

B Pharm Course Outcome (COs)

Course Code	Course Name	Course Outcome
B Pharm 1st Semester		
BP101T	Human Anatomy and Physiology I– Theory	<p>Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the human body’s various systems. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.</p> <p>Objectives: Upon completion of this course the student should be able to</p> <ol style="list-style-type: none"> 1. Explain the gross morphology, structure and functions of various organs of the humanbody. 2. Describe the various homeostatic mechanisms and their imbalances. 3. Identify the various tissues and organs of different systems of human body. 4. Perform the various experiments related to special senses and nervous system. 5. Appreciate coordinated working pattern of different organs of each system
BP102T	Pharmaceutical Analysis I – Theory	<p>Scope: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs</p> <p>Objectives: Upon completion of the course student shall be able to</p> <ol style="list-style-type: none"> 1. understand the principles of volumetric and electro chemical analysis 2. carryout various volumetric and electrochemical titrations 3. develop analytical skills
BP103T	Pharmaceutics I – Theory	<p>Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.</p> <p>Objectives: Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. Know the history of profession of pharmacy

		<p>2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations</p> <p>3. Understand the professional way of handling the prescription</p> <p>4. Preparation of various conventional dosage forms</p>
BP104T	Pharmaceutical Chemistry – Inorganic Theory	<p>Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.</p> <p>Objectives: Upon completion of course student shall be able to</p> <ol style="list-style-type: none"> 1. know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals 2. understand the medicinal and pharmaceutical importance of inorganic compounds
BP105T	Communication skills – Theory *	<p>Scope: This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation 2. Communicate effectively (Verbal and Non Verbal) 3. Effectively manage the team as a team player 4. Develop interview skills 5. Develop Leadership qualities and essentials
BP106RBT	Remedial Biology/	<p>Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.</p> <p>Objectives: Upon completion of the course, the student shall be able to</p> <ol style="list-style-type: none"> 1. know the classification and salient features of five kingdoms of life 2. understand the basic components of anatomy & physiology of plant 3. know understand the basic components of anatomy & physiology animal with special reference to human
BP106RMT	Remedial Mathematics – Theory*	<p>Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.</p>

		<p>Objectives: Upon completion of the course the student shall be able to:-</p> <ol style="list-style-type: none"> 1. Know the theory and their application in Pharmacy 2. Solve the different types of problems by applying theory 3. Appreciate the important application of mathematics in Pharmacy
BP107P	Human Anatomy and Physiology – Practical	<p>Practical complementary to the theoretical discussions. Practical allows the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.</p>
BP108P	Pharmaceutical Analysis I – Practical	
BP109P	Pharmaceutics I – Practical	
BP110P	Pharmaceutical Inorganic Chemistry – Practical	
BP111P	Communication skills – Practical*	
BP112RBP	Remedial Biology – Practical*	
B Pharm 2nd Semester		
BP201T	Human Anatomy and Physiology II – Theory	<p>Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.</p> <p>Objectives: Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. Explain the gross morphology, structure and functions of various organs of the human body. 2. Describe the various homeostatic mechanisms and their imbalances. 3. Identify the various tissues and organs of different systems of human body. 4. Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume. 5. Appreciate coordinated working pattern of different organs of each system 6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
BP202T	Pharmaceutical Organic Chemistry I – Theory	<p>Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.</p> <p>Objectives: Upon completion of the course the student shall be able to</p>

		<ol style="list-style-type: none"> 1. write the structure, name and the type of isomerism of the organic compound 2. write the reaction, name the reaction and orientation of reactions 3. account for reactivity/stability of compounds, 4. identify/confirm the identification of organic compound
BP203T	Biochemistry – Theory	<p>Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.</p> <p>Objectives: Upon completion of course student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes. 2. Understand the metabolism of nutrient molecules in physiological and pathological conditions. 3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
BP204T	Pathophysiology – Theory	<p>Scope: Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes. This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.</p> <p>Objectives: Upon completion of the subject student shall be able to –</p> <ol style="list-style-type: none"> 1. Describe the etiology and pathogenesis of the selected disease states; 2. Name the signs and symptoms of the diseases; and 3. Mention the complications of the diseases.
BP205T	Computer Applications in Pharmacy – Theory *	<p>Scope: This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. know the various types of application of computers in pharmacy 2. know the various types of databases 3. know the various applications of databases in pharmacy
BP206T	Environmental sciences – Theory *	<p>Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or</p>

		<p>induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.</p> <p>Objectives: Upon completion of the course the student shall be able to:</p> <ol style="list-style-type: none"> 1. Create the awareness about environmental problems among learners. 2. Impart basic knowledge about the environment and its allied problems. 3. Develop an attitude of concern for the environment. 4. Motivate learner to participate in environment protection and environment improvement. 5. Acquire skills to help the concerned individuals in identifying and solving environmental problems. 6. Strive to attain harmony with Nature.
BP207P	Human Anatomy and Physiology II – Practical	<p>Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.</p>
BP208P	Pharmaceutical Organic Chemistry I– Practical	
BP209P	Biochemistry – Practical	
BP210P	Computer Applications in Pharmacy – Practical*	
B Pharm 3rd Semester		
BP301T	Pharmaceutical Organic Chemistry II – Theory	<p>Scope: This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. write the structure, name and the type of isomerism of the organic compound 2. write the reaction, name the reaction and orientation of reactions 3. account for reactivity/stability of compounds, 4. prepare organic compounds
BP302T	Physical Pharmaceutics I – Theory	<p>Scope: The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.</p> <p>Objectives: Upon the completion of the course student shall be able to</p> <ol style="list-style-type: none"> 1. Understand various physicochemical properties of drug molecules in the designing the dosage forms 2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of

		formulations 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP303T	Pharmaceutical Microbiology – Theory	Scope: Study of all categories of microorganisms especially for the production of alcohol antibiotics, vaccines, vitamins enzymes etc. Objectives: Upon completion of the subject student shall be able to; 1. Understand methods of identification, cultivation and preservation of various microorganisms 2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry 3. Learn sterility testing of pharmaceutical products. 4. Carried out microbiological standardization of Pharmaceuticals. 5. Understand the cell culture technology and its applications in pharmaceutical industries.
BP304T	Pharmaceutical Engineering – Theory	Scope: This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry. Objectives: Upon completion of the course student shall be able: 1. To know various unit operations used in Pharmaceutical industries. 2. To understand the material handling techniques. 3. To perform various processes involved in pharmaceutical manufacturing process. 4. To carry out various test to prevent environmental pollution. 5. To appreciate and comprehend significance of plant lay out design for optimum use of resources. 6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.
BP305P	Pharmaceutical Organic Chemistry II – Practical	Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.
BP306P	Physical Pharmaceutics I – Practical	
BP307P	Pharmaceutical Microbiology – Practical	
BP 308P	Pharmaceutical Engineering –Practical	
B Pharm 4th Semester		
BP401T	Pharmaceutical Organic Chemistry III– Theory	Scope: This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds. Objectives: At the end of the course, the student shall be able to 1. understand the methods of preparation and properties of

		<p>organic compounds</p> <ol style="list-style-type: none"> explain the stereo chemical aspects of organic compounds and stereo chemical reactions know the medicinal uses and other applications of organic compounds
BP402T	Medicinal Chemistry I – Theory	<p>Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> understand the chemistry of drugs with respect to their pharmacological activity understand the drug metabolic pathways, adverse effect and therapeutic value of drugs know the Structural Activity Relationship (SAR) of different class of drugs write the chemical synthesis of some drugs
BP403T	Physical Pharmaceutics II – Theory	<p>Scope: The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.</p> <p>Objectives: Upon the completion of the course student shall be able to</p> <ol style="list-style-type: none"> Understand various physicochemical properties of drug molecules in the designing the dosage forms Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP404T	Pharmacology I – Theory	<p>Scope: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.</p> <p>Objectives: Upon completion of this course the student should be able to</p> <ol style="list-style-type: none"> Understand the pharmacological actions of different categories of drugs

		<p>2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.</p> <p>3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.</p> <p>4. Observe the effect of drugs on animals by simulated experiments</p> <p>5. Appreciate correlation of pharmacology with other bio medical sciences</p>
BP405T	Pharmacognosy and Phytochemistry I– Theory	<p>Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.</p> <p>Objectives: Upon completion of the course, the student shall be able</p> <ol style="list-style-type: none"> 1. to know the techniques in the cultivation and production of crude drugs 2. to know the crude drugs, their uses and chemical nature 3. know the evaluation techniques for the herbal drugs 4. to carry out the microscopic and morphological evaluation of crude drugs
BP406P	Medicinal Chemistry I – Practical	<p>Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.</p>
BP407P	Physical Pharmaceutics II – Practical	
BP408P	Pharmacology I – Practical	
BP409P	Pharmacognosy and Phytochemistry I – Practical	
B Pharm 5th Semester		
BP501T	Medicinal Chemistry II – Theory	<p>Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the chemistry of drugs with respect to their pharmacological activity 2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs 3. Know the Structural Activity Relationship of different class of drugs 4. Study the chemical synthesis of selected drugs
BP502T	Industrial Pharmacy I– Theory	<p>Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. Know the various pharmaceutical dosage forms and their

		<p>manufacturing techniques.</p> <ol style="list-style-type: none"> 2. Know various considerations in development of pharmaceutical dosage forms 3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
BP503T	Pharmacology II – Theory	<p>Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.</p> <p>Objectives: Upon completion of this course the student should be able to</p> <ol style="list-style-type: none"> 1. Understand the mechanism of drug action and its relevance in the treatment of different diseases 2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments 3. Demonstrate the various receptor actions using isolated tissue preparation 4. Appreciate correlation of pharmacology with related medical sciences
BP504T	Pharmacognosy and Phytochemistry II– Theory	<p>Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine</p> <p>Objectives: Upon completion of the course, the student shall be able</p> <ol style="list-style-type: none"> 1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents 2. to understand the preparation and development of herbal formulation. 3. to understand the herbal drug interactions 4. to carryout isolation and identification of phytoconstituents
BP505T	Pharmaceutical Jurisprudence – Theory	<p>Legislations related to the profession of pharmacy in India.</p> <p>Objectives: Upon completion of the course, the student shall be able to understand:</p> <ol style="list-style-type: none"> 1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals. 2. Various Indian pharmaceutical Acts and Laws 3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 4. The code of ethics during the pharmaceutical practice
BP506P	Industrial Pharmacy I – Practical	<p>Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory</p>
BP507P	Pharmacology II – Practical	
BP508P	Pharmacognosy and	

	Phytochemistry II – Practical	classes through experiments This is helpful for developing an insight on the subject.
B Pharm 6th Semester		
BP601T	Medicinal Chemistry III – Theory	<p>Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.</p> <p>Objectives: Upon completion of the course student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the importance of drug design and different techniques of drug design. 2. Understand the chemistry of drugs with respect to their biological activity. 3. Know the metabolism, adverse effects and therapeutic value of drugs. 4. Know the importance of SAR of drugs.
BP602T	Pharmacology III – Theory	<p>Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition, emphasis on the principles of toxicology and chronopharmacology.</p> <p>Objectives: Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases 2. comprehend the principles of toxicology and treatment of various poisonings and 3. appreciate correlation of pharmacology with related medical sciences
BP603T	Herbal Drug Technology – Theory	<p>Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs</p> <p>Objectives: Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. understand raw material as source of herbal drugs from cultivation to herbal drug product 2. know the WHO and ICH guidelines for evaluation of herbal drugs 3. know the herbal cosmetics, natural sweeteners,

		<p>nutraceuticals</p> <p>4. appreciate patenting of herbal drugs, GMP .</p>
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	<p>Scope: This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems raised therein.</p> <p>Objectives: Upon completion of the course student shall be able to:</p> <ol style="list-style-type: none"> 1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance. 2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination. 3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance. 4. Understand various pharmacokinetic parameters, their significance & applications.
BP605T	Pharmaceutical Biotechnology – Theory	<p>Scope:</p> <ol style="list-style-type: none"> 1. Biotechnology has a long promise to revolutionize the biological sciences and technology. 2. Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting. 3. Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. 4. Biotechnology has already produced transgenic crops and animals and the future promises lot more. 5. It is basically a research-based subject. <p>Objectives: Upon completion of the subject student shall be able to:</p> <ol style="list-style-type: none"> 1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries 2. Genetic engineering applications in relation to production of pharmaceuticals 3. Importance of Monoclonal antibodies in Industries 4. Appreciate the use of microorganisms in fermentation technology
BP606T	Pharmaceutical Quality Assurance –Theory	<p>Scope: This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs.</p> <p>Objectives: Upon completion of the course student shall be able to:</p> <ol style="list-style-type: none"> 1. understand the cGMP aspects in a pharmaceutical industry 2. appreciate the importance of documentation 3. understand the scope of quality certifications applicable

		to pharmaceutical industries 4. understand the responsibilities of QA & QC departments
BP607P	Medicinal chemistry III – Practical	Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.
BP608P	Pharmacology III – Practical	
BP609P	Herbal Drug Technology – Practical	
B Pharm 7th Semester		
BP701T	Instrumental Methods of Analysis – Theory	<p>Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis 2. Understand the chromatographic separation and analysis of drugs. 3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.
BP702T	Industrial Pharmacy II – Theory	<p>Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market.</p> <p>Objectives: Upon completion of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Know the process of pilot plant and scale up of pharmaceutical dosage forms 2. Understand the process of technology transfer from lab scale to commercial batch 3. Know different Laws and Acts that regulate pharmaceutical industry 4. Understand the approval process and regulatory requirements for drug products
BP703T	Pharmacy Practice – Theory	<p>Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counseling for improved patient care in the community set up.</p> <p>Objectives: Upon completion of the course, the student shall be able to</p>

		<ol style="list-style-type: none"> 1. know various drug distribution methods in a hospital 2. appreciate the pharmacy stores management and inventory control 3. monitor drug therapy of patient through medication chart review and clinical review 4. obtain medication history interview and counsel the patients 5. identify drug related problems 6. detect and assess adverse drug reactions 7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states 8. know pharmaceutical care services 9. do patient counseling in community pharmacy; 10. appreciate the concept of Rational drug therapy
BP704T	Novel Drug Delivery System – Theory	<p>Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.</p> <p>Objectives: Upon completion of the course student shall be able</p> <ol style="list-style-type: none"> 1. To understand various approaches for development of novel drug delivery systems. 2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation
BP705P	Instrumental Methods of Analysis – Practical	Practical complementary to the theoretical discussions. Practical allow the verification of different processes/methods discussed in theory classes through experiments This is helpful for developing an insight on the subject.
BP706PS	Practice School	<ol style="list-style-type: none"> 1. Students will demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects, health policy and legal issues in the practice of pharmacy. 2. Students will use knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy. 3. Students will effectively apply principles of drug store management and inventory control to medication use. 4. Students will provide patient-centered care to diverse patients using the best available evidence and monitor drug therapy of patient through medication chart review, obtain medication history interview and counsel the patients, identify drug related problems. 5. Students will engage in innovative activities by making use of the knowledge of clinical trials 6. Students will exhibit professional ethics by producing safe and appropriate medication use throughout society
B Pharm 8th Semester		
BP801T	Biostatistics and Research	Scope: To understand the applications of Biostatics in

	Methodology	<p>Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none"> • Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment) • Know the various statistical techniques to solve statistical problems • Appreciate statistical techniques in solving the problems.
BP802T	Social and Preventive Pharmacy	<p>Scope: The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.</p> <p>Objectives: After the successful completion of this course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide. 2. Have a critical way of thinking based on current healthcare development. 3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues
BP803ET	Pharma Marketing Management	<p>Scope: The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Product management.</p> <p>Course Objective: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.</p>
BP804ET	Pharmaceutical Regulatory Science	<p>Scope: This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia, UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.</p> <p>Objectives: Upon completion of the subject student shall be able to;</p> <ol style="list-style-type: none"> 1. Know about the process of drug discovery and

		<p>development</p> <ol style="list-style-type: none"> 2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 3. Know the regulatory approval process and their registration in Indian and international markets
BP805ET	Pharmacovigilance	<p>Scope: This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions.</p> <p>Objectives: At completion of this paper it is expected that students will be able to (know, do, and appreciate):</p> <ol style="list-style-type: none"> 1. Why drug safety monitoring is important? 2. History and development of pharmacovigilance 3. National and international scenario of pharmacovigilance 4. Dictionaries, coding and terminologies used in pharmacovigilance 5. Detection of new adverse drug reactions and their assessment 6. International standards for classification of diseases and drugs 7. Adverse drug reaction reporting systems and communication in pharmacovigilance 8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle 9. Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation 10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India 11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning 12. CIOMS requirements for ADR reporting 13. Writing case narratives of adverse events and their quality.
BP806ET	Quality Control and Standardization of Herbals	<p>Scope: In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLP in traditional system of medicines.</p> <p>Objectives: Upon completion of the subject student shall be able to:</p> <ol style="list-style-type: none"> 1. know WHO guidelines for quality control of herbal drugs 2. know Quality assurance in herbal drug industry 3. know the regulatory approval process and their

		<p>registration in Indian and international markets</p> <p>4. appreciate EU and ICH guidelines for quality control of herbal drugs</p>
BP807ET	Computer Aided Drug Design	<p>Scope: This subject is designed to provide detailed knowledge of rational drug design process and various techniques used in rational drug design process.</p> <p>Objectives: Upon completion of the course, the student shall be able to understand</p> <ol style="list-style-type: none"> 1. Design and discovery of lead molecules 2. The role of drug design in drug discovery process 3. The concept of QSAR and docking 4. Various strategies to develop new drug like molecules. 5. The design of new drug molecules using molecular modeling software
BP808ET	Cell and Molecular Biology	<p>Scope: Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function.</p> <ol style="list-style-type: none"> 1. This is done both on a microscopic and molecular level. 2. Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organisms such as humans, plants, and sponges. <p>Objectives: Upon completion of the subject student shall be able to;</p> <ol style="list-style-type: none"> 1. Summarize cell and molecular biology history. 2. Summarize cellular functioning and composition. 3. Describe the chemical foundations of cell biology. 4. Summarize the DNA properties of cell biology. 5. Describe protein structure and function. 6. Describe cellular membrane structure and function. 7. Describe basic molecular genetics mechanisms. 8. Summarize the Cell Cycle
BP809ET	Cosmetic Science	<p>This subject is designed to provide detailed knowledge of cosmetics, their method of preparation, regulatory issues, their mechanism of action etc.</p>
BP810ET	Experimental Pharmacology	<p>Scope: This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.</p> <p>Objectives</p> <p>Upon completion of the course the student shall be able to:</p> <ol style="list-style-type: none"> 1. Appreciate the applications of various commonly used laboratory animals. 2. Appreciate and demonstrate the various screening methods used in preclinical research 3. Appreciate and demonstrate the importance of biostatistics and research methodology 4. Design and execute a research hypothesis independently
BP811ET	Advanced Instrumentation	<p>Scope: This subject deals with the application of</p>

	Techniques	<p>instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.</p> <p>Objectives: Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. understand the advanced instruments used and its applications in drug analysis 2. Understand the chromatographic separation and analysis of drugs. 3. understand the calibration of various analytical instruments 4. Know analysis of drugs using various analytical instruments.
BP812ET	Dietary Supplements and Nutraceuticals	<p>Scope: This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.</p> <p>Objective: This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :</p> <ol style="list-style-type: none"> 1. Understand the need of supplements by the different group of people to maintain healthy life. 2. Understand the outcome of deficiencies in dietary supplements. 3. Appreciate the components in dietary supplements and the application. 4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.
BP813PW	Project Work	The course allows student to use their knowledge in the field of Pharmaceutical sciences, performing research and article writing.