



PROGRAM OUTCOMES (PO)

PO	KEY CONCEPT	EXPLANATION
PO1	Research Ability	An ability to independently carry out research and development work utilising modern tools and employing planning and problem analysis skills to solve practical problems
PO2	Technical Communication	An ability to write and present substantial technical documents / reports and communicate effectively
PO3	Expertise Demonstration	An ability to demonstrate a degree of mastery over the area of specialization in terms of pharmaceutical knowledge, learning aptitude, managerial and administrative skills, computational and informatics skills in academia, manufacturing, clinical and allied sectors
PO4	Professional Leadership	An ability to lead in terms of team building, planning, motivating and ethically executing professional responsibilities and establish professional identity in the society
PO5	Environment & Sustainability	An ability to comprehend the impact of the pharmaceutical solutions in societal and environmental contexts, and explore the knowledge of and need for sustainable development and apply the knowledge to solve such problems.



PROGRAM SPECIFIC OUTCOMES (PSO) : PHARMACOLOGY

PSO	KEY CONCEPT	EXPLANATION
PSO1	Discovery Pharmacology	Building core concept on mechanism, toxicities and evaluation of drugs through pharmacological and toxicological models via comprehensive understanding of cellular and molecular pharmacology based pharmacotherapy for drug discovery and development.
PSO2	Design and Analysis	Understand the principles of pharmaceutical analysis and apply the modern instruments, computational and informatics tools, and techniques for target and lead optimization in designing and quantification of drugs.
PSO3	Pharmacovigilance	Apply and appraise regulatory and ethical concepts in preclinical and clinical research for pharmaceutical and healthcare domain in relation to society.
PSO4	Research Methodology	Understand, apply and appraise concepts of research methodology & biostatistics, as well as apply computational and informatics tools in clinical and pharmacovigilance research.
PSO5	Scientific Communication	Ability to create an inquisitive mind thorough appraisal of various journals and develop technical communication skills to able to interact with broad scientific audience through scientific writing in form of reports/thesis or presentations.

**COURSE OUTCOME: M.PHARM.
PHARMACOLOGY (New Syllabus)**

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
MPT 1081 (Modern Pharmaceutical Analytical Techniques)	MPT 1081. CO1: Determine the role of various drug excipients interaction.
	MPT 1081. CO2: Apply the knowledge to undertake various analytical instrumental studies such as spectroscopic, separation science, thermal, biotechnological and crystallography-based studies.
	MPT 1081. CO3: Evaluate various results and interpretations of such instrumental techniques, solve any existing problems.
	MPT 1081. CO4: Develop newer analytical methods by instrumental techniques.
MPT 1082 (Advanced Pharmacology-I)	MPT 1082. CO1: Understand the pharmacodynamics and pharmacokinetics of a drug and its correlation in pharmacotherapy.
	MPT 1082. CO2: Propose different categories drugs in the treatment of a disease and execute its management.
	MPT 1082. CO3: Explain side effects, adverse effects, contradictions and the clinical uses in the treatment.
MPT 1083 (Pharmacological screening and toxicological methods I)	MPT 1083.CO1: Appreciate ethical use of animals in research.
	MPT 1083.CO2: Design, construct and validate animal models in context to a particular disease and used it for screening of drugs.
	MPT 1083.CO3: Evaluate the various methods in vivo and invitro screening methods used in pharmacological evaluations.
MPT 1084 Cellular and Molecular Pharmacology	MPT 1084.CO1: Explain the receptor signal transduction process and their molecular pathway.
	MPT 1084.CO2: Develop skills in r DNA in context to gene therapy.
	MPT 1084.CO3: Explain genetic variation and its role in pharmacology.
	MPT 1084.CO4: Develop skills in preparing and handling cell culture media.
	MPT 1985.CO1: Analyze various formulation or its components using the analytical techniques.



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<p>MPT 1985 Pharmacology Practical I</p>	<p>MPT 1985.CO2: Develop skills in working techniques used in cellular and molecular biology.</p>
	<p>MPT 1985.CO3: Develop skill in animal handling, administration of drugs through various routes and withdrawal of blood.</p>
	<p>MPT 1985.CO4: Developing skills in In vivo assay of various pharmacological activity</p>
<p>MPT 1986 Seminar/ Assignment</p>	<p>MPT 1986. CO1: Students can able to show competence in identifying relevant information, defining and explaining topics under discussion.</p>
	<p>MPT 1986. CO2: Students can able to improve their communication and presentation skill.</p>
	<p>MPT 1986. CO3: Students can engage with works that are widely held to be significant in the field of pharmaceutical research.</p>
<p>MPT 2081 (Advance Pharmacology II)</p>	<p>MPT 2081. CO1: Students will be expertise themselves in analyzing and interpretation of various biochemical involvement and cellular changes at molecular level of hormone action, inflammation, immune responses & antimicrobial resistance.</p>
	<p>MPT 2081. CO2: Students will develop the skill in assessment of effectiveness of drugs action, side effects & various contraindications in various disease cases.</p>
	<p>MPT 2081. CO3: Students will be able to Evaluate the effects of drugs vary with biological timing in various diseases like cardiovascular disease, diabetes, asthma and peptic ulcer.</p>
	<p>MPT 2081. CO4: Students will be able to interpret role of free radicals in aetiology of chronic health problem, and demonstrate antioxidant action.</p>
<p>MPT 2082 (Pharmacological and Toxicological Screening Methods – II)</p>	<p>MPT 2082. CO1: Evaluate and estimate different types of toxicity studies in regulatory toxicology and its importance in drug development.</p>
	<p>MPT 2082. CO2: Interpret and justify ethical and safety aspects of regulatory requirements for toxicity studies in association with investigational new drug application.</p>
	<p>MPT 2082. CO3: Interpret the importance of toxicokinetic and alternative methods to animal toxicity testing in association with drug discovery and assessment.</p>
<p>MPT 2083 (Principles of Drug Discovery)</p>	<p>MPT 2083. CO1: Understand the various stages of drug discovery and understand the various targets for drug discovery and its validation along with techniques for lead identification and optimization.</p>



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	<p>MPT 2083. CO2: Understand the role of genomics, proteomics and bioinformatics in drug discovery.</p> <p>MPT 2083. CO3: Apply computer aided drug designing in the process of drug discovery.</p>
<p>MPT 2084 (Clinical Research and Pharmacovigilance)</p>	<p>MPT 2084. CO1: Explain the regulatory requirements for conducting clinical trials.</p> <p>MPT 2084. CO2: Demonstrate the types of clinical trial designs.</p> <p>MPT 2084. CO3: Execute safety monitoring, reporting and close out activities.</p> <p>MPT 2084. CO4: Execute reporting of adverse drug reaction.</p>
<p>MPT 2985 (Pharmacology Practical II)</p>	<p>MPT 2985. CO1: Understand the principles of bioassay and its importance.</p> <p>MPT 2985. CO2: Execute toxicity study in accordance with the guidelines like OECD, ICH and determine the lethal doses of drugs.</p> <p>MPT 2985. CO3: Analyse the various clinical trials and monitoring safety and reporting of ADRs</p> <p>MPT 2985. CO4: Using Bioinformatics for drug designing</p>
<p>MPT 2986 (Seminar)</p>	<p>MPT 2986. CO1: Students can able to show competence in identifying relevant information, defining and explaining topics under discussion.</p> <p>MPT 2986. CO2: Students can able to improve their communication and presentation skill.</p> <p>MPT 2986. CO3: Students can engage with works that are widely held to be significant in the field of pharmaceutical research.</p>
<p>MPT 381 (Journal Club)</p>	<p>MPT 381. CO1: To search articles from various scientific databases.</p> <p>MPT 381. CO2: To prepare a technical presentation for a small audience.</p> <p>MPT 381. CO3: To deliver a presentation and address related queries.</p>
<p>MPT 384 (Research methodology & Biostatistics)</p>	<p>MPT 384.CO1: Discuss and explain different methods and technologies used to carry out research work.</p> <p>MPT 384.CO2: Assess the basic principles and working of analytical instrument in carrying out research work.</p> <p>MPT 384.CO3: Implement the regulatory requirements and follow ethics while conducting clinical trials.</p> <p>MPT 384. CO4: Demonstrate expertise in carrying out statistical analysis of the research findings</p>



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
<p>MPT 391 (Discussion/ Presentation) (Proposal)</p>	<p>MPT 391. CO1: Students will be able to categorize relevant information for defining and explaining the topic for presentation.</p>
	<p>MPT 391. CO2: In terms of summarizing and organizing the whole methodology, students will be able structure their oral work and composing information.</p>
	<p>MPT 391. CO3: Students will be able to build appropriate vocabularies with voice modulation, voice projection and pacing.</p>
<p>MPT392 (Research Work)</p>	<p>MPT 392. CO1: Students can develop a structured presentation methodology to prepare presentation material and effective visual aids.</p>
	<p>MPT 392. CO2: Students can able to percolate his knowledge to the audiences.</p>
	<p>MPT 392. CO3: The students can be able to Determine and develop personal style.</p>
<p>MPT 481 (Journal club)</p>	<p>MPT 481. CO1: To search articles from various scientific databases.</p>
	<p>MPT 481. CO2: To prepare a technical presentation for a small audience.</p>
	<p>MPT 481. CO3: To deliver a presentation and address related queries.</p>
<p>MPT 491 (Final presentation)</p>	<p>MPT 491. CO1: Students will be able to categorize relevant information for defining and explaining the topic for presentation.</p>
	<p>MPT 491. CO2: In terms of summarizing and organizing the whole methodology, students will be able structure their oral work and composing information.</p>
	<p>MPT 491. CO3: Students will be able to build appropriate vocabularies with voice modulation, voice projection and pacing.</p>
<p>MPT 492 (Research work)</p>	<p>MPT 492. CO1: The students would be able to build problem solving skills and execute them to research in the related fields.</p>
	<p>MPT 492. CO2: The students would be able to design plan of work, execute them and interpret the data to evaluate the work</p>



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	MPT 492. CO3: The students would be able to write their research reports constituting Introduction, Experimental Methods, Results & Discussion, Conclusion and References.