



PROGRAM OUTCOMES (PO): M. PHARM.

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): PHARMACEUTICAL ANALYSIS

PSO	KEY CONCEPT	EXPLANATION
PSO1	Modern Tool Usage	Know, Understand and Apply various modern tools and instruments for identification, assay as well as data interpretations of various pharmaceutical, food, herbal and cosmetological analyses
PSO2	Quality Control and Quality Assurance	Perform and Evaluate various compounds or formulations from pharmaceutical, food, herbal and cosmetological domains as per official monographs, analyze their impurity profiles and create documentation as per acceptable standards.
PSO3	Validation, standardization and Regulatory Guidelines	Understand the concept of calibration and standardization for pharmaceutical instruments, manufacturing processes as well as analytical methodologies in order to apply them in specific cases
PSO4	Bioanalytical profiling and Clinical Trial Design	Develop bioanalytical methods for pharmacokinetic, cytological, enzymatic or biopharmaceutical evaluation for compounds of biological interest and design various methods for clinical trial of a particular NDA or ANDA class of compounds (or formulation) as per official guidelines.
PSO5	Research and Development	Develop and create solutions for various realistic problems through strategic research and statistical design, data analysis, interpretations and subsequent validations through peer reviewed publications.



COURSE OUTCOME

M. PHARM. PHARMACEUTICAL ANALYSIS

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
MPT 1011 MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	MPT1011.CO1: Understand the principles behind various spectroscopic, chromatographic, thermal, electrochemical, biological and crystallographic instrumental techniques
	MPT1011.CO2: Evaluate the data or results produced by the above instrumental techniques and interpret the outcome
	MPT1011.CO3: Apply the various instruments in pharmaceutical, food and cosmetics analysis
	MPT1011.CO4: Create various analytical models with the help of the instrumental techniques and evaluate the data for solving new projects
MPT 1012 ADVANCED PHARMACEUTICAL ANALYSIS	MPT1012.CO1: Understand the knowledge of impurity profiling, stability studies and various biological assays
	MPT1012.CO2: Apply the above knowledge to fingerprint various impurities in pharmaceutical products, formulations, degradation products and biological entities from specific samples
	MPT1012.CO3: Evaluate and estimate the presence of impurities and degradation products from different active pharmaceutical ingredients (API) and formulations
	MPT1012.CO4: Analyze the biological entities and macromolecules from various biological and immunoassays.
MPT 1013 PHARMACEUTICAL VALIDATION	MPT1013.CO1: Demonstrate the aspects of validation from instruments to processes, principles, regulatory guidelines and importance
	MPT1013.CO2: Understand the concept and methodology of qualification, application to various analytical instruments
	MPT1013.CO3: Comprehend various aspects and regulatory guidelines for obtaining Intellectual Property Rights (IPR) or Patents
	MPT1013.CO4: Apply the concepts of qualification, validation, new method development and IPR filing for various processes or products
MPT 1014 FOOD ANALYSIS	MPT1014.CO1: Understand the knowledge of Food constituents, Food additives, finished food products and Pesticides in food.



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	MPT1014.CO2: Analyse qualitatively and quantitatively the presence of food constituents, Impurities and Pesticide in Finished food products.
	MPT1014.CO3: Perceive the knowledge of food regulations and legislations.
MPT 1915 PHARMACEUTICAL ANALYSIS PRACTICAL I	MIP1915.CO1: Understand analysis of official compounds by different instrumental method including multi-component systems.
	MIP1915.CO2: Develop knowledge and skills to calibrate various glassware and instruments used in pharmaceutical industry.
	MIP1915.CO3: Design analytical methods for food products and related components.
	MIP1915.CO4: Apply various analytical methods for impurity profiling of drugs and related candidates.
	MIP1915.CO5: Create analytical methodologies for estimation of biochemical entities in various drug and food formulations
MIP 181 SEMINAR/ASSIGNMENT	MIP 181.CO1: The students would be able to learn different types of scholarly sources and analyse them
	MIP 181.CO1: The students would be able to improve communication skills
	MIP 181.CO3: The students would be able to develop problem solving skills and conduct research in the related fields
MPT 2011 ADVANCED INSTRUMENTAL ANALYSIS	MPT2011.CO1: Comprehend the principles of advanced chromatographic techniques, electrophoresis, NMR and Mass Spectroscopy
	MPT2011.CO2: Evaluate the outcomes of the above instrumental techniques
	MPT2011.CO3: Apply various instruments in medicinal, cosmetics and food analysis
	MPT2011.CO4: Construct various analytical models using instrumental techniques for newer projects
MPT 2012 MODERN BIO-ANALYTICAL TECHNIQUES	MPT2012.CO1: Understand the extraction of drugs from biological samples.
	MPT2012.CO2: Analyse the process and steps involved in the bioanalytical method development and its validation.
	MPT2012.CO3: Comprehend and discuss the biopharmaceutical factors affecting bioavailability.



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	MPT2012.CO4: Estimate the pharmacokinetic parameters of drugs and develop the BA/BE studies.
	MPT2012.CO5: Discuss various cytological and enzymological assays and analyse its results
<p align="center">MPT 2013 QUALITY CONTROL AND QUALITY ASSURANCE</p>	MPT2013.CO1: Appreciate the Concept and Evolution of Quality Control and Quality Assurance and the responsibilities of QA & QC departments.
	MPT2013.CO2: Explain the cGMP aspects in the pharmaceutical industry.
	MPT2013.CO3: Comprehend the scope of quality certifications applicable to Pharmaceutical industries through analysis of raw materials, finished products, packaging materials, in-process quality control, manufacturing operations and controls.
	MPT2013.CO4: Explain and discuss the importance of documentation in the pharmaceutical industry.
<p align="center">MPT 2014 HERBAL AND COSMETIC ANALYSIS</p>	MPT2014.CO1: Understand the principles behind herbal drug analysis, herb-drug or food-herb interactions, bioactivity and biotransformation of herbal drugs, official guidelines, concept of herbal adulterants
	MPT2014.CO2: Evaluate impurity if herbal products by molecular fingerprinting and other high throughput instrumental techniques
	MPT2014.CO3: Analyse cosmetics by different parametric tests both qualitatively and quantitatively.
	MPT2014.CO4: Establish the relationship between cosmetic raw materials and products in India and their Indian Regulatory standards.
<p align="center">MPT 2915 PHARMACEUTICAL ANALYSIS PRACTICAL - II</p>	MPT2915.CO1: Understand the handling principles of various analytical instruments such as spectrophotometers, chromatography, electrochemical and bioanalytical instruments
	MPT2915.CO2: Apply various instruments techniques for qualitative and quantitative analysis of various pharmaceutical compounds, fixed dose combinations, marketed dosage forms and bioanalytical entities
	MPT2915.CO3: Design and Develop various bioavailability and bioequivalence study protocols
	MPT2915.CO4: Apply various quality control tests for drugs, food, cosmetics and packaging materials
	MPT2915.CO5: Create Master formula records as per standard procedures and regulatory guidelines



NAME OF THE COURSE WITH CODE	COURSE OUTCOME
<p style="text-align: center;">MPT 2916 SEMINAR/ASSIGNMENT</p>	<p>MPT 281.CO1: Students can able to show competence in identifying relevant information, defining and explaining topics under discussion.</p>
	<p>MPT 281.CO2: Students can able to improve their communication and presentation skill.</p>
	<p>MPT 281.CO3: Students can engage with works that are widely held to be significant in the field of pharmaceutical research.</p>
<p style="text-align: center;">MPT 381 JOURNAL CLUB</p>	<p>MPT 381.CO1: To survey 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 style="text-align: center;">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>
<p style="text-align: center;">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 style="text-align: center;">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 style="text-align: center;">MPT 481 JOURNAL CLUB</p>	<p>MPT 481. CO1: To search articles from various scientific databases.</p>



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