Date: - 06/01/2024

Course Outcomes

Course outcomes contain complete information about the core subjects of Pharmacy such as Pharmaceutics, Pharmacology, Pharmaceutical Chemistry andPharmacognosy.

Program Name: B. Pharmacy
Number of Courses: 68

Course Code	Name of Subject	Course Outcomes
Semester I (Theory)		
BP101T	**Human Anatomy and Physiology- I**	**CO1.**Explain the gross morphology, structure and functions of various organs of the human body
		CO2. Describe the various homeostatic mechanisms and their imbalances.
		CO3. Identify the various tissues and organs of different systems of human body.
		CO4. Perform the various experiments related to special senses and nervous system.
		CO5. Appreciate coordinated working pattern of different organs of each system
BP102T	**Pharmaceutical Analysis I**	**CO1.** Understand the principles of volumetric and electro chemical analysis
		CO2. Carryout various volumetric and electrochemical titrations
		CO3. Develop analytical skills
BP103T	**Pharmaceutics I**	**CO1.** Know the history & profession of pharmacy
		CO2. Understand the basics of different dosage form, pharmaceutical incompatibilities, and pharmaceutical capsulations.
		CO3. Understand the professional way of handling the prescription
		CO4. Preparation of various conventional dosage form
		CO5. To develop Monophasic & biphasic dosage form.
BP104T	**Pharmaceutical Inorganic Chemistry**	**CO 1**. Upon completion of course student shall be able to know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
		CO2.Upon completion of course student shall be able to understand the medicinal and pharmaceutical importance of inorganic compounds.
BP105T	**Communication skills**	**CO1.** Students are able to understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.

		CO2. Student can able to develop interview skills.
		CO3. Student can able to develop leadership qualities and essentials.
		CO4. Student can able to effectively manage the team as a team player.
BP106RBT	**Remedial Biology**	**CO1.** Know the classicification&salient features of five kingdoms of life**.**
		CO2. To understand the basic component of anatomy & physiology of plant**.**
		CO3. To understand the basic component of anatomy & physiology of Animal.
BP106RMT	**Remedial Mathematics**	**CO|1**. Express abstract mathematical reasoning
		CO2. Describe Mathematical Knowledge and understanding to help in the field of clinical Pharmacy
		CO3. Apply Mathematical Concepts and Principal to perform Computations for Pharmaceutical Sciences .
		CO4. Create, use and analyze Mathematical representations and Mathematical relationship
Semester I (Practical)		
BP107P	**Human Anatomy and Physiology I**	**CO1.** explain the gross knowledge about living tissue with microscopic study
		CO2. identification of axial and appendicular bones
		CO3. able to enumeration blood cells like RBCs & WBCs as well as hemoglobin content of blood
		CO4. knowledge about clotting bleeding time blood group detection & sedimentation rate of Erythrocyte
		CO5. determination of heart rate , pulse rate & recording of blood pressure
BP108P	**Pharmaceutical Analysis I**	**CO1.**To Get acquaints to basic apparatus and instrument their calibration.
		CO2. Understand concept of various volumetric analysis.
		CO3. Understand concept of various electrochemical titration.
BP109P	**Pharmaceutics I**	**CO1.**Understand principles used in the preparation of solid, liquid or semisolid dosage form.
		CO2. To experiment with monophasic liquid dosage forms for internal & external administration
		CO3. To prepare biphasic liquid dosage form.
		CO4. To design powder & granules.
		CO5. To formulate suppositories.

BP110P	**Pharmaceutical Inorganic Chemistry**	**CO1**. Students will be able to perform and analyze different limit test for metallic impurities such as ferrous ion, chlorideion, sulphate ion, lead , arsenic etc.
		CO2. Students will be able to carry out identification test for inorganic compounds like ferrous sulphate, magnesium hydroxide sodium bicarbonate and copper sulphate.
		CO3. Students will be able to know and carry out test for purity of inorganic powdered drug .Example Bentonite Powder.
		CO4. Students will be able to carry out test for purity by using titration techniques. Eg. Antacids preparations.
		CO5. Student will be able to understand basic preparation reaction for some inorganic compounds such as boric acid, potassium alum, ferrous sulphate copper sulphate.
BP111P	**Communication Skills**	**CO1.** Students are able to learn basic communication tools
		CO2. Students are able to understand effective pronunciation
		CO3. Students are able to understand advance learning tools.
		CO4. Students are able to develop Good personality development.
BP112RBTP	**Remedial Biology**	**CO1.** Discuss the significance of various vital physiological parameter of human body.
		CO2. To carry out microscopic & morphological evaluation of plant part**.**
		CO3. Describe the various homeostatic mechanisms & their imbalance**.**
		CO4. Appreciate coordinated working pattern of different organs of each system.
Semester II (Theory)		
BP201T	**Human Anatomy and Physiology II**	**CO1.** Explain the gross morphology, structure and functions of various organs of the human body.
		CO2. Describe the various homeostatic mechanisms and their imbalances.
		CO3. Identify the various tissues and organs of different systems of human body.
		CO4. Perform the hematological tests like blood cell counts, haemoglobin estimation,
		CO5. Bleeding/clotting time etc and also record blood pressure, heart rate, pulse andrespiratory volume.
		CO6. Appreciate coordinated working pattern of different organs of each system

		CO7. Appreciate the interlinked mechanisms in the maintenance of normal functioning(homeostasis) of human body.
BP202T	**Pharmaceutical Organic Chemistry I**	**CO1.** Write the Structure, name and type of isomerism of the organic compound.
		CO2. Write the reaction, name the reaction and orientation of reactions.
		CO3. Account for reactivity stability of compounds.
		CO4. Identify confirms the identification of organic compound.
BP203T	**Biochemistry**	**CO1.** Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
		CO2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
		CO3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
BP204T	**Pathophysiology**	**CO1.** Describe the etiology and pathogenesis of the selected disease states.
		CO2. Name the signs and symptoms of the diseases and Mention the complications of the diseases
BP205T	**Computer Applications in Pharmacy**	**CO1.** know the various types of application of computers in pharmacy
		CO2. know the various types of databases
		CO3. know the various applications of databases in pharmacy
		CO4. know the programming languages used in pharmacy
		CO5. know the application of computers in vaccine discovery
BP206T	**Environmental Science**	**CO1.** The students will Acquire skills to help the concerned individuals in identifying and solving environmental problems.
		CO2. The students will develop Strive to attain harmony with Nature.
		CO3. The students will develop an attitude of concern for the environment.
		CO4. The students will Impart basic knowledge about the environment and its allied problems.
Semester II (Practical)		
BP207P	**Human Anatomy and Physiology II**	**CO1.** Explain the gross morphology, structure of various systems & organ of the human body
		CO2. Describe the various function of nervous system

		CO3. Examination of various sensory organs with their function
		CO4. Determination of vital, tidal volume & body temperature as well as basal body index
		CO5. Appreciate knowledge about family planning device and pregnancy diagnosis test.
BP208P	**Pharmaceutical Organic Chemistry I**	**CO1.** To understand concepts of melting and boiling points of organic compounds.
		CO2. Students are able to understand identify and confirm the unknown organic compounds.
		CO3. Students are able to carry out various chemical tests for identifying functional group for given organic compounds.
		CO4. Students are able to understand construct the molecular models.
BP209P	**Biochemistry**	**CO1.** Introduction to biochemistry
		CO2. Understanding Good laboratory practices in biochemistry laboratory
		CO3. Learn safety and precautionary measures for working in a laboratory
		CO4. Develop skill and proficiency in preparation of laboratory reagents.
BP210P	**Computer Applications in Pharmacy**	**CO1.** Know basic concepts of computer.
		CO2. Know the processes used in information storage & retrieval using various tools.
		CO3. Know methods to export data to web pages.
		CO4. Know the methods to retrieve the information of a drug & its adverse effects using online tools including generating & printing patient report.
Semester III (Theory)		
BP301T	**Pharmaceutical Organic Chemistry II**	**CO1.** Write the structure, name and the type of isomerism of the organic compound
		CO2. Write the reaction, name the reaction and orientation of reactions
		CO3. Account for reactivity/stability of compounds
		CO4. Prepare organic compounds
		CO5. Students should gain the knowledge of Fats & oils, Quality control test of fats & oils.
		CO6. Student are learn Electophilic substitution reaction benzene,
		CO7. Students are learn various derivatives of Benzene, polynuclear hydrocarbons
BP302T	**Physical Pharmaceutics I**	**CO1.**Understand various physicochemical properties of drug molecules in the designing the dosage forms

		CO2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
		CO3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP303T	**Pharmaceutical Microbiology**	**CO1.** Student shall be able toUnderstand methods of identification, cultivation and preservation of various microorganisms
		CO2. Student shall be able to understand the importance and implementation of sterilization in pharmaceutical processing and industry.
		CO3. Students shall be able to Learn sterility testing of pharmaceutical products.
		CO4. Carried out microbiological standardization of Pharmaceuticals.
		CO5. Student should Understand the cell culture technology and its applications in pharmaceutical Industries.
BP304T	**Pharmaceutical Engineering**	**CO1.** To know various unit operations used in Pharmaceutical industries.
		CO2. To understand the material handling techniques.
		CO3. To perform various processes involved in pharmaceutical manufacturing process.
		CO4. To carry out various test to prevent environmental pollution.
		CO5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
		CO6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.
Semester III (Practical)		
BP305P	**Pharmaceutical Organic Chemistry II**	**CO1.** Preparation and purification of organic compound.
		CO2. Qualitative analysis of fats & oils by determining analytical constants.
		CO3. To synthesis of various derivative of benzene.
		CO4. To understand intermediate reaction & condition during synthesis of organic compound.
BP306P	**Physical Pharmaceutics I**	**CO1.** Students should gain the knowledge regarding the mechanism of solute solvent interactions
		CO2. Students should acquire skills and and working knowledge of the principles and concept of surface tension and its measurement.

		CO3. Students should understand the various intermolecular forces involved in the formulation of complexes and its applications.
		CO4. Students should gain the knowledge regarding the partition co-efficient of the various drugs.
		CO5. Students should understand regarding the various titrations
BP307P	**Pharmaceutical Microbiology**	**CO1.** Students should able to understand principle & working of different equipments.
		CO2. Students are able tounderstand concepts & methods of pharmaceutical sterilization.
		CO3. Students acquire the knowledge regarding sterility testing for pharmaceutical product.
		CO4. Students should be able to know the principle and methods of Microbiological assay.
		CO5. Students should be able to biochemical test for identification of bacteria.
BP308P	**Pharmaceutical Engineering**	**CO1.** Students are able to understand how to determineradiation constant of brass iron unpainted and painted glass
		CO2. Student should able to understand construct drying curve and determination of moisture content
		CO3. Student able to learn about determination of humidity of air from wet & dry bulb temperature
		CO4. Student should acquire the knowledge about different pharmaceutical machinery
		CO5. Student able to understand type of mill and dryer
Semester IV (Theory)		
BP401T	**Pharmaceutical Organic Chemistry III**	**CO1.** Understand the methods of preparation and properties of organic compounds
		CO2. Explain the stereo chemical aspects of organic compounds and stereo chemical Reactions
		CO3. Know the medicinal uses and other applications of organic compounds
BP402T	**Medicinal Chemistry I**	**CO1.** Upon completion of the course the student shall be able to understand the chemistry of drugs with respect to their pharmacological activity.
		CO2. Upon completion of the course the student shall be able to understand the drug metabolic pathways, adverse effect and therapeutic value of drugs.
		CO3. Upon completion of the course the student shall be able to know the Structural Activity Relationship (SAR) of different class of drugs.

		CO4. Upon completion of the course the student shall be able to write the chemical synthesis of some drugs.
BP403T	**Physical Pharmaceutics II**	**CO1.** Understand various physicochemical properties of drug molecules in the designing the dosage forms
		CO2. Know the principles of chemical kinetics &to use them for stability testing and determination of expiry date of formulations
		CO3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP404T	**Pharmacology I**	**CO1.** Understand the pharmacological actions of different categories of drugs
		CO2. Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels.
		CO3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
		CO4. Observe the effect of drugs on animals by simulated experiments
		CO5. Appreciate correlation of pharmacology with other bio medical sciences
BP405T	**Pharmacognosy and Phytochemistry I**	**CO1.** To know the techniques in the cultivation and production of crude drugs
		CO2. To know the crude drugs, their uses and chemical nature
		CO3. know the evaluation techniques for the herbal drugs
		CO4. To carry out the microscopic and morphological evaluation of crude drugs
		CO5. To understands the herbal drug interaction.
Semester IV (Practical)		
BP406P	**Y7Medicinal Chemistry I**	**CO1.** Upon completion of the course the student shall be able to carry out laboratory synthesis of drug intermediates like Benzimidazole&benztriazole.
		CO2. Upon completion of the course the student shall be able to carry out laboratory synthesis of certain drugs example from certain class of drugs included in theory syllabus like benzocaine, barbiturates etc.
		CO3. Upon completion of the course the student shall be able to carry out essay of drug of different formulation by different method of drug such as Chlorpheniramine maleate, Aspirin tablet, atropine tablet etc.

		CO4. Upon completion of the course the student shall be able to come to know importance of physicochemical properties of drug in relation to biological action.
BP407P	**Physical Pharmaceutics II**	**CO1.** Gain the knowledge of particle size analysis and surface area determination method
		CO2. Determine viscosity of fluids and study application of it to colloid stability
		CO3. Apply the knowledge chemical kinetics in drugs
BP408P	**Pharmacology I**	**CO1.** Describe the knowledge about experimental pharmacology with experimental instrument, experimental animal.
		CO2. Maintenance of laboratory animal as per CPCSEA guideline
		CO3. Describe knowledge of route of drug administration & blood withdrawal technique in animal
		CO4. Observe the effect of various drug effects on specific model.
		CO5. Explain various local anesthetics with their function and rout of administration.
BP409P	**cPharmacognosy and Phytochemistry I**	**CO1.** To understand different processes of extraction and extractive value of crude drug.
		CO2. To understand able to analysis of crude drug by various chemical test eg.(i)Tragaccanth (ii) Acacia etc.
		CO2. To understand the determination of stomatal number and index
		CO3. Use of microscopic method in the identification of natural drug and herbal product.
		CO4. Extraction procedure of natural compound
Semester V (Theory)		
BP501T	**Medicinal Chemistry II**	**CO1.** On completion of course students shall be able to get fundamental knowledge of the structure, chemistry, and therapeutic uses of classes of drugs.
		CO2. On completion of course students shall be able to understand the chemistry (Stereochemistry & stereo/optical isomers) of drugs with respect to their Pharmacological actions.
		CO3. On completion of course students shall be able to understand the drug metabolic pathways (Anticancer drugs, drug acting on endocrine systems, drugs used in CHF) of drugs, adverse effects and therapeutic uses of drugs.
		CO4. On completion of course students shall be able to know & correlate the structural activity relationship (SAR) of different classes of drugs.

		CO5. On completion of course students shall be able to understand chemical synthesis of some selected drugs.
		CO6. On completion of course students shall be able to understand mechanism of actions of drugs, receptor involved and bonding interactions involved.
		CO7. On completion of course students shall be able to understand certain class of drugs which are having multiple uses in different diseased conditions.
BP502T	**Industrial Pharmacy-I**	**CO1.**Student able to know the different physic-chemical parameters of drug as tool in optimization of various dosage form and development of stable dosage form.
		CO2. Student knows various considerations in development of pharmaceutical dosage form.
		CO3. Students are able to develop soiled and liquid dosage form using different established procedure and machineries.
		CO4. Student knows about the various evaluation test and acceptable criteria as per USP, BP, and IP for Soiled, Liquid and semisolid dosage form.
		CO5. Student learns about the awareness on facilities and requires standard necessary for sterile dosage form.
		CO6. Student is able to know formulation and packing of different types of parental, ophthalmic and cosmetic products.
		CO7. Student able to select and evaluate appropriate packing material for various pharmaceutical.
BP503T	**Pharmacology II**	**CO1.** Understand the mechanism of drug action and its relevance in the treatment of different diseases
		CO2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
		CO3. Demonstrate the various receptor actions using isolated tissue preparation
		CO4. Appreciate correlation of pharmacology with related medical sciences
BP504T	**Pharmacognosy and Photochemistry II–**	**CO1.** To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.
		CO2. To understand the preparation and development of herbal formulation.
		CO3. To understand the herbal drug interactions.
		CO4. To carry out isolation and identification of phytoconstituents.

BP505T	**Pharmaceutical Jurisprudence**	**CO1.** The Pharmaceutical legislations and their implications the development and marketing of pharmaceuticals. **CO 2.** Various Indian pharmaceutical Acts and Laws **CO3.** The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals **CO4.** The code of ethics during the pharmaceutical practice
Semester V (Practical)		
BP506P	**Industrial Pharmacy-I**	**CO1**. Student are able to understand about the deriving Preformulation parameter in lab
		CO2. Student gets aware about the how Preformulation study plays important role all formulation before start of production
		CO3. Student able to performed tablet and capsule manufacturing in the laboratory level
		CO4. Student able to performed QC and Finished product test for the tablet and capsules and knows about the acceptance criteria with respect to test.
		CO5. Students know about the feeling and sealing of ampoules in the aseptic area and mechanism of HEPA.
BP507P	**Pharmacology II**	**CO1.** Describe Knowledge about in vitro pharmacology and various physiological salt solution
		CO2. Enumerate the effect of various drugs on Blood pressure, Heart Rate & various cardiovascular functions.
		CO3. Describe about bioassay principle and method related to it.
		CO4. Study of various drug by using bioassay method like interpolation, bracketing, matching, multiple point bioassay.
		CO5. Enumerate the anti-inflammatory, analgesic effect of drug.
BP508P	**Pharmacognosy and Photochemistry II**	**CO1.** Students are able to understand identify by morpholological and microscopical characteristics.
		CO2. Students are able to understand methods and principles of isolation and detection of active constituents.
		CO3. Students are able to understand by various separation techniques, various extraction and isolation.
		CO4. To understand various chemicals tests for analysis of crude drugs**.**

Semester VI (Theory)		
BP601T	**Medicinal Chemistry III**	**CO1**. Upon completion of the course the student shall be able to understand the importance of drug design and different techniques of drug design.
		CO2. Upon completion of the course the student shall be able to understand the chemistry of drugs with respect to their biological activity.
		CO3. Upon completion of the course the student shall be able to know the metabolism, adverse effects and therapeutic value of drugs.
		CO 4. Upon completion of the course the student shall be able to know the importance of SAR of drugs.
BP602T	**Pharmacology III**	**CO1.** Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
		CO2. Comprehend the principles of toxicology and treatment of various poisoning.
		CO3. Appreciate correlation of pharmacology with related medical sciences.
BP603T	**Herbal Drug Technology**	**CO1.** Students know the herbal cosmetics, natural sweeteners, and nutraceuticals ets.
		CO2. Students gain knowledge about Indian systems of Medicine like Ayurveda, Siddha, Unani and Homeopathy
		CO3. Know about appreciate patenting of herbal drugs, GMP and Schedule T.
		CO4. Students understand raw material as source of herbal drugs from cultivation to herbal drug product.
		CO5. Students know about the WHO and ICH guidelines for evaluation of herbal drugs.
BP604T	**Biopharmaceutics and Pharmacokinetics**	**CO1.** Students should know the basic concepts in biopharmaceutics and pharmacokinetics.
		CO2. Students should understand the pharmacokinetic model based on plasma level or urinary excretion data that best describes the process of drug absorption, distribution, metabolism and elimination (ADME).
		CO3. Knowledge about biopharmaceutical studies and use data obtained in the development of dosage forms.
		CO4. Design Bioavailability and Bioequivalence studies.
		CO5. Students should know to Calculate various pharmacokinetic parameters from plasma and urinary excretion data applying compartment modeling and model independent methods.

BP605T	**Pharmaceutical Biotechnology**	**CO1.** Students should know the basic principles of genetic engineering and enzyme technology.
		CO2. Knowledge on genetic multiplication and biotransformation.
		CO3. Students should know the concepts of rDNA technology and its applications.
		CO4. Students should know the concept of immunity and production of vaccine.
		CO5. Students should know about hybridoma technology and understand hypersensitivity reaction.
		CO6. Discuss the principles of fermentation its design and production of pharmaceutical products.
BP606T	**Quality Assurance**	**CO1.** Understand the cGMP aspects in a pharmaceutical industry
		CO2. Appreciate the importance of documentation
		CO3. Understand the scope of quality certifications applicable to pharmaceutical Industries
		CO4. Understand the responsibilities of QA & QC departments
Semester VI (Practical)		
BP607P	**Medicinal Chemistry III**	**CO1**. Upon completion of the course the student shall be able to carry out synthesis of drug intermediate like triphenylimidazole ,7-hydroxy -4 -methyl coumerin
		CO. Upon completion of the course the student shall be able to carry out laboratory synthesis of certain class of drugs included in theory syllabus like Sulfurnilamide, Toldutamide, hexamine etc.
		CO3. Upon completion of the course the student shall beable to carry out assay of certain class of drug by titrimetric method of drugs likechloroquine, metronidazol and Chlorpromazine maleate.
		CO4. Upon completion of the course the student shall be able to carry out synthesis of some important drug like Phenytoin by microwave radiation technique.
BP608P	**Pharmacology III**	**CO1.** Calculate dose for experimental purpose.
		CO2. Enemurate the effect of various drug as like their antiallergic activity mast cell stabilization effect, antiulcer effect.
		CO3. Estimate the biochemical analytical serum parameter.
		CO4. Estimation of skin irritation eye irritation oral toxicity.

		CO5. Understand the biostatics method like ANVAT test, Student T test, Chi square test, Wilcoxon Signed Rank test.
BP609P	**Herbal Drug Technology**	**CO1.** Students should gain the knowledge preliminary phytochemical screening of crude drugs.
		CO2. Students should acquire skills prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeia requirements.
		CO3. Students should understand the various Determination of like Aldehyde, Phenol contentcontent and total alkaloids its applications.
		CO4. Students should gain knowledge the Determination of the alcohol content of Asava and Arista.
		CO5. Students should understand evaluation of excipients of natural origin.
Semester VII (Theory)		
BP701T	**Instrumental Methods of Analysis**	**CO1.** Student learns the various instrumentation on UV Visible spectroscopy, Fluorimetry, IR spectroscopy.
		CO2. Student should understand the chromatographic separation and analysis of drugs.
		CO3. Student gets fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique.
		CO4. Student should understand theoretical knowledge on modern analytical instruments that are used for drug testing.nhmn
		CO5. Student should learn Principles and instrumentation of High performance liquid chromatography (HPLC) and Gas chromatography.
		CO6. Student should gain the knowledge regarding the instrumentation and applications on Flame Photometry.
		CO7. Student gets fundamental knowledge to understand the UV Visible spectroscopy, Fluorimetry, IR spectroscopy and HPLC.
BP702T	**Industrial Pharmacy- II**	**CO1.** Student should Know the process of pilot plant and scale up of pharmaceutical dosage forms
		CO2. Student gain knowledge about Understand the process of technology transfer from lab scale to commercial batch.
		CO3. Student should able to understand Know different Laws and Acts that regulate pharmaceutical industry.
		CO4. Explain about various laws and Act that regulate in Pharmaceutical industries.

		CO4. Students known about Understand the approval process and regulatory requirements for drug products.
BP703T	**Pharmacy Practice**	**CO1.** Students shall able to know about hospitals, hospital pharmacy & community pharmacy.
		CO2. Students able to detect & assess adverse drug reaction.
		CO3. Students gain knowledge about drug distribution methods in hospitals & also gain the knowledge about hospital formulary and therapeutic drug monitoring.
		CO4. Students understand the concept of Pharmacy & Therapeutic Committee and Drug & Poison information services.
		CO5. Students able to do patient counseling in community pharmacy.
		CO6. Students get idea about Budget preparation and over the counter sales.
		CO7. Students know about investigational drugs, inventory control and interpret selected laboratory results of specific disease states.
BP704T	**Novel Drug Delivery System**	**CO1.** Understand various approaches for development of novel drug delivery systems.
		CO2. To understands criteria for selection of drug and polymers for the development of novel drug delivery system, their formulation and evaluation.
		CO3. Student should gain the knowledge about bio-adhesion, mucoadhesion& formulation of buccal drug delivery system
		CO4. Student should be able to understand different approaches used in formulation of transdermal drug delivery system
		CO5. Students should be able to understand different strategies for drug absorption & also able to formulate suitable gastro retentive drug delivery system
		CO6. Student should gain the knowledge about targeted drug delivery system & nasopulmonary drug delivery system
		CO7. Students should gain knowledge about different novel drug delivery system such as ocular, intrauterine & implantable drug delivery system
BP706PS	**Practice School**	**CO1.**Develop Familiarize with the aspects of realistic practice in the domain of interest.
		CO2. Develop the knowledge and skills related to Practical learning in the domain of interest.
		CO3. Analyst the problems encountered during realistic Practice and make use of theoretical Knowledge to resolve the problems.

		CO4.Understanding the importance and applications of various subjects and their correlation with Practice of Pharmacy
		CO5.Expalin the concepts of advanced drug design and development Concepts
Semester VII (Practical)		
BP705P	**Instrumental Methods of Analysis**	**CO1.** The student will learn to the basic Practical knowledge of the instrumentation techniques available
		CO2. Student should learn the aspects of separation for multi components.
		CO3. Student should gain the knowledge Practical skills for the analysis of drugs and Excipients using various instrumentation techniques.
		CO4. The student will learn to make accurate analysis and report the results in defined formats.
		CO5. Student should understand documentation and express the observations with clarity.
Semester VIII (Theory)		
BP801T	**Biostatistics and Research Methodology**	**CO1.** Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE
		CO2. Know the various statistical techniques to solve statistical problems
		CO3. Appreciate statistical techniques in solving the problems
		CO4. To understand basic aspects of statics such as central tendency, dispersion & correlation.
		CO5. To access the need of regression modeling and to build up the ability to use various statistical problems**.**
BP802T	**Social and Preventive Pharmacy**	**CO1.** Acquire High Consciousness/ realization of current issue related tohealth& pharmaceutical problems within the country & worldwide.
		CO2. Have a critical way of thinking based on current healthcare development.
		CO3. Evaluate alternative ways of solving problems related to health & pharmaceutical issues.
		CO4. Student shall be able to explain the general measures & strategies to be followed in social & preventive
		CO5. Students should understand national health programme its objective, functioning & outcomes.
BP803ET	**Pharma Marketing Management**	**CO1.** Understand marketing concepts and technique

		CO2. Know product management in pharmaceutical industry
		CO3. Understand pharmaceutical marketing channels
		CO4. Know emerging concepts in marketing
		CO5. Discuss the role of market research
BP805ET	**Pharmacovigilance**	**CO1.** Drug safety monitoring, National and international scenario of Pharmacovigillance
		CO2. Dictionaries, coding and terminologies used in pharmacovigilance & detection of new adverse drug reactions and their assessment, CIOMS requirements for ADR reporting.
		CO3. International standards for classification of diseases and drugs
		CO4. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
		CO5. Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation
		CO6. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
		CO7. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
BP813PW	**Project Work**	**CO1**. Upon completion of the course the student shall be able to understand basic principles of research and methodology.
		CO2. Upon completion of the course the student shall be able to know selection of project topic.
		CO3. Upon completion of the course the student should enhance interpretation skills of data.
		CO4. Upon completion of the course the student should enhance orientation towards research fields.

Principal