Side effects, adverse effects and therapeutic uses of different drug classes.
	BP501T (5) Outline synthetic route of the important class of compounds.
	BP501T (6) Acquire knowledge on thrust areas for further research.
<p>BP502T Industrial Pharmacy-I</p>	BP502T (1) Discuss various concepts of preformulation.
	BP502T (2) Elaborate formulation and evaluation of tablets, capsules and liquid orals using established procedures and technology with their defects and corrective approaches.
	BP502T (3) Explain the concept, types, pharmacopoeial specifications, techniques and equipments used in tablet coating.
	BP502T (4) Illustrate preformulation, formulation, and evaluation of parenteral and ophthalmic products.
	BP502T (5) Estimate packaging materials for various pharmaceutical dosage forms.
	BP502T (6) Discuss formulation of cosmetics such as lipsticks, shampoos, cold cream, vanishing cream, tooth pastes, hair dyes and sunscreens.
<p>BP506P Industrial Pharmacy-I</p>	BP506P (1) Design experiments showing influence of various additives on dosage form and stability studies.
	BP506P (2) Formulate and evaluate tablets, capsules and liquid orals.
	BP506P (3) Discuss pharmacopoeial specifications, techniques & equipments used in tablet coating.
	BP506P (4) Evaluate formulated parenteral and ophthalmic products.
	BP506P (5) Evaluate selected packaging materials for various pharmaceutical dosage forms.
	BP506P (6) Formulate and evaluate various cosmetics products.
<p>BP503T Pharmacology-II</p>	BP503T (1) Describe the different classes of drugs used in the treatment of diseases pertaining to cardio-vascular system.
	BP503T (2) Explain the Pharmacotherapy of drug acting on hemopoietic system.

	<p>BP503T (3) Appraise the role of diuretic and antidiuretic drugs in various disorder.</p> <p>BP503T (4) Elaborate the pharmacology of autocooids and related drugs.</p> <p>BP503T (5) Explain the pharmacology of drug in the treatment of diseases pertaining to endocrine system.</p>
<p>BP507P Pharmacology-II</p>	<p>BP507P (1) Evaluate the pharmacological effects of variety of drugs on Frog heart preparation using software.</p> <p>BP507P (2) Examine effect of drugs by using suitable isolated tissue preparation.</p>
	<p>BP507P (3) Estimate unknown concentration of drugs by using various bioassay methods.</p> <p>BP507P (4) Calculate PA₂ and PD₂ value of drug using suitable isolated tissue preparation.</p> <p>BP507P (5) Demonstrate anti-inflammatory, analgesic and mast cell stabilization activity.</p> <p>BP507P (6) Interpret clinical case study.</p>
<p>BP504T Pharmacognosy and Phytochemistry-II</p>	<p>BP504T (1) Describe various techniques used in biosynthetic study for natural products with its applications.</p> <p>BP504T (2) Explain structural elucidation of phytoconstituents with its contribution in drug discovery.</p> <p>BP504T (3) Discuss various natural products used as pharmaceutical excipients as allied industrial utility.</p> <p>BP504T (4) Recognize the need and significance of herbal drug analysis.</p> <p>BP504T (5) Elaborate quality control parameters for crude drugs and its derivatives.</p> <p>BP504T (6) Explain various types of extraction methods with applications for phytopharmaceuticals.</p>
<p>BP508P Pharmacognosy and Phytochemistry-II</p>	<p>BP508P (1) Explain extraction, isolation of phytoconstituents followed by TLC analysis.</p> <p>BP508P (2) Analyze sugar in natural gum by various chromatography techniques.</p> <p>BP508P (3) Evaluate quality control parameters for variou phytoconstituents.</p> <p>BP508P (4) Determine proximate analysis of crude drugs.</p> <p>BP508P (5) Discuss various natural products used as pharmaceutical excipients as allied industrial utility.</p> <p>BP508P (6) Explain structural elucidation of phytoconstituents.</p>
<p>BP505T Pharmaceutical Jurisprudence</p>	<p>BP505T (1) Discuss definitions, schedules in the various pharmaceutical laws and obey pharmaceutical code of ethics.</p> <p>BP505T (2) Summarise in details various pharmaceutical Acts in India and their executions.</p>

	<p>BP505T (3) Explain patents, procedure for patent application and IPR.</p> <p>BP505T (4) Illustrate role of the regulatory system for safety and effectiveness of medicine and their quality.</p> <p>BP505T (5) Elaborate on advance resources for intellectual property rights.</p> <p>BP505T (6) Describe revision and amendments in various Pharmaceutical Acts.</p>
Semester-VI	
BP601T Medicinal Chemistry- III	BP601T (1) Discuss physicochemical properties of drugs.
	BP601T (2) Illustrate chemistry, SAR of medicinally important drug classes and mode of action at molecular level.
	BP601T (3) Describe pharmacological action of different drug classes.
	BP601T (4) Explain Side effects, adverse effects and therapeutic uses of different drug classes.
	BP601T (5) Outline synthetic route of the important class of compounds.
	BP601T (6) Acquire knowledge on thrust areas for further research.
BP607P Medicinal Chemistry- III	BP607P (1) Synthesize medicinally important organic compounds and evaluate their physicochemical properties.
	BP607P (2) Develop the skill involved in purification of synthesized compounds by various techniques.
	BP607P (3) Synthesis of medicinally important compounds or intermediates by Microwave method
	BP607P (4) Demonstrate use of physicochemical properties of drugs in pharmaceutical and biological system
	BP607P (5) Sketch the structures and chemical reactions by using different Softwares.
BP602T Pharmacology-III	BP602T (1) Describe pathophysiology and pharmacology of drug acting on Respiratory system.
	BP602T (2) Explain pathophysiology and pharmacology of drug acting on digestive system.
	BP602T (3) Appraise the role of chemotherapy and its agents like sulphonamide, cotrimoxazole, and antibiotics.
	BP602T (4) Explain mechanism of action, antimicrobial spectrum, resistance, adverse effect and uses of various chemotherapeutic agents.
	BP602T (5) Outline pharmacology of immunomodulators and their use as immunostimulant and immunosuppressant.

	BP602T (6) Apply the knowledge of Chrono pharmacology and toxicology in treatment of poisoning and related clinical symptoms of various drugs.
BP608P Pharmacology-III	BP608P (1) Demonstrate antiulcer activity, purgative activity and gastrointestinal motility by using different model.
	BP608P (2) Interpret acute oral, skin irritation and eye irritation toxicity studies by using different OECD guidelines.
	BP608P (3) Interpret different biostatistics method in different pharmacology experiment.
	BP608P (4) Illustrate bioassay methods using suitable isolated tissue preparation.
	BP608P (5) Demonstrate pyrogen test, effect of mydriatic as well as miotic and hypoglycemic effect on rabbit.
BP603T Herbal drug Technology	BP603T (1) Discuss development and evaluation of marketed cosmetic & nutraceutical formulations.
	BP603T (2) Describe need and significance of herbal drug analysis.
	BP603T (3) Explain development of NDDS in herbals.
	BP603T (4) Elaborate patenting process of herbal medicines.
	BP603T (5) Discuss importance of herbal drug industry in global contest.
	BP603T (6) Summarise various Ayurvedic dosage forms and nutraceuticals.
BP609P Herbal drug Technology	BP609P (1) Prepare herbal traditional/ folklore formulations.
	BP609P (2) Develop and evaluate marketed cosmetic and nutraceutical formulations.
	BP609P (3) Design pharmacognostic study for crude drugs with preformulation parameters for formulation.
	BP609P (4) Elaborate on various traditional dosage forms and nutraceuticals.
	BP609P (5) Discuss various natural products used as pharmaceutical excipients as allied industrial utility.
	BP609P (6) Evaluate quality control parameters for various phytoconstituents.
BP604T Biopharmaceutics and Pharmacokinetics	BP604T (1) Elaborate anatomy of human body.
	BP604T (2) Discuss various theories of dissolution of drug molecules.
	BP604T (3) Relate different mechanism of absorption of compounds with respect to their biological membrane.
	BP604T (4) Explain the linkage between absorption and distribution of drug molecules.
	BP604T (5) Discuss in detail various mechanism of eliminations for drug molecules.
BP605T	BP605T (1) Summaries scope and applications in pharmacy.

Pharmaceutical Biotechnology	BP605T (2) Compile the role of gene transfer and genetic engineering techniques in field of molecular biotechnology.
	BP605T (3) Discuss rDNA technology and applications of human gene therapy as well as monoclonal antibody.
	BP605T (4) Appraise applications of genetic engineering.
	BP605T (5) Categories enzyme immobilization and discuss its applications.
	BP605T (6) Explain the process of effluent treatment and its applications.
BP606T Quality Assurance	BP606T (1) Discuss the cGMP aspects in a pharmaceutical industry.
	BP606T (2) Elaborate on responsibilities of QA & QC departments
	BP606T (3) Explain the scope of quality certifications applicable to pharmaceutical industries.
	BP606T (4) Summarise the importance of documentation, complaints, quality audit and quality review according to regulatory agencies.
Semester-VII	
BP701T Instrumental Methods of Analysis	BP701T (1) Discuss the fundamental knowledge of principles and instrumentation of spectroscopic and chromatographic technique.
	BP701T(2) Interpret and critically evaluate scientific findings.
	BP701T(3) Illustrate the interaction of matter with electromagnetic radiations and justify its applications in drug analysis.
	BP701T(4) Classify the chromatographic separation methods and choose appropriate technique for analysis of drugs.
	BP701T(5) Design methods for quantitative & qualitative analysis of drugs using various analytical instruments.
BP705P Instrumental Methods of Analysis	BP705P (1) Experiment of the different types of analytical instrumental technique available for quality control of pharmaceuticals.
	BP705P (2) Practice various sampling techniques
	BP705P (3) Interpret the analytical data produced by different analytical techniques.
	BP705P (4) Predict the interaction of electromagnetic radiation with matter
	BP705P (5) Summarise capability of performing measurements on analytical instruments
BP702T Industrial Pharmacy II	BP702T (1) Explain the process of pilot plant and scale up of pharmaceutical dosage forms.

	<p>BP702T (2) Discuss the process of technology transfer from lab scale to commercial batch.</p> <p>BP702T (3) Summarise different Laws and Acts that regulate pharmaceutical industry.</p> <p>BP702T (4) Elaborate the approval process and regulatory requirements for drug products.</p> <p>BP702T (5) Describe the role and responsibility of regulatory agencies in the approval of drugs.</p> <p>BP702T (6) Explain the concept of quality management system.</p>
<p>BP703T Pharmacy Practice</p>	<p>BP703T (1) Classify hospitals and learn about hospital organization as well as pharmacist's roles and responsibilities.</p> <p>BP703T (2) Identify drug related problem and assess adverse drug reactions, interactions and their mechanisms.</p> <p>BP703T (3) Elaborate on pharmaceutical care service.</p> <p>BP703T (4) Explain the monitoring of drug therapy for patient.</p> <p>BP703T (5) Discuss pharmacy stores management, inventory control and rational drug therapy.</p> <p>BP703T (6) Interpret selected laboratory results of specific disease states.</p>
<p>BP704T Novel Drug Delivery System</p>	<p>BP704T (1) Explain principle and technology used in the design of sustained release and controlled release drug delivery systems.</p> <p>BP704T (2) Discuss criteria for selection of a drugs and polymers for the development of Novel drug delivery systems.</p> <p>BP704T (3) Elaborate the various approaches for development and evaluation of novel drug delivery systems.</p> <p>BP704T (4) Explain the formulation and characterization of transdermal drug Delivery systems.</p> <p>BP704T (5) Describe formulation and evaluation of Gastro retentive & Nasopulmonary drug delivery systems.</p> <p>BP704T (6) Discuss various approaches for the development of targeted drug Delivery systems and its applications.</p>
Semester-VIII	
<p>BP801T Biostatistics and Research Methodology</p>	<p>BP801T (1) Explain the measure of central tendency, dispersion and correlation.</p> <p>BP801T (2) Summarise the concept of regression analysis, probability theory, parametric and non-parametric test.</p> <p>BP801T (3) Discuss the designing of methodology.</p> <p>BP801T (4) Describe the basic concepts of clinical trial, research.</p> <p>BP801T (5) Explain the design and analysis of experiments as well as different types of graphical representation of data.</p> <p>BP801T (6) Discuss the ethical practices related to experiments.</p>
<p>BP802T</p>	<p>BP802T (1) Acquire high consciousness/realization of current issues related to health.</p>

Social and Preventive Pharmacy	BP802T (2) Assess pharmaceutical problems within the country and worldwide.
	BP802T (3) Describe critical way of thinking based on current healthcare development.
	BP802T (4) Evaluate alternative ways of solving problems related to health and pharmaceutical issues.
BP803ET Pharma Marketing Management	BP803ET (1) Explain concepts, techniques and applications of the marketing in pharmaceutical industry.
	BP803ET (2) Describe strategies for product branding.
	BP803ET (3) Discuss techniques for product promotion.
	BP803ET (4) Elaborate pharmaceutical marketing channels and role of professional sales representative.
	BP803ET (5) Discuss price management, price regulation by authorities and emerging concepts in marketing.
BP804ET Pharmaceutical Regulatory Science	BP804ET (1) Explain the process of drug discovery and development.
	BP804ET (2) Discuss about regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
	BP804ET (3) Elaborate regulatory approval process and their registration in Indian and international markets.
	BP804ET (4) Illustrate Product development, business, and strategy.
	BP804ET (5) Discuss intellectual property rights and various regulatory agencies.
BP805ET Pharmacovigilance	BP805ET (1) Discuss the importance of drug safety monitoring and the development of pharmacovigilance program.
	BP805ET (2) Explain international standards for classification of diseases and drugs.
	BP805ET(3) Describe about national and international pharmacovigilance program and the terminologies used.
	BP805ET(4) Recognize various methods of drug safety surveillance and communication in pharmacovigilance.
	BP805ET (5) Explain the methods to generate safety data during the phases of clinical trial and recognize the role of ICH and GCP guidelines.
	BP805ET (6) Explain pharmacogenomics of adverse drug reactions and evaluate drug safety in special population
BP809ET Cosmetic Science	BP809ET (1) Explain Indian and EU regulation for cosmetics and cosmeceuticals.
	BP809ET (2) Classify Cosmetics based on structure and function of skin, hair, teeth and gum.
	BP809ET (3) Formulate cosmetics based on their role and properties.

	<p>BP809ET (4) Appraise the role of herbs in cosmetics, SPF and BIS specification in cosmetics.</p> <p>BP809ET (5) Evaluate cosmetics for their performance using sophisticated instruments.</p> <p>BP8059T (6) Design cosmetics and cosmeceuticals that address the problems of skin, hair, and oral.</p>
<p>BP811T Advanced Instrumentation Techniques</p>	<p>BP811T (1) Explain principle, instrumentation and applications of various spectroscopic and chromatographic technique in Pharmaceutical research.</p> <p>BP811T (2) Interpret the spectrums and chromatogram obtained from methods of analysis.</p> <p>BP811T (3) Judge the research problems in Pharma. Analysis.</p> <p>BP811T (4) Examine and interpret the data obtained through experimentation as per regulatory requirements.</p> <p>BP811T (5) Discuss different analytical techniques for the assay of various APIs and formulations as per Pharmacopoeial standards.</p>
<p>BP812ET Dietary Supplements & Nutraceuticals</p>	<p>BP812ET (1) Elaborate various types of nutraceuticals.</p> <p>BP812ET (2) Explain importance of dietary supplements in global contest.</p> <p>BP812ET (3) Discuss current status of nutraceuticals in market.</p> <p>BP812ET (4) Summarise the importance of antioxidant principles in nutraceuticals.</p> <p>BP812ET (5) Appraise the significance of free radicals as functional food.</p> <p>BP812ET (6) Explain regulatory aspects of functional foods and nutraceuticals.</p>