



## Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A++' ♦ Approved by AICTE ♦ ISO 21001:2018 Certified  
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KL College of Pharmacy

Program: M. Pharmacy

Academic Year :2024-2025

Course Code	Course Title	CO. No	Description of the course Outcome
22PY5101	Modern Pharmaceutical Analytical Techniques	CO1	Investigation, characterization and quantification of typical organic chemical compounds using UV-visible, IR, flame emission, atomic absorption spectroscopy and spectrofluorimetry
		CO2	Investigation and determination of the structure of typical organic chemical compounds using NMR spectroscopy
		CO3	Investigation and determination of the structure of typical organic chemical compounds using MS spectrometry
		CO4	Isolation, purification and quantification of typical organic chemical compounds using chromatography techniques
		CO5	Concepts in electrophoresis and radio-immuno assays
		CO6	Investigation and determination of the structure of typical chemical compounds using X-Ray Diffraction methods
22PY5102	Drug Delivery Systems	CO1	Understand the concepts involved in SR and CR drug delivery systems
		CO2	Identify suitable drugs and polymers for specific controlled drug delivery systems and discuss modern strategies
		CO3	Understand various approaches for rate controlled and ocular drug delivery systems
		CO4	Understand the formulation concepts involved in development of GRDDS, buccal and transdermal DDS
		CO5	Illustrate the evaluation of buccal and transdermal DDS
		CO6	Illustrate the need and application of novel strategies in delivery of biosimilars like proteins, peptides and vaccines

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22PY5103	Modern Pharmaceutics	CO1	Discuss various preformulation concepts in dosage form development
		CO2	Develop new dosage forms by applying the principles of Optimization
		CO3	Design validation protocol for solid and liquid dosage forms
		CO4	Apply the cGMP and Industrial management principles in dosage form development
		CO5	Understand the process of compaction and compression in solid dosage form development
		CO6	Understand the study of consolidation parameter
22PY5104	Regulatory Affairs	CO1	Understand the concepts of innovator and generic drugs in drug development process
		CO2	Understand Regulatory requirements for new drug application approval in pharmaceuticals
		CO3	Understand ICH guidelines for filing and approval process of drug products in different countries
		CO4	Illustrate the post approval regulatory requirements for products and submission of global documents in Common Technical Document/ eCTD formats
		CO5	Illustrate the regulatory procedures involved in non-clinical and clinical drug development
		CO6	Apply the principles of regulatory affairs in drug development process, filing and approval, non-clinical and clinical drug development in global scenario
22PY5105	Pharmaceutics Practical I	CO1	Analyse the Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer, Demonstrate the experiments using HPLC and Gas Chromatography Estimate Pharmacopoeial substances by Fluorimetry and Flame Photometry
		CO2	Formulate and evaluate the different marketed formulations Analyze the precompression parameters and understand the influence of excipients on product performance Construct the release kinetic plots through model dependent and independent methods
22PY5106	Seminar/Assignment	CO1	Select topic from the course content for deep learning towards seminar presentation
		CO2	Develop advanced content and present it as seminar
		CO3	Select topic from the course content for deep learning towards assignment preparation
		CO4	Develop advanced content and present it as assignment

*S. Hanuman*

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22PY5107	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	CO1	Understand the concepts involved in Drug targeting systems
		CO2	Understand the preparation and evaluation of targeting methods
		CO3	Design and develop various delivery systems for a specific drug targets
		CO4	Understand the preparation and evaluation of Intra nasal formulations
		CO5	Understand the nucleic acid- based therapeutic drug delivery system
		CO6	Applications of the Potential target diseases for gene therapy
22PY5108	Advanced Biopharmaceutics and Pharmacokinetics	CO1	Understand the mechanisms and factors affecting ADME processes through GIT
		CO2	Discuss several biopharmaceutic considerations, BCS, IVIVC and permeability in drug product design and in vitro drug product performance
		CO3	Understand the impact of drug interactions on drug action
		CO4	Explain the protocol for bioavailability/bioequivalence studies and their role in generic product development
		CO5	Illustrate the assessment of pharmacokinetic parameters assuming different models
		CO6	Illustrate the application of pharmacokinetic principles in development of drug products and biosimilars
22PY5109	Computer Aided Drug Delivery Systems	CO1	Explain the history of computers in pharmaceutical research and development
		CO2	Explain computational modeling of drug disposition
		CO3	Apply the approaches of optimization techniques in pharmaceutical formulation
		CO4	Understand the importance of computers in biopharmaceutical characterization
		CO5	Understand the role of computer simulations in PK-PD and clinical data management
		CO6	Illustrate the application of AI, robotics and CFD in pharmacy field
22PY5110	Cosmetics and Cosmeceuticals	CO1	To know the Regulatory provisions related to the import, manufacture and sale of cosmetics.
		CO2	Understand the diverse skin problems and how to overcome through skin preparations
		CO3	To understand the formulation and evaluation of a variety of cosmetic products.
		CO4	Understanding the key ingredients and basic science to develop cosmetics and Cosmeceuticals.
		CO5	To gain the knowledge of the various technologies involved in cosmetics manufacture.
		CO6	To understand the Design of cosmeceuticals and herbal formulations.

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22PY5111	Pharmaceutics Practical II	CO1	Demonstrate the practical skills in development and evaluation of novel systems Demonstrate the BA studies, PK-PD analysis, and IVIVC Apply computational tools in product development and optimization
		CO2	Understand the concept and application of PK-PD simulation models Understand the clinical data collection and population modeling Demonstrate the formulation and evaluation of cosmeceuticals
22PY5112	Seminar/Assignment	CO1	Select topic from the course content for deep learning towards seminar presentation
		CO2	Develop advanced content and present it as seminar
		CO3	Select topic from the course content for deep learning towards assignment preparation
		CO4	Develop advanced content and present it as assignment
22PY5113	Research Methodology and Biostatistics	CO1	Understand the basic principles of research methodology and its role in pharmaceutical aspect
		CO2	Understand the basic concepts of biostatistics
		CO3	Illustrate the importance of biostatistics in research
		CO4	Develop research proposal following the principles of medical research
		CO5	Understand and apply the guidelines of CPCSEA in preclinical experimentation
		CO6	Understand the principles of Declaration of Helsinki
22PY5114	Journal Club	CO1	Select a research paper published in reputed journal by using search engines and databases
		CO2	Critically appraise the published research work
		CO3	Develop a report
		CO4	Present the critical observations and discuss
22PY5115	Discussion / Presentation (Proposal Presentation)	CO1	Identify the research problem
		CO2	Discuss research problem with team, peers and guide for solution
		CO3	Develop a protocol report on the critically appraised research problem with aim and objectives
		CO4	Analyse and present the critically appraised research problem in appropriate form and discuss the plan of work
22PY5116	Research Work	CO1	Conduct literature review and come to conclusions on selection of drugs/excipients/methods/techniques
		CO2	Develop a research protocol or plan of work
		CO3	Conduct research experiments to meet the aim and objectives of proposed research work
		CO4	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement
		CO5	Document the findings of conducted experiments
		CO6	Interpret the results obtained and plan further activities

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22PY5117	Journal Club	CO1	Select a research paper published in reputed journal by using search engines and databases
		CO2	Critically appraise the published research work
		CO3	Develop a report
		CO4	Present the critical observations and discuss
22PY5118	Research Work	CO1	Review the latest literature in selected area of work
		CO2	Conduct research experiments to meet the aim and objectives of proposed research work
		CO3	Evaluate the findings and plan alterations or new methodologies or procedures for further improvement
		CO4	Document the findings of conducted experiments
		CO5	Interpret the results obtained and summarize the work with a conclusion
		CO6	Draft the chapters for thesis
22PY5119	Discussion / Final Presentation	CO1	Interpret the observations and results
		CO2	Develop the presentation in an organized manner
		CO3	Explain the followed methods and results
		CO4	Defend the questions from experts and peers
22PY5120	Co-curricular Activities	CO1	Participate in external scientific/technical programs like conferences/seminars/symposia
		CO2	Present their technical or research work
		CO3	Perform scientific paper writing and critical thinking
		CO4	Perform team management and networking

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