COURSE OUTCOME
B. PHARM

Semester	Course Code	CO No.	Course Outcome
Human Anatomy and Physiology I – Theory			
I	BP101T	CO101T.1	Explain the concepts and compare cellular and tissue level of organization.
		CO101T.2	Describe anatomy and physiology of skin, skeletal system and joints.
		CO101T.3	Apply the knowledge of body fluid, blood and lymphatic system to assess various disorders.
		CO101T.4	Recognize the anatomical structures and physiological functions of peripheral nervous system and special sense organs.
		CO101T.5	Evaluate the structure and functions of heart and blood vessels to assess cardiovascular disorders.
Pharmaceutical Analysis I – Theory			
I	BP102T	CO102T.1	Discuss the methods of concentration expression, different techniques of analysis as per pharmacopeia.
		CO102T.2	Justify proper indicators used in volumetric titration.
		CO102T.3	Judge the applicability of volumetric & electrochemical titrations.
		CO102T.4	Develop the theoretical skills in solving problems of volumetric & electrochemical titration.
Pharmaceutics I – Theory			
I	BP103T	CO103T.1	Describe the development of pharmacy profession & pharmacopoeias.
		CO103T.2	Apply the concepts of pharmaceutical calculations in compounding and dispensing.
		CO103T.3	Demonstrate professional way of handling the prescription.
		CO 103T.4	Analyze pharmaceutical incompatibilities along with their corrective measures.
		CO 103T.5	Design and evaluate various conventional dosage forms.
Pharmaceutical Inorganic Chemistry – Theory			
I	BP104T	CO104T.1	Exemplify the relevance and significance of inorganic chemistry to pharmaceutical sciences.
		CO104T.2	Discuss various pharmacopoeias and their contents.
		CO104T.3	Illustrate method of preparation, properties, medicinal uses and assay of different pharmaceutical inorganic compounds.
		CO 104T.4	Memorize various major intra and extra cellular electrolytes with their role
		CO 104T.5	Explain the theory of radio-pharmaceuticals and their applications.

Semester	Course Code	CO No.	Course Outcome
Communication skills – Theory			
I	BP105T	CO105T.1	Identify the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation.
		CO105T.2	Adapt effective verbal and non-verbal communication skills.
		CO105T.3	Develop the desired skill sets for the interview & presentations.
		CO105T.4	Build and demonstrate leadership qualities and competencies.
Remedial Biology– Theory			
I	BP 106 RBT	CO106T.1	Summarize five kingdoms of life and morphology of flowering plants.
		CO106T.2	Discuss body fluids- circulation, digestion, absorption, breathing and respiration.
		CO106T.3	Explain excretory products and their elimination, neural control and coordination, chemical coordination and regulation and human reproduction.
		CO106T.4	Recall nutritional requirement of plants and photosynthesis.
		CO106T.5	Describe plant respiration, plant growth and development, cell and tissue.
Remedial Mathematics – Theory			
I	BP106RMT	CO106RMT .1	Know the theory and their application in Pharmacy
		CO106RMT .2	Solve the different types of problems by applying theory
		CO106RMT .3	Appreciate the important application of mathematics in Pharmacy
Human Anatomy and Physiology I – Practical			
I	BP107P	CO107P.1	Perform the hematological tests like blood cell counts, hemoglobin estimation, ESR, bleeding and clotting time.
		CO107P.2	Determine heart rate, pulse rate and blood pressure.
		CO107P.3	Operate the compound microscope for blood cell counts and histological study.
		CO107P.4	Identify the different types of bones and tissues of human body.
Pharmaceutical Analysis I – Practical			
I	BP108P	CO108P.1	Develop the skills for quantitative estimations by different volumetric analysis.
		CO108P.2	Apply the fundamentals to prepare & standardize different strength of solutions
		CO108P.3	Operate different instruments & integrate its skills for performing electrochemical analysis.
		CO108P.4	Perform limit test of common impurities in pharmaceutical substances

Semester	Course Code	CO No.	Course Outcome
Pharmaceutics I – Practical			
I	BP109P	CO109P.1	Demonstrate skills and techniques which are part of pharmaceutical procedures through the actual use of equipment and instruments.
		CO109P.2	Explain the principles underlying formulation and processes for powders, liquids and semisolid dosage forms.
		CO109P.3	Apply the concepts of pharmaceutical calculations in compounding and dispensing.
		CO109P.4	Compare various preparations based on their formulations, use and methodology involved.
		CO109P.5	Justify the appropriate excipients, formulation design, labeling and packaging to meet the needs.
Pharmaceutical Inorganic Chemistry – Practical			
I	BP110P	CO110P.1	Demonstrate the medicinal and pharmaceutical importance of inorganic compounds.
		CO110P.2	Enumerate types of impurity and their detection by using various limit tests.
		CO110P.3	Analyze different cations and anions by qualitative tests.
		CO110P.4	Prepare and determine the purity of inorganic compounds.
Communication skills – Practical			
I	BP111P	CO111P.1	Describe effective communication and pronunciation techniques.
		CO111P.2	Express desired skill sets for the interview and presentations.
		CO111P.3	Adapt effective writing skills.
Remedial Biology – Practical*			
I	BP112 RBP	CO112P.1	Outline the construction, working, care and handling of instruments, glassware's and equipment's required for practical.
		CO112P.2	Perform section cutting techniques, mounting and staining, Permanent slide preparation.
		CO112P.3	Assess the knowledge of Microscopic and Macroscopic study and identification of tissues pertinent to stem, root, leaf, seed, fruit, and flower.
		CO112P.4	Determine Blood group, Blood pressure, Tidal volume, Vital capacity and its Significance.
		CO112P.5	Outline mechanisms in the maintenance of normal functioning of Plant and Human body.

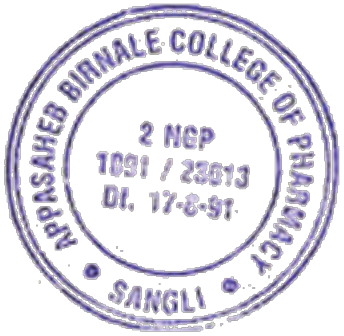
Semester	Course Code	CO No.	Course Outcome
Human anatomy and physiology-II- Theory			
II	BP201T	CO201T.1	Explain the physiological functions of various systems of the human body.
		CO201T.2	Recognize the gross morphology and structure of various organs in the system.
		CO201T.3	Evaluate the anatomical and physiological changes to assess the various disorders.
		CO201T.4	Summarize the various endocrinal hormones and their mechanisms of actions.
		CO201T.5	Discuss the basic concepts of genetics and its pattern of inheritance.
Pharmaceutical Organic Chemistry I – Theory			
II	BP202T	CO202T.1	Describe the classification, nomenclature, isomerism in organic compounds.
		CO202T.2	Summarize the knowledge of hybridization and stabilities in hydrocarbons.
		CO202T.3	Discuss the mechanisms, orientations, kinetics, and stereochemistry of various organic reactions along with factors.
		CO202T.4	Explain the methods of preparations and reactions of organic compounds.
		CO202T.5	Express the qualitative tests identify the structure of organic compounds of medicinal importance andits applications.
Biochemistry – Theory			
II	BP203T	CO203T.1	Recall the structures, properties, biological significance & applied energetics of biomolecules.
		CO203T.2	Illustrate and explain metabolic pathways & physiological conditions associated with biomolecules.
		CO203T.3	Summarize the concept of biological oxidation emphasizing on ETC, oxidative phosphorylation & nucleic acid.
		CO203T.4	Memorize the catalytic role, inhibitors, therapeutic & diagnostic applications of enzymes
Pathophysiology (Theory)			
II	BP204T	CO204T.1	Explain basic principles of cell injury and adaptation.
		CO204T.2	Describe the process of inflammation and repair.
		CO204T.3	Describe the etiology and pathogenesis of the various diseases.
		CO204T.4	Analyze clinical manifestations of the various diseases.

Semester	Course Code	CO No.	Course Outcome
Computer Applications in Pharmacy – Theory			
II	BP205T	CO205T.1	Illustrate various applications of computer in pharmacy.
		CO205T.2	Identify and analyze various types of databases.
		CO205T.3	Explain the different concepts of web technologies.
		CO205T.4	Demonstrate various applications of databases in pharmacy.
Environmental sciences – Theory			
II	BP206T	CO206T.1	Create the awareness about environmental problems among learners.
		CO206T.2	Implement basic knowledge about the environment and its allied problems.
		CO206T.3	Develop an attitude of concern for the environment and attain harmony with Nature.
		CO206T.4	Motivate learner to participate in environment protection and environment improvement.
		CO206T.5	Demonstrate skills to help the concerned individuals in identifying and solving environmental problems.
Human anatomy and physiology-II- Practical			
II	BP207P	CO207P.1	Explain various systems of human body using specimens, models and charts.
		CO207P.2	Identify the histological features of vital organs and gonads.
		CO207P.3	Perform the various experiments related to special senses and nervous system.
		CO207P.4	Determine the tidal volume, vital capacity, body mass index and pregnancy test.
		CO207P.5	Demonstrate positive, negative feedback mechanism and total blood count by cell analyzer.
Pharmaceutical Organic Chemistry I – Practical			
II	BP208P	CO208P.1	Identify the organic compound by systematic qualitative analysis.
		CO208P.2	Synthesize and analyze various organic compounds.
		CO208P.3	Detect the extra elements in organic compounds.
		CO208P.4	Determine the melting point/boiling point of organic compound.
		CO208P.5	Construct the molecular model of compound using atomic model set.

Semester	Course Code	CO No.	Course Outcome
Biochemistry – Practical			
II	BP209P	CO209P.1	Predict the qualitative & quantitative analysis of carbohydrates & proteins and determine enzymatic hydrolysis of starch.
		CO209P.2	Perform the qualitative& quantitative analysis of blood and urine.
		CO209P.3	Determine salivary amylase activity, effect of temperature & substrate concentration on salivary amylase.
		CO209P.4	Prepare the buffer solutions & measurement of pH.
Computer Applications in Pharmacy – Practical			
II	BP210P	CO210P.1	Know the various types of application of computers in pharmacy
		CO210P.2	Know the various types of databases
		CO210P.3	Know the various applications of databases in pharmacy
Pharmaceutical Organic Chemistry II – Theory			
III	BP301T	CO301T.1	Describe the classification, preparation, reaction mechanism and applications of organic compounds.
		CO301T.2	Predict the structure and name of organic compounds (IUPAC) and vice versa.
		CO301T.3	Illustrate the fundamental principles of organic compounds.
		CO301T.4	Discuss the principle, applications and stability of cycloalkanes.
Physical Pharmaceutics I – Theory			
III	BP302T	CO302T.1	Apply the concepts of physicochemical properties in the formulation development and evaluation of various dosage forms.
		CO302T.2	Recognize the principles that govern the solubility of drugs and its importance in pharmaceutical systems.
		CO302T.3	Utilize the fundamental knowledge of physical theories and physicochemical properties of matter in the development of dosage forms.
		CO302T.4	Relate the knowledge of surface and interfacial phenomena, pH, buffers and isotonic solutions in formulation development.
		CO302T.5	Summarize the basic principles of complexation, protein binding and explain their effect on drug action.

Semester	Course Code	CO No.	Course Outcome
Pharmaceutical Microbiology – Theory			
III	BP303T	CO303T.1	Recall and summarize methods of isolation, identification, cultivation & preservation of various micro-organisms and animal cells.
		CO303T.2	Compare and demonstrate different techniques of sterilization and disinfection.
		CO303T.3	Evaluate quality, sterility and purity of various products.
		CO303T.4	Classify critical clean areas and propose suitable aseptic protocols for its maintenance.
		CO303T.5	Utilize different techniques of microscopy efficiently.
Pharmaceutical Engineering – Theory			
III	BP304T	CO304T.1	Illustrate the principles and applications of various unit operations involved in pharmaceutical preparations.
		CO304T.2	Describe the principles and methodology of various equipments and their applications in pharmaceutical industry.
		CO304T.3	Choose the appropriate equipment for desired unit operation by considering the factors influencing it.
		CO304T.4	Propose the material for construction of equipments used in pharmaceutical operations and the methods for prevention of corrosion.
Pharmaceutical Organic Chemistry II – Practical			
III	BP305P	CO305P.1	Predict the outcomes of organic reactions.
		CO305P.2	Describe the mechanism of organic reactions including all intermediate.
		CO305P.3	Synthesize and analyze various organic compounds.
		CO305P.4	Compare practical yield, theoretical yield, % practical yield of synthesized organic compounds.
Physical Pharmaceutics I – Practical			
III	BP306P	CO306P.1	Demonstrate skills and techniques as a part of pharmaceutical procedures through the actual use of equipment and instruments.
		CO306P.2	Assess the various physicochemical properties and demonstrate their use in formulation development.
		CO306P.3	Interpret and use stability constants in pharmaceutical formulation.
		CO306P.4	Design and interpret the experimental data in a tabular and or graphical form.

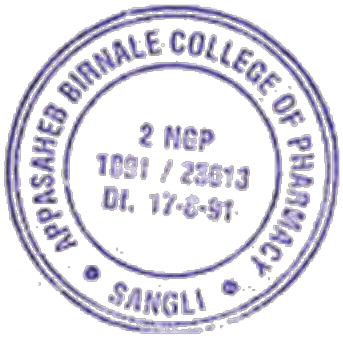
Semester	Course Code	CO No.	Course Outcome
Pharmaceutical Microbiology – Practical			
III	**BP307P**	**CO307P.1**	Plan strategies for isolation, identification, cultivation & preservation of various micro-organisms.
		CO307P.2	Apply various sterilization and disinfection techniques.
		CO307P.3	Assess the quality, sterility and purity of various products.
		CO307P.4	Demonstrate competency in microbiology laboratory safety and specialized skills with the ability to report and infer the observations.
		CO307P.5	Propose an aseptic protocol to carry out critical operations by utilizing the knowledge gained.
Pharmaceutical Engineering –Practical			
III	**BP308P**	**CO308P.1**	Explain various unit operations involved in pharmaceutical manufacturing.
		CO308P.2	Describe principles and methodology of various unit operations and their applications in pharmaceutical industry.
		CO308P.3	Develop experimental and analytical skills required for different unit operations.
		CO308P.4	Design and interpret the experimental data in a tabular and or graphical form.



Semester	Course Code	CO No.	Course Outcome
Pharmaceutical Organic Chemistry III– Theory			
IV	BP401T	CO401T.1	Explain basic concepts of stereochemistry of organic molecules.
		CO401T.2	Justify the concept of geometrical isomerism with special emphasis on conformational isomerism
		CO401T.3	Recall the synthesis, reactions and medicinal uses of various heterocyclic compounds.
		CO401T.4	Discuss the mechanism of various reactions along with itssynthetic importance.
Medicinal Chemistry I – Theory			
IV	BP402T	CO402T.1	Predict influence of drug metabolism and physicochemical properties of drugs on biological action.
		CO402T.2	Define and classify different therapeutic agents.
		CO402T.3	Illustrate Structural activity relationship (SAR) of different therapeutic agents.
		CO402T.4	Explain metabolic pathways, Mode of action and uses of different therapeutic agents.
		CO402T.5	Compose synthetic scheme of some selected drugs.
Physical Pharmaceutics II—Theory			
IV	BP403T	CO403T.1	Apply the concepts of physicochemical properties in the formulation development and evaluation of various dosage forms.
		CO403T.2	Discriminate the different dispersed systems and apply their knowledge in analysis and stabilization of it.
		CO403T.3	Recognize and determine the fundamentals of rheological properties with respect to their rheograms and of deformation of solids.
		CO403T.4	Explain and apply fundamentals of micromeritics.
		CO403T.5	Illustrate the principles behind drug stability and use them for stability testing of formulations.
Pharmacology I – Theory			
	BP404T	CO404T.1	Determine the pharmacokinetic parameters of drugs.
		CO404T.2	Describe the mechanisms of drug action at organ/sub cellular /macromolecular levels.
		CO404T.3	Explain the various phases of drug discovery and development.
		CO404T.4	Classify, categorize and get in-depth knowledge about pharmacology of drugs acting on peripheral nervous system.
		CO404T.5	Apply the pharmacological knowledge of drugs in the prevention and the treatment of CNS related disorders.

Semester	Course Code	CO No.	Course Outcome
Pharmacognosy and Phytochemistry I– Theory			
IV	BP405T	CO405T.1	Summarize fundamentals of pharmacognosy subject and evaluation techniques for herbal drugs.
		CO405T.2	Discuss the techniques in cultivation and production of crude drugs.
		CO405T.3	Develop general idea of plant tissue culture and its application in pharmacognosy.
		CO405T.4	Compare the role of pharmacognosy in different systems of medicine and discuss secondary metabolites.
		CO405T.5	Illustrate different crude drugs of primary metabolites, their chemical constituents, uses and marine drug category.
Medicinal Chemistry I – Practical			
IV	BP406P	CO406P.1	Describe principle, mechanism and application of various drug products or intermediate.
		CO406P.2	Synthesize and compare theoretical yield with practical yield of various drug product or intermediate.
		CO406P.3	Perform an assay of pure drug substance by using different titration techniques.
		CO406P.4	Determine the partition coefficient of some drugs.
Physical Pharmaceutics II – Practical			
IV	BP407P	CO407P.1	Demonstrate skills and techniques as a part of pharmaceutical procedures through the actual use of equipment and instruments.
		CO407P.2	Analyze and apply various physicochemical and micromeritic properties in formulation development.
		CO407P.3	Evaluate the stability data and signify its relevance in stabilization of pharmaceutical formulations.
		CO407P.4	Design and interpret the experimental data in a tabular and or graphical form.

Semester	Course Code	CO No.	Course Outcome
Pharmacology I – Practical			
IV	BP408P	CO408P.1	Explain commonly used instruments and common laboratory animals in experimental pharmacology.
		CO408P.2	Utilize the laboratory techniques of drug administration, blood withdraw, anesthesia and euthanasia as per CPCSEA guidelines for animal studies.
		CO408P.3	Evaluate the effects of drugs acting on CNS in animal studies by simulated experiments.
		CO408P.4	Determine the effects of drugs acting on ANS in animal studies by simulated experiments.
Pharmacognosy and Phytochemistry I – Practical			
IV	BP409P	CO408P.1	Analyze the unorganized crude drugs by chemical tests.
		CO408P.2	Evaluation of leaf drugs by microscopic method.
		CO408P.3	Perform quantitative microscopy to determine the size of Calcium oxalate crystals and starch grains.
		CO408P.4	Calculate the percentage purity and number of starch grains by Lycopodium spore method.
		CO408P.5	Perform physical evaluation of crude drugs.



Semester	Course Code	CO No.	Course Outcome
Medicinal Chemistry II – Theory			
V	BP501T	CO501T.1	Recall knowledge about definition and classification of the different therapeutic agents used in different disease conditions.
		CO501T.2	Estimate mode of action of different therapeutic agents.
		CO501T.3	Describe biosynthetic pathways, adverse effect and therapeutic value of different therapeutic agents.
		CO501T.4	Illustrate Structural Activity Relationship of different class of drugs.
		CO501T.5	Design synthetic scheme of some selected drugs from each category.
Industrial Pharmacy I– Theory			
V	BP502T	CO502T.1	Anticipate various pharmaceutical dosage forms and their manufacturing techniques.
		CO502T.2	Assess the physicochemical properties of drugs for the development of dosage forms.
		CO502T.3	Design and evaluate pharmaceutical dosage forms.
		CO502T.4	Appraise various considerations in development of pharmaceutical and cosmetic formulations.
		CO502T.5	Choose packaging material used for pharmaceutical product.
Pharmacology II – Theory			
V	BP503T	CO503T.1	Classify categories and get in-depth knowledge about pharmacology of drugs used in cardiovascular disorders.
		CO503T.2	Apply the pharmacological knowledge of drugs acting on hemopoietic and urinary system in management of related diseases.
		CO503T.3	Explain the physio pharmacology of autocoids and drugs used in gout and rheumatic arthritis.
		CO503T.4	Describe the pharmacological aspects of different drugs acting on the endocrine system.
		CO503T.5	Plan the appropriate methods of bioassay to determine the potency of drugs.
Pharmacognosy and Phytochemistry II– Theory			
V	BP504T	CO504T.1	Illustrate metabolic pathway in higher plants.
		CO504T.2	Describe crude drugs containing secondary metabolites.
		CO504T.3	Determine isolation and characterization of phytoconstituents.
		CO504T.4	Discuss industrial production, estimation and utilization of phytoconstituents.
		CO504T.5	Summarize modern extraction, isolation & purification techniques of phytoconstituents.

Semester	Course Code	CO No.	Course Outcome
Pharmaceutical Jurisprudence – Theory			
V	BP505T	CO505T.1	Recall and describe the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
		CO505T.2	Describe the various Indian pharmaceutical Acts and Laws.
		CO505T.3	Recognize various regulatory authorities, agencies pertaining to Indian Pharmaceutical Acts and Laws governing the manufacture and sale of pharmaceuticals.
		CO505T.4	Implement the code of ethics in pharmaceutical practices.
Industrial Pharmacy I – Practical			
V	BP506P	CO506P.1	Estimate the effect of physicochemical properties of drugs to dosage form characteristics
		CO506P.2	Design and Evaluate different dosage forms
		CO506P.3	Operate the different instruments in pharmaceutical manufacturing and evaluation
		CO506P.4	Judge the selection of packaging material for pharmaceuticals
Pharmacology II – Practical			
V	BP507P	CO507P.1	Design appropriate method of bioassay to analyze the potency of drugs.
		CO507P.2	Determine PA2 and PD2 value using isolated tissue by simulated experiments.
		CO507P.3	Evaluate the analgesic, anti-inflammatory, diuretic, spasmogenic and spasmolytic activity of drugs by simulated experiments.
		CO507P.4	Recall the composition of physiological salt solution and their applications.
		CO507P.5	Explain the effect of drugs on Blood Pressure and heart rate of dog by simulated experiments.
Pharmacognosy and Phytochemistry II – Practical			
V	BP508P	CO508P.1	Evaluate crude drugs by organoleptic and microscopic method.
		CO508P.2	Perform isolation and identification of phytoconstituents by different techniques.
		CO508P.3	Analyze crude drugs by chemical tests.
		CO508P.4	Demonstrate TLC and Paper chromatography method.
		CO508P.5	Estimate the percentage of volatile oil present in crude drugs.

Semester	Course Code	CO No.	Course Outcome
Medicinal Chemistry III – Theory			
VI	BP601T	CO601T.1	Develop an understanding of the physicochemical properties of drugs.
		CO601T.2	Understand how current drugs were developed by using pharmacophore modeling and docking technique.
		CO601T.3	Acquire knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents.
		CO601T.4	Recall knowledge about the mechanism pathways of different class of medicinal compounds.
		CO601T.5	Introduce to a variety of drug classes and some pharmacological properties.
		CO601T.6	Design synthetic scheme and illustrate Structural Activity Relationship of different class of drugs.
Pharmacology III – Theory			
VI	BP602T	CO602T.1	Classify, categorize and get in-depth knowledge about pharmacology of drugs used in Respiratory and GIT disorders.
		CO602T.2	Describe the pharmacological aspects of drugs and its relevance in treatment of different infectious diseases.
		CO602T.3	Explain the details of immunomodulatory agents and concepts of chrono pharmacology.
		CO602T.4	Analyze the toxic clinical symptoms of drugs and discuss its treatment.
		CO602T.5	Explain the various toxicity studies use in drug development process.
Herbal Drug Technology – Theory			
VI	BP603T	CO603T.1	Develop raw material as source of herbal drug from cultivation to herbal drug product.
		CO603T.2	Summarize nutraceuticals and herbal-drug, herb-food interactions.
		CO603T.3	Formulate the herbal cosmetics using natural excipients.
		CO603T.4	Discuss patenting, WHO and ICH guidelines of herbal drugs.
		CO603T.5	Explain detail accounts of plant based industry and Schedule T.

Semester	Course Code	CO No.	Course Outcome
Biopharmaceutics and Pharmacokinetics – Theory			
VI	BP604T	CO604T.1	Summarize and apply the concepts of Biopharmaceutics and Pharmacokinetics in pharmaceutical product development.
		CO604T.2	Construct drug response curve and predict the pharmacokinetic parameters.
		CO604T.3	Apply and Correlate different Pharmacokinetic parameters with their significance.
		CO604T.4	Design bioavailability and bioequivalence studies.
Pharmaceutical Biotechnology – Theory			
VI	BP605T	CO605T.1	Discuss the fundamentals of modern techniques of enzyme biotechnology.
		CO605T.2	Recall the basic principles and applications of genetic engineering in designing human medicines.
		CO605T.3	Classify immunological products and illustrate general methods used in their production.
		CO605T.4	Appraise the use of micro-organisms in fermentation technology.
		CO605T.5	Categorize the defense mechanisms of human host and conclude the factors governing immunity.
		CO605T.6	Summarize various blood products and plasma substitutes.
Quality Assurance – Theory			
VI	BP606T	CO606T.1	Demonstrate the responsibilities of Quality Assurance and Quality Control department and understand the scope of quality certification applicable to pharmaceutical industries.
		CO606T.2	Justify the significance of quality in pharmaceutical manufacturing.
		CO606T.3	Understand and apply the concept of cGMP/GLP in manufacturing practice.
		CO606T.4	Elaborate the concept of validation in Quality Assurance.
Medicinal Chemistry III – Practical			
VI	BP607P	CO607P.1	Understand reaction, principle, mechanism and application of various drug product or intermediate.
		CO607P.2	Synthesize and predict theoretical yield, practical yield and calculations of various drug product or intermediate
		CO607P.3	Estimate assay of pure drug substance by using different titration techniques.
		CO607P.4	Perform recrystallization of synthesized compound by selecting proper solvent.
		CO607P.5	Adopt suitable procedure for determination of partition coefficient and refractive index of some drugs.

Semester	Course Code	CO No.	Course Outcome
Pharmacology III – Practical			
VI	BP608P	CO608P.1	Calculate the dose of drugs and pharmacokinetic parameters in experimental pharmacology.
		CO608P.2	Estimate serum biochemical parameters by using semi-autoanalyzer.
		CO608P.3	Apply the biostatistical methods in experimental pharmacology.
		CO608P.4	Explain the acute oral toxicity, skin and eye irritation and pyrogen test of drug by simulated methods.
		CO608P.5	Describe the analgesic, anti-ulcer, insulin hypoglycemic, purgative activity of compounds and concept of agonist and antagonist.
Herbal Drug Technology – Practical			
VI	BP609P	CO609P.1	Perform preliminary phytochemical screening of crude drugs.
		CO609P.2	Determine alcohol content, phenol content, aldehyde content and total alkaloid content.
		CO609P.3	Evaluate recipients of natural origin.
		CO609P.4	Formulate and standardize herbal formulation and herbal cosmetics.
		CO609P.5	Analyze herbal drugs from recent pharmacopoeia.
Instrumental Methods of Analysis – Theory			
VII	BP701T	CO701T.1	Describe the interaction of matter with electromagnetic radiations and its applications in drug analysis.
		CO701T.2	Define different terminology of chromatography.
		CO701T.3	Illustrate the chromatographic separation and analysis of drugs
		CO701T.4	Revise quantitative & qualitative analysis of drugs using various analytical instruments.
Industrial Pharmacy II – Theory			
VII	BP702T	CO702T.1	Illustrate the process of pilot plant and scale up of pharmaceutical dosage forms.
		CO702T.2	Demonstrate the process of technology transfer.
		CO702T.3	Explain overview pertaining to regulatory agencies and protocols for drug approval.
		CO702T.4	Summarize quality management systems in pharmacy field.

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Semester	Course Code	CO No.	Course Outcome
Pharmacy Practice – Theory			
VII	BP703T	CO703T.1	Explain the organization, structure, legal aspects and functions of Hospital, PTC, and hospital and community pharmacy.
		CO703T.2	Summarize the drug distribution methods useful in the hospital as a part of drug store management and inventory control.
		CO703T.3	Analyze drug related problems like ADR, DI, and explain the concept of TDM and rational drug therapy.
		CO703T.4	Develop communication skill for interdepartmental communication, community health education and counseling the patients.
		CO703T.5	Design hospital Formulary, discuss interpretation of clinical laboratory tests and drug information services available to society.
Novel Drug Delivery System – Theory			
VII	BP704T	CO704T.1	Summarize various approaches for development of novel drug delivery systems.
		CO704T.2	Justify the criteria for selection of drugs and polymers for the development of novel drug delivery systems.
		CO704T.3	Design & Evaluate novel drug delivery systems.
		CO704T.4	Illustrate the various approaches for drug targeting in novel drug delivery systems.
Instrumental Methods of Analysis – Practical			
VII	BP705P	CO705T.1	Determine effect of solvents on absorption maxima of organic compounds,
		CO705T.2	Resolve amino acids, sugars and plant pigments by different chromatography.
		CO705T.3	Perform Assay and Simultaneous estimation of organic compounds
		CO705T.4	Demonstrate experiment on HPLC and GC
		CO705T.5	Estimate the drugs by different instrumental techniques
Practice School- Experimental Pharmacology			
VII	BP706 PS	CO706 PS.1	Adapt problem solving, critical thinking and innovations abilities.
		CO706 PS.2	Develop curiosity to learn.
		CO706 PS.3	Develop hands on skills for experimental pharmacology.
		CO706 PS.4	Adapt professional and ethical aspects necessary for team work.

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Semester	Course Code	CO No.	Course Outcome
Practice School-(Herbal technology)			
VII	BP706 PS	CO706 PS.1	Perform different extractions techniques for crude drugs.
		CO706 PS.2	Isolate different phytochemicals by chromatographic techniques.
		CO706 PS.3	Analyze and identify different photochemical by chromatographic techniques.
		CO706 PS.4	Determine elements present in soil/water samples.
Practice School-Calibration & validation			
VII	BP706 PS	CO706 PS.1	Understand the importance of realistic learning through practice in calibration & validation domain.
		CO706 PS.2	Explain practical aspects of calibration & validation domain.
		CO706 PS.3	Apply knowledge and skills related to practical learning in the calibration & validation domain.
		CO706 PS.4	Analyze the problems encountered during realistic practice and make use of theoretical knowledge to resolve those problems.
		CO706 PS.5	Create the ability to perform well in the Calibration & validation domain after becoming an employee/entrepreneur.
Practice School- Industrial pharmacy			
VII	BP706 PS	BP706PS.1	Be acquainted with the process of pilot plant and scale up technique to improve practice of technology transfer from lab scale to commercial batch
		BP706PS.2	Inculcate industrial culture amongst the students.
		BP706PS.3	Facilitate undergraduate students to have a smoother transition from academics to professional.
		BP706PS.4	Offer prospect to students to apply some of the ideas, skills in their careers, which also enhances their confidence levels.
		BP706PS.5	Enables students to be aware of their personal strengths and limitations as professionals
		BP706PS.6	Augmentation in marketability of students after graduation.

Semester	Course Code	CO No.	Course Outcome
Biostatistics and Research Methodology– Theory			
VIII	BP801T	CO801T.1	Apply the concepts of Biostatistics in Pharmaceutical research.
		CO801T.2	Select appropriate statistical tool and a viable research hypothesis for a research project.
		CO801T.3	Create a framework for experimental research.
		CO801T.4	Appraise statistical techniques in solving the problems.
Social and Preventive Pharmacy- Theory (Elective)			
VIII	BP802T	CO802T.1	Apply the Concept of social and health education for maintenance of health and hygiene.
		CO802T.2	Utilize various measures to prevent and control various communicable and non communicable diseases.
		CO802T.3	Recommend relevant national health program by analyzing health needs of society.
		CO802T.4	Explain objectives, components, strategies and outcome of different national health interventional program.
		CO802T.5	Illustrate the community services for rural, urban and school health promotion and development.
Pharma Marketing Management – Theory (Elective)			
VIII	BP803ET	CO803 ET.1	Summarize the concepts of product management, pharmaceutical marketing and market research.
		CO803 ET.2	Elaborate and inculcate various sales forecasting techniques.
		CO803 ET.3	Recognize the different pricing authorities.
		CO803 ET.4	Describe the different channels of drug distribution
Pharmacovigilance – Theory (Elective)			
VIII	BP805ET	CO805 ET.1	Explain History, development, National and international scenario of pharmacovigilance
		CO805 ET.2	Develop the skills of classifying drugs, diseases and adverse drug reactions and discuss drug Dictionaries, coding and terminologies used in pharmacovigilance.
		CO805 ET.3	Utilize ICH Guidelines, Information resources, for preparation of ADR report and to establish pharmacovigilance program in an organization.
		CO805 ET.4	Perform Adverse drug reaction reporting, Vaccine safety surveillance and effective communication in pharmacovigilance
		CO805 ET.5	Evaluate safety data of compound generated in preclinical, clinical and post approval phases.

Semester	Course Code	CO No.	Course Outcome
Cell and Molecular Biology – Theory (Elective)			
VIII	BP808ET	CO808 ET.1	Compare and illustrate the structure, functions of Prokaryotic and eukaryotic cells and their chemical foundations.
		CO808 ET.2	Explain the details of cell nucleic acids.
		CO808 ET.3	Describe protein structure, functions, Cellular Processes and significance of Protein Synthesis.
		CO808 ET.4	Discuss genomic analysis and cell cycle analysis
		CO808 ET.5	Describe cell signaling, its receptors, signaling pathways and its misregulation
Cosmetic Science – Theory (Elective)			
VIII	BP809ET	CO809 ET.1	Describe the role of cosmetic excipients and building blocks in the formulation of cosmetics.
		CO809 ET.2	Explain the structure and functions of skin, hair, teeth and gums.
		CO809 ET.3	Design and evaluate cosmetics for skin care, hair care and oral care considering problems of skin, hair and oral cavity.
		CO809 ET.4	Formulate and evaluate herbal cosmetics
Experimental Pharmacology – Theory (Elective)			
VIII	CO810 ET	CO810 ET.1	Explain CPCSEA, OECD Guidelines and common laboratory animals.
		CO810 ET.2	Discuss the various techniques for drugs administration, blood collection and euthanasia used in animals.
		CO810 ET.3	Demonstrate various screening methods used in preclinical research.
		CO810 ET.4	Design and execute research methodology independently.
		CO810 ET.5	Apply the knowledge of biostatistics and research methodology in preclinical and clinical studies.
Dietary Supplements And Nutraceuticals – Theory (Elective)			
VIII	BP812ET	CO812T.1	Describe the need of supplements to maintain public health.
		CO812T.2	Justify Phytochemicals as nutraceuticals.
		CO812T.3	Discuss free radicals, dietary fibers and complex carbohydrates.
		CO812T.4	Summarize functional food for chronic diseases prevention.
		CO812T.5	Explain regulatory and the commercial aspects of dietary supplements including health claims.