

M-PHARM COURSE SUBJECTS

M-PHARM FIRST YEAR SEM I

QUALITY ASSURANCE DEPARTMENT

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES - MPH101T / MPC 101T/ MQA101T/ MPL101T

Knowledge

1. Have knowledge about Chemicals and Excipients
2. Have understanding of the analysis of various drugs in single and combination dosage forms
3. Acquire theoretical and practical skills of the instruments

QUALITY MANAGEMENT SYSTEMS -MQA 102T

Knowledge

1. To understand the quality evaluation in the pharmaceutical industries
2. Impart basic knowledge about the importance of quality
3. Gain Knowledge to develop tools for quality improvement
4. To understand ISO management systems and its application in analysis of issues in quality
5. Knowledge Acquiring skills for stability testing of drug and drug substances
6. To learn statistical approaches for quality improvement

QUALITY CONTROL AND QUALITY ASSURANCE- MQA 103T

Knowledge

1. Knowledge of the cGMP aspects in a pharmaceutical industry.
2. Learn the importance of documentation.
3. Understand the scope of quality certifications applicable to Pharmaceutical industries.
4. Understand the responsibilities of QA & QC departments.

PRODUCT DEVELOPMENT AND TECHNOLOGY TRANSFER -MQA 104T

Knowledge

1. Gain knowledge & Understand the new product development process
2. Knowledge to sort out various information obtained during R&D
3. Knowledge to understand the necessary information to transfer technology from R&D to actual manufacturing
4. Knowledge to elucidate necessary information to transfer technology of existing products between various manufacturing places

PHARM QUALITY ASSURANCE I - MQA 105P

Skill

1. Acquire skills to design important documents.
2. Get skills to perform IPQC tests, FP tests.
3. Understand concepts of TQM, Six Sigma, CAPA, OOS, OOT
4. Skill to determine physical constants and phenomena for analytical and formulation development.

PHARMACEUTICS DEPARTMENT:

DRUG DELIVERY SYSTEM- MPH 102 T

Knowledge

1. The subject imparts various approaches for development of novel drug delivery systems
2. The principles of selection of drug and polymer for development of delivery system
3. The subject imparts knowledge about formulation and evaluation of novel drug delivery systems

MODERN PHARMACEUTICS-MPH 103T

Knowledge

1. Elements of preformulation
2. Active pharmaceutical ingredients and generic drug product development
3. Industrial management and GMP consideration
4. Optimization techniques and pilot plant scale up techniques
5. Knowledge to Develop Leadership qualities and essentials
6. Stability testing, sterilization process & packaging of dosage forms

REGULATORY AFFAIRS- MPH 104T

Knowledge

1. Knowledge to understand concept of innovator & generic drugs, drug development process
2. Knowledge of regulatory guidance & guidelines for filing & approval process
3. Knowledge for preparation of Dossiers and their submission to regulatory agencies in different countries
4. Knowledge for post approval regulatory requirement for actives & drug product
5. To impart knowledge submission of global documents in CTD/ECTD Formats
6. To understand knowledge of clinical trial requirement for approvals for conducting clinical trials
7. Knowledge to gain pharmacovigilance & process of monitoring in clinical trial

PHARMACEUTICS PRACTICAL I (PRACTICAL)- MPH 105P

Skill

1. Understand formulation of microspheres, liposomes
2. Understand improving dissolution and dissolution study
3. Understanding pharmacokinetics and bioavailability
4. Understanding of quality by design
5. Formulation of kinetics

PHARMACOLOGY DEPARTMENT:

ADVANCED PHARMACOLOGY-MPL 102T

Knowledge

1. The Neurotransmitters involved in the autonomic nervous system, their Synthesis and Metabolism.
2. Various adrenoreceptors and cholinergic receptors, their subtypes and the clinical spectrum of their general and selective agonist and antagonist.
3. The agents that stimulate or relax skeletal muscle, including the cholinergic neuromuscular agonists and antagonists as well as the neuromuscular agents
4. acting at noncholinergic sites.
5. The essential pharmacotherapy and pharmacological features of common and important drugs used in cardiovascular diseases and respiratory disorders.
6. The guidelines for animal experimentations. Various routes of drug administration, methods for blood collection from experimental animals.
7. Composition of physiological salt solutions and basic instruments used in experimental pharmacology.
8. Performance of isolated experiments using various isolated preparations and the effects of different drugs on the concentration response curves.
9. Study the action of various drugs using preclinical models/ computer simulations.

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-I- MPL103T

Knowledge

1. At completion of this course it is expected that students will be able to evaluate the regulations and ethical requirements for the usage of experimental animals
2. At completion of this course it is expected that students will be able to describe the various animals and techniques used in drug discovery
3. At completion of this course it is expected that students will be able to understand the process and good laboratory practices in the maintenance and handling of experimental animals
4. At completion of this course it is expected that students will be able to describe the various newer screening methods involved in the drug discovery process.
5. At completion of this course it is expected that students will be able to correlate or extrapolate the *in vitro* data to preclinical and preclinical to humans

CELLULAR AND MOLECULAR PHARMACOLOGY- MPL 104 T

Knowledge

1. Gained knowledge on the Receptor signal transduction processes in detail
2. Developed an understanding about the various molecular pathways affected by drugs
3. Gained insight into the application molecular pharmacology and biomarkers in drug discovery process
4. Capability to choose appropriate molecular biology techniques for specific pharmacology research

PHARMACOLOGY PRACTICAL- I- MPL 105P

Skill

1. Skill to perform animal handling, drug administered, surgical and euthanasia techniques, practice experimentation on laboratory animals
2. Skill to perform various preclinical models for animal experimentation for drug discovery
3. Skill to use various softwares and techniques for data analysis
4. Skill to analyze and estimate the biological sample by HPLC,UV, Flame photometry or other modern analytical tools
5. Skill to develop qualities of critical thinking, problem solving, planning ability, sincerity, time management, use of appropriate method and professional identity in preclinical drug discovery research

PHARMACEUTICAL CHEMISTRY DEPARTMENT:

ADVANCED ORGANIC CHEMISTRY I -MPC102T

Knowledge

1. The principles and applications of retrosynthesis
2. The mechanism & applications of various named reactions
3. The concept of disconnection to develop synthetic routes for small target molecule.
4. The various catalysts used in organic reactions
5. The chemistry of heterocyclic compounds

ADVANCED MEDICINAL CHEMISTRY THEORY- MPC103T

Knowledge

1. At completion of this course it is expected that students will be able to Understand-drug discovery protocol.
2. At completion of this course it is expected that students will be able to Understand Different stages of drug discovery
3. At completion of this course it is expected that students will be able to Understand Role of medicinal chemistry in drug research
4. At completion of this course it is expected that students will be able to Understand Different techniques for drug discovery
5. At completion of this course it is expected that students will be able to Understand Various strategies to design and develop new drug like molecules for biological targets
6. At completion of this course it is expected that students will be able to Understand Peptidomimetics

CHEMISTRY OF NATURAL PRODUCTS- MPC104T

Knowledge

1. After completion of course, the subject knowledge will be helpful to provide detail knowledge about chemistry of medicinal compounds from natural origin and general methods of structural elucidation of such compounds.
2. After completion of course student is able to know Different types of natural compounds and their chemistry and medicinal importance
3. After completion of course student is able to the importance of natural compounds as lead molecules for new drug discovery
4. After completion of course student is able to he concept of rDNA technology tool for new drug discovery
5. After completion of course student is able to General methods of structural elucidation of compounds of natural origin
6. After completion of course student is Able to do Isolation, purification and characterization of simple chemical constituents from natural source

ADVANCED MEDICINAL CHEMISTRY- MPC105P

Skill

1. After completion of course student is Able to know about chemicals and excipients.
2. After completion of course student is Able to know about The analysis of various drugs in single and combination dosage forms
3. After completion of course student is Able to know about Theoretical and practical skills of the instruments
4. After completion of course student is Able to know about Knowledge to develop an attitude of concern for the industry environment
5. After completion of course student is Able to know about Knowledge to ensure safety standards in pharmaceutical industry
6. After completion of course student is Able to Acquire knowledge to provide comprehensive knowledge on the safety management
7. After completion of course student is Able to know about Knowledge to empower an idea to clear mechanism and management in different kinds of hazard management system
8. After completion of course student is Able to know about acquire the knowledge for to teach the method of hazard assessment, procedure, methodology for provide safe industrial atmosphere

M-PHARM SEM II

(QUALITY ASSURANCE DEPARTMENT)

HAZARDS AND SAFETY MANAGEMENT - MQA201T

Knowledge

1. Knowledge to understand about environmental problems among learner
2. Knowledge to impart balance knowledge about environment and its allied problem
3. Knowledge to develop an attitude of concern for the industry environment
4. Knowledge to ensure safety standards in pharmaceutical industry
5. Acquire knowledge to provide comprehensive knowledge on the safety management
6. Knowledge to empower an idea to clear mechanism and management in different kinds of hazard management system
7. Knowledge for to teach the method of hazard assessment, procedure, methodology for provide safe industrial atmosphere

PHARM. VALIDATION- MQA 202T

Knowledge

1. Understand the concepts of calibration, qualification and validation
2. Understand Process validation of different dosage forms
3. Have skill to qualify of various equipments and instruments
4. Acquire skill of Validation of analytical method for estimation of drugs, Cleaning validation of equipments

AUDITS AND REGULATORY COMPLIANCE- MQA 203T

Knowledge

1. To understand the importance of auditing
2. To understand the methodology of auditing
3. Gain Knowledge to carry out the audit process
4. To learn how to prepare an audit report
5. Gain knowledge to prepare checklist for auditing

PHARMACEUTICAL MANUFACTURING TECHNOLOGY- MQA 204T

Knowledge

1. The common practice in the pharmaceutical industry developments, plant layout and production planning
2. Will be familiar with the principles and practices of aseptic process technology, non sterile manufacturing technology and packaging technology.
3. Have a better understanding of principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing

PHARM QUALITY ASSURANCE II -205P

Skill

1. Acquire skills to design important documents like checklists
2. Get skills to perform analysis of actives and contaminants
3. Understand concepts of QbD, PAT
4. Skill to qualify equipments.

PHARMACEUTIC DEPARTMENT

MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS)- MPH 201T

Knowledge

1. The various approaches for development of novel drug delivery systems.
2. The criteria for selection of drugs and polymers for the development of NTDS
3. The formulation and evaluation of novel drug delivery systems

ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS -MPH 202T

Knowledge

1. Understand the basic concepts of biopharmaceutics and pharmacokinetics
2. Learn to use raw data and derive pharmacokinetic models
3. To understand bioequivalence studies
4. To understand design and evaluation of dosage regimen
5. To understand pharmacokinetic problems and application of pharmacokinetics

COMPUTER AIDED DRUG DEVELOPMENT MPH203T

Knowledge

1. History of computers in pharmaceutical research and development
2. Computational modelling of drug disposition
3. Computers in preclinical development
4. Optimization techniques in formulation development
5. Computer in market analysis
6. Computers in clinical development
7. Artificial intelligence and robotics
8. Computational fluid dynamics

COSMETICS AND COSMECEUTICALS MPH 204 T

Knowledge

1. Key ingredients in cosmetics and cosmeceuticals
2. Key building blocks for formulations
3. Current technologies in market
4. Various key ingredients and basic science to develop cosmetics and cosmeceuticals.
5. Scientific knowledge to develop cosmetics and cosmeceuticals with desired safety, stability and efficacy

PHARMACEUTICS PRACTICAL II -205P

Skill

1. Understanding of important analytical methods UV, HPLC, GC
2. Formulation of novel drug delivery systems
3. Understanding Physics of tableting
4. Understanding of preformulation of tablet
5. To study kinetics of dissolution

PHARMACOLOGY DEPARTMENT:

ADVANCED PHARMACOLOGY-II-MPL201T

Knowledge

1. The Neurotransmitters involved in the autonomic nervous system, their Synthesis and Metabolism.
2. Various adrenoreceptors and cholinceptor, their subtypes and the clinical spectrum of their general and selective agonist and antagonist.
3. The agents that stimulate or relax skeletal muscle, including the cholinergic neuromuscular agonists and antagonists as well as the neuromuscular agents
4. acting at noncholinergic sites.
5. The essential pharmacotherapy and pharmacological features of common and important drugs used in cardiovascular diseases and respiratory disorders.
6. The guidelines for animal experimentations. Various routes of drug administration, methods for blood collection from experimental animals.
7. Composition of physiological salt solutions and basic instruments used in experimental pharmacology.
8. Performance of isolated experiments using various isolated preparation and the effects of different drugs on the concentration response curves.
9. Study the action of various drugs using preclinical models/ computer Simulations.

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-MPL202T

Knowledge

1. At completion of this course it is expected that students will be able to understand the importance of ethical and various regulatory requirements for toxicity studies.
2. At completion of this course it is expected that students will be able to explain and plan the various types of toxicity studies.
3. At completion of this course it is expected that students will be able to understand and plan of IND and Safety pharmacology studies
4. At completion of this course it is expected that students will be able to understand and plan the toxicokinetic evaluation in preclinical studies
5. At completion of this course it is expected that students will be able to understand and plan alternative methods to animal toxicity testing

PRINCIPLES OF DRUG DISCOVERY- MPL203T

Knowledge

1. Will be able to appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery
2. Will be able to explain various targets for drug discovery
3. Will be able to explain various lead seeking method and lead optimization
4. Will appreciate the importance of the role of computer aided drug design in drug discovery

CLINICAL RESEARCH AND PHARMACOVIGILANCE- MPL204T

Knowledge

1. At completion of this course it is expected that students will be able to understand the importance of ethical and regulatory requirements for conducting of clinical trials
2. At completion of this course it is expected that students will be able to explain and plan various clinical trials.
3. At completion of this course it is expected that students will be able to execute safety monitoring, reporting, and close out activities
4. At completion of this course it is expected that students will be able to explain the roles of key players involved in clinical trial and to understand the principle of pharmacovigilance
5. At completion of this course it is expected that students will be able to understand and assess new adverse drug reactions

ADVANCED PHARMACOLOGY II-MPL205P

Skill

1. The guidelines for animal experimentations. Various routes of drug administration, methods for blood collection from experimental animals.
2. Composition of physiological salt solutions and basic instruments used in experimental pharmacology.
3. Performance of isolated experiments using various isolated preparation and the effects of different drugs on the concentration response curves.
4. Study the action of various drugs using preclinical models/ computer simulations.

PHARMACEUTICAL CHEMISTRY

ADVANCED SPECTRAL ANALYSIS- MPC201T

Knowledge

1. Will be able to Interpret NMR, Mass and IR spectra of various organic compounds
2. Will be able to carry out Identification of organic compounds
3. Acquire theoretical and practical skills of the hyphenated instruments

ADVANCED ORGANIC CHEMISTRY II -MPC202T

Knowledge

1. The principles and applications of Green chemistry
2. The concept of peptide chemistry.
3. The various catalysts used in organic reactions
4. The concept of stereochemistry and asymmetric synthesis.

COMPUTER AIDED DRUG DESIGN-MPC203T

Knowledge

1. At completion of this course it is expected that students will be able to Understand Role of CADD in drug discovery
2. At completion of this course it is expected that students will be able to Understand Different CADD techniques and their applications
3. At completion of this course it is expected that students will be able to Understand Various strategies to design and develop new drug like molecules.
4. At completion of this course it is expected that students will be able to Understand Working with molecular modeling softwares to design New drug molecules
5. At completion of this course it is expected that students will be able to Understand The in silico virtual screening protocols

PHARMACEUTICAL PROCESS CHEMISTRY- MPC204T

Knowledge

1. At the completion synthetic routes that are safe, cost-effective, environmentally friendly, and efficient should be developed on learning the subject.
2. At completion of this course it is expected that students will be able to understand The strategies of scale up process of APIs and intermediates.
3. At completion of this course it is expected that students will be able to understand The various unit operations and various reactions in process chemistry

PHARMACEUTICAL CHEMISTRY PRACTICALS – II-MPC205P

Skill

1. After completion of course student is Able to know about chemicals and excipients.
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