JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh, India

INSTITUTE OF SCIENCE & TECHNOLOGY

M.Pharm in Pharmacology

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Able to apply the knowledge gained during the course of the program from pharmacology, pharmaceutics, medicinal chemistry and pharmaceutical analysis

PSO 2: Able to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team.

PSO 3: Able to do multidisciplinary jobs in the pharmaceutical industries in various branches and would be able to write effective project reports in multidisciplinary environment in the context of changing technologies.

PSO4: Able to communicate easily and comfortably. Would be able to perform multitasks in multi fields including pharmaceutical & cosmetics. Research area would be strong.

PROGRAM OUTCOMES:

At the end of the program the student will be able to:

PO1:Pharmaceutical Knowledge:- Students gain a deep knowledge regarding human body, its related diseases, analytical skills, drug molecules (Active Pharmaceutical Ingredients) along with excipients, natural drug resources, chemistry involved in API including synthesis of commonly used drugs, effect of drug on human body, toxicity and impurity profile, ADME studies of drugs (behavior of drug in human body), dosage form studies including novel approaches, designing and development of formulation stability studies, analysis etc

PO2: Research Analysis: Students could apply the knowledge in research field to make new discoveries.

PO3: Design & Development of dosage forms: Various dosage forms could be prepared by the a pharmacy students in the pharmaceutical companies for the ease of patients.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern methods usage: Create, select, and apply appropriate techniques, resources, and modern methods with an understanding of the limitations and its usage. The student also learns to handle many instruments related to their studies which would help them work in a Pharmaceutical Industry, pharmacovigilance, regulatory requirements, legal processes etc.

PO6: Pharmacy and society: Pharmacist provides complete health care data and practices to the people of the society and guides them to be healthy. The student also learns drug distribution system, patient counseling, industrial laws etc. Student gains expertise in storage and distribution of drugs with all precautions and in-depth knowledge of dose, adverse effect and other health related issues to deal with indoor and outdoor patients admitted in hospitals and also in public.

PO7: Environment and sustainability: Understand the impact of the professional pharmacist in society and environment, and make an impact of it on the people of the society.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the pharmacy practice. Student is also trained in ethical behavior with physician, nurses and other paramedical staff for protecting patient's health

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams acts as a multidisciplinary person in every context.

PO10 : Communication: Communicate effectively on pharmaceutical activities with the community and with society.

PO11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO12 : Social Interaction: Being a public welfare job a pharmacist would be able to interact with the people in a better way to cure them and make them feel healthy.

COURSE OUTCOMES

Course Code	MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES
MPL101T	

After completion of course, students would be able to:

CO1 Chemicals and Excipients
CO2 The analysis of various drugs in single and combination dosage forms Theoretical and
CO3 practical skills of the instruments

Course Code	ADVANCED PHARMACOLOGY-I
MPL102T	

After completion of course, students would be able to:

CO1 Discuss the pathophysiology and pharmacotherapy of certain diseases
CO2 Explain the mechanism of drug actions at cellular and molecular level
CO3 Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

Course Code	PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-I
MPL103T	

After completion of course, students would be able to:

CO1 Appraise the regulations and ethical requirement for the usage of experimental animals.
CO2 Describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals
CO3 Describe the various newer screening methods involved in the drug discovery process
CO4 Appreciate and correlate the preclinical data to humans

Course Code	CELLULAR AND MOLECULAR PHARMACOLOGY
MPL104T	

After completion of course, students would be able to:

CO1 Explain the receptor signal transduction processes.
CO2 Explain the molecular pathways affected by drugs.
CO3 Appreciate the applicability of molecular pharmacology & biomarkers in drug discovery process.
CO4 Demonstrate molecular biology techniques as applicable for pharmacology

Course Code	PHARMACOLOGY PRACTICAL I
MPL105PA	

After completion of course, students would be able to:

CO1 Understand the various route of drug administration to the different animals
CO2 Evaluation of several activities like CNS and ANS
CO3 Assays of marketed formulations
CO4 Estimation of several components like sodium ,potassium, Riboflavin and quinine sulfate can be studied by using flame photometry and fluorimetry
CO5 Several Techniques of blood sampling

Course Code	PHARMACOLOGY PRACTICAL II
MPL105PB	

After completion of course, students would be able to:

CO1 Extraction of various biological samples can be studied using Analytical Techniques
CO2 Estimation of drugs from biological samples or fluids
CO3 Different pharmacokinetic parameters can be studied using Insilco methods
CO4 Isolation and identification of like Genetic components like DNA,RNA from various sources like bacteria, onion, cauliflower and yeast
CO5 Estimation of proteins in biological samples

Course Code	ADVANCED PHARMACOLOGY II
MPL201T	

After completion of course, students would be able to:

CO1 Explain the mechanism of drug actions at cellular and molecular level
CO2 Discuss the Pathophysiology and pharmacotherapy of certain diseases
CO3 Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

Course Code	PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II
MPL202T	

After completion of course, students would be able to:

CO1 Explain the various types of toxicity studies.
CO2 Appreciate the importance of ethical and regulatory requirements for toxicity studies.
CO3 Demonstrate the practical skills required to conduct the preclinical toxicity studies.

Course Code	PRINCIPLES OF DRUG DISCOVERY
MPL203T	

After completion of course, students would be able to:

CO1 Explain the various stages of drug discovery
CO2 Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery
CO3 Explain various targets for drug discovery.
CO4 Explain various lead seeking method and lead optimization
CO5 Appreciate the importance of the role of computer aided drug design in drug discovery

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Kakinada-533003, Andhra Pradesh, India

INSTITUTE OF SCIENCE & TECHNOLOGY

Course Code	CLINICAL RESEARCH AND PHARMACOVIGILANCE
MPL204T	

After completion of course, students would be able to:

CO1 Explain the regulatory requirements for conducting clinical trial
CO2 Demonstrate the types of clinical trial designs
CO3 Explain the responsibilities of key players involved in clinical trials Execute safety monitoring, reporting and close-out activities Explain the principles of Pharmacovigilance
CO4 Detect new adverse drug reactions and their assessment
CO5 Perform the adverse drug reaction reporting systems and communication in Pharmacovigilance

Course Code	PHARMACOLOGY PRACTICAL III
MPL205PA	

After completion of course, students would be able to:

CO1 Effect of several agonistic and antagonistic drugs can be studied by using DRC methods
CO2 Determination of strength of unknown sample can be determined by several methods like matching bioassay, interpolation , bracketing and multiple point bioassay
CO3 Study of effect of various drugs can be studied by using isolated heart preparations
CO4 Recording of rat ECG,BP and heart rate

Course Code	PHARMACOLOGY PRACTICAL IV
MPL205PB	

After completion of course, students would be able to:

CO1 Drug absorption studies can be performed using different methods
CO2 Several toxicity studies can be studied according to OECD guidelines
CO3 Repeated dose toxicity studies can be studied by using several biological fluids
CO4 Protocol design for clinical trials can be studied
CO5 Understand several Insilico studies like docking, Pharmacophore modeling and QSAR studies.

Course Code	RESEARCH METHODOLOGY AND BIOSTATISTICS
MRM301T	

After completion of course, students would be able to:

CO1 Recognize the value, scope, objective and requirements of research
CO2 Discuss the basic concept and importance of statistical analysis
CO3 Discuss the basic principles of medical research
CO4 Describe the guidelines for the maintenance of laboratory animals
CO5 Perform the profession of Pharmacy with code of conduct and ethics
CO6 Apply the principles of medical research for the development of knowledge in the field of medicine

Course Code	JOURNAL CLUB

After completion of course, students would be able to:

CO1 Student shall able to publish research publications.
CO2 Usage of various domains for research publications
CO3 Knowledge about writing of research publications

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Kakinada-533003, Andhra Pradesh, India

INSTITUTE OF SCIENCE & TECHNOLOGY

Course Code	**DISCUSSION / PRESENTATION(PROPOSAL PRESENTATION)**

After completion of course, students would be able to:

CO1 Identify the research problem
CO2 Discuss research problem with team and peers for solution
CO3 Develop a protocol report on the critically appraised research problem
CO4 Present the critically appraised research problem in appropriate forum

Course Code	**RESEARCH WORK**

After completion of course, students would be able to:

CO1 Work in a team and undertake a project in the area of Pharmaceutical Sciences
CO2 Apply concepts of pharmaceutical sciences for executing the project
CO3 Apply appropriate research methodology while formulating a project
CO4 Generate specifications, synthesize, analyse, develop and evaluate a project
CO5 Defend the project, exhibit, make a presentation and document the work

Course Code	**DISCUSSION/FINAL PRESENTATION**

After completion of course, students would be able to:

CO1 Identify the research problem
CO2 Discuss research problem with team and peers for solution
CO3 Develop a protocol report on the critically appraised research problem
C04 Present the critically appraised research problem in appropriate forum