



# Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

◆ Approved by AICTE ◆ ISO 21001:2018 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

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## KL College of Pharmacy

### Program: B. Pharmacy

### Academic Year: 2025-2026

Course Code	Course Title	CO. No	Description of the course Outcome
25PY1101T	Human Anatomy and Physiology-I (Theory)	CO1	Understand the cellular level and tissue level organisation of an organ in human body
		CO2	Understand the anatomical features and physiology of skin bone and skeletal muscle and joints and their related disorders
		CO3	Understand the anatomical and physiological functions of blood and heart and their related disorders
		CO4	Understand the physiological aspects and pathological peripheral nervous system
25PY1101P	Human Anatomy and Physiology-I (Practical)	CO1	Applying the gross anatomy and functions of microscope, connective tissues, skeletal system, and understanding and performance of bleeding and clotting time
		CO2	Applying and performs the blood group analysis, ESR rate, heart rate, pulse, BP, and measurement of hemoglobin, RBC, and WBC counts.
25PY1102T	Pharmaceutical Analysis (Theory)	CO1	Outline Preparation and standardization of different molar and normal solutions. Enlist Sources, types and methods of Minimizing errors.
		CO2	Understand the theories and Classifications of Volumetric titrations.
		CO3	Understand the importance of Complexometry, Masking and Demasking agents. Concepts of Redox titrations
		CO4	Illustrate Construction and working of Reference and indicator electrodes
25PY1102P	Pharmaceutical Analysis (Practical)	CO1	Analyze the exact amount and concentration of chemical substances
		CO2	Analyze the exact amount, concentration and normality of chemical substances
25PY1103T	Pharmaceutics (Theory)	CO1	Understand the history of profession of pharmacy, Understand the basics of different dosage forms, Understand the professional way of handling the prescription

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		CO2	Understand the basics of pharmaceutical calculations, Understand the different powder dosage forms
		CO3	Understand the liquid dosage forms
		CO4	Understand the different semi-solid dosage forms
25PY1103P	Pharmaceutics (Practical)	CO1	Apply the knowledge of preparation and labeling techniques of different solid and monophasic liquid dosage forms
		CO2	Apply the knowledge of preparation and labeling techniques of different types of Biphasic dosage forms and semi-solid dosage forms with its preparation, dispense and label
25PY1104T	Pharmaceutical Inorganic Chemistry (Theory)	CO1	To remember and classify various inorganic compounds, sources of Impurities and test for purity of Impurities
		CO2	To Understand the monograph study of various inorganic compounds belongs to Acid base regulators, Intra & Extracellular Electrolytes
		CO3	To Understand the monograph study of various inorganic compounds belongs to Dental products Gastro-intestinal agents
		CO4	To Understand the monograph study of various inorganic compounds belongs to Miscellaneous agents & Radiopharmaceuticals
25PY1104P	Pharmaceutical Inorganic Chemistry (Practical)	CO1	To Apply and Test the Limit tests for the ions and Identification tests
		CO2	To apply and Determine the purity of various inorganic compounds and preparation of inorganic pharmaceuticals
25PY1105T	Communication Skills (Theory)	CO1	Identify different types of communication process and their importance and personalize barriers & perspectives of communication
		CO2	Describe the elements of communication and employ different types of communicative styles
		CO3	Determine which listening process is effective based on the situation and practice written communication
		CO4	Apply the skills necessary for personal interview demonstrating presentation skills and illustrate the do's and don'ts of group discussion
25PY1105P	Communication Skills (Practical)	CO1	Understand different types of communication process and their importance and personalize barriers & perspectives of communication.
		CO2	Determine which listening process is effective while note taking and report them based on the situation and practice written communication.
25PY1106RBT	Remedial Biology (Theory)	CO1	Introduce biology to non-biology students
		CO2	Know the classification and salient features of five kingdoms of life
		CO3	Understand the basic components of anatomy & physiology of plant
		CO4	Understand the basic components of anatomy & physiology animal with special reference to human

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25PY1106RBP	Remedial Biology (Practical)	CO1	Demonstration of experiments in biology and application of In silico models to demonstrate experiments on frog
		CO2	Identification of tissues and Determination of BP, Blood group and TV
25PY1106RMT	Remedial Mathematics (Theory)	CO1	Apply the types of matrices, addition, multiplication of matrices, transpose, determinant of a matrix, of a matrix using it to solve simultaneous equation
		CO2	Understand the concept of different types of functions and also write the functions in terms of graphs, straight line, slopes, intersection points
		CO3	Understand the derivatives of constants, Derivative of the sum or difference of two functions, Conditions for a function to be a maximum or a minimum at a point
		CO4	Understand the derivatives of different functions with single independent variable order, degree and solving the differential equations by using different methods
25PY1207T	Human Anatomy and Physiology-II (Theory)	CO1	Understand the gross morphology, structure and functions of Central Nervous system and Brain.
		CO2	Understand the gross morphology, structure and functions of digestive system. Formation and role of ATP, Creatinine Phosphate and BMR
		CO3	Understand the gross morphology, structure and functions of respiratory and urinary system.
		CO4	Understand the gross morphology, structure and functions of endocrine and reproductive system. Introduction to genetics.
25PY1207P	Human Anatomy and Physiology-II (Practical)	CO1	Analysis on organization of nervous system, endocrine, integumentary and special senses; and knowledge on the , neurological, visual and reflex activity.
		CO2	Analysis on digestive, respiratory, reproductive, urinary systems, negative feedback mechanism. Analysis on family planning devices and pregnancy diagnosis test, vital organs and gonads.
25PY1208T	Pharmaceutical Organic Chemistry I (Theory)	CO1	Understand the structure, name and the type of isomerism of the organic compound
		CO2	Understand the name of the reaction and orientation of reactions
		CO3	Understand the reactivity /stability of compound
		CO4	Understand the Named reactions in Organic chemistry
25PY1208P	Pharmaceutical Organic Chemistry I (Practical)	CO1	To Apply the knowledge on the basic qualitative analysis of organic compounds
		CO2	To Apply the knowledge on Synthesis of derivatives of organic compounds
25PY1209T	Biochemistry (Theory)	CO1	Understand the principles of chemistry in biology.
		CO2	Understand the metabolic process and reactions involved in body for Carbohydrates and biological oxidation.
		CO3	Understand the metabolism of nutrient molecules in physiological and pathological conditions.
		CO4	Understand the genetic organization of mammalian

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			genome and functions of DNA in the synthesis of RNAs and protein. Understand the role of enzymes in physiology of human body.
25PY1209P	Biochemistry (Practical)	CO1	Application and identification by qualitative and quantitative examination of carbohydrates, cholesterol, proteins and determining blood cholesterol.
		CO2	Application of enzymatic hydrolysis of biomolecules and salivary enzyme activity
25PY1210T	Pathophysiology (Theory)	CO1	Understand the causes, progression of injury, inflammation and repair
		CO2	Understand the causes and pathogenesis of diseases related to cardio vascular system and Central nervous system
		CO3	Understand the pathophysiology of diseases related to respiratory system and Gastro Intestinal system
		CO4	Understand the concepts of pathogenesis of different communicable diseases and cancer
25PY1211T	Computer Applications in Pharmacy (Theory)	CO1	Understand the Number system and different types of numbering systems, Concept of Information Systems and Software, Web technologies
		CO2	Understand the various types of application of computers in pharmacy
		CO3	Understand the computers in Pharmacy Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design
		CO4	Understand the web-based tools for pharmacy practice
25PY1211P	Computer Applications in Pharmacy (Practical)	CO1	Apply knowledge on creating a HTML web page to show personal information, design a questionnaire, and retrieve the information of a drug
		CO2	Apply knowledge for Drug information storage and retrieval using MS Access and Creating invoice table using MS Access.
25PY1212T	Environmental Sciences (Theory)	CO1	Understand the importance of Environmental education and conservation of natural resources.
		CO2	Understand the importance of renewable natural resources.
		CO3	Understand the importance of ecosystems and biodiversity
		CO4	Understand the environmental science knowledge on solid waste management, disaster management and EIA process
25UC1103	Language Skills	CO1	Understand the essential listening, speaking, and reading skills
		CO2	Apply and produce essential writing and non-verbal communication skills
25PY2113T	Pharmaceutical Organic Chemistry –II (Theory)	CO1	Understand Aromatic nature and type of chemical reactions of organic compound
		CO2	Understand the reactivity of Polycyclic Aromatic compounds and different Strain theories
		CO3	Understand about substituted Aromatic compounds, their preparation and properties
		CO4	Understand the study of sugars, amino acids, proteins,

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			fats and oils and effects of various parameters
25PY2113P	Pharmaceutical Organic Chemistry –II (Practical)	CO1	Apply the concepts of different named reactions to synthesize organic compounds
		CO2	Estimate quality and purity of various oils by Acid value, Saponification value, and Iodine value and discuss the purification techniques and their importance in chemistry
25PY2114T	Physical Pharmaceutics-I (Theory)	CO1	Understand the principles of colloidal systems and their properties and rheological behaviour of pharmaceutical systems
		CO2	Understand the physical parameters in designing of dispersed systems
		CO3	Understand the principles of particle surface characteristics in study of powdered materials and application of these concepts in designing of dosage forms:
		CO4	Understand the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
25PY2114P	Physical Pharmaceutics-I (Practical)	CO1	Understand the Solubility of drugs and mechanisms of solute solvent interactions, States of Matter and properties of matter and Physicochemical properties of drug molecules
		CO2	Apply the Concepts of Surface and interfacial phenomenon, Complexation and protein binding and determination of PH in biological systems
25PY2115T	Pharmaceutical Microbiology (Theory)	CO1	Understand nutritional requirements, cultivation and preservation of various microorganisms
		CO2	Understand the importance and implementation of sterilization in pharmaceutical processing and industry
		CO3	Understand the sterility testing of pharmaceutical products. And morphology, cultivation and replication of fungi and virus..
		CO4	Understand microbiological standardization of Pharmaceuticals.
25PY2115P	Pharmaceutical Microbiology (Practical)	CO1	Analysis of different equipments used in experimental microbiology, to perform the preparation of culture media and sterilization of glassware. Applying the knowledge of sterilization techniques and isolation of Pure Cultures
		CO2	Analysis and apply the staining techniques of bacteria, demonstration of bacterial motility by hanging drop technique. To perform the microbiological assays of antibiotics, sterility testing of pharmaceuticals, biochemical tests of Microorganisms
25PY2116T	Pharmaceutical Engineering (Theory)	CO1	Understand the concept of flow of fluids and various principles and equipments involved in size separation and size reduction techniques
		CO2	Understand the concept of Heat transfer and principles and equipments involved in evaporation and distillation
		CO3	Apply the concepts of drying and mixing in

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			operation of pharmaceutical manufacturing dosage forms
		CO4	Understand various materials involved in pharmaceutical manufacturing process, principles and equipments involved in filtration and centrifugation
25PY2116P	Pharmaceutical Engineering (Practical)	CO1	Apply various unit operations used in pharmaceutical industries and material handling techniques
		CO2	Apply various processes involved in pharmaceutical manufacturing and the operation of pharmaceutical manufacturing equipment
25UC1203	Design Thinking and Innovation	CO1	Understand the importance of Design thinking mindset for identifying contextualized problems
		CO2	Analyze the problem statement by empathizing with user
		CO3	Develop ideation and test the prototypes made
		CO4	Explore the fundamentals of entrepreneurship skills for transforming the challenge into an opportunity
25PY2217T	Pharmaceutical Organic Chemistry III (Theory)	CO1	Learn stereoisomerism and racemic modification of compound
		CO2	Understand stereo specific reactions and its nomenclature of given organic compounds
		CO3	Understand nomenclature rules, synthesis and its reactions for heterocyclic compounds
		CO4	Understand preparative methods, medicinal uses of heterocyclic drugs and Study of Named reactions.
25PY2218T	Medicinal Chemistry I (Theory)	CO1	Understand the correlation of pharmacology of a disease with physico-chemical properties of drugs
		CO2	Understand the chemistry, metabolic pathways, structure activity relationship and therapeutic value of adrenergic drugs
		CO3	Understand the chemistry, metabolic pathways, structure activity relationship and therapeutic value of cholinergic drugs
		CO4	Understand the chemistry, metabolic pathways, structure activity relationship and therapeutic value of CNS drugs
25PY2218P	Medicinal Chemistry I (Practical)	CO1	Apply the various chemical reactions to perform chemical synthesis of some drugs and their intermediates.
		CO2	Apply qualitative technique to perform the assays for few drugs to identify its purity and to determination of a physical property, partition coefficient for few drugs
25PY2219T	Physical Pharmaceutics II (Theory)	CO1	Apply the principles of colloidal systems and their properties and rheological behaviour of pharmaceutical systems
		CO2	Application of physical parameters in designing of dispersed systems
		CO3	Apply the principles of particle surface characteristics in study of powdered materials and application of these concepts in designing of dosage forms
		CO4	Apply the principles of chemical kinetics & to use them for stability testing and determination of expiry

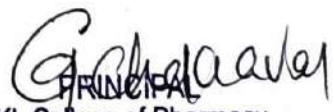
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			date of formulations
25PY2219P	Physical Pharmaceutics II (Practical)	CO1	Apply the principles of colloidal systems and their properties and rheological behaviour of pharmaceutical systems and physical parameters in designing of dispersed systems
		CO2	Apply the principles of particle surface characteristics in study of powdered materials and application of these concepts in designing of dosage forms and the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
25PY2220T	Pharmacology I (Theory)	CO1	Understanding the pharmacological actions of different categories of drugs
		CO2	Understand the mechanism of drug action at the organ system/subcellular/macromolecular level
		CO3	Applying the basic knowledge of pharmacology in PNS
		CO4	Applying the effect of drugs on CNS
25PY2220P	Pharmacology I (Practical)	CO1	Apply basic principles of pharmacology and common laboratory techniques
		CO2	Analyse the effect of drugs using various pharmacological equipments (In silico)
25PY2221T	Pharmacognosy And Phytochemistry I (Theory)	CO1	Understand the knowledge of crude drugs and its evaluation
		CO2	Understand the cultivation, collection and processing of crude drugs
		CO3	To know about the traditional systems of medicine and a brief introduction about secondary metabolites
		CO4	Understand primary metabolites and marine source of drugs
25PY2221P	Pharmacognosy And Phytochemistry I (Practical)	CO1	Applying the knowledge of chemical evaluation in identifying and physical evaluation of crude drugs
		CO2	Applying the knowledge of microscopical evaluation of crude drugs by linear measurements and leaf constants
25PY3122T	Medicinal Chemistry II (Theory)	CO1	Understanding the nomenclature, chemistry, metabolism, structure-activity relationship, mechanism of action, synthesis (few drugs) and uses of antihistamine and antineoplastic drugs
		CO2	Understanding the nomenclature, chemistry, metabolism, structure-activity relationship, mechanism of action, synthesis (few drugs) and uses of anti-anginal, antihypertensive and diuretic drugs
		CO3	Applying the knowledge of the nomenclature, chemistry, metabolism, structure- activity relationship, mechanism of action, synthesis (few drugs) and uses of anti- arrhythmic, anticoagulant, antihyperlipidemic and local anaesthetic drugs and drug used in cardiac failure
		CO4	Applying the knowledge of the nomenclature, chemistry, metabolism, structure- activity relationship, mechanism of action, synthesis (few drugs) and uses of antidiabetic drugs, hormones and steroid drugs

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25PY3123T	Industrial Pharmacy I (Theory)	CO1	Know about Physicochemical properties of drug that influences the performance of drug and dosage form.
		CO2	Understand the formulation, manufacturing, evaluation of tablets, liquid orals, capsules and pelletization.
		CO3	Know about different considerations related to parenterals and ophthalmic products
		CO4	Understand the formulation, preparation and evaluation of cosmetics and aerosols. A note on packaging materials for pharmaceutical products
25PY3123P	Industrial Pharmacy I (Practical)	CO1	Estimate the Physicochemical properties of drug that influences the performance of drug and dosage form and preparation and evaluation of capsules and coated tablets
		CO2	Examine preparation and evaluation of injections and creams
25PY3124T	Pharmacology II (Theory)	CO1	Understanding Pharmacology of cardio vascular system drugs: congestive heart failure drugs, Anti-hypertensive drugs, Anti-anginal drugs, Anti-arrhythmic drugs, Anti-hyperlipidemic drugs.
		CO2	Understanding the pharmacology of shock, Hematinics, coagulants and anticoagulants, Fibrinolytics and anti-platelet drugs, diuretics and autocoids
		CO3	Understand the Pharmacology of drugs acting on endocrine system. Anterior Pituitary hormones, Thyroid hormones, Insulin, Oral Hypoglycemic agents and glucagon, ACTH and corticosteroids.
		CO4	Apply the principles of Bio -Assays
25PY3124P	Pharmacology II (Practical)	CO1	Analysing the pharmacological activity of drugs on Cardiac and Renal system and dose responses on isolated tissues (Insilco)
		CO2	Analyse the potency of drugs by Bioassays and the effect of drugs on analgesic and inflammation
25PY3125T	Pharmacognosy and Phytochemistry II (Theory)	CO1	Understand the importance of the basic metabolic pathways occurring in higher plants
		CO2	Understand the importance of biological sources of various crude drugs
		CO3	Understand the extraction procedures of crude drugs
		CO4	Application of various techniques involved in production of the phytoconstituents and identification of it
25PY3125P	Pharmacognosy and Phytochemistry II (Practical)	CO1	Apply various chemical tests to Identification of phytoconstituents in the crude drugs
		CO2	Examine the Isolation and detection of Phytoconstituents from crude drugs
25PY3126T	Pharmaceutical Jurisprudence (Theory)	CO1	Understand Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
		CO2	Understand Various Indian Pharmaceutical Acts and Laws such as Drugs and Cosmetics Act and its rules
		CO3	Understand The regulatory authorities and agencies governing the manufacture and sale of

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			pharmaceuticals
		CO4	Understand The code of ethics, laws and regulations during the pharmaceutical practice
25PY3122S	AI and Python Programming for Pharmacy	CO1	Apply AI concepts and knowledge-representation methods to choose suitable machine learning paradigms and implement basic algorithms for solving specific problems
		CO2	Apply core python programming concepts and integrate AI/ML algorithms to create and evaluate solutions for real-world pharmacy problems
25PY3123S	Production Process for API/Bulk Drug/Intermediates	CO1	Apply the principles of Active Pharmaceutical Ingredient productions in pharmaceutical manufacturing.
		CO2	Analyze the application of unit operations for API (Active Pharmaceutical Ingredient) manufacturing and plant components
25PY3227T	Medicinal Chemistry III (Theory)	CO1	Understand the chemistry, SAR, classification of different Beta - lactam, Aminoglycoside, Tetracyclines, Macrolide's antibiotics, and the concept of prodrug.
		CO2	Understand the chemistry, SAR, classification of different Antimalarials, Anti tubercular agents, Anti protozoal, Anthelmintics antibiotics.
		CO3	Understand the chemistry, SAR, classification of different Urinary tract Anti-Infective agents, Anti-viral, Anti-fungal antibiotics.
		CO4	Understand the chemistry, SAR, classification of different Sulfonamides and sulfones. Know the importance of QSAR of drugs drug design and combinatorial chemistry
25PY3227P	Medicinal Chemistry III (Practical)	CO1	Analysing the Preparation of drugs and intermediates like 1. Sulphanilamide, 2. 7 Hydroxy, 4 methyl coumarin 3. Chlorobutanol 4. Triphenyl imidazole 5. Tolbutamide 6. Hexamine. Assay of drugs like 1. Isonicotinic acid hydrazide 2. Chloroquine 3. Metronidazole 4. Dapsone 5. Chlorpheniramine maleate 6. Benzyl penicillin
		CO2	Analysing the Preparation of medicinally important compounds or intermediates like aspirin, paracetamol by Microwave irradiation technique. Drawing structures and reactions using chem draw Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeness screening Lipinskies RO5
25PY3228T	Pharmacology III (Theory)	CO1	Understand the pharmacology of drugs acting on Respiratory and digestive system
		CO2	Understand the pharmacology of chemotherapy
		CO3	Understand the immuno pharmacology and principles of animal toxicology
		CO4	Comprehend the principles of toxicology and treatment of various poisonings

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25PY3228P	Pharmacology III (Practical)	CO1	Obtain the knowledge on introduction to experimental Pharmacology, common laboratory animals, agonist and antagonist activities of drugs on isolated tissues. Get trained on screening of anti-allergic drugs, anti-ulcer drugs and gastro intestinal activity
		CO2	Estimation of different biochemical parameters using semi auto analyser and obtain a knowledge on screening of hypo glycaemic drugs, Pyrogen testing, Trained in performing of toxicity studies, and get knowledge in application of Biostatistics in Pharmacological research.
25PY3229T	Herbal Drug Technology (Theory)	CO1	Apply the knowledge on formulation of Ayurvedic dosage form understand raw material as source of herbal drugs from cultivation to herbal drug product.
		CO2	Understand the concept of Nutraceuticals and their role in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastrointestinal diseases
		CO3	Apply the knowledge on formulation of Herbal Cosmetics using Herbal excipients
		CO4	Understand the WHO and ICH guidelines for evaluation of herbal drugs. Understand Regulatory Issues -Regulations in India and Schedule T
25PY3229P	Herbal Drug Technology (Practical)	CO1	Analyze the preliminary screening and determination of phytochemical constituents
		CO2	Analyze and Evaluation of natural origins and application of herbal products in cosmetics
25PY3230T	Biopharmaceutics And Pharmacokinetics (Theory)	CO1	To Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
		CO2	To understand the concepts of bioavailability and bioequivalence of drug products and their significance.
		CO3	To understand the Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination
		CO4	To Understand various pharmacokinetic parameters, their significance & applications.
25PY3231T	Pharmaceutical Biotechnology (Theory)	CO1	Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
		CO2	Understand genetic engineering applications in relation to production of pharmaceuticals
		CO3	Understanding the importance of immunity and Importance of preparation of immunological preparation and Monoclonal antibodies in Industries
		CO4	Understand the use of microorganisms in biotransformation with fermentation technology
25PY3232T	Quality Assurance (Theory)	CO1	Understand the cGMP aspects in a pharmaceutical industry
		CO2	Understand the importance of organization and personnel
		CO3	Understand the scope of quality certifications

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			applicable to pharmaceutical industries
		CO4	Understand the responsibilities of QA & QC departments
25PY4133T	Instrumental Method of Analysis (Theory)	CO1	Understand the intensity and wavelength distribution of absorption and emission spectrum after excitation by a certain spectrum of light
		CO2	Understand and Interpret chemical compounds by molecular vibrations and identify chemical elements by measuring emitted light intensity, on absorption of optical radiation by free atoms and measuring intensities of scattered and emitted light through samples
		CO3	Understand the concepts of Chromatography and techniques used in resolving complex mixtures into individual compounds.
		CO4	Understand and acquire knowledge on various instrumental procedure involving Chromatographic principles.
25PY4133P	Instrumental Method of Analysis (Practical)	CO1	Application through estimation of samples by spectroscopic methods
		CO2	Application through determination of samples by Chromatographic and Spectroscopic methods
25PY4134T	Industrial Pharmacy II (Theory)	CO1	Understand the process of pilot plant and scale up of pharmaceutical dosage forms
		CO2	Understand the process of technology transfer from lab scale to commercial batch
		CO3	Understand different Laws and Acts that regulate pharmaceutical industry
		CO4	Application of the approval process and regulatory requirements for drug products
25PY4135T	Pharmacy Practice (Theory)	CO1	To understand hospital organization and its functions along with application of ADRs.
		CO2	To understand various drug distribution methods, TDM and medication adherence of patients
		CO3	To understand in detail about PTC, Drug information services and patient counselling
		CO4	To understand and apply the activities of clinical pharmacists along with investigation of laboratory data
25PY4136T	Novel Drug Delivery Systems (Theory)	CO1	To Understand the Various approaches of controlled drug delivery system and Microspheres.
		CO2	To Understand the various approaches for development of Mucosal and implantable drug delivery system.
		CO3	To Understand the approaches and Evaluation of Transdermal, Gastro retentive and Naso pulmonary drug delivery system.
		CO4	To Apply the concept and approaches ocular and targeting methods such as liposomes, niosomes, and nanoparticles.
25PY4137PS	Practice School	CO1	Educational initiatives seeking to introduce industry perspective in education
		CO2	To acquire learning by applying the knowledge and the skills they possess

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		CO3	Simulation of the Industry environment into the process of education
		CO4	Industrial training through experimental and cooperative learning
		CO5	Promotes Partnership and intellectual exchange between academia and industry
25UC0026	Human Values, Gender Equality & Professional Ethics	CO1	Understand the basic concepts of Value Education.
		CO2	Gain basic understanding of the principles in Harmony among the Human Beings, Family and Society
		CO3	Gain knowledge in the concept of Harmony in the family and society
		CO4	Acquire knowledge in the concepts of harmony in the nature
25PY4133S	Operation of Analytical Instruments	CO1	Analysing the basic principles of analytical instruments.
		CO2	Analysing the operation of analytical instruments.
25PY4238T	Biostatistics And Research Methodology (Theory)	CO1	Apply graphical representation of a given numerical data through its frequency distribution and also calculation of various measures of location and dispersion
		CO2	Apply the chances of occurrences of an event through various probability distributions and fit a curve by using principle of least squares
		CO3	Apply ANOVA technique to construct Completely randomized design, randomized block design, Latin square design
		CO4	Apply statistical tests for large and small samples to test the hypothesis. and Analyze the variance by using completely randomized, randomized, Latin square designs and also apply queuing models to the real world problems
25PY4239T	Social And Preventive Pharmacy (Theory)	CO1	Understand current issues related to health and pharmaceutical problems within the country and worldwide.
		CO2	Applying current healthcare development for a critical way of thinking.
		CO3	Understanding alternative ways of solving problems related to health issues through various healthcare programs.
		CO4	Understanding alternative ways of solving problems related to sanitation and hygiene
25PY4240ET	Pharma Marketing Management (Theory)	CO1	Understand the concepts of sales and marketing of pharmaceutical products
		CO2	Understand about various policies for drug inventory management
		CO3	Understand about retail and wholesale marketing
		CO4	Understand business potential and development in product sales and manufacturing
25PY4241ET	Pharmaceutical Regulatory Science (Theory)	CO1	To understand about the process, legal aspects, quality policies of drug discovery and development and manufacturing in India
		CO2	To understand the regulatory authorities and agencies

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			governing the manufacture and sale of pharmaceuticals
		CO3	To understand the regulatory approval process in India
		CO4	To understand about the registration of drug product in Indian and international markets
25PY4242ET	Pharmacovigilance (Theory)	CO1	Understanding the monitoring aspects of Pharmacovigilance
		CO2	Understanding the monitoring aspects of Pharmacovigilance
		CO3	Understanding the monitoring aspects of Pharmacovigilance
		CO4	Understanding the medical codes used in the pharmacovigilance industry
25PY4243ET	Quality Control and Standardization of Herbals (Theory)	CO1	Understand and know WHO guidelines for quality control of herbal drugs
		CO2	Understand and know Quality assurance in herbal drug industry
		CO3	Understand and know the regulatory approval process and their registration in Indian and international markets
		CO4	Understand and appreciate EU and ICH guidelines for quality control of herbal drugs
25PY4244ET	Computer Aided Drug Design (Theory)	CO1	Apply the principles to discover and optimize lead molecules
		CO2	Understand the role of drug design in drug discovery process
		CO3	Apply the principles of QSAR and docking to predict the activity of potential drug candidates
		CO4	Understand various strategies to develop new drug-like molecules
25PY4245ET	Cell and Molecular Biology (Theory)	CO1	Understanding basics and applications of cell and molecular biology
		CO2	Understanding chemical foundations and cellular process
		CO3	Understand of science of genetics.
		CO4	Understand the principle of cell signalling
25PY4246ET	Cosmetic Science (Theory)	CO1	Understand the Principles of formulation and building blocks of skin care products
		CO2	Understand the Principles of formulation and building blocks of Hair care Products
		CO3	Understand the Principle of formulation of oral care products and Role of herbs in cosmetics
		CO4	Understand the Principles of Cosmetic Evaluation
25PY4247ET	Experimental Pharmacology (Theory)	CO1	understand the uses of various commonly used laboratory animals in preclinical research
		CO2	Understand the animal screening models for various indications
		CO3	Understand the animal screening models for nervous system related indications
		CO4	Understand the importance of biostatistics and research methodology in clinical and preclinical research

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25PY4248 ET	Advanced Instrumentation Techniques (Theory)	CO1	Apply and understands the ability to investigate and determine the structure of typical organic chemical compounds using suitable Nuclear magnetic resonance experiments
		CO2	Apply and understand the concepts in Thermo gravimetric analysis, Differential Thermal Analysis, Differential Scanning Calorimetry. X-Ray Diffraction methods
		CO3	Apply and understanding the calibration of various analytical instruments.
		CO4	Apply and gain knowledge on analysis of drugs using various analytical instruments
25PY4249ET	Dietary Supplements and Nutraceuticals (Theory)	CO1	Understand the need of supplements by the different group of people to maintain healthy life..
		CO2	Understand the outcome of deficiencies in dietary supplements
		CO3	Understand the components in dietary supplements and their application
		CO4	Understand the regulatory and commercial aspects of dietary supplements including health claims
25PY4250PW	Project Work	CO1	Application of Pharmacy in clinical settings
		CO2	Application of modern tools usage
		CO3	Application of pharmacy knowledge in communication skills and ethics
		CO4	Application of Pharmacy knowledge in research development

  
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