



SANTHIRAM COLLEGE OF PHARMACY

Approved by AICTE & PCI, New Delhi - Affiliated to JNTUA, Anantapur
NH - 18, Nandyal, Kurnool District, Andhra Pradesh - 518501.

Course Outcomes (CO's)

B-PHARMACY I st SEMESTER (I st YEAR) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Human Anatomy and Physiology-I (Theory)	BP101 T		Upon completion of the Course student will be able to
		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	To Perform the various experiments related to special senses and nervous system.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Analysis (Theory)	BP102T		Upon completion of the Course student will be able to
		1	Understand fundamentals & principles of analytical chemistry.
		2	Carryout various volumetric and electrochemical titrations
		3	Develop analytical skills
		4	Understand the knowledge about assay of pharmaceutical substances
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutics I (Theory)	BP103 T		Upon completion of the Course student will be able to
		1	Know the history of profession of pharmacy factors influencing the dose of drug and dose calculations.
		2	Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
		3	Understand the professional way of handling the prescription
		4	Preparation of various conventional dosage form
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Inorganic Chemistry (Theory)	BP104 T		Upon completion of the Course student will be able to
		1	Understand the history of pharmacopoeia, sources and types of impurities and describe the official methods of control like limit tests.
		2	Acquires knowledge on acids, bases, buffers, buffered isotonic solutions, methods of adjusting isotonicity and major extra and intra cellular



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			electrolytes and know the monographs of dental products.
		3	Classify the gastrointestinal agents and described the methods of preparation, properties, storage, assay and uses with marketed formulations of inorganic compounds in gastrointestinal agents.
		4	Classify the miscellaneous compounds and know the monographs of inorganic compounds in each category.
		5	To understand the radioactivity and study of different radioisotopes, storage, precautions and applications of radioactive substances.
Course	Course Code	COs Number	Course Outcomes (COs)
Communication skills (Theory)	BP105T		Upon completion of the Course student will be able to
		1	Understand and apply knowledge of human communication and language processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication.
		2	Find, use, and evaluate primary academic writing associated with the communication discipline
		3	Develop knowledge, skills, and job-ready skills in Pharmaceutical industry that facilitate their ability to work collaboratively with others.
		4	Enhance communication competencies such as managing conflict, understanding small group processes, active listening, appropriate self-disclosure, and other work place norms.
		5	Learn interview skills.
Course	Course Code	COs Number	Course Outcomes (COs)
Remedial Biology (Theory)	BP106RBT		Upon completion of the Course student will be able to
		1	Know the anatomical Principles followed by scientists for classification of five kingdom animals and its salient features.
		2	Get knowledge on different parts of plants and its morphological and anatomical characters and its importance.
		3	Know the basic components of human anatomy & physiology of prescribed systems.
		4	Know the basic components in plant anatomy & physiology.
		5	Know the plant growth and its regulation.
		6	Know the basic structural and functional organization of living organism.



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Course	Course Code	COs Number	Course Outcomes (COs)
Remedial Mathematics (Theory)	BP106RMT		Upon completion of the Course student will be able to
		1	Know Basic mathematical operations
		2	Know trigonometry mostly used in any sciences.
		3	Draw lines, finding the equations for the purpose of relational study
		4	Know Basic calculus which is used in analytical study of their life sciences applications
		5	Know Some advanced calculations in Research or Project works
		6	Enrich analytical skills in research study
B-PHARMACY IInd SEMESTER (1st YEAR) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Human Anatomy and Physiology II (Theory)	BP201T		Upon completion of the Course student will be able to
		1	Explain the gross morphology, structure and functions of various organs of the human body, Identify the various tissues and organs of different systems of human body
		2	Describe the various homeostatic mechanisms and their imbalances.
		3	Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
		4	Appreciate coordinated working pattern of different organs of each system
		5	Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Organic Chemistry I(Theory)	BP202T		Upon completion of the Course student will be able to
		1	Understand the structure, name and theories of stability, reactivity and orientation.
		2	Understand the types of isomerism and synthesis of organic compounds.
		3	Understand the physical and chemical properties, account for reactivity, and effect of substituents and stability of compounds.
		4	Understand the reactions, name reactions and orientation of reactions.



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Course	Course Code	COs Number	Course Outcomes (COs)
Biochemistry (Theory)	BP203 T		Upon completion of the Course student will be able to
		1	To Understand the catalytic role of enzymes,
		2	To know the importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
		3	Understand the metabolism of nutrient molecules in physiological conditions.
		4	Understand the metabolism of nutrient molecules in pathological conditions.
		5	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
Course	Course Code	COs Number	Course Outcomes (COs)
Pathophysiology (Theory)	BP204T		Upon completion of the Course student will be able to
		1	Explain age-related differences in physiologic and patho physiologic processes and their clinical manifestations.
		2	Explore the most common etiologies and pathogenesis of human disease.
		3	Explore the sign and symptoms of the human disease.
		4	Explore the most common etiologies and predisposing factors associated with infectious disease.
Course	Course Code	COs Number	Course Outcomes (COs)
Computer Applications in Pharmacy (Theory)	BP205T		Upon completion of the Course student will be able to
		1	Know various types of application of computers in pharmacy.
		2	Know the various types of databases.
		3	Know the various applications of databases in pharmacy
		4	Familiar with overview of the computers and MS-office
		5	Familiar with internet, WWW, browsing, HTML & e-mails.
		6	Familiar with Database management
Course	Course Code	COs Number	Course Outcomes (COs)
Environmental sciences (Theory)	BP206T		Upon completion of the Course student will be able to



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		1	Understand basics of environment like ecology, ecosystem, food chain, food web and ecological pyramids.
		2	Know the different natural sources and their conservation to save the environment.
		3	Know the current problems of environment and how to solve them, Role of individual in conservation of environment and natural resources.
		4	Understand the different factors of environmental pollution and measures to minimize it.
		5	Aware about hazards of disposal wastes from hospitals and pharmaceutical industries.
		6	Know the Disaster management in natural calamities.
B.Pharmacy IIIrd Semester (IInd Year) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Organic Chemistry II (Theory)	BP301 T		Upon completion of the Course student will be able to
		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
Course	Course Code	COs Number	Course Outcomes (COs)
Physical Pharmaceutics I (Theory)	BP302 T		Upon completion of the Course student will be able to
		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 adjustments
		3	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
		4	Classify the complexes and determining the methods of analysis of complexes
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Microbiology (Theory)	BP303 T		Upon completion of the Course student will 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



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		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.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Engineering (Theory)	BP304 T		Upon completion of the Course student will be able to
		1	To know various unit operations and perform various processes involved in pharmaceutical manufacturing
		2	To understand the material handling techniques.
		3	To carry out various test to prevent environmental pollution.
		4	To appreciate and comprehend significance of plant lay out design for optimum use of resources.
		5	To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.
B.Pharmacy IVth Semester (IInd year) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Organic Chemistry III (Theory)	BP401 T		Upon completion of the Course student will be able to
		1	Explain the stereo chemical aspects of organic compounds and stereo chemical reactions
		2	understand the methods of preparation and properties of organic compounds
		3	Familiar with synthesis, reactions, relative aromaticity of various heterocyclic compounds
		4	To know the medicinal uses and other applications of organic compound
		5	Brief information on mechanisms of various naming reactions.
Course	Course Code	COs Number	Course Outcomes (COs)
Medicinal Chemistry I (Theory)	BP402 T		Upon completion of the Course student will be able to
		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 (SAR) of different class of drugs



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		4	write the chemical synthesis of some drugs
Course	Course Code	COs Number	Course Outcomes (COs)
Physical Pharmaceutics II (Theory)	BP403T		Upon completion of the Course student will be able to
		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 nad determination of expiry date of formulations
		3	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms
		4	Calculate the expiration date of different dosage forms and describe the accelerated stability studies
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacology I (Theory)	BP404T		Upon completion of the Course student will be able to
		1	Understand the pharmacological actions of different categories of drugs
		2	Drug discovery and clinical evaluation of new drugs
		3	Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels
		4	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacognosy and Phytochemistry I (Theory)	BP405T		Upon completion of the Course student will be able to
		1	Know the techniques in the cultivation and production of crude drugs
		2	Know the evaluation techniques for the herbal drugs
		3	Get knowledge regarding Sources of crude drugs
		4	Get acknowledge about role of plants in Alternative systems of Medicine
		5	Get knowledge on Primary and Secondary metabolites of plants
B.Pharmacy Vth Semester (IIIrd Year) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Medicinal Chemistry II (Theory)	BP501T		Upon completion of the Course student will be able to
		1	Understand the chemistry of drugs with respect to their pharmacological activity



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		2	Understand the drug MOA, metabolic pathways, adverse effect and therapeutic value of drugs
		4	Know the Structural Activity Relationship of different class of drugs
		5	Study the chemical synthesis of selected drugs
Course	Course Code	COs Number	Course Outcomes (COs)
Industrial Pharmacy I	BP502T		Upon completion of the Course student will be able to
		1	Know the various pharmaceutical dosage forms and their manufacturing techniques.
		2	Know various considerations in development of pharmaceutical dosage forms
		3	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
		4	Understand about basics various formulations of Cosmetics and Pharmaceutical Aerosols
		5	To undersatand legal and official requirements for Packaging Materials Science and quality control tests.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacology II (Theory)	BP503T		Upon Completion of this Course student will be able to
		1	Understand the mechanism of drug action and its relevance in the treatment of different diseases
		2	Explain the pharmacology and rational use of drugs used for the treatment various endocrine disorders.
		3	Have basic knowledge of Pharmacology of autocooids
		4	Describe the principles, applications and types of bioassay, Evaluate the potency of unknown compound with reference to standard
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacognosy and Photochemistry II (Theory)	BP504T		Upon Completion of this Course student will be able to
		1	Learn about biogenetic studies and significance in drug discovery
		2	Know detailed information about various secondary metabolites.
		3	Know Isolation, identification and analysis of phytoconstituents by various analytical techniques.
		4	Understand Industrial production, estimation, and utilization of phytoconstituents



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		5	basics of phytochemistry including application of various analytical techniques in extraction and purification of phytoconstituents.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Jurisprudence (Theory)	BP505T		Upon Completion of this Course student will be able to
		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
B.Pharmacy VIth semester (IIIrd Year) (PCI Regulation)			
Course	Course Code	COs Number	Course Outcomes (COs)
Medicinal Chemistry III – (Theory)	BP601T		Upon completion of the Course student will be able to
		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 metabolism, adverse effects and therapeutic value of drugs.
		5	Know the importance of SAR of drugs.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacology III – Theory (Theory)	BP602T		Upon completion of the Course student will be able to
		1	Know drugs used in respiratory disorders and GIT disorders
		2	Learn in detail about various infectious agents, mechanisms, sensitivity, and resistance of different antii nfectives.
		3	Gain knowledge about different antiviral drugs pharmacology. Antitubercular, antileprotics, use of MDT, and drug resistance
		4	Study in detail about cancer pathophysiology and pharmacology of different anticancer drugs, Immunosupressants
		5	Explain about toxicological studies and chronopharmacology.



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Course	Course Code	COs Number	Course Outcomes (COs)
Herbal Drug Technology (Theory)	BP603T		Upon completion of the Course student will be able to
		1	Get knowledge about herbs as raw materials, biodynamic agriculture and organic farming
		2	Know Indian systems of medicine, Ayurvedic formulation preparation
		3	Know the WHO and ICH guidelines for evaluation of herbal drugs, patenting and regulating aspects of herbal drugs.
		4	Get knowledge about various herbal drug interactions
		5	Get knowledge about herbal formulations, herbal cosmetics and herbal excipients, scope and future prospects of herbal drug industry, GMP in manufacturing of herbal drugs,
Course	Course Code	COs Number	Course Outcomes (COs)
Biopharmaceutics and Pharmacokinetics Theory	BP604T		Upon completion of the Course student will be able to
		1	Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance on the concept of drug distribution, protein binding – factors.
		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.
		5	Understand the concept of Linear and Non-Linear kinetics, mechanisms and method of assessments.
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmaceutical Biotechnology (Theory)	BP605T		Upon Completion of This Course Student will be able to
		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	Understand the use of microorganisms in fermentation technology



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		5	Understand different types of immunity, preparation of various vaccines and related products, hybridoma technology, Microbial transformation.
Course	Course Code	COs Number	Course Outcomes (COs)
Quality Assurance (Theory)	BP606T		Upon Completion of This Course Student will be able to
		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
		5	Qualification of Analytical instruments, Analytical method Validation.
Course	Course Code	COs Number	Course Outcomes (COs)
Instrumental methods of Analysis	BP701T	1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
		2	Understand the chromatographic and Electrophoresis separation and analysis of drugs.
		3	Perform quantitative & qualitative analysis of drugs using various analytical instruments.
		4	Understand the Electrophoresis separation and analysis of drugs.
Course	Course Code	COs Number	Course Outcomes (COs)
Industrial Pharmacy II	BP 702 T	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
Course	Course Code	COs Number	Course Outcomes (COs)
Pharmacy Practice	BP 703 T	1	To know Hospital pharmacy and its organization, drug distribution methods in a hospital and identify drug related problems.
		2	To monitor drug therapy of patient through medication chart review and clinical review
		3	To interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states



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		4	To understand pharmaceutical care services and provide patient counseling in community pharmacy to improve patient quality of life
		5	To understand Hospital formulary and inventory control
Course	Course Code	COs Number	Course Outcomes (COs)
Novel drug delivery Systems	BP 704 T	1	To understand various approaches for development of Controlled drug delivery system
		2	To understand the criteria for selection of drugs and polymers for the development of Controlled drug delivery systems, their formulation and evaluation
		3	To understand various approaches for development of Sustained drug delivery system
		4	To understand the criteria for selection of drugs and polymers for the development of Sustained drug delivery systems, their formulation and evaluation
		5	To understand various approaches for development of Targeted drug delivery system