

Program outcomes, Program specific outcomes and Course outcomes (POs, PSOs, COs)

Program Outcome (POs):-

PO1:Pharmaceutical Knowledge:- Students gain a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

PO2: Research Analysis: Students could apply the knowledge in research field to make new discoveries.

PO3: Design & Development of dosage forms: Various dosage forms could be prepared by the a pharmacy students in the pharmaceutical companies for the ease of patients.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern methods usage: Create, select, and apply appropriate techniques, resources, and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

PO6: Pharmacy and society: Pharmacist provides complete health care data and practices to the people of the society and guides them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Student gains expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with indoor and outdoor patients admitted in hospitals and also in public.

PO7: Environment and sustainability: Understand the impact of the professional pharmacist in society and environment, and make an impact of it on the people of the society.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health.

PO9 : Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams acts as a multidisciplinary person in every context.

PO10 : Communication: Communicate effectively on pharmaceutical activities with the community and with society.

PO11: 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.

PO12 : Social Interaction: Being a public welfare job a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Able to apply the knowledge gained during the course of the program from pharmacology, pharmaceutics, medicinal chemistry, Pharmacognosy, APHE, communication skills, pharmaceutical analysis, Biotechnology, biochemistry, cosmetology and environmental studies

PSO 2: Able to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team.

PSO 3: Able to do multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write effective project reports in multidisciplinary environment in the context of changing technologies.

PSO4: Able to communicate easily and comfortably. Would be able to perform multitasks in multi fields including pharmaceutical & cosmetics. Research area would be strong.

Course outcomes (COs):

YEA R	SUBJECT CODE	SUBJECT	OUTCOME
	BP101T	HUMAN ANATOMY AND PHYSIOLOGY-I	CO1: 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. Practicals allow the verification of physiological processes

I year			discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.
	BP102T	PHARMACEUTICAL ANALYSIS	CO2: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs including their principles, titrations and analytical skills.
	BP103T	PHARMACEUTICS- I	CO3: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.
	BP104T	PHARMACEUTICAL INORGANIC CHEMISTRY	CO4: This subject deals with the monographs of inorganic drugs and pharmaceuticals.
	BP105T	COMMUNICATION SKILLS	CO5: 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.
	BP 106RBT	REMEDIAL BIOLOGY	CO6: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.
	BP 106RMT	REMEDIAL MATHEMATICS	CO7: 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.
	BP 201T	HUMAN ANATOMY AND PHYSIOLOGY-II	CO8: 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.
	BP202T	PHARMACEUTICAL ORGANIC CHEMISTRY –I	CO9: 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.
	BP203 T	BIOCHEMISTRY	CO10: 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 & CO autocatalytic functions of DNA.
	BP 204T.PATHOPHYSIOLOGY CO11	BP 204T.PATHOPHYSIOLOGY CO11	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.

	BP205 T. COMPUTER APPLICATIONS IN PHARMACY CO12	BP205 T. COMPUTER APPLICATIONS IN PHARMACY CO12	This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.
	BP 206 T. ENVIRONMENTAL SCIENCES CO13	BP 206 T. ENVIRONMENTAL SCIENCES CO13	Environmental Sciences is the scientific study of the environmental system and the status of its inherent or 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.
II year	BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II CO14	BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II CO14	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.
	BP302T. PHYSICAL PHARMACEUTICS-I CO15	BP302T. PHYSICAL PHARMACEUTICS-I CO15	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.
	BP 303 T. PHARMACEUTICAL MICROBIOLOGY CO16	BP 303 T. PHARMACEUTICAL MICROBIOLOGY CO16	Study of all categories of microorganisms especially for the production of alcohol antibiotics, vaccines, vitamins enzymes etc..
	BP 304 T. PHARMACEUTICAL	BP 304 T. PHARMACEUTICAL	This course is designed to impart a fundamental knowledge on the art and

	CAL ENGINEERING CO17	ENGINEERING CO17	science of various unit operations used in pharmaceutical industry.
	BP401T. PHARMACEUTI CAL ORGANIC CHEMISTRY – III CO18	BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III CO18	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.
	BP402T. MEDICINAL CHEMISTRY – I CO19	BP402T. MEDICINAL CHEMISTRY – I CO19	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.
	BP 403 T. PHYSICAL PHARMACEUTI CS-II CO20	BP 403 T. PHYSICAL PHARMACEUTICS-II CO20	The course deals with the various physica 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
	BP 404 T. PHARMACOLO GY-I CO21	BP 404 T. PHARMACOLOGY-I CO21	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.
	BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I CO22	BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I CO22	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.
III year	BP501T. MEDICINAL CHEMISTRY – II CO23	BP501T. MEDICINAL CHEMISTRY – II CO23	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
	BP 502 T. Industrial PharmacyI CO24	BP 502 T. Industrial PharmacyI CO24	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.
	BP503.T. PHARMACOLOGY-II CO25	BP503.T. PHARMACOLOGY-II CO25	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.
	BP504 T. PHARMACOGN	BP504 T. PHARMACOGNOSY	The main purpose of subject is to impart the students the knowledge of

OSY AND PHYTOCHEMISTRY II CO26	AND PHYTOCHEMISTRY II CO26	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
BP 505 T. PHARMACEUTICAL JURISPRUDENCE CO27	BP 505 T. PHARMACEUTICAL JURISPRUDENCE CO27	This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.
BP601T. MEDICINAL CHEMISTRY – III CO28	BP601T. MEDICINAL CHEMISTRY – III CO28	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.
BP602 T. PHARMACOLOGY-III CO29	BP602 T. PHARMACOLOGY-III CO29	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.
	BP 603 T. HERBAL DRUG TECHNOLOGY CO30	BP 603 T. HERBAL DRUG TECHNOLOGY CO30	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
	BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS CO31	BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS CO31	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 arisen therein
	BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY CO32	BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY CO32	Biotechnology has a long promise to revolutionize the biological sciences and technology. Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes subject interesting. Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. Biotechnology has already produced transgenic crops and animals and the future promises lot more. It is basically a research-based subject.
	BP606TPHARMACEUTICAL QUALITY ASSURANCE CO33	BP606TPHARMACEUTICAL QUALITY ASSURANCE CO33	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.
	BP701T. INSTRUMENTAL	BP701T. INSTRUMENTAL	This subject deals with the application of instrumental methods in qualitative

IV year	L METHODS OF ANALYSIS CO34	METHODS ANALYSIS CO34	OF 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.
	BP 702 T. INDUSTRIAL PHARMACYII CO35	BP 702 T. INDUSTRIAL PHARMACYII CO35	This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market
	BP 703T. PHARMACY PRACTICE CO36	BP 703T. PHARMACY PRACTICE CO36	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
	BP 704T: NOVEL DRUG DELIVERY SYSTEMS CO37	BP 704T: NOVEL DRUG DELIVERY SYSTEMS CO37	This subject is designed to impart basic knowledge on the area of novel drug delivery systems.
	BP801T. BIOSTATISTICS AND RESEARCH METHODOLOGY CO38	BP801T. BIOSTATISTICS AND RESEARCH METHODOLOGY CO38	To understand the applications of Biostatistics in 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.
	BP 802T SOCIAL AND PREVENTIVE PHARMACY CO39	BP 802T SOCIAL AND PREVENTIVE PHARMACY CO39	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.
	BP803ET. PHARMA MARKETING MANAGEMENT CO40	BP803ET. PHARMA MARKETING MANAGEMENT CO40	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.
	BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE CO41	BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE CO41	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.
	BP 805T:	BP 805T:	This paper will provide an opportunity for

PHARMACOVIGILANCE CO42	PHARMACOVIGILANCE CO42	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.
BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS CO43	BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS CO43	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.
BP 807 ET. COMPUTER AIDED DRUG DESIGN CO44	BP 807 ET. COMPUTER AIDED DRUG DESIGN CO44	This subject is designed to provide detailed knowledge of rational drug design process and various techniques used in rational drug design process.
BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject) CO45	BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject) CO45	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. This is done both on a microscopic and molecular level. 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.
BP809ET. COSMETIC SCIENCE(Theory) CO46	BP809ET. COSMETIC SCIENCE(Theory) CO46	This subject deals with the study of cosmetics including their preparation, uses and effects.

	BP810 ET. PHARMACOLOGICAL SCREENINGMETHODS CO47	BP810 ET. PHARMACOLOGICAL SCREENINGMETHODS CO47	This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.
	BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES CO48	BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES CO48	This subject deals with the application of 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.
	BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS CO49	BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS CO49	This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.