

NIMRA COLLEGE OF PHARMACY

Nimra Nagar, Jupudi, Ibrahimpatnam, Vijayawada, Andhra Pradesh-521456

M PHARM COURSE OUTCOMES

PROGRAMME: M. PHARMACY- PHARMACEUTICS (COURSE OUTCOMES)

Course Name: Modern Pharmaceutical Analytical Techniques (Theory)

Course Code: MPH 101 T, I M Pharmacy, First Semester.

MPH 101 T.1	Understand the UV-Visible spectroscopy, IR, flame and atomic absorption spectroscopy.
MPH 101 T.2	Know principles of NMR spectroscopy, instrumentation and applications.
MPH 101 T.3	Understand the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy.
MPH 101 T.4	Know the principles and procedures of paper and capillary electrophoresis; XRD and its applications.
MPH 101 T.5	Understand the principles and procedures of immunoassays like radioimmunoassay, ELISA and bioluminescent assays.

Course Name: Advanced Biopharmaceutics & Pharmacokinetics (Theory)

Course Code: MPH 102 T, I M Pharmacy, First Semester.

MPH 102 T.1	The basic concepts in biopharmaceutics and pharmacokinetics.
MPH 102 T.2	The use of raw data and derive the pharmacokinetic models and parameters that describe the process of drug absorption, distribution, metabolism and excretion.
MPH 102 T.3	To critically evaluate biopharmaceutics studies involving drug product equivalency.
MPH 102 T.4	To design and evaluate dosage regimens of the drugs using pharmacokinetic parameters.
MPH 102 T.5	The potential clinical pharmacokinetic problems and application of basics of pharmacokinetics.

Course Name: Modern Pharmaceutics (Theory)

Course Code: MPH 103 T, I M Pharmacy, First Semester.

MPH 103 T.1	Learn about the science behind performing a Preformulation study before formulating a novel drug delivery system.
MPH 103 T.2	Understand the current good manufacturing practices that are implemented in various pharmaceutical industries.
MPH 103 T.3	Understand various validation protocols that are been followed in the pharmaceutical industries as per various regulatory guidelines.
MPH 103 T.4	Understand various optimization techniques that are used in prior to formulate any new dosage form. Understand how to run the optimization softwares (For ex: Design expert and Minitab).
MPH 103 T.5	Understand about the science between compaction and compression of a tablet. Understand about various dissolution parameters that have to be incorporated while performing dissolution studies.

Course Name: Regulatory Affairs (Theory)

Course Code: MPH 104T, I M Pharmacy, First Semester.

MP H 104 T.1	Comprehend regulations pertaining to drugs.
MP H 104 T.2	Describe the regulatory guidance and guidelines for filing and approval process.
MP H 104 T.3	Detail the preparation of dossiers and their submission to regulatory agencies in different countries.
MP H 104 T.4	Express the submission of global documents in CTD/eCTD formats.
MP H 104 T.5	Define the clinical trials for approvals for conducting clinical trials.

Course Name: Pharmaceutics – I (Practical)

Course Code: MPH 105 P, I M Pharmacy, First Semester.

MPH 105P.1	Know Variability and Operation of commonly used analytical instruments like UV Vis spectrophotometer, HPLC, Gas Chromatography, Fluorimetry and Flame photometry.
MPH 105P.2	Have knowledge as well as hands on training with respect to the principles of formulation science such as Preformulation studies and Micromeritics
MPH 105P.3	Possess the knowledge about effect of compressional force on tablets Properties.

Course Name: Pharmaceutics – II (Practical)

Course Code: MPH 106 P, I M Pharmacy, First Semester.

MPH 106P.1	Understand the role of Biopharmaceutics in bioavailability and calculation of pharmacokinetic parameters
MPH 106P.2	Improvement of dissolution studies on poorly soluble drugs
MPH 106P.2	Formulate and evaluate various novel drug delivery systems: Floating DDS, Muco adhesive tablets and Trans dermal patches

Course Name: Molecular Pharmaceutics (Nano Technology & Targeted DDS) (Theory)

Course Code: MPH 201 T, I M Pharmacy, Second Semester.

MPH 201 T.1	The concepts of nanotechnology-based drug delivery systems and targeted drug delivery systems
MPH 201 T.2	The criteria for selection of drugs and excipients for the development of nano pharmaceuticals and targeted drug delivery systems
MPH 201 T.3	Various approaches/ methods for the development of such formulations.
MPH 201 T.4	Evaluation tests for nano pharmaceuticals and targeted drug delivery systems

Course Name: Drug Delivery Systems (Theory)

Course Code: MPH 202 T, I M Pharmacy, Second Semester.

MPH 202 T.1	The basic concepts of modified release drug delivery systems.
MPH 202 T.2	The criteria for selection of drugs and excipients.
MPH 202 T.3	Various approaches/methods for the development of novel drug delivery systems.
MPH 202 T.4	The evaluation tests for the novel drug delivery systems.

Course Name: Computer Aided Drug Delivery System (Theory)

Course Code: MPH 203 T, I M Pharmacy, Second Semester.

MPH 203 T.1	Explain about the role of computers in pharmaceutical research, various modeling approaches and parameters used in modeling.
MPH 203 T.2	Understand about basics and guidelines of Quality by Design (QbD). Understand about computation modeling techniques of ADME process for a drug.
MPH 203 T.3	Understand about the concept of optimization and they can design a formulation of emulsion a micro emulsion using software's like design expert.
MPH 203 T.4	Understand about using of computer aided designs in in-vitro dissolution studies. Understand the regulations involved in clinical data collection and management.

Course Name: Formulation Development of Pharmaceutical and Cosmetic Products (Theory)

Course Code: MPH 204 T, I M Pharmacy, Second Semester.

MPH 204 T.1	Learn about the science behind performing a Preformulation study before formulating a novel drug delivery system. Learn about various pre-formulation parameters that have to be studied before formulating a novel drug delivery system.
MPH 204 T.2	Learn about the importance of solubility for a drug and methods to enhance the solubility.
MPH 204 T.3	Learn about basics of drug dissolution and various parameters involved in in vitro drug dissolution studies.
MPH 204 T.4	Understand about basics and legal aspects of cosmeticology and various formulations like dentifrices, lipsticks, nail polish and baby products etc.

Course Name: Pharmaceutics – III (Practical)

Course Code: MPH 205 P, I M Pharmacy, Second Semester.

MPH 205P.1	Know the effect of temperature, nonsolvent, incompatible polymer addition on preparation of microcapsules.
MPH 205P.2	Design and perform in-vitro evaluation studies for various novel drug delivery systems: Alginate beads, gelatin /albumin microspheres, liposomes / niosomes and spherules.
MPH 205P.3	Perform in-vitro dissolution of marketed products and interpretation of dissolution data.

Course Name: Research Methodology and Biostatistics (Theory)

Course Code: MRM 301 T, II M Pharmacy, Third Semester.

MRM 301T.1	Identify the concepts of medical research and values in medical ethics. Define the CPCSEA guidelines for laboratory animal facility.
MRM 301T.2	Understand Basic statistical methods which are used in collecting data study and analyze. Observe Errors relating experimentation
MRM 301T.3	Know testing of the hypothesis and understand how far population parameter significant based on estimator with the help of parametric tests. Non parametric tests can also observed.
MRM 301T.4	Know application of Analysis in field or lab experimental to design and factorial experiments. Apply the knowledge in research objects about reliability and validity experimental study.

Course Name: Journal Club

Course Code: MPH 302, II M Pharmacy, Third Semester.

MPH 302.1	Critically appraise the research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills.
MPH 302.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment

Course Name: Project Work

Course Code: MPH 402 & 403, II M Pharmacy, Fourth Semester.

MPH 402.1	Prepare the presentation based on the results obtained in the research work.
MPH 402.2	Explain outcome of their project along with further scope for research. This develops their oratory and leadership skills.

**PROGRAMME: M. PHARMACY- PHARMACEUTICAL ANALYSIS
(COURSE OUTCOMES)**

Course Name: Modern Pharmaceutical Analytical Techniques (Theory)

Course Code: MPA 101 T, I M Pharmacy, First Semester.

MPA 101 T.1	To understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments
MPA 101 T.2	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
MPA 101 T.3	To expand the theoretical knowledge on various instrumental techniques including microscopic methods available for analysis of organic substances
MPA 101 T.4	To apply the knowledge learnt in developing new procedures of their own design
MPA 101 T.5	Comparing various methods of analysis and their outcomes

Course Name: Advanced Pharmaceutical Analysis (Theory)

Course Code: MPA 102 T, I M Pharmacy, First Semester.

MPA 102 T.1	The student Will understand the concepts of Impurity profiling
MPA 102 T.2	The students will gain appropriate knowledge about stability testing of bulk and various formulations.
MPA 102 T.3	Subject supply enough idea on the biological tests
MPA 102 T.4	It supports to understand the immunoassays.
MPA 102 T.5	The students learn the regulatory guidelines and their applications.

Course Name: Pharmaceutical Validation (Theory)

Course Code: MPA 103 T, I M Pharmacy, First Semester.

MPA 103 T.1	The student learns on the importance of patent and intellectual property rights.
MPA 103 T.2	The students are trained on the qualification aspects of instruments.
MPA 103 T.3	The importance of calibration to be performed for the instruments.
MPA 103 T.4	The various validation aspects to be carried out in the industry.
MPA 103 T.5	The students gain knowledge on how validation are carried for various components. Such as instrument validation, cleaning validation and process validation.

Course Name: Food Analysis (Theory)

Course Code: MPA 104T, I M Pharmacy, First Semester.

MPA 104 T.1	Student shall be able to understand various determination methods for Food constituents
MPA 104 T.2	Student shall be able to understand various determination methods for Food additives.
MPA 104 T.3	Student shall be able to understand the determination procedures of Finished food products
MPA 104 T.4	Student shall be able to understand various analytical techniques in the determination of Pesticides in food
MPA 104 T.5	Student shall be able to understand various analytical techniques in the determination of knowledge on food regulations

Course Name: Pharmaceutical Analysis – I (Practical)

Course Code: MPA 105 P, I M Pharmacy, First Semester.

MPA 105P.1	Calibration of UV-Visible spectrophotometer and FTIR spectrophotometer, Calibration of GC and HPLC.
MPA 105P.2	Assay of official compounds by different titrations and instrumental techniques
MPA 105P.3	Quantitative determination of hydroxyl group and amino group, and Colorimetric determination of drugs by using different reagents

Course Name: Pharmaceutical Analysis – II (Practical)

Course Code: MPA 106 P, I M Pharmacy, First Semester.

MPA 106P.1	Learn about the determination of total reducing sugar, proteins, vitamins content in foods
MPA 106P.2	Understand the selection of analytical methods for analysis of synthetic colors in food products
MPA 106P.2	Understand the selection of various analytical methods for determining food additives

Course Name: Advanced Instrumental Analysis (Theory)

Course Code: MPA 201 T, I M Pharmacy, Second Semester.

MPA 201 T.1	The detailed interpretation pattern for the organic substances
MPA 201 T.2	Practical aspects and troubleshooting techniques for HPLC and GC techniques for Bio-chromatographic analysis.
MPA 201 T.3	Knowledge and skills in advanced instrumentation techniques for drug analysis
MPA 201 T.4	Theoretical aspects of hyphenated analytical techniques
MPA 201 T.5	Critical analysis of analytical problem and selection of appropriate analytical tool for the quantification of chemicals and excipients

Course Name: Modern Bio-Analytical Techniques (Theory)

Course Code: MPA 202 T, I M Pharmacy, Second Semester.

MPA 202 T.1	It upgrade the method to conduct bio-equivalence study for formulations by utilising the proper regulatory guidelines
MPA 202 T.2	Get the knowledge on extraction procedures
MPA 202 T.3	Pupil will be exposed to both theoretical and practical knowledge on dissolution and release studies.
MPA 202 T.4	The subject content presents better understanding on metabolite identification process.
MPA 202 T.5	The class learns the drug product performance through bioavailability studies.

Course Name: Quality Control and Quality Assurance (Theory)

Course Code: MPA 203 T, I M Pharmacy, Second Semester.

MPA 203 T.1	Student shall be able to understand the importance of cGMP aspects of documentation
MPA 203 T.2	Student shall be able to understand the importance of analysis of packing materials
MPA 203 T.3	Student shall be able to understand the responsibilities of QA department
MPA 203 T.4	Student shall be able to understand the manufacturing operations and control.
MPA 203 T.5	Student shall be able to understand GLP and regulatory Affairs

Course Name: Herbal and Cosmetic Analysis (Theory)

Course Code: MPA 204 T, I M Pharmacy, Second Semester.

MPA 204 T.1	Student shall be able to understand various herbal regulations
MPA 204 T.2	Student shall be able to understand various analytical techniques in the determination of herbal products
MPA 204 T.3	Student shall be able to understand the herbal monographs
MPA 204 T.4	Student shall be able to understand various herbal drug interactions
MPA 204 T.5	Student shall be able to understand various performance evaluation of cosmetic products

Course Name: Pharmaceutical Analysis – III (Practical)

Course Code: MPA 205 P, I M Pharmacy, Second Semester.

MPA 205P.1	Know comparison of absorption spectra by UV and Wood ward – Fiesure rule and Interpretation of organic compounds by FT-IR
MPA 205P.2	Know protocol preparation and performance of analytical / bioanalytical method validation, and protocol preparation for the conduct of BA/BE studies according to guidelines.
MPA 205P.3	Understand determination of purity by DSC in pharmaceuticals and Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra

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