Program Outcomes:

Program outcomes are statements conveying the intent of a program of study. Specifically, program outcomes refer to what a student should know or be able to do at the end of a program. They are often seen as the knowledge and skills students will have obtained by the time they have received their intended degree.

Program Outcomes for M.Pharmacy (Pharmacology) Program

1. Pharmacy knowledge: Demonstrate knowledge of the basic pharmaceutical sciences and the ability to acquire, manage and use current information for problem solving

2. Professional Identity: Be committed and responsible person to play a proactive role with reliability to community and empower society.

3. Drug Expertise: Acquire knowledge on various classes of drugs and their mode of actions to unveil the remedies for many ailments.

4. Usage of modern tools: Apply critical thinking skills, including investigation, application, analysis, creativity, evaluation of information, data and documents related to research, investigation.

5. Research Skill: Acquire technological knowledge in one or more domains of pharmaceutical sciences.

6. Collaborative and Multidisciplinary work: Apply critical thinking skills, including investigation, application, analysis, creativity, evaluation of information, data and documents related to research investigation.

7. Entrepreneurship: Acquire the ability to publicize the research outcomes useful to government, pharmaceutical industries, health care providers and the community. Possess the ability to identify business Opportunities and initiate entrepreneurship.

8. Ethical Practices and Social Responsibility: Acquire knowledge of ethics of research, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.

9. Statistical Skills: Apply and analyze quantitative metrics to gain safety data on dosage, also to compare the effectiveness among experimental groups.

10. Life-Long Learning: Understand and apply the concepts in day-to-day life activities for the benefit of self and for the welfare of society and its concerns.

Course Outcomes:

Course Outcomes are narrower statements that describe what students are expected to know, and be able to do at the end of each course. These relate to the skills, knowledge, and behaviour that students acquire in their enrolment through the course.

Name of the Course Course Code	Course Outcome Code	Course Outcome Statements
Modern Pharmaceutical Analytical Techniques MPL101T	MPL101T.1	Explain general principles and theory of spectroscopy
	MPL101T.2	Understand the basic instrumentation of HPTLC, HPLC, GC for identification, and characterization of compounds
	MPL101T.3	Understand the basic concept, instrumentation and separation of Chromatographic techniques
	MPL101T.4	Understand the basic principles and instrumentation of fluorimeter and atomic absorption spectrometer
	MPL101T.5	Identify organic compounds by –X-ray crystallography
	MPL101T.6	Explain Instrumentation, separation and identification of compounds by electrophoresis technique.
Advanced Pharmacology-I MPL102T	MPL102T.1	Explain the Pharmacokinetic and Pharmacodynamic aspects of drugs including quantization of drug receptor interaction.
	MPL102T.2	Illustrate the Neurohumoral transmission in Autonomic nervous system and central nervous system.
	MPL102T.3	Discuss the Pharmacology of dugs at cellular and molecular level
	MPL102T.4	Describe the Pathophysiology and Pharmacotherapy of certain diseases
	MPL102T.5	Understand the Physiological and Pathophysiological role of Autocoids
	MPL102T.6	Understand the Advanced treatment for Neurovegetative disorders
Pharmacological and Toxicological Screening Methods-I MPL103T	MPL103T.1	Appraise the regulation and guideline regarding animal handling and usage
	MPL103T.2	Demonstrate the use of various animals in screening methods
	MPL103T.3	Identify the new and novel screening methods for drug discovery process
	MPL103T.4	Corelate and extrapolate the preclinical data to human regimen
	MPL103T.5	Explain various good clinical practices useful in drug discovery process
	MPL103T.6	Demonstrate the maintenance and handling of experimental animals as per guidelines

Cellular and Molecular Pharmacology MPL104T	MPL104T.1	Understood the fundamental knowledge on the structure and functions of cellular components.
	MPL104T.2	Appreciate and apply the interaction of these components with drugs in drug discovery process
	MPL104T.3	Explain the receptor signal transduction processes and molecular pathway affected by drugs
	MPL104T.4	Appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.
	MPL104T.5	Explain the types and applications of Immuno-therapeutics
	MPL104T.6	Demonstrate molecular biology techniques as applicable for pharmacology.
Pharmacology Practical-I MPL105PA	MPL105PA.1	Analyse different compounds and their formulations using UV Visible spectrophotometer
	MPL105PA.2	Explain animal restraining, routes of drug administration, anaesthesia and euthanasia blood and tissue sampling techniques
	MPL105PA.3	Evaluate CNS stimulant, depressant, anti-anxiety and anticonvulsant activities
	MPL105PA.4	Evaluate different antiulcer, analgesic, anti-inflammatory, analgesic and local anaesthetic studies
	MPL105PA.5	Evaluate diuretic activity
	MPL105PA.6	Estimate oral glucose tolerance test
Pharmacology Practical-II MPL105PB	MPL105PB.1	To isolate & identify the DNA & RNA from various sources like bacteria, cauliflower and onion
	MPL105PB.2	Estimate RNA /DNA by UV spectroscopy & proteins by Braford/lowry's in biological samples
	MPL105PB.3	understand the Cell viability tests, enzyme based invitro assays, enzyme inhibition and enzyme induction activity
	MPL105PB.4	understand the gene amplification by PCR and protein quantification western blotting
	MPL105PB.5	Extraction and estimation of drugs from various biological samples and biological fluids by using different analytical techniques like UV and HPLC
	MPL105PB.6	Pharmacokinetic studies and data analysis of drugs given by different routes administration using different software
I M.PHARMACY II SEMESTER		
Advanced Pharmacology-II MPL201T	MPL201T.1	Apply the cellular and molecular mechanism in drug discovery process
	MPL201T.2	Understand the importance of microbial agents mechanism in regimen design
	MPL201T.3	Demonstrate the endocrinal hormone applicability in replacement therapy
	MPL201T.4	Estimate the role of radicals in progression of various metabolic disease
	MPL201T.5	Explain the pathogenesis of neurodegenerative disease due to radical generations
	MPL201T.6	Identify the possible cause and prognosis in gastrointestinal diseases

Pharmacological and Toxicological Screening Methods-II MPL202T	MPL202T.1	Explain the basics and the types of toxicology
	MPL202T.2	Enumerate the regulatory guidelines (ICH, OECD, EPA and Schedule-Y) required to perform preclinical toxicity studies in laboratories
	MPL202T.3	Describe in detail about various methods employed in drug discovery and development
	MPL202T.4	Enumerate reproductive toxicology studies and genotoxicity studies
	MPL202T.5	Identify the role and importance of IND submission in drug discovery
	MPL202T.6	Explain the importance of toxicokinetic and alternative methods to animal toxicity testing
Principles of Drug Discovery MPL203T	MPL203T.1	Describe in detail about various stages involved in modern drug discovery process
	MPL203T.2	Explain the role of various elements in target discovery and validation
	MPL203T.3	Explain Lead Identification methods and computational protein structure prediction
	MPL203T.4	Describe in detail about the concept of Rational Drug Design
	MPL203T.5	Explain the concept of molecular docking and its applications
	MPL203T.6	Explain the concept of QSAR, its statistical methods and prodrug design
Clinical Research and Pharmacovigilance MPL204T	MPL204T.1	Explain the Principles of ICH-GCP, ICMR, Schedule Y guidelines and the Ethical Principles governing Informed consent Process
	MPL204T.2	Discuss the roles and responsibilities of various Clinical Trail Personnel involved in Clinical trails
	MPL204T.3	Enumerate various guidelines for the Preparation of Essential Documents in Clinical Trail.
	MPL204T.4	Interpret various methods for ADR reporting and tools used in Pharmacovigilance
	MPL204T.5	Understand the types of adverse drug reactions, Management and terminologies of ADR
	MPL204T.6	Understand the Principles of Pharmacovigilance, Pharmacoeconomics and safety Pharmacology.
Pharmacology Practical-III MPL205PA	MPL205PA.1	To record the DRC of agonist using suitable isolated tissue preparations
	MPL205PA.2	To study the effects of antagonist / potentiating agents on DRC of agonist using suitable isolated tissue preparations
	MPL205PA.3	To determine strength of unknown sample by matching bioassay by using suitable isolated tissue preparations
	MPL205PA.4	To determine strength of unknown sample by bracketing bioassay by using suitable isolated tissue preparations
	MPL205PA.5	To determine strength of unknown sample by interpolation, multiple point bioassay by using suitable isolated tissue preparations
	MPL205PA.6	RECORDING bp, ECG , HR of rat

Pharmacology Practical-IV MPL205PB	MPL205PB.1	Demonstrate the Drug absorption studies by averted ileum Preparation
	MPL205PB.2	Experiment the acute oral toxicity, acute dermal toxicity and Repeated dose toxicity studies as per OECD guidelines
	MPL205PB.3	Understand the designing of Clinical trial protocol and ADR monitoring Protocol.
	MPL205PB.4	Evaluate Drug mutagenicity study using mice bone-marrow chromosomal aberration
	MPL205PB.5	Using In-silico docking studies/pharmacophore-based screening/QSAR studies
M.PHARM III & IV SEMESTERS		
Research Methodology and Biostatistics MRM301T	MRM301T.1	Explain qualitative and quantitative aspects of clinical study design
	MRM301T.2	Interpret Various Biostatistical methods in Experimental Pharmacological studies
	MRM301T.3	Describe various ethical guidelines for biomedical research.
	MRM301T.4	Enumerate various CPCSEA guidelines for laboratory animal facility.
	MRM301T.5	Discuss the principals of Declaration of Helsinki for Medical Research.
	MRM301T.6	Understand Research writing and Review of Literature
Journal Club MRM302S & MRM401P	MRM302S.1	Understanding and debating current topics of active interest in their field
	MRM302S.2	Apply skills to use search engines for selection of scientific articles of their interest
	MRM302S.3	Analyze the critical thinking skills in appraisal of the scientific literature
	MRM302S.4	Create a scientific report on the critically appraised article
	MRM302S.5	Evaluate detailed knowledge of a specific area of research including the literature published in that area, its underlying concepts, theories and assumptions.
	MRM302S.6	Apply ability to write various types of manuscripts
Discussion/Presentation MRM303S & MRM402P	MRM303S.1	Identify relevant information, defining and explaining topics under discussion
	MRM303S.2	Demonstrate complexity, insight, cogency, independent thought, relevance and persuasiveness
	MRM303S.3	Demonstrate Command of voice modulation, voice projection, and pacing to support their presentation
	MRM303S.4	Evaluate information and use and apply relevant theories
	MRM303S.5	Demonstrate breadth of reading, use sources ,show independence and flexibility of thought
	MRM303S.6	Analyze and Demonstrate problem solving skills and apply theoretical knowledge

Research Work MRM304S & MRM403P	MRM304S.1	Identify and discuss the role, importance and concepts to the research process in pharmacology
	MRM304S.2	Discuss the complex issues in selecting a research problem, selecting an appropriate research design, and implementing a research project.
	MRM304S.3	Identify and discuss the concepts and procedures of sampling, data collection, analysis and reporting.
	MRM304S.4	Establish motivation for any topic of interest and develop a thought process for technical presentation.
	MRM304S.5	Organize a detailed literature survey and build a document with respect to technical publications. Analysis and comprehension of proof-of-concept and related data.
	MRM304S.6	Analysis and comprehension of proof-of-concept and related data and Make use of new and recent technology for creating technical reports