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Geethanjali

# Geethanjali College of Pharmacy

Approved by AICTE, PCI New Delhi, Permanently Affiliated to JNTUH & B. Pharmacy Accredited by NBA
Recognized Under UGC Section 2F & 12B of UGC Act, 1956, by DSIR-SIRO & HI/BI of MSME, Certified by ISO 9001:2015
Cheeryal (V), Keesara (M), Medchal-Malkajgiri Dist, Telangana State- 501301.

## Program: MASTER OF PHARMACY (PHARMACEUTICS)

## BATCH (2019-2021) REGULATION R19

## COURSE OUTCOMES WITH KNOWLEDGE LEVEL & ITS RELEVANCE TO PROGRAM OUTCOMES

| Program: Master of Pharmacy (PHARMACEUTICS)/ First Year/ I Semester | | | | | |
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| **Course Name** | **Code** | **Course Outcome No.** | **CO Statement** | **Knowledge Level** | **Relevanceto PO's** |
| MODERN PHARMACEUTICS -I | M.PT/ R19.C 111 | C111.1 | Analyze Goals of preformulation ,parameters, polymorph and amorphousform ,selection of drugs | K4 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C111.2 | Categorize the excipients for development of solid dosage form | K4 | |
| | | C111.3 | Prioritize and plan coating techniques and problem encountered in micro encapsulation | K5 | |
| | | C111.4 | Criticize and judge formulation development capsules | K5 | |
| | | C111.5 | Value the optimization techniques in pharmaceutical formulationand process | K5 | |
| ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS | M.PT/ R19.C 112 | C112.1 | Summarize various biological and metabolic factors affecting bioavailability, describe the assessment of biological samples to determine bioavailability | K3 | PO1 PO2 PO3 PO4 PO5 |

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| | | C112.2 | Determine various pharmacokinetic parametersby application of compartment models | K4 | PO6<br>PO7<br>PO8<br>PO9<br>PO10<br>PO11 |
| | | C112.3 | Calculate absorption rate | K4 | |

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| | | | for various order kinetics | | |
| | | C112.4 | Summarize the concept of nonlinear pharmacokinetics | K3 | |
| | | C112.5 | Discuss the concept of time dependent pharmacokinetics and druginteractions. | K3 | |
| DRUG REGULATORY AFFAIRS | M.PT/ R19.C 114 | C114.1 | Discuss the rationale behind regulatory requirements and ways and means of complying with them in India. | K 4 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C114.2 | Point out the important aspects of GMP. | K 4 | |
| | | C114.3 | List various laws, legislation and guidance related to safety, efficacy ethical conduct and regulatory approval of drugs in USA & Brazil. | K 4 | |
| | | C114.4 | Handle documentation and general principles involvedin regulatory writing and submission to agencies. | K 4 | |
| | | C114.5 | Organize the submission of Drug Master Files to regulatory authorities as per their specific requirements in USA, Europe andCanada. | K 4 | |
| STABILTY OF DRUG AND DOSAGE FORM | M.PT/ R19.C 118 | C118.1 | Judge and prioritize, and plan regarding hydrolysis, photolysis | K5 | PO1 PO3 PO4 PO6 PO7 PO9 PO10 PO11 |
| | | C118.2 | Define and describe aboutthe physical stability | K2 | |
| | | C118.3 | summarize the use of excipients and knowledge regarding extraction of drugs | K2 | |
| | | C118.4 | design and modify raw materials used in cosmetic industry | K6 | |
| | | C118.5 | solve the theory of hair andskin formulations | K3 | |

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| RESEARCH METHODOLOGY & INTELLECTULA PROPERTY RIGHTS | M.PT/ R19.C 119 | C119.1 | Summarize Research problem, Sources of research problem | K3 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C119.2 | Organize the effective literature studies approaches, analysis, Plagiarism, Research ethics | K4 | |
| | | C119.3 | Understand the effective technical writing, how to write report | K3 | |
| | | C119.4 | Determine the Patents, Designs, Trade and Copyright. | K5 | |
| | | C119.5 | Analyze the Licensing and transfer of technology | K4 | |
| MODERN PHARMACEUTICS -I (LAB) | M.PT/ R19.C1 110 | C1110.1 | Compare to carry out the preformulation studies of solid dosage forms effects of compressional force on tablet disintegration time | K4 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C1110.2 | List the study of micromeritic properties ofpowders and granules andeffect of particle size on dissolution of tablets | K4 | |
| | | C1110.3 | Evaluate the effects of binders on dissolution of tablet. Pharmacokinetic models ,to determine similarity factors | K5 | |
| | | C1110.4 | Estimate Accelerated stability testing of differenttablets ,determine of first second order rate constantsby acid and alkaline | K5 | |
| | | C1110.5 | Determine Preparation ns evaluation of beta cyclodextrin complexes ofnew drug preparation of paracetamol tablets and comparison with marketedproducts | K5 | |

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| ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS (LAB) | M.PT/ R19.C1111 | C1111.1 | Analyze the dissolution by various data-kinetic modeling and Intrinsic dissolution. | K4 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C1111.2 | Evaluate the drug-protein binding analysis. | K5 | |
| | | C1111.3 | Describe the Ka(absorptionrate constant ) absorption curve-Wagner nelson method , Loo-Riegel method. | K2 | |
| | | C1111.4 | Explain the Assignment of numerical problems, one compartment and two compartment disposition, method of residuals, AUCand evaluation of pharmacokinetic parameters. | K2 | |
| | | C1111.5 | Understand the drug release from semi solids by agar gel method of Franz diffusion cell. | K2 | |
| AUDIT COURSE-1 VALUE EDUCATION | M.PT/ R19.C1115 | C1115.1 | Understand human values, their significance and rolein life. | K3 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C1115.2 | Promote self-reflection and critical inquiry that fostercritical thinking of one'svalue and the values of others. | K3 | |
| | | C1115.3 | Practice respect for human rights and democraticprinciples. | K3 | |
| | | C1115.4 | Emerge as responsible citizens with clear conviction to practice values and ethics in life. | K3 | |
| | | C1115.5 | Develop the overall personality. | K3 | |
| **M. Pharmacy/ First Year/ II Semester** | | | | | |
| MODERN | M.PT/ | C121.1 | Describe the pilot plant scale | K2 | PO1 |

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| PHARMACEUTICS -II | R19.C 121 | | up techniques used in pharmaceutical manufacturing | | PO2<br>PO3<br>PO4<br>PO5<br>PO6<br>PO7<br>PO8<br>PO9<br>PO10<br>PO11 |
| | | C121.2 | Explain the formulation development of Parenteral dosage forms | K2 | |
| | | C121.3 | Evaluate the pharmaceutical aerosols and manufacturing process | K5 | |
| | | C121.4 | Discuss about manufacture of the cosmetics and nutraceuticals | K2 | |
| | | C121.5 | Analyse the aseptic processing operation | K4 | |
| ADVANCED DRUG DELIVERYSYSTEMS | M.PT/ R19.C 122 | C122.1 | Understand the Controlled release oral drug delivery systems & Parenteral controlled release drug delivery systems | K3 | PO1<br>PO3<br>PO4<br>PO6<br>PO7<br>PO9<br>PO10<br>PO11 |
| | | C122.2 | Determining Implantable Therapeutic systems , Transdermal delivery systems , Ocular and Intrauterine delivery systems | K4 | |
| | | C122.3 | Summarize Bioadhesive drug delivery systems & Nasal drug delivery systems | K3 | |
| | | C122.4 | Elaborate Liposomes, Niosomes, Microspheres, Nanoparticles & Resealed erythrocytes | K5 | |
| | | C122.5 | Distinguish the Drug Delivery to lungs & Deliveryto the brain | K4 | |
| INDUSTRIAL PHARMACY | M.PT/ R19.C 123 | C123.1 | Distinguish the detailed studyof machinery and theory of pharmaceutical operations like milling, mixing, filtration and drying. | K4 | PO1<br>PO3<br>PO4<br>PO6<br>PO7<br>PO8<br>PO9<br>PO10 |
| | | C123.2 | Summarize various material | K3 | |

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| | | | of construction, equipment's, packaging materials involved in large scale production like monophasic and biphasic dosage forms. | | PO11 |
| | | C123.3 | Elaborate about product organization, its objectives, and policies related to material management, handling, inventory management, planning control budget and total quality management. | K5 | |
| | | C123.4 | Discuss about effluent analysis and distinguish between its specifications, and preventive measures for the different pollutions like water, solid, air and sound. | K5 | |
| | | C123.5 | To criticize and judge the validation methods and processes involved in solids, liquids and sterile dosage forms. | K5 | |
| NANO BASED DRUG DELIVERYSYSTEMS | M.PT/ R19.C 126 | C126.1 | Determination and classification of various properties of nano materials with their role of size, its distribution and its properties. | K4 | PO1<br>PO2<br>PO3<br>PO4<br>PO5<br>PO6<br>PO7<br>PO8<br>PO9<br>PO10<br>PO11 |
| | | C126.2 | Summarize various physical, chemical, biological methodsfor the synthesis of different types of nano particles like gold, magnetic, polymeric, assembly structures. | K3 | |
| | | C126.3 | Elaborate about Biomedical applications of nano technology | K5 | |
| | | C126.4 | Designing of nano materialsfor drug delivery related to pulmonary, nasal, cancer therapy and cardio vascular diseases. | K5 | |

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| | | C126.5 | Distinguish the principles of size reduction, analysis of nano particles, size, PDI, sizeseparation and different methods of analysis for the release of drugs. | K4 | |
| MODERN PHARMACEUTICS -II (LAB) | M.PT/ R19.C 129 | C129.1 | Experimenting the Preparation of mouth wash | K3 | PO1 PO3 PO4 PO6 PO7 PO9 PO10 PO11 |
| | | C129.2 | Preparing the formulation and evaluation of vanishingcream and calamine lotion | K3 | |
| | | C129.3 | Estimating the preparationand evaluation of floating tablets and Fast dissolvingtablets | K4 | |
| | | C129.4 | Determination the evaluationof Chewable tablets | K3 | |
| | | C129.5 | Experimenting the preparation of oral rehydration solution | K4 | |
| ADVANCED DRUG DELIVERYSYSTEMS (LAB) | M.PT/ R19.C 1210 | C1210.1 | Determining the study on diffusion of drugs through various polymeric membranes | K3 | PO1 PO3 PO4 PO6 PO7 PO8 PO9 PO10 PO11 |
| | | C1210.2 | Estimating the formulation and evaluation of sustained release oral matrix tablet | K4 | |
| | | C1210.3 | Determining the formulationand evaluation of sustained release oral reservoir system. | K3 | |
| | | C1210.4 | Experimenting the formulation and evaluation of microspheres / microencapsules | K5 | |
| | | C1210.5 | Structuring the formulation and evaluation of transdermalfilms & Formulation and evaluation of mucoadhesive system | K4 | |
| AUDIT COURSE -2 DISASTER | M.PT/ R19.C | C1113.1 | Understand key concepts of disasters and its relationships | K3 | PO1 PO3 |

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| MANAGEMENT | 1113 | | with development and disaster prone areas in India. | | PO4<br>PO6<br>PO7<br>PO8<br>PO9<br>PO10<br>PO11 |
| | | C1113.2 | Explain repercussions of disasters and hazards. | K3 | |
| | | C1113.3 | Promote prevention and preparedness for disaster. | K3 | |
| | | C1113.4 | Understand the techniques of risk reduction | K3 | |
| | | C1113.5 | Enhance awareness of disaster risk management and build skills to respond to disasters. | K3 | |
| **M. Pharmacy/ Second Year/ I Semester** | | | | | |
| SCALEUP AND TECHNOLOGY TRANSFER | M.PT/ R19.C 212 | C212.1 | Design the pilot scale up technology | K6 | PO1<br>PO3<br>PO4<br>PO6<br>PO7<br>PO9<br>PO10<br>PO11 |
| | | C212.2 | Judge the documentation process | K5 | |
| | | C212.3 | Conclude in choosing of equipment for dosage form production | K4 | |
| | | C212.4 | Summarize the process validation | K2 | |
| | | C212.5 | Describe safety and hazardsin industries | K2 | |
| AUDITS AND REGULATORY COMPLIANCE | M.PT/ R19.C 218 | C218.1 | Discuss briefly about audit objectives and theirmanagement. | K4 | PO1<br>PO2<br>PO3<br>PO4<br>PO5<br>PO6<br>PO7<br>PO8<br>PO9<br>PO10<br>PO11 |
| | | C218.2 | Understand the role of quality systems and audits in pharmaceutical manufacturing environment. | K4 | |
| | | C218.3 | Prepare checklist of auditing of vendors and production department. | K4 | |
| | | C218.4 | Organize the auditing of a microbiological laboratory. | K4 | |
| | | C218.5 | List the basics of auditing various engineering systemsin a manufacturing plant. | K4 | |