



Koneru Lakshmaiah Education Foundation

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

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

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KL College of Pharmacy

Program: B. Pharmacy

Academic Year :2021-2022

Course Code	Course Title	CO. No	Description of the course Outcome
21PY1101T	Human Anatomy and Physiology-I (Theory)	CO1	Understand the gross morphology
		CO2	Understanding anatomy and physiological concepts
		CO3	Understanding physiology of body fluids
		CO4	Understand the gross morphology of PNS
21PY1101P	Human Anatomy and Physiology-I (Practical)	CO1	Application of gross morphology of body organs using microscope
		CO2	Applying the concepts of hematocytometry
		CO3	Determination of various blood parameters
		CO4	Determination of heart rate, BP
21PY1102T	Pharmaceutical Analysis I (Theory)	CO1	Understand the principles of volumetric and electro chemical analysis
		CO2	Understand the theories and classifications of volumetric titrations
		CO3	Understanding the Importance of complexometry, masking and demasking agents. Concepts of Redox-titrations.
		CO4	Understanding the concepts of electrochemical methods for analysis
21PY1102P	Pharmaceutical Analysis I (Practical)	CO1	Application of volumetric and electro chemical analysis
		CO2	Analysing volumetric titrations
		CO3	Analysing the Importance of complexometry
		CO4	Analysing the concepts of electrochemical methods for analysis
21PY1103T	Pharmaceutics (Theory)	CO1	Understand the history and development of profession of pharmacy
		CO2	Apply the knowledge on pharmaceutical calculations
		CO3	Understand the principles involved in the formulation development
		CO4	Understand the principles involved in the formulation development of semisolid dosage forms

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21PY1103P	Pharmaceutics (Practical)	CO1	Apply the knowledge of preparation and dispensing of monophasic liquid dosage forms
		CO2	Apply the knowledge of preparation and dispensing of biphasic liquid dosage forms
		CO3	Apply the knowledge of preparation and dispensing of powder dosage forms
		CO4	Apply the knowledge of preparation and dispensing of biphasic liquid dosage forms
21PY1104T	Pharmaceutical Inorganic Chemistry (Theory)	CO1	Understand inorganic compounds, sources of Impurities and test for purity of Impurities
		CO2	Understand the monograph study of various inorganic compounds
		CO3	Understand the monograph study of various inorganic compounds belongs to Dental products & Gastro-intestinal agents
		CO4	Understand the monograph study of various inorganic compounds belongs to Miscellaneous agents & Radiopharmaceuticals
21PY1104P	Pharmaceutical Inorganic Chemistry (Practical)	CO1	Test for "Limit tests "for the ions
		CO2	Test for "Limit tests "for the ions
		CO3	Determination of purity of various inorganic compounds
		CO4	Preparation of inorganic pharmaceuticals
21PY1105T	Communication Skills (Theory)	CO1	Apply the practical knowledge of using action words in sentence construction
		CO2	Apply and analyse the right kind of pronunciation with regards to speech sounds
		CO3	Apply the concept of fundamental principle of counting to solve the problems
		CO4	Analyze the given conditions and finding out all the possible arrangements in linear & circular order
21PY1105P	Communication Skills (Practical)	CO1	Understand Basic communication
		CO2	Understand Pronunciations
		CO3	Application of advanced learning
		CO4	Application of handling skills
21PY1106RBT	Remedial Biology (Theory)	CO1	Application of handling skills
		CO2	Introduce biology to non-biology students
		CO3	Know the classification and salient features of five kingdoms of life
		CO4	Understand the basic components of anatomy & physiology of plant
21PY1106RBP	Remedial Biology (Practical)	CO1	Demonstration of experiments in biology
		CO2	Application of Insilco models to demonstrate experiments on frog
		CO3	Identification of tissues
		CO4	Determination of BP, Blood group and TV

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21PY1106RMT	Remedial Mathematics (Theory)	CO1	Understand the essentials of mathematics
		CO2	Know theory and applications of Mathematics
		CO3	Solve problems applying theoretical concepts
		CO4	Application of Pharmacy in Life sciences
21PY1207T	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.
		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
21PY1207P	Human Anatomy and Physiology-II (Practical)	CO1	Apply the knowledge to perform various physiology experiments
		CO2	Demonstration of various Sensory activities
		CO3	Demonstration of various physiological activities
		CO4	Examining physiological functions
21PY1208T	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
21PY1208P	Pharmaceutical Organic Chemistry I (Practical)	CO1	Test for organic compounds and detection of elements
		CO2	Test for functional groups
		CO3	Identification of unknown compounds
		CO4	Preparation of derivatives
21PY1209T	Biochemistry (Theory)	CO1	Understand The Principles of Chemistry in biology
		CO2	Understand the catalytic role of enzymes
		CO3	Understand the metabolism of nutrient molecules in physiological and pathological conditions
		CO4	Understand the genetic organization of mammalian genome
21PY1209P	Biochemistry (Practical)	CO1	Qualitative and quantitative analysis of carbohydrates, proteins and cholesterol
		CO2	Determination of blood cholesterol, and measurement of pH
		CO3	Preparation of buffer solution
		CO4	Enzymatic hydrolysis of biomolecules and salivary enzyme activity
21PY1210T	Pathophysiology (Theory)	CO1	Understand the conditions leading to a disease
		CO2	Understand the mechanism of inflammation
		CO3	Understand the etiology and pathogenesis of the selected disease states
		CO4	Understanding the principles of selected diseases

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21PY1211T	Computer Applications in Pharmacy (Theory)	CO1	Apply the knowledge of Numbering system and its calculations Understand the concepts of Information System and software
		CO2	Apply the knowledge using HTML, XML, CSS, MS access languages. Understand the concepts of web technologies
		CO3	Understand the various types of application of computers in pharmacy
		CO4	Applying knowledge on Data analysis in preclinical development Understand the concept of Bioinformatics
21PY1211P	Computer Applications in Pharmacy (Practical)	CO1	Apply knowledge on creating a HTML web page
		CO2	Apply knowledge on creating mailing labels Using Label Wizard
		CO3	Apply knowledge for Drug information storage and retrieval using MS Access
		CO4	Apply knowledge Creating and working with queries in MS Access
21PY1212T	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
20UC1101	Integrated Professional English	CO1	Understand Basic English Sounds
		CO2	Understand Oral Communication
		CO3	Understand Non-Verbal Communication
		CO4	Communication Skills and Inter Professional Collaboration
21PY2113T	Pharmaceutical Organic Chemistry –II (Theory)	CO1	Understand Aromatic nature and type of chemical reactions of organic compound
		CO2	Understand account for reactivity of Polycyclic Aromatic compounds and different Strain theories
		CO3	Understand the preparation and properties of aromatic compounds
		CO4	Application of SAR on medical uses of selected drugs
21PY2113P	Pharmaceutical Organic Chemistry –II (Practical)	CO1	Application of laboratory techniques
		CO2	Determination of oil values
		CO3	Preparation of various Organic compound
		CO4	Synthesis of various organic compounds
21PY2114T	Physical Pharmaceutics-I (Theory)	CO1	Understand the Solubility of drugs and mechanisms of solute solvent interactions
		CO2	Understand the Principles involved in States of Matter and properties of matter and Physicochemical properties of drug molecules
		CO3	Understand the Concepts involved in Surface and interfacial phenomenon.

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		CO4	Application of Complexation and protein binding and determination of PH in biological systems
21PY2114P	Physical Pharmaceutics-I (Practical)	CO1	Application of the principles of physical chemistry in development of colloidal systems
		CO2	Understand the different types of liquids based on the viscosity
		CO3	Design a stable suspension / emulsion by using principles of dispersed systems
		CO4	Application of surface properties of solids, importance of particle size and particle size determination technique
2PY2115T	Pharmaceutical Microbiology (Theory)	CO1	Understand methods of identification, cultivation and preservation of various microorganisms
		CO2	Understand the importance and implementation of sterilization in pharmaceutical processing and industry
		CO3	Understand sterility testing of pharmaceutical products
		CO4	Understand microbiological standardization of Pharmaceuticals.
21PY2115P	Pharmaceutical Microbiology (Practical)	CO1	Study of different equipments used in experimental microbiology, to perform the preparation of culture media and sterilization of glassware
		CO2	Applying the knowledge of sterilization techniques and isolation of Pure Cultures
		CO3	Apply the staining techniques of bacteria, demonstration of bacterial motility by hanging drop technique
		CO4	Perform the microbiological assays of antibiotics, sterility testing of pharmaceuticals
21PY2116T	Pharmaceutical Engineering (Theory)	CO1	Understand the concept of flow of fluids and various principles and equipment involved in size separation and size reduction techniques
		CO2	Understand the concept of Heat transfer and principles and equipment involved in evaporation and distillation
		CO3	Apply the concepts of drying and mixing in operation of pharmaceutical manufacturing dosage forms
		CO4	Understand various materials involved in pharmaceutical manufacturing process
21PY2116P	Pharmaceutical Engineering (Practical)	CO1	To know various unit operations used in pharmaceutical industries
		CO2	To understand the material handling techniques
		CO3	Understand various processes involved in pharmaceutical manufacturing process
		CO4	Apply knowledge on operation of pharmaceutical manufacturing equipment

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20UC1202	English Proficiency	CO1	Demonstrating different interpersonal skills for employability
		CO2	Distinguishing business essential skills
		CO3	Classifying social media and corporate communication skills
		CO4	Applying analytical thinking skills
21UC1203	Design Thinking and Innovation	CO1	Understand the basics of design thinking and its implications in product or service development
		CO2	Understand and Analyse the requirements of a typical problem
		CO3	Plan the necessary activities towards solving the problem through ideation and prototyping
		CO4	Evaluate the solution and refine them based on the customer feedback
21PY2217T	Pharmaceutical Organic Chemistry III (Theory)	CO1	Describes stereoisomerism and racemic modification of compound
		CO2	Account for stereo specific reactions and its nomenclature of given organic compounds
		CO3	Detail study of Heterocyclics, its nomenclature, synthesis and its reactions
		CO4	Description of preparative methods, medicinal uses of heterocyclic drugs and Study of Named reactions.
21PY2218T	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
21PY2218P	Medicinal Chemistry I (Practical)	CO1	Perform chemical synthesis of some drugs
		CO2	Perform chemical synthesis of some intermediates in chemical reactions
		CO3	Perform the assays for few drugs to identify its purity
		CO4	Determination of a physical property, partition coefficient for few drugs
21PY2219T	Physical Pharmaceutics II (Theory)	CO1	Understand the principles of physical chemistry in pharmaceutical technology
		CO2	Understand various physicochemical properties of drug molecules in the designing the dosage forms
		CO3	Understand the use of physicochemical properties in the formulation development and evaluation of dosage forms.
		CO4	Understand the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations

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21PY2219P	Physical Pharmaceutics II (Practical)	CO1	Apply various methods of determining viscosity of liquids
		CO2	Apply the principles of dispersed systems and determine the stability of suspensions
		CO3	Apply the principles of kinetics for detection of rate constants
		CO4	Apply the concepts of Accelerated stability studies
21PY2220T	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
21PY2220P	Pharmacology I (Practical)	CO1	Application of basic principles of pharmacology
		CO2	Application of common laboratory techniques
		CO3	Examining drugs using pharmacological equipments (In silico)
		CO4	Analysing the effect of drugs on stereotypic and catatonic activity
21PY2221T	Pharmacognosy And Phytochemistry I (Theory)	CO1	To know the knowledge of crude drugs and its evaluation
		CO2	To know about the cultivation, collection and processing of crude drugs
		CO3	Know about the traditional systems of medicine and a brief introduction about secondary metabolites
		CO4	Know about the primary metabolites and marine source of drugs
21PY2221P	Pharmacognosy And Phytochemistry I (Practical)	CO1	Applying the knowledge of chemical evaluation in identifying crude drugs
		CO2	Applying the knowledge of physical evaluation of crude drugs
		CO3	Applying the knowledge of physical evaluation of crude drugs
		CO4	Applying the knowledge of physical evaluation of crude drugs
21PY3122T	Medicinal Chemistry II (Theory)	CO1	Understanding the nomenclature, chemistry, metabolism, structure-activity relationship, mechanism of action, synthesis (few 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 drugs
		CO4	Applying the knowledge of the nomenclature, chemistry, metabolism, structure-activity relationship, mechanism of action, synthesis (few

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			drugs) and uses of Antidiabetic drugs, hormones and steroid drugs
21PY3123T	Industrial Pharmacy I (Theory)	CO1	Understand 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	Understand different considerations related to parenterals and ophthalmic products
		CO4	Apply the formulation, preparation and evaluation of cosmetics and aerosols. A note on packaging materials for pharmaceutical products
21PY3123P	Industrial Pharmacy I (Practical)	CO1	Applying the Preformulation studies on paracetamol/aspirin/or any other drug
		CO2	Applying the preparation and evaluation of capsules and coated tablets.
		CO3	Analysing the preparation and evaluation of injections
		CO4	Analysing the evaluation of creams
21PY3124T	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	Applying the principles of Bio-Assays
21PY3124P	Pharmacology II (Practical)	CO1	Analyzing the pharmacological activity of drugs on Cardiac and Renal system
		CO2	Analysing dose responses on isolated tissues (Insilco)
		CO3	Examining the potency of drugs by Bioassays
		CO4	Analysing the effect of drugs on analgesic and inflammation
21PY3125T	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	Production of the phytoconstituents and identification of it.

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21PY3125P	Pharmacognosy and Phytochemistry II (Practical)	CO1	Identification of phytoconstituents in the crude drug by chemical tests
		CO2	Application of Pharmacognostical study of crude drugs
		CO3	Isolation of phytoconstituents from the crude drugs
		CO4	Detection of Phytoconstituents by chromatographic techniques
21PY3126T	Pharmaceutical Jurisprudence (Theory)	CO1	Understanding the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
		CO2	Understanding Various Indian pharmaceutical Acts and Laws
		CO3	Understanding the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
		CO4	Understanding the code of ethics during the pharmaceutical practice
21PY3123S	Production Process for API/Bulk Drug/Intermediates	CO1	Application of various unit operations and design and working of equipment used for the unit operations
		CO2	Perform and evaluate various preformulation studies for API and analyze the behavior of API
		CO3	Determine different degradative reactions of API and evaluate the nature of degradation
		CO4	Operate and perform various exercises on various equipment used in the manufacturing process
21PY3227T	Medicinal Chemistry III (Theory)	CO1	Understand the importance of drug design and different techniques of drug design
		CO2	Understand the chemistry of drugs with respect to their biological activity
		CO3	Understanding the metabolism, adverse effects & therapeutic value of drugs.
		CO4	Applying the concepts of SAR of drugs
21PY3227P	Medicinal Chemistry III (Practical)	CO1	Perform synthesis of drugs and intermediates
		CO2	Performing Assay of drugs
		CO3	Preparation of medicinally important compounds
		CO4	Analyzing the structures using Chem draw
21PY3228T	Pharmacology III (Theory)	CO1	Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
		CO2	Comprehend the principles of toxicology and treatment of various poisonings
		CO3	Appreciate correlation of pharmacology with related medical sciences
		CO4	Applying the concepts of pharmacodynamics of medicinal agents
21PY3228P	Pharmacology III (Practical)	CO1	Demonstration of various In silico experiments
		CO2	Understanding various pharmacokinetic calculations
		CO3	Analyzing Pharmacological effects
		CO4	Application of biostatistics in experimental pharmacology

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21PY3229T	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
21PY3229P	Herbal Drug Technology (Practical)	CO1	Test for preliminary phytochemical screening
		CO2	Determination of phytochemical constituents
		CO3	Evaluation of natural origins
		CO4	Application of herbal products in cosmetics
21PY3230T	Biopharmaceutics And Pharmacokinetics (Theory)	CO1	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	Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
		CO4	Understand various pharmacokinetic parameters, their significance & applications.
21PY3231T	Pharmaceutical Biotechnology (Theory)	CO1	Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
		CO2	Applications of genetic engineering in relation to production of pharmaceuticals
		CO3	Understanding Importance of Monoclonal antibodies in Industries
		CO4	Appreciate the use of microorganisms in fermentation
21PY3232T	Quality Assurance (Theory)	CO1	Understand the importance of quality assurance in Production of quality pharmaceutical production industry
		CO2	Understand the importance of good manufacturing
		CO3	Practices in a pharmaceutical industry
		CO4	Understand the importance of good laboratory practices in a pharmaceutical industry
21PY4133T	Instrumental Method of Analysis (Theory)	CO1	Know about various instruments and standard operating procedures
		CO2	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
		CO3	Understand the chromatographic separation and analysis of drugs.
		CO4	Understand the principle and application of advanced analytical instruments.

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21PY4133P	Instrumental Method of Analysis (Practical)	CO1	Understanding the concept, applying and analyzing the samples under UV, Colorimetry, Fluorimetry
		CO2	Understanding the concept, applying and analyzing the samples by using Flame photometry, Nepheloturbidometry
		CO3	Understanding, applying the concept by analyzing the samples for separation affinities by paper chromatography, thin layer chromatography, column chromatography
		CO4	Understanding the working, analyzing the concept by separation of sample components using HPLC, Gas Chromatography.
21PY4134T	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
21PY4135T	Pharmacy Practice (Theory)	CO1	Understand various drug distribution methods in a hospital
		CO2	Appreciate the pharmacy stores management and inventory control
		CO3	Examining patient drug therapy
		CO4	Application of communication skills in patient counselling
21PY4136T	Novel Drug Delivery Systems (Theory)	CO1	Understand the Various approaches of controlled drug delivery system and Microspheres
		CO2	Understand the various approaches for development of Mucosal drug delivery systems, implantable, buccal drug delivery system
		CO3	Understand the approaches and Evaluation of Transdermal, Gastro retentive and Naso pulmonary drug delivery system.
		CO4	Apply the concept and approaches ocular and targeting methods such as liposomes, niosomes, and nanoparticles
21PY4137PS	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
		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

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21UC0010	Universal Human Values & Professional Ethics	CO1	Realize the basic aspiration and understanding harmony in the human being
		CO2	Realize the purpose of family and understand about relationship
		CO3	Realize ways to attain harmony in nature
		CO4	Realize the definitiveness of human conduct
21PY4133S	Operation of Analytical Instruments	CO1	Explanation of basic principles of analytical instruments used in life science sector. Summarize application of each analytical instrument and Operation of pH meter, conductivity meter, hardness tester as per SOP
		CO2	Operation of analytical weighing balance, Operation of moisture analyser, disintegration tester, loss on drying (LOD) machine, dissolution apparatus, Karl Fisher (KF) apparatus, viscometer, density tester, refractometer, polarimeter, autotitrator, torque tester, leak test apparatus, pycnometer, tensile strength tester, Operation and maintain centrifuge, autoclave, thin layer chromatography (TLC) chamber, hot air oven, muffle furnace
		CO3	Operation and maintain high performance liquid chromatography (HPLC) instrument Operation of infrared Fourier-transform infrared (FT-IR) spectrometer Operation of Ultraviolet and visible (UV-Vis) analyser
		CO4	Operation gas chromatography (GC) instrument Performing calibration and validation of analytical instrument as per SOP and manual Performing maintenance procedure for analytical instruments as per SOP
21PY4238T	Biostatistics And Research Methodology (Theory)	CO1	Graphical representation of a given numerical data through its frequency distribution and also calculation of various measures of location and dispersion
		CO2	Determines 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.

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21PY4239T	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 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.
21PY4240ET	Pharma Marketing Management (Theory)	CO1	To provide an understanding of sales and marketing of pharmaceutical products
		CO2	Know about various policies for drug inventory management
		CO3	Know about retail and wholesale marketing
		CO4	Understand business potential and development in product sales and manufacturing
21PY4241ET	Pharmaceutical Regulatory Science (Theory)	CO1	Know about legal aspects and quality policies for drug manufacturing
		CO2	Know about the process of drug discovery and development
		CO3	Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
		CO4	Know the regulatory approval process and their registration in Indian and international markets
21PY4242ET	Pharmacovigilance (Theory)	CO1	Know about the history, basic terminologies & development of Pharmacovigilance & highlight the importance of monitoring in drug safety
		CO2	Applications of the principles of Meddra coding & establishing Pharmacovigilance programme in India & providing criteria for
		CO3	Analyse identified problems and communicate effectively with the regulatory bodies& other stake holders pertaining to the vaccine Pharmacovigilance.
		CO4	Application of ICH Guidelines and clear instructions to follow the practice of Pharmacovigilance in GMP environment.
21PY4243ET	Quality Control and Standardization of Herbals (Theory)	CO1	Know WHO guidelines for quality control of herbal drugs
		CO2	Know Quality assurance in herbal drug industry
		CO3	Know the regulatory approval process and their registration in Indian and international markets
		CO4	Appreciate EU and ICH guidelines for quality control of herbal drugs
21PY4244ET	Computer Aided Drug Design (Theory)	CO1	Design and discovery of lead molecules
		CO2	Application of of drug design in drug discovery process
		CO3	Application of the concept of QSAR and docking
		CO4	Understand various strategies to develop new drug like molecules

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21PY4245ET	Cell and Molecular Biology (Theory)	CO1	Summarize cell and molecular biology history
		CO2	Summarize cellular functioning and composition
		CO3	Describe the chemical foundations of cell biology
		CO4	Summarize the DNA properties of cell biology
21PY4246ET	Cosmetic Science (Theory)	CO1	Principles of formulation and building blocks of skin care products
		CO2	Principles of formulation and building blocks of Hair care products
		CO3	Role of herbs in cosmetics
		CO4	Principles of Cosmetic Evaluation
21PY4247ET	Experimental Pharmacology (Theory)	CO1	Appreciate the applications of various commonly
		CO2	Appreciate and demonstrate the various screening methods used in preclinical research
		CO3	Appreciate and demonstrate the importance of biostatistics and research methodology
		CO4	Design and execute a research hypothesis independently
21PY4248 ET	Advanced Instrumentation Techniques (Theory)	CO1	Understand the advanced instruments used and its applications in drug analysis
		CO2	understand the chromatographic separation and analysis of drugs.
		CO3	Understand the calibration of various analytical instruments
		CO4	Application of analysis of drugs using various analytical instruments
21PY4249ET	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	Appreciate the components in dietary supplements and the application
		CO4	Appreciate the regulatory and commercial aspects of dietary supplements including health claims.
21PY4250PW	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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