COURSE OUTCOMES:

Table 3.1: *List of course outcomes of a subject in I Year/Istsemister*

Subject: HUMAN ANATOMY AND PHYSIOLOGY- I THEORY **Subject code: BP101T**	
S.noofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Impart knowledge & understanding on the anatomy & physiology of various systems of human body. Describe various homeostatic mechanisms & tissues of human body
CO2	Describe structure & functions of Integumentary system & outline divisions of skeletal system & different types of joints.
CO3	Explain composition & functions ofvarious body fluids. Describe about hemopoietic system & Lymphatic system
CO4	. Impart knowledge & understanding on the organization of Peripheral nervous system & to describe anatomy & physiology of Sense organs
CO5	Outline the structure & functions of cardiovascular system.

Subject: PHARMACEUTICAL ANALYSIS –I THEORY **Subject code: BP102T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the fundamental concepts in pharmaceutical analysis
CO2	Understand the principles of various volumetric analysis
CO3	Apply the concepts of volumetric analysis in assay of selected drugs.
CO4	. Understand the principle of electrochemical method of analysis.

CO5	Apply the concepts of electrochemical method of analysis

Subject: PHARMACEUTICS-1 THEORY **Subject code: BP103T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Know about the history background and development of pharmacy profession various pharmacopoeias and types of conventional dosage forms, handling of prescription and calculate the dose of a child.
CO2	Understand various pharmaceutical calculations. To know about powders, liquid dosage forms, solubility enhancement techniques
CO3	Understand various monophasic liquid dosage forms and biphasic liquid dosage forms and method of preparation and stability of emulsions.
CO4	. Understand term suppository and types of suppository displacement value and various pharmaceutical Incompatibilities.
CO5	Know the definition of various semi solids, method of preparation and evaluation and also use of excipients in the preparation of semi- solids.

Subject: PHARMACEUTICAL INORGANIC CHEMISTRY THEORY **Subject code: BP104T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Know about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
CO2	Understand the role of acids, bases, buffers and their role in Pharmaceutical preparations.To know about electrolytes used in replacement therapy.

CO3	Understand the properties and medicinal uses of Acidifiers, Antacids and Cathartics. To understand the Classification, mechanism of antimicrobials
CO4	. Understand the role of medicinal and therapeutic agents in disease conditions
CO5	Understand the role ofdifferent radiopharmaceuticals as unique medicinal formulations.

Subject: COMMUNICATION SKILLS -THEORY **Subject code: BP105T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Able to learn the basics of communication and different types of communication by this they will able to know how communicate better, how to present themselves in front of others
CO2	By different elements available in communicating with people can express through language, and expressing their view by using verbal and non-verbal mode of communication
CO3	They will learn difference between learning and listening and different methods in applying to learning and listening
CO4	. Students will learn do's and don'ts during or while attending the interview. Knowing or focusing on the purpose of interview. Punctuality maintenance to interview dressing formally, eye contact are few of them. Deal up with fears while presenting presentations like having good content of knowledge gives confidence to the student, giving practice regularly gives confidence.
CO5	Group discussions will help in building up knowledge of student by sharing with others by using good communication skills it is better understood to the listener.

Subject: REMEDIAL MATHEMATICS **Subject code: BP 106 RMT**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	This course involves the definition of logarithm and apply them to solve problems. Also discusses the basics of calculus like functions and limits and continuity. Also provides knowledge an partial fractions applicable in chemical kinetics and pharmacokinetics

CO2	This course comprises of matrices definitions and their type also imparts knowledge to solve simultaneous equations using matrix methods to solve pharmacokinetics equations
CO3	This course introduces differential calculus it requires to apply the methods to solve the problems and also to memorize them for effective solution of problems
CO4	. This consists of analytical geometry to equations of straight line a d different form of them. Also includes integral calculus which has to be understood and use formulae to apply them in different fields
CO5	This course includes differential equations and Laplace transforms solving differential equations require thorough knowledge of differential calculus and Integral calculus

Subject: REMEDIAL BIOLOGY **Subject code: BP106RBT**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand about living world and morphology of flowering plants
CO2	Infer about body fluids, digestive enzymes and respiratory system of human body
CO3	Illustrate the basic components of renal system and its functions.
CO4	Explain the basic components of neuronal system and its functions.
CO5	Describe about plants, plant respiration and mineral nutritions.

Subject: HUMAN ANATOMY AND PHYSIOLOGY- I PRACTICAL: **Subject code: BP107P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**

CO1	Identify the various tissues and bones of the different systems of the human body.
CO2	Perform basic hematological experiments like Blood grouping, Estimation of RBC & WBC Count
CO3	Determine physiological parameters like blood pressure, heart rate, pulse rate.

Subject: PHARMACEUTICAL ANALYSIS LAB-I PRACTICAL **Subject code: BP108P.**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Analyze the presence of impurities qualitatively by performing limit tests.
CO2	Prepare various standard solution and express their concentration by standardization
CO3	Analyze the selected compounds qualitatively by using various volumetric methods of analysis
CO4	. Express concentration and analyze the end point graphically using electrochemical method.

Subject: PHARMACEUTICS-1 PRACTICAL **Subject code: BP109T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Know how to prepare various monophasic liquid dosage forms along with neat and labelled container.
CO2	Learn the manufacturing of various biphasic liquid forms along with neat and labelled container
CO3	Learn the method of preparation of various semi- solid dosage forms along with neat and labelled container.

Subject: PHARMACEUTICAL INORGANIC CHEMISTRYPRACTICAL **Subject code: BP110P**

S.no ofCOs	Course Outcomes On completion of course the student can be able to:
CO1	Understand the principle and procedures of limit test and their modifications, for chlorides, sulphates, iron, heavy metals and arsenic.
CO2	Understand and perform the identification tests.
CO3	Understand and perform the test for purity for the given compounds.
CO4	. Understand and prepare given inorganic pharmaceuticals

Subject: COMMUNICATION SKILLS PRACTICAL **Subject code: BP111P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Learn dos & don'ts that are to be followed during communicating with each other and also learn different ways to meet greet and apologize to people.
CO2	Learn grammar and by practicing these they will be able to write sentences very effectively
CO3	Learn different types of speeches and how to apply them in communicating with others and can use them in effective writing. Presentation skills can be improved, Techniques for delivery of speeches.

Table 3.2: *List of course outcomes of a subject in I YEAR II SEMESTER*

Subject: HUMAN ANATOMY & PHYSIOLOGY-II (THEORY) **Subject code: BP201T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Explain the gross morphology, structure and functions of Nervous system
CO2	Explain the gross morphology, structure, functions and disorders of Digestive system with a note on energetics.
CO3	Explain the gross morphology, structure, physiological functions and disorders of Respiratory system and urinary system
CO4	. Enlist endocrine hormones and their functioning with explanation on the gross morphology, structure, physiological functions and disorders of various endocrine organs
CO5	Describe the gross morphology, structure, physiological functions and disorders of Reproductive system. To enumerate the role of genetics

Subject: PHARMACEUTICAL ORGANIC CHEMISTRY-I THEORY **Subject code: BP202T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To illustrate IUPAC nomenclature of different organic compounds
CO2	TO understand the hybridization of alkanes, alkenes, mechanism involved in elimination reactions, stability and reactions of conjugated dienes and preparations.
CO3	TO understand the mechanism involved in nucleophilic substitution reaction
CO4	. Evaluate the importance of carbonyl function in organic chemistry.Knowledge on Nucleophilic addition reactions and understand the reaction mechanism of various name reactions.
CO5	Enlighten relationship between acidity constant and basicity constant. Understand conversion of carboxylic acids to their derivatives

Subject: BIOCHEMISTRY- THEORY **Subject code: BP203T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the fundamental concepts bioenergetics of biomolecules
CO2	Understand the metabolic pathways of different nutrients molecules in physiological and pathological conditions.
CO3	Understand the mechanisms involved in biological oxidation pathway (and inhibitor associated with it).
CO4	. Understand the catalytic role of enzyme inhibitor in design of new drug molecules with their therapeutic diagnostic applications.
CO5	Understand the genetic organization mammalian genome and functions of DNA in synthesis of RNA and proteins.

Subject: PATHOPHYSIOLOGY THEORY. **Subject code: BP204T.**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the principles and causes of cell injury and mechanism and mediators of inflammation
CO2	Explain the pathogenesis and complications of disease of cardiovascular, respiratory and renal systems.
CO3	Understand basic pathophysiological mechanisms of blood, endocrine and nervous system disorders
CO4	. Learn and explain the pathogenesis of diseases of bones and joints, cancer, IBD, hepatitis and jaundice
CO5	Describe the etiology and pathogenesis of STD's& infection diseases.

Subject: COMPUTER APPLICATIONS THEORY **Subject code: BP205T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the design and applications of number systems in information technology. Information systems help students to understand the steps involved in managing the operations
CO2	create Web page s using different markup languages like HTML, XML, CSS and able to design basic databases and generate reports using queries
CO3	Understand the use and applications of computer in pharmacy and different pharmacy automation technologies
CO4	. Gain knowledge on basic bio informatics and role of bio informatics in drug discovery
CO5	Summerize the role of computers as data analysis in preclinical development

Subject: ENVIRONMENTAL SCIENCES THEORY **Subject code: BP206T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Create the awareness about environmental problems and role of an individual in conservation of natural resources
CO2	Basic knowledge about the environment and its allied problems
CO3	Motivate learner to participate in environment protection and environment improvements and solving environmental problems.

Subject: HUMAN ANATOMY AND PHYSIOLOGY-II PRACTICALS **Subject code: BP207P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Identify the various tissues and organs of different systems of human body using models
CO2	Demonstrate physiological actions such as, taste, smell, vision, neuronal activity.
CO3	Determination of vital parameters like tidal volume, vital capacity.

Subject: PHARMACEUTICAL ORGANIC CHEMISTRY -I PRACTICALS **Subject code: BP208P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Deal with qualitative identification of organic compounds. The chemical tests have been designed to illustrate the application of chemical means of identifying the unknown compound
CO2	Understand the method of preparation of various compounds.
CO3	Understand construction of molecular models and stereochemistry of compounds by use of stereochemistry.

Subject: BIOCHEMISTRYPRACTICAL **Subject code: BP209P**	
S.no ofCOs	**Course Outcomes**

	On completion of course the student can be able to:
CO1	Perform qualitative analysis of various biomolecules in thebody fluids
CO2	Understand the various factors effecting enzyme activity.
CO3	Perform qualitative estimation of biomolecule (sugars, protein, andcreatinine total cholesterol).

Subject: COMPUTER APPLICATIONS PRACTICAL **Subject code: BP210P.**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Appreciate the importance of MS word to gather information in the form of questionnaire and also mil merge tool in designing labels
CO2	– Retrieve drug information through different databases and online tools and able to design Web page using HTML language
CO3	Create database using MS access and information of patient database using queries and generating reports.

Table 3.3: *List of course outcomes of a subject in II YEAR /III SEMESTER*

Subject: Pharmceutical organic chemistry-II theory **Subject code:** BP301T	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Recognize the general properties of aromatic compounds, the criteria of aromaticity and Huckel's rule. Know the types of electrophilic aromatic substitution reactions. Understand the reactivity of aromatic compounds.
CO2	To understand the chemistry of aromatic acids and amines.
CO3	To understand the importance of key reactions of triglycerides such as hydrolysis, hydrogenation,

	etc.To know the analytical constants.
CO4	To understand the importance of polynuclear hydrocarbons, their synthesis and reactions.
CO5	To understand the stabilities of cycloalkanes, strainless theory.

Subject: PHYSICAL PHARMACEUTICS-I THEORY **Subject code:**BP302T	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the terms and concepts of solubility and miscibility and also factors controlling and effects the solubility of drugs.
CO2	Understand the various physicochemical properties of drug molecules in the designing the dosage forms.
CO3	Understand the concept of surface and interfacial tensions, surface free energy, mechanisms of adsorption on liquid and solid interfaces.
CO4	Understand the significance of complex action, protein liquid interactions in drug action.
CO5	Formulate and analyze a buffer solution of desired pH and buffer capacity and uses of buffers in pharmaceutical solutions.
Subject: PHARMACEUTICAL MICROBIOLOGY-THEORY **Subject code: BP303T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand Microbiology, know about its history, applied branches and its Scope., regarding the Bacterial Structure and its nutrition required for growth of Bacteria, Isolation procedures., and also Microscopy, its principles and Applications.
CO2	Enumerate the principles and procedures for staining and different methods of Sterilization, their advantages and disadvantages.

CO3	Importance and Classification of Fungus, Virus along with their morphological features and cultivation of them and also Explain the Disinfectants, Bacteriostatics and Bactericidals, their mode of action, Classification and Evaluation methods. Perform the Sterility Testing of Pharmaceutical Products according to IP, BP and USP.
CO4	Design an aseptic area having Laminar Flow equipment with all the specifications.discuss the different techniques involved in the assay of Standardization of Antibiotics, Vitamins and Amino acids along with a new antibiotic.
CO5	Enumerate the different factors affecting microbiological spoilage and sources of contamination, importance of preservatives, illustrate the animal cell culture and its importance.

Subject: PHARMACEUTICAL ENGINEERING THEORY

Subject code: BP304T

S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Determine the flow of fluids using various instruments and to know the Size reduction & Size separation unit operations involved in pharmaceutical industries.
CO2	Know the objectives and heat transfer mechanism and importance of Evaporation and Distillation unit operations involved during pharmaceutical manufacturing process.
CO3	Understand the importance and optimization of various parameters of Drying & Mixing unit operations involved during pharmaceutical manufacturing process.
CO4	**U**nderstand & perform the filtration and centrifugation unit operations, theories used for preparation of sterile pharmaceutical dosage forms.
CO5	Understand the material handling techniques & to appreciate various preventive methods used for corrosion control in pharmaceutical industries.

Subject: PHARMACEUTICAL ORGANIC CHEMISTRY II PRACTICAL

Subject code: BP305P

S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Learn to know recrystallization for some organic compounds and steam distillation of solvents.
CO2	Learn the analysis of oils and fats – Acid value, Saponification value and Iodine value.

CO3	Synthesize selected organic compounds by different mechanism.

ubject: PHYSICAL PHARMACEUTICS-I PRACTICAL **Subject code: BP306P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Determine various solubility parameters of drugs room temperature, pH and distribution coefficient at various solvents
CO2	Determine HLB number of a surfactant %composition of impurities in a system and surface tension of a liquid
CO3	Determine the stability constants and donor acceptor ratios of cupric-glycine complex and PABA-Caffeine complex and Freundlich and Langmuir constants using activated charcoal.

Subject: PHARMACEUTICAL MICROBIOLOGY PRACTICAL **Subject code: BP307P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Expose to different laboratory experiments, rules and regulations, sterilization of glassware and media.
CO2	Enumerate the techniques used for the preparation of cultures and also the techniques used for isolation of pure culture by different methods.
CO3	Demonstrate the different staining methods and determine the motility of microbes along with bacteriology of water.
CO4	Explain the importance of sterility and illustrate the various methods for sterility and microbiological assay methods for pharmaceuticals.

Subject: PHARMACEUTICAL ENGINEERING PRACTICAL **Subject code: BP308P**

S.no ofCOs	Course Outcomes On completion of course the student can be able to:
CO1	Perform the site reduction and site separation experiments
CO2	Determine the radiation constants for different metals. Construction of drying curves estimate the efficiency of steam distillation, studying the effect of various factors on rate on evaporation
CO3	Determine the humidity of air by dew point andpsychromometry
CO4	Understand the concept of various factors affecting ratefiltration
CO5	Determine the effect of time on rate of crystallization.

Table 3.4: *List of course outcomes of a subject in IIYear/ IVSemester*

Subject: PHARMACEUTICAL ORGANIC CHEMISTRY -III THEORY **Subject code: BP40IT**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Know the history and development of medicinal chemistry, understand various physicochemical properties and the metabolic pathway of drugs.
CO2	Understand the role of neurotransmitters and Classification, mechanism of action, Structure activity relationship studies, uses of drugs acting on Autonomic Nervous System.
CO3	Understand the role of neurotransmitters and Classification, mechanism of action, Synthesis, Structure activity relationship studies, uses of drugs mentioned actingon cholinergic receptors
CO4	Understand Classification, mechanism of action, Structure activity relationship studies, synthesis and uses of mentioned drugs acting on Central nervous system.
CO5	Understand Classification, mechanism of action, Structure activity relationship studies, synthesis, uses of mentioned drugs acting on Central nervous system.

Subject: MEDICINAL CHEMISTRY-ITHEORY **Subject code: BP402T**

S.no ofCOs	Course Outcomes On completion of course the student can be able to:
CO1	Know the history and development of medicinal chemistry, understand various physicochemical properties and the metabolic pathway of drugs.
CO2	Understand the role of neurotransmitters and Classification, mechanism of action, Structure activity relationship studies, uses of drugs acting on Autonomic Nervous System.
CO3	Understand the role of neurotransmitters and Classification, mechanism of action, Synthesis, Structure activity relationship studies, uses of drugs mentioned acting on cholinergic receptors
CO4	Understand Classification, mechanism of action, Structure activity relationship studies, synthesis and uses of mentioned drugs acting on Central nervous system.
CO5	Understand Classification, mechanism of action, Structure activity relationship studies, synthesis, uses of mentioned drugs acting on Central nervous system.

Subject: PHYSICAL PHARMACEUTICS-II (THEORY)

Subject code: BP403T

S.no ofCOs	Course Outcomes On completion of course the student can be able to:
CO1	Understand various physicochemical properties of drug molecules in the designing the dosage form.
CO2	Understand the flow characteristic properties of different liquids and determination of viscosity of liquids by using different equipment's.
CO3	Understand various physicochemical properties of drug molecules in the designing the emulsion and suspensions.
CO4	Know about various powder characteristic flow properties and derived properties and also determination of particle size.
CO5	Know the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulations.

Subject: PHARMACOLOGY- I THEORY **Subject code: BP404T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To understand the basic pharmacological knowledge and appreciate the correlation of pharmacology with other bio medical sciences
CO2	To analyze and understand the mechanism of drug action at macro molecular levels.
CO3	To remember and understand the pharmacological actions of differentcategories.
CO4	To remember and understand the pharmacology of drugs acting on central nervous system
CO5	To analyze, remember and understand the pharmacology of drugs acting on central nervous system.

Subject: PHARMACOGNOSY AND PHYTOCHEMISTRY -I THEORY **Subject code: BP405T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Describe thehistory& scope, different methods of classification of crude drugs. explain various (quality control methods) of crude drugs.
CO2	Illustrate various methods of cultivation, collection & storage of crude drugs and conservation of medicinal plants.
CO3	Understand the plant tissue culture techniques and applications.
CO4	Impart knowledge on various systems ofmedicines and different types of secondarymetabolites.
CO5	Memorize the systemic study of various plant products, primary metabolites and Marine drugs.
Subject: MEDICINAL CHEMISTRY –I PRACTICAL **Subject code: BP406P**	

S.no of COs	Course Outcomes On completion of course the student can be able to:
CO1	Synthesize the drugs or intermediates by using basic organic reaction mechanisms.
CO2	Calculate the percentage purity of given drugs by using quantitative analytical methods.
CO3	Determine the partition co-efficient, hydrophobicity or hydrophilicity of drugs.

Subject: PHYSICAL PHARMACEUTICS-II LAB **Subject code: BP407P**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To determine various flow properties of powders & also particle size & its distribution by different methods.
CO2	To determine viscosity of a liquid & semi-solids by equipment's and also sedimentation volume of liquid
CO3	To determine first & second order rate constants & also accelerated stability studies.

Subject: PHARMACOLOGY- I PRACTICAL **Subject code: BP408P**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To understand the basic experimental pharmacological equipment and methodology.
CO2	To study the various activities on animals by using different instruments.
CO3	To observe the effects of drugs on animals by stimulated experiments.

Subject: PHARMACOGNOSY AND PHYTOCHEMISTRY- I LAB

Subject code: BP409P	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Analyze crude drugs by performing various chemical tests.
CO2	Analyze various parameters of crude drugs by quantitative microscopic evaluationmethods.
CO3	Analyze various crude drugs by physical evaluation methods.

Table 3.5: *List of course outcomes of a subject in III YEAR/ V SEMESTER*

Subject: MEDICINAL CHEMISTRY -II THEORY **Subject code: BP501T**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Study the Physiology of histamine, its receptors and their distribution in the body. Know the theory of chemotherapy, classification, mechanism of action, SAR, therapeutic activity and synthesis of antihistamines and antineoplastic agents.
CO2	Study the Physiology of diuretics and hypertension. Classification, mechanism of action, SAR, therapeutic activity, and synthesis of diuretics and hypertensive agents.
CO3	Study the Physiology of arrhythmia and coagulation. Classification, mechanism of action, SAR,

	therapeutic activity and synthesis of anti arrhythmia, anti hyperlipidemic, anti coagulants and congestive heart failure.
CO4	Study the Physiology of endocrine system.Classification, mechanism of action SAR, and therapeutic activity of drugs acting on endocrine system.
CO5	Study the Physiology of diabetes. Classification, mechanism of action,SAR, and therapeutic activity and synthesis of anti diabetic drugs.
Subject: INDUSTRIAL PHARMACY-I THEORY **Subject code: BP502T**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To understand various physiochemical characteristics of the drug substances and their applications in the development of different dosage forms and its impact on the stability of dosage forms
CO2	To understand and describe the formulation, manufacturing, quality control tests of tablets, tablet coating and formulation, manufacturing, evaluation of liquid oral preparations.
CO3	To understand the formulation, filling, quality control tests of capsules and formulations, process, manufacturing of pellets.
CO4	To learn and acquire the knowledge on formulation, manufacturing and evaluation of parenteral products and ophthalmic preparations.
CO5	To learn and acquire the knowledge on cosmetic preparations, pharmaceuticals aerosols and various packaging materials.

Subject: PHARMACOLOGY- II THEORY **Subject code: BP503T**	
S.noofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To understand the mechanism of drug action in relevance totreatment of cardiovascular diseases.
CO2	To learn the different mechanisms of drugs of action in relation to its treatment of cardiovascular diseases.

CO3	To understand the physiological role of autacoids and pharmacology of drugs acting on various inflammatory disorders.
CO4	To explain Pharmacological actions of endocrine hormones and describe pharmacology of drugs used in the treatment of various hormonal disorders.
CO5	To analyze and understand pharmacology of drugs acting on reproductive organs. To understand various principles of Bioassays.

Subject: PHARMACOGNOSY AND PHYTOCHEMISTRY -II THEORY **Subject code: BP504T**	
S.noofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Students can be able to know the biogenesis of different secondary metabolites in plants using different pathways.
CO2	Identify different classes of phytoconstituents present in plants, their uses and their sources.
CO3	Carry out isolation and identification of phytoconstituents.
CO4	Understand industrial production,estimation and utilization of various pure phytoconstituents.
CO5	Know the modern methods of extraction techniques, isolation, purification and analysis of drugs by different chromatographic and spectroscopic techniques.

Subject: PHARMACEUTICAL JURISPRUDENCETHEORY **Subject code: BP505T**	
S.noofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Acquire knowledge on schedule rules, import manufacture license and analysis of drugs and cosmetics.

CO2	Describe the schedules,sale,labeling, and packing of drugs and cosmetics. study of administration of the drugs and cosmetic act and rules.
CO3	Explain the pharmacy education,regulation, regulatory bodies alcoholic preparations, narcotic and psychotropic substances control.
CO4	Study of prohibition of advertisements animal ethical committee procedures, controlling price of drugs.
CO5	Explain about Code of ethics, legislation acts and intellectual property rights.

Subject: INDUSTRIAL PHARMACY-I PRACTICAL **Subject code: BP506 T**	
S.noofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Acquire knowledge about preparation of injections.
CO2	Acquire knowledge about semisolid preparations
CO3	Prepare & evaluate the tablets, capsules, acquire knowledge on tablet coating.
CO4	Acquire knowledge on pre-formulation studies of various drugs.
CO5	Evaluate the glass containers.

Subject: PHARMACOLOGY- II PRACTICALS **Subject code: BP507 P**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	To understand the basic knowledge in experimental pharmacology and study the effects of drugs on animals.

CO2	To learn different methods or procedures on *in vivo* animal activity studies.
CO3	To analyze or understand the principles of bio assay.

Subject: PHARMACOGNOSY AND PHYTOCHEMISTRY II PRACTICALS **Subject code: BP508P**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the morphology and histological characteristics of various crude drug powders.
CO2	Isolate and detect various active principles present in plants like caffeine, atropine etc.
CO3	Analyze different phytoconstituents by performing TLC and Paper chromatography techniques.

Table 3.6: *List of course outcomes of a subject in IIIyear/ VIsemester –*

Subject: MEDICINAL CHEMISTRY III THEORY **Subject code: BP601T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**

CO1	Know the history and development of Antibiotics. Classification, stereochemistry, mechanism of action,SAR, therapeutic activity and important products of lactam antibiotics, aminoglycosides and tetracyclines.
CO2	Know the history and development of Macrolide antibiotics and antimalarial drugs. Classification, stereochemistry, mechanism of action,SAR, therapeutic activity and synthesis of Macrolide antibiotics and antimalarial drugs. Learn the basic concepts and applications of Prodrugs.
CO3	Study the pathophysiology of Tuberculosis and urinary tract infections. Learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of antitubercular, urinary tract anti-infective and antiviral agents.
CO4	Study the pathophysiology of Fungal and protozoal infections. Learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of anti-Fungal and protozoal agents.
CO5	Know the development and various approaches used in Drug design. Learn the concepts and applications of combinatorial chemistry in drug synthesis.

Subject: PHARMACOLOGY-IIITHEORY **Subject code: BP602T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand the mechanism of drug action and its relevance in the treatment of respiratory and Gastrointestinal tract diseases.
CO2	Learn the general principles of chemotherapy.
CO3	Learn and understand the mechanism of drug action in relevance in the treatment of different infectious disease.
CO4	Understand the principles of chemotherapy and immunopharmacology.
CO5	Comprehend the principles of toxicology and treatment of various poisonings and understand the basic knowledge in chemo pharmacology

Subject: HERBAL DRUG TECHNOLOGY **Subject code: BP603T**	
S.no ofCOs	**Course Outcomes**

	On completion of course the student can be able to:
CO1	Understand about the raw materials as a source of herbal products, the good agricultural practices and Indian system of medicines.
CO2	Understand about the nutraceuticals and their benefits and Herbal-Drug and Herb -Food Interactions.
CO3	Know the herbal cosmetics, herbal excipients and novel herbal formulations.
CO4	Know the WHO and ICH guidelines for evaluation of herbal drugs and Patenting and Regulatory issues of natural products.
CO5	Know about the scope and future prospects of herbal industry and good manufacturing practice of Indian systems of medicines.
Subject: BIOPHARMACEUTICS AND PHARMACOKINETICS THEORY **Subject code: BP604T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand basics concepts in biopharmaceutics and pharmacokinetics and their significance. Describe mechanism of drugs absorption, determine factors influencing absorption through GIT and non-per oval extra vascular routes. Understand and determine the factors affecting distribution affecting protein and tissue binding of volume of distribution, kinetics of protein binding of drugs and their significance.
CO2	Understand metabolism and metabolic Pathway for renal and non-renal routes of excretion, describe the factors affecting renal and non-renal excretion of drugs, renal clearance. Understanding bioavailability and invitro dissolution models *in-vitro in-vivo* correlation, studies. Determine the methods to enhance dissolution and bioavailability of poorly soluble drugs.
CO3	Understand pharmacokinetics and various pharmacokinetics models, describe one compartments. Open model a) Iv bolus b) Infusion c) Extra vascular administration. Understand and derive various PK parameters their significance and application.
CO4	Understanding multi compartments model (Two compartments open model) Derive kinetics of multiple dosing, loading and maintenance doses, calculation of doses and their significance.
CO5	Understanding nonlinear pharmacokinetics describes the causing factor for non-linearity, derive Michaels – Menten method for estimation of parameter explanation with example.

Subject: PHARMACEUTICAL BIOTECHNOLOGY THEORY

Subject code: BP605T	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand biotechnology and explain the methods and applications of enzyme biotechnology, biosensors., protein engineering and in the production of enzymes.
CO2	summerize the basic principles of genetic engineering and diseases the role of recombinant DNA technology in the production of interferons vaccines hepatitis – B hormones insulin with applications.
CO3	explain types of immunity and its application during the hypersensitive reactions, immune simulations and immune suppressors. Discuss the passive immunity and immunization products blood products monoclonal antibodies with their applications.
CO4	Explain microbial biotransformation and its applications and types of mutation and mutants also discuss about the immunodiagnostic tests and genetic organization.
CO5	discuss the design, methods requirements various controls along with media composition, equipments and sterilization methods and explain production of penicillin citric acid vitamin - B12, glutamic acid, griseofulvin along with a brief note on blood products and plasma substitutes

Subject: QUALITY ASSURANCE THEORY **Subject code: BP606T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand and recognize the various aspects of quality control and management and the scope of quality certification applicable to pharmaceutical industries.
CO2	Understand the cGMP aspects affecting the quality of pharmaceuticals in various departments.
CO3	Understand and recognize the various Good Laboratory Practices followed and quality control tests of packing materials.
CO4	Understand and recognize the need for proper documentation in maintenance of quality.
CO5	Understand the responsibilities of quality control and quality assurance department.

Subject: MEDICINAL CHEMSITRY-III LAB **Subject code: BP607P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Synthesis of drugs and intermediates by using principles of organic reaction mechanisms.
CO2	Calculate the percentage purity of some drugs by using quantitative analytical methods
CO3	Synthesize and know the importance of microwave irradiation techniques when compared to conventional methods of synthesis.
CO4	Learn the drawing structures and reactions using CHEMDRAW software.
CO5	Calculate the physicochemical parameters by using various software's used in drug design and those related to the biological activity.

Subject: PHARMACOLOGY-III PRACTICAL **Subject code: BP608P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Learn dose calculation and pharmaco-kinetic parameters in pharmacological experiments.
CO2	Understand various activity studies by using various animal model.
CO3	Learn various effects on animals by using simulated experiments.
CO4	Acquire the knowledge in determination of toxicity testing of a given drug.
CO5	Learn and understand the biostatistics methods in experimental pharmacology.

Subject: HERBAL DRUG TECHNOLOGY PRACTICAL Subject code: BP609P	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand about the natural excipients, asavas and aristas and their evaluation.
CO2	Evaluate different phytoconstituents present in the plants like alkaloids, aldehydes, phenols.
CO3	Prepare and evaluate herbal cosmetic formulations like creams, lotions, shampoos etc.

Table 3.7: *List of course outcomes of a subject in IV year / VII semester*

Subject: INSTRUMENTAL METHODS OF ANALYSIS THEORY Subject code: BP701T	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand and apply the concepts of interaction of electromagnetic radiation with matter
CO2	Understand and apply the principle of separation involved in various chromatographic techniques.
CO3	Understand and apply the concepts of separation using various electrophoretic techniques.
Subject: INDUSTIAL PHARMACY II THEORY **Subject code:BP702T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Know the process of pilot plant and scale up of bulk pharmaceutical dosage forms
CO2	Understand the process of technology transfer from lab scale to commercial batch
CO3	Know different laws and acts, general considerations of investigational new drug (IND) application that regulate pharmaceutical industry.
CO4	Understand the concept of quality, total quality management and ISO:69000 series of quality standards to industry.

CO5	Understand the approval process and regulatory requirements and approval procedures for new drugs and certificate of pharmaceutical product.

Subject: PHARMACY PRACTICE THEORY **Subject code: BP703T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand different type of hospital and it's department staff and their functions to know the organization of hospital pharmacy and its function and managing community pharmacy. To understand the ADRS and medical related problems.
CO2	Understand the dispensing and distribution of drugs in different department of hospital. To know the importance of hospital formulary. To understand the need of therapeutic drug monitoring. Role of pharmacist in medication adherence to understand medication history interview.
CO3	Know the role of PTC in hospital, importance of DIC and PIC and pharmacist role in it. To know the step wise process of patient counseling, to know the role pharmacist in CME and CPE.
CO4	Know the role of pharmacist in hospital budget preparation, importance to drug therapy monitoring, ward round and pharmaceutical care. To know the rationality of OTC drugs.
CO5	Know the different types of inventory control methods and their importance. to know the various committee in hospital .to know the normal value of laboratory report and interpretation of abnormal values.
Subject: NOVEL DRUG DELIVERY SYSTEMS(THEORY) **Subject code: BP704T**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand controlled drug delivery systems. and the various approaches to design-controlled release formulations and to know the various physicochemical and biological properties of control drug delivery systems and to Understand polymers & microspheres &its applications in formulations.
CO2	Understand mucosal drug delivery systems, their principles and concepts of bio adhesion/muco-adhesionand transmucosal permeability. Understand formulation for buccal delivery systems
CO3	Understand the basic concepts and components of trans-dermal drug delivery system. factors affecting &various approaches in formulations of TDDS&Gastro retentive drug delivery systems along with Naso pulmonary delivery systems.

CO4	Understand various approachesto design targeted drug delivery systems of niosomes, liposomes and nanoparticles.
CO5	Understand the various ocular drug delivery systems and intra-uterine systems and their approaches and its applications.

Subject: INSTRUMENTAL METHODS OF ANALYSIS PRACTICAL **Subject code: BP705P**	
S.no ofCOs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Analyse the given drugs qualitatively and quantitatively using various spectroscopic techniques.
CO2	Analyse the given drugs qualitatively and quantitatively using various chromatographic techniques.

Table 3.8: *List of course outcomes of a subject inIV year / VIII semester*

Subject: BIOSTATISTICS AND RESEARCHMETHODOLOGY **Subject code: BP801T.**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	This course gives introduction to biostatistics.Measure of of dispersion helps us to apply the concepts in the field of pharmacy. It helps to understand the concept of standard deviation, with emphasis on pharmaceutical examples. Correction studies help us to understand the closeness & relation between multiple variable.
CO2	This course deals with the fitting of data using regression lives. It also focuses on probability theory and theoretical and continuous distribution like binomial, Poisson and normal. It gives knowledge on samplings, method of sampling and basic concepts of inferential statistic. It helps us on to understand and various parametric statistical tests like t test, Anovaetc.
CO3	This course comprises of non-parametric tests like walcoxin rank sum test,MannWhitney U test etc. Also,this includes the course to know the need of research and its methodology. This also discusses the methods of graphical representation
CO4	This course gives introduction by practical statistical analysis by using online satisfied software like excel SPSS MINITAB design of experiments etc.

CO5	This course deals with designation and analysis of experiments using factorial designs to learn the principles of experimental designs.

Subject: SOCIAL AND PREVENTIVE PHARMACY **Subject code: BP802T**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Understand basic concepts of health and disease and also general measures and strategies to be followed in the social and preventive pharmacy.
CO2	Acquire knowledge on general principles of prevention and control of various diseases.
CO3	categorize different national health programs, its objectives, functions and outcomes of various life-threatening diseases.
CO4	Describe various national health intervention programs and role of WHO in Indian national program.
CO5	Evaluate different ways of solving problems related to health and community services.

Subject: COMPUTER AIDED DRUG DESIGN THEORY **Subject code: BP807ET**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Design and discover of new lead molecules & explain the role of drug design in drug discovery process.
CO2	Distinguish between SAR &QSAR. Describe the concept of QSAR.

CO3	Explain about the Molecular Modelling, virtual screening techniques and Docking techniques.
CO4	Acquire knowledge on Informatics methods & databases used for the drug design process.
CO5	Design new lead molecules using molecular modeling software.

Subject: COSMETIC SCIENCE THEORY **Subject code: BP809 ET**	
S.no of COs	**Course Outcomes** **On completion of course the student can be able to:**
CO1	Summarize the excipients used in preparation of cosmetic formulations.
CO2	Understanding Principles of formulation and building blocks of cosmetic products
CO3	Appreciate the importance of herbs in cosmetics
CO4	Know the Indian and EU regulations governing cosmetic preparations and understanding the principle of cosmetic evaluation
CO5	Understand the problems associated with cosmetic products