

CONTENT

Sr. No.	Content	Page No.
1.	Program Outcomes	2
2.	B.Pharmacy - Semester I- Course Outcome Statements	3
3.	B.Pharmacy - Semester II- Course Outcome Statements	6
4.	B.Pharmacy - Semester III- Course Outcome Statements	9
5.	B.Pharmacy - Semester IV- Course Outcome Statements	11
6.	B.Pharmacy - Semester V- Course Outcome Statements	13
7.	B.Pharmacy - Semester VI- Course Outcome Statements	15
8.	B.Pharmacy - Semester VII- Course Outcome Statements	17
9.	B.Pharmacy - Semester VIII- Course Outcome Statements	19

PROGRAM OUTCOMES

Sr. No	Program Outcomes	Program Outcomes Statement
A.	Pharmacy Knowledge	Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioural, social, and administrative pharmacy sciences; and manufacturing practices.
B.	Planning Abilities	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
C.	Problem analysis	Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
D.	Modern tool usage	Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
E.	Leadership skills	Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
F.	Professional Identity	Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
G.	Pharmaceutical Ethics	Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
H.	Communication	Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
I.	The Pharmacist and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
J.	Environment and sustainability	Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
K.	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

B.PHARMACY

SEMESTER I

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP101T	Human Anatomy and Physiology I	<p>BP101T (1) Explain the gross morphology, structure and functions of various organs of the human body.</p> <p>BP101T (2) Describe the various homeostatic mechanisms and their imbalances and explain coordinated working pattern of different organs of each system</p> <p>BP101T (3) Clarify various tissues and organs of different systems of human body.</p> <p>BP101T (4) Describe various experiments related to special senses and nervous system.</p>
BP102T	Pharmaceutical Analysis I	<p>BP102T (1) To study fundamentals of pharmaceutical analysis and pharmacopoeia.</p> <p>BP102T(2) Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.</p> <p>BP102T (3) Clarify need and basic principles of Acid Base titration, non aqueous titration, complexometric titration, precipitation titrations, gravimetric analysis etc</p> <p>BP102 T (4) Illustrate principle, types of electrode, instrumentation and applications of Potentiometry, Conductometry and Polarography</p>
BP103T	Pharmaceutics I	<p>BP103T (01) Know the history of profession of pharmacy.</p> <p>BP103T (02) Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.</p> <p>BP103T (03) Understand the professional way of handling the prescription.</p> <p>BP103T (04) Preparation of various conventional dosage forms.</p>
BP104T	Pharmaceutical Inorganic Chemistry	<p>BP104T(1) Knowledge of sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals</p> <p>BP104T(2) Understanding of the basic concepts of acidity /basicity, buffers and tonicity applicable in pharmaceuticals</p> <p>BP104T(3) Understanding of the medicinal and pharmaceutical importance of inorganic compounds</p> <p>BP104T(4) Understanding of concepts and principles of radiopharmaceuticals.</p>
BP105T	Communication Skills	<p>BP105T(1) Knowledge to handle interpersonal</p>

		<p>relations & communicate effectively.</p> <p>BP105T(2) build a repertoire of functional vocabulary and to move from the lexical level to the syntactic level.</p> <p>BP105T(3) describe the four basic communication skills – Listening, Speaking, Reading and Writing.</p> <p>BP105T(4) become aware of their thinking styles and to enable them to convert thinking into performance.</p>
BP 106RBT	Remedial biology/ Remedial mathematics	<p>BP106 RBT (1) know the classification and salient features of five kingdoms of life.</p> <p>BP106 RBT (2) understand the basic components of anatomy & physiology of plant.</p> <p>BP106 RBT (3) know understand the basic components of anatomy & physiology animal with special reference to human</p> <p>BP106 RBT (4) know understand the basic components of Cell - The unit of life</p>
BP107P	Human Anatomy and Physiology I	<p>BP107P(1) To identify the various tissues and organs of different systems of human body.</p> <p>BP107P(2) To perform the various experiments related to special senses and nervous system.</p> <p>BP107P(3) To describe the various homeostatic mechanisms and their imbalances.</p> <p>BP107P(4) To study the maintenance of normal functioning of human body</p>
BP108P	Pharmaceutical Analysis I	<p>BP108P (1) To get acquaint to basic apparatus and instruments and their calibration.</p> <p>BP108P (2) Understand concept of various volumetric analysis.</p> <p>BP108P(3) Understand concept of various electrochemical titrations.</p> <p>BP108P(4) To develop analytical skills in data interpretation and calculations.</p>
BP109P	Pharmaceutics I	<p>BP109P (01) Understand formulation and evaluation of Pharmaceutical solution</p> <p>BP109P (02) Understand formulation and evaluation of Pharmaceutical dispersed system</p> <p>BP109P (03) Understand formulation and evaluation of pharmaceutical powders</p> <p>BP109P (04) Understand formulation and evaluation of semisolid dosage form</p>
BP110P	Pharmaceutical Inorganic Chemistry	<p>BP110P(1) Develop skills to perform limit test for given sample</p> <p>BP110P(2) Perform identification inorganic salts through various qualitative tests</p> <p>BP110P(3) Ability to perform tests for purity for different compounds as per IP</p> <p>BP110P(4) Knowledge and skills to prepare</p>

		inorganic salts -boric acid, potash alum and ferrous sulphate
BP111P	Communication Skills	BP111P(1) Develop Basic communication important for Meeting People. BP111P(2) Knowledge about Pronunciations BP111P(3) Ability to perform Advanced Learning BP111P(4) Develop skills for Effective Writing
BP112RBP	Remedial Biology	BP112RBP(1) Knowledge about basic introduction to experiments in biology. BP112RBP(2) Study of cell and its inclusions BP112RBP(3) Determination of blood group, blood pressure and tidal volume. BP112RBP(4) Develop skills for Microscopic study and identification of tissues pertinent.

SEMESTER II

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP201T	Human Anatomy and Physiology II	<p>BP201T(1) Explain the gross morphology, structure and functions of various organs of the human body.</p> <p>BP201T(2) Describe the various homeostatic mechanisms and their imbalance along with interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.</p> <p>BP201T(3) Explain the various tissues and organs of different systems of human body with coordinated working pattern of different organs of each system</p> <p>BP201T(4) Describe the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.</p>
BP202T	Pharmaceutical organic Chemistry I	<p>BP202T(1) Knowledge of the classification , nomenclature, structure and the type of isomerism of the organic compound</p> <p>BP202T(2) Understanding of important physical properties, reactions (and underlying mechanisms) and methods of preparation of various functional groups.</p> <p>BP202T(3) Account for reactivity/stability of compounds and intermediates forming in reactions</p> <p>BP202T(4) Identify / confirm the identification of organic compound.</p>
BP203T	Biochemistry	<p>BP203T(1) Understand classification, chemical nature, biological role and metabolism of biomolecules.</p> <p>BP203T(2) Understand bioenergetics and biological oxidation pathway.</p> <p>BP203T(3) Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.</p> <p>BP203T(4) Understand the catalytic role of enzymes and importance of enzyme in biochemical process.</p>
BP204T	Pathophysiology	<p>BP 204T(1) Describe the etiology and pathogenesis of the selected disease states</p> <p>BP 204T(2) Describe the signs and symptoms of the diseases</p> <p>BP 204T(3) Explain the complications of the diseases.</p>
BP205T	Computer Application in Pharmacy	<p>BP205T(1) know the various types of application of computers in pharmacy</p> <p>BP205T(2) know the various types of databases.</p>

		BP205T(3) know the various applications of databases in pharmacy.
BP206T	Environmental Science	<p>BP206T(1) Create the awareness about environmental problems among learners.</p> <p>BP206T(2) Impart basic knowledge about the environment and its allied problems.</p> <p>BP206T(3) Develop an attitude of concern for the environment.</p> <p>BP206T(4) Motivate learner to participate in environment protection and environment improvement.</p> <p>BP206T(5) Acquire skills to help the concerned individuals in identifying and solving environmental problems.</p> <p>BP206T(6) Strive to attain harmony with Nature.</p>
BP207P	Human Anatomy and Physiology II	<p>BP207P(1) To study the gross morphology, structure and functions of nervous, respiratory, urinary and reproductive systems in the human body.</p> <p>BP207P (2) To identify the various organs of different systems of human body.</p> <p>BP207P (3) To perform and learnt about the experiments like neurological reflex, body temperature measurement.</p> <p>BP207P (4) To perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc. and also to record blood pressure, heart rate, pulse and respiratory volume.</p>
BP208P	Pharmaceutical organic Chemistry I	<p>BP208P(1) Knowledge of safety measures in organic chemistry laboratory and various laboratory techniques.</p> <p>BP208P(2) Understanding of steps involved in identification of unknown organic compound.</p> <p>BP208P(3) Ability to prepare suitable solid derivatives from organic compounds.</p> <p>BP208P(4) Develop skills to prepare stereo models containing various functional groups.</p>
BP209P	Biochemistry	<p>BP209P(1) Learn quantitative analysis test of carbohydrates, amino acids and proteins</p> <p>BP209P(2) Understand qualitative analysis of urine for normal constituents.</p> <p>BP209P(3) Study principle and procedure for determination of serum total cholesterol, blood sugar and blood creatinine.</p> <p>BP209P(4) Understand role of salivary amylase.</p>
BP210P	Computer Application in Pharmacy	<p>BP210P(1) Design a questionnaire using a word processing package to gather information about a particular disease.</p> <p>BP210P(2) Create a database, invoice table and HTML web page.</p>

BP210P(3) Drug information storage and retrieval using MS Access.

BP210P(4) Exporting Tables, Queries, Forms and Reports to web pages and XML pages.

SEMESTER III

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP301T	Pharmaceutical Organic Chemistry-II	<p>BP301T(1) Understand the introduction, orbital picture, resonance, reactions and effects of substituent's of benzene. Explain acidity, effect of substituents, reaction and qualitative test of phenols. Also elucidate basicity, effect of substituents, reaction of aromatic amines.</p> <p>BP301T(2) Explain the optical isomerism and geometrical isomerism of organic compounds. Clarify the concept of resolution of racemic modifications</p> <p>BP301T(3) Knowledge of synthesis, reactions and structure and medicinal uses of some polynuclear hydrocarbons.</p> <p>BP301T(4) Understand the theory of cycloalkanes and chemistry of fats and oils.</p>
BP302T	Physical Pharmaceutics-I	<p>BP302T (01) Investigate and apply various theories, laws and equations related to different states of matter.</p> <p>BP302T (02) Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant.</p> <p>BP302T (03) Demonstrate use of physicochemical properties of drugs in the formulation development and evaluation of dosage forms.</p> <p>BP302T (04) Understands solubility of drugs, diffusion principles, phase rule and applications of distribution law.</p>
BP303T	Pharmaceutical Microbiology	<p>BP303T (01) Understand methods of identification, cultivation and preservation of various microorganisms.</p> <p>BP303T (02) To understand the importance and implementation of sterilization in pharmaceutical processing and industry.</p> <p>BP303T (03) Learn sterility testing of pharmaceutical products.</p> <p>BP303T (04) Carried out microbiological standardization of Pharmaceuticals.</p> <p>BP303T (05) Understand the cell culture technology and its applications in pharmaceutical industries.</p>
BP304T	Pharmaceutical Engineering	<p>BP304T (01) To know various unit operations used in Pharmaceutical industries.</p> <p>BP304T (02) To understand the material</p>

		<p>handling techniques</p> <p>BP304T (03) To perform various processes involved in pharmaceutical manufacturing process.</p> <p>BP304T (04) To carry out various test to prevent environmental pollution.</p> <p>BP304T (05) To appreciate and comprehend significance of plant lay out design for optimum use of resources.</p> <p>BP304T (06) To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.</p>
BP305P	Pharmaceutical Organic Chemistry-II	<p>BP305P(1) Demonstration of recrystallisation and Steam distillation</p> <p>BP305P (2) Perform separation and identification of qualitative analysis of solid-solid organic binary mixtures.</p> <p>BP305P (3) Determine the saponification value of oil sample.</p> <p>BP305P (4) Synthesize the different organic compounds and understand the reaction mechanisms</p>
BP306P	Physical Pharmaceutics I	<p>BP306P (1) Apply the knowledge of phase diagram to determine consolute temperatures</p> <p>BP306P (2) Understand the concept of solubility and recognize basic rules and equations regarding physical principles</p> <p>BP306P (3) Apply the knowledge of complexation and adsorption isotherms</p> <p>BP306P (4) Understand the phenomenon of partition coefficient and surface tension</p>
BP307P	Pharmaceutical Microbiology	<p>BP307P (1) Introduction and study of different equipments and processing.</p> <p>BP307P (2) Understand the concept of Sterilization</p> <p>BP307P(3) Perform microbiological assay of antibiotics</p> <p>BP307P (4) Understand the phenomenon of Staining methods</p>
BP308P	Pharmaceutical Engineering	<p>BP308P (1) Understand the phenomenon of radiation constant.</p> <p>BP308P (2) Description of Construction working and application of Pharmaceutical Machinery</p> <p>BP308P(3) Understand the concept of Size reduction</p> <p>BP308P(4) To calculate the uniformity Index</p>

SEMESTER IV

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP401T	Pharmaceutical organic Chemistry III	<p>BP401T (1) understand the methods of preparation and properties of organic compounds.</p> <p>BP401T (2) explain the stereo chemical aspects of organic compounds and stereo chemical reactions.</p> <p>BP401T (3) know the medicinal uses and other applications of organic compounds.</p>
BP402T	Medicinal Chemistry I	<p>BP402T (1) Understand history and basic principles of Medicinal Chemistry.</p> <p>BP402T (2) Learn classification, mechanism of action, structure activity relationship and uses of drugs acting on Autonomic nervous system.</p> <p>BP402T (3) Study of classification, mechanism of action, Structure activity relationship and uses of drugs acting on Central Nervous System</p> <p>BP402T (4) Study of centrally and peripherally acting analgesic drugs.</p>
BP403T	Physical pharmaceutics-II	<p>BP403T (01) Relate various physicochemical properties of drug and excipient molecules in designing the dosage forms.</p> <p>BP403T (02) Distinguish the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations</p> <p>BP403T (03) Demonstrate use of physicochemical properties in evaluation of dosage forms.</p> <p>BP403T (04) Understand physicochemical properties of drug molecules in formulation research and development.</p>
BP 404T	Pharmacology I	<p>BP404T (01) Understand the pharmacological actions of different categories of drugs.</p> <p>BP404T (02) Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.</p> <p>BP404T (03) Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.</p> <p>BP404T (04) Observe the effect of drugs on animals by simulated experiments</p> <p>BP404T (05) Appreciate correlation of pharmacology with other bio medical sciences</p>
BP405T	Pharmacognosy and Phytochemistry I	<p>BP405T (01) Comprehend and explain Primary and secondary metabolites from source to their industrial applications.</p>

		<p>BP405T (02) Explain meaning & significance of Pharmacognostic parameters and pharmacognostic scheme of study of crude drugs.</p> <p>BP405T (03) Explain properties, methods of extraction, pharmaceutical and industrial applications of carbohydrates, lipids and proteins and their derived products.</p> <p>BP405T (04) Explain properties, methods of extraction, and systematic pharmacognostic study of crude drugs from Glycosides and Tannins.</p>
BP406P	Medicinal Chemistry I	<p>BP406P (1) Learn synthesis of medicinally important compounds / drug intermediates with Recrystallization and TLC techniques.</p> <p>BP406P (2) Understand Purification methods for synthesized compounds using Column chromatography</p> <p>BP406P (3) Study of Partition coefficient of drugs</p> <p>BP406P (4) Study of Ionisation constants of drugs.</p>
BP407P	Physical Pharmaceutics II	<p>BP407P (1) Gain the knowledge of particle size analysis and surface area determination methods</p> <p>BP407P (2) Determine viscosity of fluids and study application of it to colloid stability</p> <p>BP407P(3) Apply the knowledge of chemical kinetics in drugs stability</p> <p>BP407P (4) To understand the stability of sols</p>
BP408P	Pharmacology I	<p>BP408P (1) To understand the pharmacological actions of different categories of drugs</p> <p>BP408P (2) To study in detailed about mechanism of drug action at organ system/sub cellular/ macromolecular levels</p> <p>BP408P (3) To understand the application of basic pharmacological knowledge in the prevention and treatment of various diseases.</p> <p>BP408P (4) To observed the effect of drugs on animals by simulated experiments</p>
BP409P	Pharmacognosy and Phytochemistry I	<p>BP409 P (01) Able to understand morphology, microscopy and powder characteristics of crude drugs.</p> <p>BP409 P (02) Able to identify unorganized drugs by chemical methods</p> <p>BP409 P (03) Able to determine the quality of unorganized crude drugs</p> <p>BP409 P (04) Able to conduct extraction and estimation of different phytoconstituents.</p>

SEMESTER V

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP 501T	Medicinal Chemistry II	<p>BP501T (1): Understand the chemistry of drugs with respect to their pharmacological activity</p> <p>BP501T (2): Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs</p> <p>BP501T (3): Know the Structural Activity Relationship of different class of drugs</p> <p>BP 501T (4): Study the chemical synthesis of selected drugs</p>
BP 502T	Formulative Pharmacy	<p>BP502T (1) Explain various pharmaceutical dosage forms and their manufacturing techniques</p> <p>BP502T (2) Explain various considerations in development of pharmaceutical dosage forms</p> <p>BP502T (3) Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality</p> <p>BP502T (4) Formulate parenteral, ophthalmic aerosol and cosmetics dosage forms and evaluate them for their quality</p>
BP 503T	Pharmacology II	<p>BP503T (1) To study the pharmacology and pharmacotherapy of various drugs acting on cardiovascular system.</p> <p>BP503T (2) To understand the pharmacology of autocids and related drugs.</p> <p>BP503T (3) To study the pharmacology and pharmacotherapy of various drugs acting on endocrine system.</p> <p>BP503T (4) To appreciate correlation of pharmacology with related medical sciences.</p>
BP 504T	Pharmacognosy and Phytochemistry II	<p>BP504T (1) To know the modern extraction techniques, characterisation and identification of the herbal drugs and phytoconstituents</p> <p>BP504T (2) To understand the production of phytoconstituents /herbal formulations.</p> <p>BP504T (3) To understand the metabolic pathways in formation of secondary metabolites and application of biogenetic studies.</p> <p>BP504 T (4) To carry out isolation and identification of phytoconstituents.</p>
BP 505T	Pharmaceutical Jurisprudence	<p>BP505 T(1) The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.</p>

		<p>BP505 T (2) Various Indian pharmaceutical Acts and Laws</p> <p>BP505 T(3) The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals</p> <p>BP505 T(4) The code of ethics during the pharmaceutical practice</p>
BP506P	Formulative Pharmacy	<p>BP502P (1) Understand the use of various equipment's in Pharmaceutics laboratory relevant to tablets, capsules & coating</p> <p>BP502P (2) Understand preparation and evaluation of Parenteral, ophthalmic dosage form</p> <p>BP502P (3) Understand preparation and evaluation of cosmetics products</p> <p>BP502P (4) Understand evaluation of glass container</p>
BP507P	Pharmacology II	<p>BP507P (1) To understand the basic principle of bioassay and type of bioassay.</p> <p>BP507P (2) To demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments.</p> <p>BP507P (3) To understand the effect of different drugs on the concentration response curves.</p> <p>BP507P (4) To demonstrate the various receptor actions using isolated tissue preparation.</p>
BP508P	Pharmacognosy and Phytochemistry II	<p>BP 508P (1) To perform histological studies, powder characteristics, extraction and detection of crude drugs</p> <p>BP 508 P (2) Carry out isolation and detection of active principles.</p> <p>BP 508P (3) separate sugars by paper chromatography and TLC studies of plant extract.</p> <p>BP 508P (4) carry out distillation of volatile oils and analysis of crude drugs by chemical tests.</p>

SEMESTER VI

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP601T	Medicinal chemistry III	<p>BP 601 T (1) Understand the importance of drug design and different techniques of drug design.</p> <p>BP 601 T (2) Understand the chemistry of drugs with respect to their biological activity.</p> <p>BP 601 T (3) Know the metabolism, adverse effects and therapeutic value of drugs.</p> <p>BP 601 T (4) Know the importance of SAR of drugs.</p>
BP602T	Pharmacology III	<p>BP602 (1) To study the pharmacology and pharmacotherapy of various drugs acting on respiratory system and gastrointestinal tract.</p> <p>BP602 (2) To understand the pharmacology of chemotherapy.</p> <p>BP602 (3) To study the details of immunopharmacology, toxicology, and chronopharmacology.</p> <p>BP602 (4) To appreciate correlation of pharmacology with related medical sciences.</p>
BP603T	Herbal Drug Technology	<p>BP603 T (01) To Understand raw material as source of herbal drugs from cultivation to herbal drug product.</p> <p>BP603 T (02) To Know the WHO and ICH guidelines for evaluation of herbal drugs.</p> <p>BP603 T (03) To understand the herbal cosmetics, natural sweeteners and nutraceuticals.</p> <p>BP603 T (04) To Understand Patenting of Herbal Drugs and GMP.</p>
BP604T	Biopharmaceutics and Pharmacokinetics	<p>BP 604 T (1) Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance</p> <p>BP 604 T (2) Use plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.</p> <p>BP 604 T (3) Understand the concepts of bioavailability and bioequivalence of drug products and their significance</p> <p>BP 604 T (4) Understand the concept of dissolution and application of in vitro in vivo correlation in drug product development</p>
BP605T	Pharmaceutical Biotechnology	<p>BP605(1) Know the basics of biotechnology techniques and the various systems used.</p> <p>BP605(2) Know the information about the application of genetic engineering in animals</p> <p>BP605(3) Know the method of genetic</p>

		<p>engineering for production of rDNA products</p> <p>BP605(4) State the application of Fermenter process in production of vitamins and antibiotics</p>
BP606T	Quality Assurance	<p>BP 606(1) Understand the cGMP aspects in pharmaceutical industry</p> <p>BP 606(2) Appreciate the importance of documentation</p> <p>BP 606(3) Understand the scope of quality certifications applicable to pharmaceutical industries</p> <p>BP 606(4) Understand the responsibilities of QA & QC departments</p>
BP607P	Medicinal chemistry III	<p>BP 607 P (1) To Synthesize, recrystallize and understand reaction mechanisms involved in synthesis of medicinally important organic compound. Synthesize medicinally important organic compounds using microwave assisted organic synthesis</p> <p>BP 607 P (2) To Prepare of medicinally important compounds or intermediates by Microwave synthesis.</p> <p>BP 607 P (3) To Understand drug design softwares.</p> <p>BP 607 P (4) To understand and calculate physiochemical properties of drug molecule.</p>
BP608P	Pharmacology III	<p>BP608P (1) To understand the basic principle of bioassay and type of bioassay.</p> <p>BP608P (2) To demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments.</p> <p>BP608P (3) To understand the effect of different drugs on the concentration response curves.</p> <p>BP608P (4) To demonstrate the various receptor actions using isolated tissue preparation.</p>
BP609P	Herbal Drug Technology	<p>BP609 P (01) Able to understand Preliminary Phytochemical Screening and monograph analysis of Herbal Crude Drug.</p> <p>BP609 P (02) Able to incorporate extract in the cosmetic and herbal preparation and their evaluation.</p> <p>BP609 P (03) To understand the determination of Alcohol content and evaluation of excipients of natural origin.</p> <p>BP609 P (04) To understand determination of Aldehyde Content, Phenol Content and Total Alkaloids.</p>

SEMESTER VII

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP701T	Instrumental Methods of Analysis	<p>BP701T (1) Understand the principle and instrumentation of UV spectrophotometry, Fluorimetry, FT-IR and justify its application in drug analysis</p> <p>BP701T (2) Understand the principle and instrumentation of flame photometry, Atomic Absorption spectroscopy, nephelometry and turbidometry and justify its applications in drug analysis</p> <p>BP701T (3) Classify the chromatographic separation methods and choose appropriate technique for analysis of drugs.</p> <p>BP701T (4) Design methods for performing quantitative & qualitative analysis of drugs using various analytical instruments</p>
BP702T	Industrial Pharmacy	<p>702T (1) To know the process of pilot plant and scale up of pharmaceutical dosage forms</p> <p>702T(2) To understand the process of technology transfer from lab scale to commercial batch</p> <p>702T(3) To know different Laws and Acts that regulates pharmaceutical industry</p> <p>702T(4) To understand the approval process and regulatory requirements for drug products</p>
BP703T	Pharmacy Practice	<p>BP703T (1) To explain concepts of hospitals, hospital organization, their functioning, various drug distribution methods in a hospital and role of hospital pharmacist.</p> <p>BP703T (2) To understand the concept of community pharmacy, pharmacy stores management, inventory control, record keeping and role of community pharmacists.</p> <p>BP703T (3) To understand role of pharmacist in rational drug therapy, drug monitoring, medication history, patient counseling, patient compliance and ADR detection, reporting and monitoring.</p> <p>BP703T (4) Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states and to know pharmaceutical care services</p>
BP704T	Novel Drug Delivery System	<p>BP 704T (1) Study of controlled Drug Release Systems and Polymers</p> <p>BP 704T (2) Study of microencapsulation & its applications</p>

		<p>BP 704T (3) Study of formulation and evaluation of various and Novel drug delivery systems like Mucosal, Implantable, Transdermal, Gastroretentive & Naso-pulmonary</p> <p>BP 704T (4) Study of targeted, ocular and Intrauterine drug delivery systems</p>
BP705 P	Instrumental Methods of Analysis	<p>BP705P (1) To study the basic of instrumentation of various analytical instruments and their calibration.</p> <p>BP705P (2) Understand the concept of linearity, absorbance maxima, calibration curve method, and calculation of absorptivity constant.</p> <p>BP705P (3) Understand the concept of Assay of APIs and formulation by various analytical techniques including UV spectroscopy. Flourimetry, colorimetry and Flame photometry.</p> <p>BP705P (4) To develop analytical skills in data interpretation and calculations of purity of API in formulations using chromatographic techniques.</p>

SEMESTER VIII

COURSE CODE	COURSE NAME	COURSE OUTCOME STATEMENT
BP801T	Biostatistics and Research Methodology	<p>BP801T (1) To understand the research need</p> <p>BP801T (2) To know the statistical techniques and to apply those to solve the statistical problems</p> <p>BP801T (3) To operate statistical tools like M.S. Excel, SPSS, R and MINITAB® and DoE</p> <p>BP801T (4) To design and analysis of experiments.</p>
BP802T	Social and Preventive Pharmacy	<p>BP802T (1) To Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.</p> <p>BP802T (2) To explain various national and international health and disease control programmes.</p> <p>BP802T (3) Develop a critical way of thinking based on current healthcare development.</p> <p>BP802T (4) Evaluate alternative ways of solving problems related to health and pharmaceutical issues.</p>
BP803ET	Pharmaceutical Marketing	<p>BP803ET (1) Basic concepts of Management</p> <p>BP803ET(2) Understanding of marketing concepts and techniques and their applications in the pharmaceutical industry</p> <p>BP803ET (3) Basic concepts of Human Resource Development</p> <p>BP803ET(4) Understanding of Product decision. Promotion and pricing of products</p>
BP804ET	Pharmaceutical Regulatory Science	<p>BP804ET (1) Know 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</p> <p>BP804ET (2) Understand the process of drug discovery and development</p> <p>BP804ET (3) Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals</p>

		BP804ET (4) Understand the regulatory approval process and their registration in Indian and international markets.
BP805ET	Pharmacovigilance	<p>BP805ET (1) To Understand importance of drug safety monitoring and explain History, development, National and international scenario of pharmacovigilance & comprehend dictionaries, coding and terminologies used in pharmacovigilance.</p> <p>BP805ET (2) To Understand detection and assessment of new adverse drug reactions, Adverse drug reaction reporting systems and communication in pharmacovigilance, PV Program of India (PvPI) requirement for ADR reporting in India ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning. CIOMS requirements for ADR reporting</p> <p>BP805ET (3) To Comprehend methods of safety data during pre-clinical, clinical and post approval phases of drugs' life cycle.</p> <p>BP805ET (4) To Write case narratives of adverse events and their quality.</p>
BP807ET	Computer Aided Drug Design	<p>BP807ET (1) Understand the design and discovery process of lead molecules</p> <p>BP807ET (2) Understand the Classification of drug design tools for drug discovery process</p> <p>BP807ET (3) Understand various strategies to develop drug like molecules.</p> <p>BP807ET (4) Understand various molecular modelling software to design new drug molecule</p>
BP808ET	Cell and Molecular Biology	<p>BP808ET (1) To summarize cell and molecular biology history, cellular functioning and Composition & describe the chemical foundations of cell biology.</p> <p>BP808ET (2) To describe structure and functions of cellular membrane, DNA and Cell Cycle</p> <p>BP808ET (3) To describe basic molecular genetics mechanisms.</p> <p>BP808ET (4) To understand the cell signaling pathways with their regulations and role in disease process</p>

BP809ET	Cosmetic Science	<p>BP809ET (1) Study of basics of cosmetic and cosmeceutical products</p> <p>BP809ET (2) Study of Principles of formulation and building blocks of skin care & Hair care products</p> <p>BP809ET (3) Study of formulation and evaluation of Sun protection & other cosmetic products</p> <p>BP809ET (4) Study of Cosmetic problems</p>
BP810ET	Experimental Pharmacology	<p>BP810ET (1) To understand the applications of various commonly used laboratory animals.</p> <p>BP810ET (2) To Demonstrate the various screening methods used in preclinical research.</p> <p>BP810ET (3) To comprehend and demonstrate the importance of biostatistics and research methodology.</p> <p>BP810ET (4) To design and execute a research hypothesis independently.</p>
BP811ET	Advanced Instrumentation Techniques	<p>BP811ET (1) Express the principle of the advanced instruments used and justify its applications in drug analysis</p> <p>BP811ET (2) Understand the instrumentation of analytical techniques and its application in analysis of drugs</p> <p>BP811ET (3) Explain the importance and methods for the calibration of various analytical instruments</p> <p>BP811ET (4) Introduction to Extraction techniques and understand the hyphenated techniques.</p>
BP812ET	Dietary Supplements and Nutraceuticals	<p>BP812ET (1) Understand the need of supplements by the different group of people to maintain healthy life.</p> <p>BP812ET (2) Understand the outcome of deficiencies in dietary supplements.</p> <p>BP812ET (3) Recognize the components in dietary supplements and the application.</p> <p>BP812ET (4) Acquaint with the regulatory and commercial aspects of dietary supplements including health claims.</p>