



NRI COLLEGE OF PHARMACY

(Run by Sri DurgaMalleSwari Educational Society)

(Approved by AICTE & PCI - New Delhi : : Affiliated to JNTUK, Kakinada)

Pothavaram (V), (Via) Nunna, Agiripalli (M), Krishna District, A.P., Pin : 521 212, Cell : 9394686868

PROGRAMME: M.PHARMACY (PHARMACEUTICAL ANALYSIS) COURSE OUTCOMES

COURSE NAME: Modern Analytical Pharmaceutical Analytical Techniques (Theory)

COURSE CODE: MPA 101T, I M.PHARMACY I SEM

MPA 101 T.1	Understand the UV-Visible spectroscopy, IR, flame and atomic absorption spectroscopy.
MPA 101 T.2	Know principles of NMR spectroscopy, instrumentation and applications.
MPA 101 T.3	Understand the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy.
MPA 101 T.4	Understand the different chromatographic techniques like paper, ion exchange, gas, HPLC, etc
MPA 101 T.5	Know the principles and procedures of paper and capillary electrophoresis; XRD and its applications.
MPA 101 T.6	Understand the principles and procedures of potentiometry and thermal analytical techniques like DSC and TGA.

COURSE NAME: ADVANCED PHARMACEUTICAL ANALYSIS (Theory)

COURSE CODE: MPA 102T, I M.PHARMACY I SEM

MPA 102 T.1	To know about impurity and stability studies, Pharmaceutical Ingredients and quantification of impurities as per ICH guidelines, Impurities in new drug products, Impurities in residual solvents
MPA 102 T.2	To develop knowledge about Element classification, control of elemental impurities, Stability test parameters, sampling frequency, specification, storage conditions and recording of results.
MPA 102 T.3	To explore about Impurity profiling, accelerated stability testing & shelf life calculation, Photo stability testing guidelines, ICH stability guidelines for biological products
MPA 102 T.4	To know about Stability testing of Phytopharmaceuticals: Regulatory requirements, protocols, HPTLC /HPLC finger printing, interactions and complexity
MPA 102 T.5	To gain knowledge on Biological tests and assays of vaccines, PCR studies for gene regulation, instrumentation
MPA 102 T.6	To understand Immunoassays Basic principles, Production of antibodies, Radio immunoassay, Optical IA, Enzyme IA, Fluoro IA, Luminescence IA, Quantification and applications of IA

COURSE NAME: PHARMACEUTICAL VALIDATION (Theory)

COURSE CODE: MPA 103T, I M.PHARMACY I SEM

MPA 103 T.1	To remember the validation, qualification, concepts and understand the qualification parameters.
MPA 103 T.2	Study the various types of Chromatographies (UV, HPLC, HPTLC, GC, FTIR, etc), electric balance, pH meter and glassware in detail.
MPA 103 T.3	Demonstrate the water systems in pharmaceutical industry. Understand the cleaning validation of equipment employed in the manufacture of pharmaceuticals
MPA 103 T.4	Explain the validation parameters according to ICH and USP along with computerized system validation
MPA 103 T.5	To formulate the IPR, IP, IPR concepts as per present industry scenario.

COURSE NAME: FOOD ANALYSIS (Theory)

COURSE CODE: MPA104 T, I M.PHARMACY I SEM

MPA 104 T.1	The study of carbohydrates typically explains about their structure, function & Metabolism and it illustrates monosaccharides, disaccharides, Polysaccharides & including their storage, cellular processes, Glycolysis , Gluconeogenesis and their role in nutrition and their impact on health.
MPA 104 T.2	The study of proteins illustrates about their structure, function & Metabolism, it also explains about amino acids, Peptide Bonds, Protein Folding and protein synthesis, degradation, protein nutrition, protein purification and Health benefits.
MPA 104 T.3	The Comprehensive understanding of structures, functions, Metabolism and Implication of lipids and Vitamins.
MPA 104 T.4	The outcome aim is to provide a detailed understanding of the role, regulation, implication of food additives in food industry this implicates about safety, adhere regulation, contribution to industry practices and apply knowledge on food products. These also includes about Pigments and Synthetic dyes.
MPA 104 T.5	The study of Analysis on fermentation of products like milk, wine, Cheeses, Spirits, Beer & Vinegar .Milk constituents , Milk products and their adulterants & contamination is been detailed explained.
MPA 104 T.6	The comprehensive study on Pest & Insects on various foods, and use of pesticides in agriculture & their % residues in grains, fruits, vegetables, milk & their products regulatory emphasis on BIS, Agmark, FDA and US-FDA.

COURSE NAME: PHARMACEUTICAL ANALYSIS PRACTICAL –I (Practical)

COURSE CODE: MPA 105PA, I M.PHARMACY I SEM

MPA 105 PA.1	Calibration of glasswares and pH meter
MPA 105 PA.2	Calibration of UV-Visible spectrophotometer and FTIR spectrophotometer
MPA 105 PA.3	Calibration of GC and HPLC

MPA 105 PA.4	Cleaning validation of any one equipment and Impurity profiling of drugs
MPA 105 PA.5	Assay of official compounds by different titrations and instrumental techniques
MPA 105 PA.6	Estimation of riboflavin/quinine sulphate by fluorimetry; Estimation of sodium/potassium by flame photometry
MPA 105 PA.7	Quantitative determination of hydroxyl group and amino group, and Colorimetric determination of drugs by using different reagents

COURSE NAME: PHARMACEUTICAL ANALYSIS PRACTICAL –II (Practical)

COURSE CODE: MPA 105PB, I M.PHARMACY I SEM

MPA 105 PB.1	Learn about the determination of total reducing sugar, proteins, vitamins content in foods
MPA 105 PB.2	Determine the saponification value, Iodine value, Peroxide value, Acid value of food products.
MPA 105 PB.3	Understand the selection of analytical methods for analysis of synthetic colors in food products
MPA 105 PB.4	Know very well about determination of concentration of preservatives and pesticides residue in food products
MPA 105 PB.5	Understand the selection of various analytical methods for determining food additives
MPA 105 PB.6	Determine density and specific gravity of food substances.

COURSE NAME: ADVANCED INSTRUMENTAL ANALYSIS (Theory)

COURSE CODE: MPA 201T, I M.PHARMACY II SEM

MPA 201T.1	The basic theoretical knowledge of the instrumentation techniques available. Theoretically understand the aspects of separation for multi components.
MPA 201T.2	Practical skills for the analysis of drugs and excipients using various instrumentation techniques. To make accurate analysis and report the results in defined formats.
MPA 201T.3	Students gained the necessary knowledge of the principles of instrumental scientific research. The knowledge will include the design and analysis techniques of mass spectrometry, ion mobility, high performance liquid chromatography, ultraviolet-visible spectrophotometry and fluorescence.
MPA 201T.4	Students are expected to demonstrate actual analysis using high end instruments. They should able to prepare the specialised solutions like buffers, indicators etc. They should able to do real sample analysis on instruments using SOPs.
MPA 201T.5	They should demonstrate troubleshooting abilities during actual analysis. They should able prepare protocols for analysis and SOP for various instruments.

COURSE NAME: MODERN BIO ANALYTICAL TECHNIQUES (Theory)

COURSE CODE: MPA 202T, I M.PHARMACY II SEM

MPA 202 T.1	Understand Extraction of drugs and metabolites from biological matrices and Bioanalytical method validation
MPA 202 T.2	Understanding of Biopharmaceutical considerations in bioanalytical techniques
MPA 202 T.3	Detailed study of Pharmacokinetics and Toxicokinetics
MPA 202 T.4	Know about Cell Culture Techniques, cell viability assays, flow cytometry
MPA 202 T.5	Understand Modern metabolite identification procedures with in vivo drug product performance (BE/BA).

COURSE NAME: QUALITY CONTROL & QUALITY ASSURANCE (Theory)

COURSE CODE: MPA203T, I M.PHARMACY II SEM

MPA 203T.1	Students have to understand ICH guidelines, Good Laboratory Practice and some quality control related concepts.
MPA 203T.2	Students have the ability to understand the schedule M guidelines, contamination control, cGMP guidelines, good warehousing practice and CPCSEA guidelines.
MPA 203T.3	They have ability to analysis of raw materials, packaging materials, in process quality control and formulations in Pharma Industry according to Indian, US and British pharmacopoeias.
MPA 203T.4	By this completion students have the capability of – How to maintain, retention and retrieval of documents. How to write Standard Operating Procedures(SOP), Master Formula Record, Quality audit plan and reports.
MPA 203T.5	Students learn completely about operations like production, manufacturing, cross contaminations preventions and packaging.

COURSE NAME: HERBAL & COSMETIC ANALYSIS (Theory)

COURSE CODE: MPA204T, I M.PHARMACY II SEM

MPA 204T.1	Introduction to Herbal remedies, toxicity and regulations: WHO and AYUSH guideline
MPA 204T.2	Detailed information of Adulteration and deterioration along with Regulatory requirements for setting herbal drug industry
MPA 204T.3	Stability testing protocols and monographs of herbal drug
MPA 204T.4	Understanding herbal drug-drug interactions
MPA 204T.5	Complete analytical evaluation of cosmetic products according to BIS

COURSE NAME: PHARMACEUTICAL ANALYSIS PRACTICAL III (Practical)

COURSE CODE: MPA 205PA, I M.PHARMACY II SEM

MPA 205 PA.1	Know comparison of absorption spectra by UV and Wood ward – Fiesure rule and Interpretation of organic compounds by FT-IR
MPA 205 PA.2	Know Interpretation of organic compounds by NMR and MS
MPA 205 PA.3	Understand determination of purity by DSC in pharmaceuticals and Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
MPA 205 PA.4	Perform bio molecules separation utilizing various sample preparation techniques and quantitative analysis of components by gel electrophoresis and HPLC techniques
MPA 205 PA.5	Perform Isolation of analgesics from biological fluids (Blood serum and urine).
MPA 205 PA.6	Know protocol preparation and performance of analytical / bioanalytical method validation, and protocol preparation for the conduct of BA/BE studies according to guidelines

COURSE NAME: PHARMACEUTICAL ANALYSIS PRACTICAL –IV (Practical)

COURSE CODE: MPA 205PB, I M.PHARMACY II SEM

MPA 205 PB.1	Perform in process and finished product quality control tests for tablets, capsules, parenterals and creams
MPA 205 PB.2	Perform quality control tests for primary and secondary packing materials, and assay of raw materials
MPA 205 PB.3	Know testing of related and foreign substances in drugs and raw materials, and preparation of Master Formula Record and Batch Manufacturing Record
MPA 205 PB.4	Perform quantitative analysis of rancidity in lipsticks and hair oil, and determination of aryl amine content and Developer in hair dye
MPA 205 PB.5	Know determination of foam height and SLS content of Shampoo, and determination of total fatty matter in creams
MPA 205 PB.6	Know determination of acid value and saponification value, and determination of calcium thioglycolate in depilatories

COURSE NAME: SEMINAR/ASSIGNMENT

1	Improve Oral and written communication skills.
2	Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
3	Understand and discuss current, real-world issues
4	Introduce to different types of scholarly sources and how to access them
5	Provide with preliminary skills to do further research in the field of international relations
6	Know how to break down a piece of writing into its component parts and analyze the arguments

7	Give the opportunity to read in depth on a topic and understand how different pieces of scholarship are engaged in conversation with one another.
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COURSE NAME: RESEARCH METHODOLOGY AND BIOSTATICS (Theory)

COURSE CODE: MRM 301T, M.PHARMACY III SEM

MRM 301T.1	Learn general research methodology.
MRM 301T.2	Understand the basic concepts of biostatistics and learn different parametric and non-parametric tests.
MRM 301T.3	Understand the functions of ethics committees in medical research.
MRM 301T.4	Understand the CPCSEA guidelines for laboratory animal facility.
MRM 301T.5	Understand the genesis of bioethics with special reference to Helsinki declaration.

COURSE NAME: JOURNAL CLUB

1	Critically appraise the research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills.
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: DISCUSSION / PRESENTATION

1	Select the topic for carryingout the research work and collection of literature on the selected topic.
2	Plan the work to be performed systematically and present it in a neat way.

COURSE NAME: RESEARCH WORK

1	Generate the topic for the project and Collect the information from the relevant sources
2	Assemble the information into a more realistic draft ethically and conclude the contents.
3	Prepare the presentation and explain outcome of their project along with further scope for research. This develops their oratory and leadership skills



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PROGRAMME: M.PHARMACY (PHARMACEUTICS) COURSE OUTCOMES

COURSE NAME: Modern Analytical Pharmaceutical Analytical Techniques (Theory)

COURSE CODE: MPH 101T, I M.PHARMACY I SEM

MPH 101 T.1	Understand the UV-Visible spectroscopy, IR, flame and atomic absorption spectroscopy.
MPH101 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	Understand the different chromatographic techniques like paper, ion exchange, gas, HPLC, etc
MPH 101 T.5	Know the principles and procedures of paper and capillary electrophoresis; XRD and its applications.
MPH 101 T.6	Understand the principles and procedures of immunoassays like radioimmunoassay, ELISA and bioluminescent assays.

COURSE NAME: DRUG DELIVERY SYSTEM (Theory)

COURSE CODE: MPH 102T, I M.PHARMACY I SEM

MPH 102 T.1	Understand drug delivery system give a detailed information transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effect.
MPH 102 T.2	Understand approaches, formulations, technologies, and systems for transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effect with suitable drug delivery.
MPH 102 T.3	Know methods of manufacture and evaluation of various Sustained Release (SR) and Controlled Release (CR) formulations like Gastroretentive, Buccal, Transdermal and Ocular drug delivery systems.
MPH 102 T.4	Understand recent developments in protein and peptide for parenteral delivery approaches will give new dimension of drug deliver for antibiotics, insulin, etc.
MPH 102 T.5	Understand vaccine delivery and different mode of application approach for clinical use. They know the different types of Drug carrier used in the process of drug delivery which serves to improve the selectivity, effectiveness, and/or safety of drug administration.
MPH 102 T.6	Know the latest drug delivery knowledge and think to develop new formulation based on the individual requirement.

COURSE NAME: MODERN PHARMACEUTICS(Theory)

COURSE CODE: MPH 103T, I M.PHARMACY I SEM

MPH 103 T.1	Learns about the science behind performing a preformulation study and understand various optimization techniques that are used in prior to formulate any new dosage form
MPH 103 T.2	Understands various validation protocols that are been followed in the pharmaceutical industries as per ICH And WHO guidelines
MPH 103 T.3	Understand the current good manufacturing practices that are implemented in various pharmaceutical industries
MPH 103 T.4	Understand about the science between compaction and compression of tablets
MPH 103 T.5	Understand about various diffusion and dissolution parameters that have to be incorporated while performing dissolution studies.

COURSE NAME: REGULATORY AFFAIRS(Theory)

COURSE CODE: MPH104 T, I M.PHARMACY I SEM

MPH 104 T.1	To impart advanced knowledge and skills required to learn the concept of generic drug's and their development
MPH 104 T.2	To various regulatory filings in different countries, different phases of clinical trials and submitting regulatory documents: filing process of IND, NDA and ANDA.
MPH 104 T.3	To know the chemistry, manufacturing controls and the regulatory importance.
MPH 104 T.4	To learn the documentation requirements
MPH 104 T.5	To know the approval process

COURSE NAME: PHARMACEUTICS PRACTICAL –I (Practical)

COURSE CODE: MPH 105PA, I M.PHARMACY I SEM

MPH 105 PA.1	Know Variability and Operation of commonly used analytical instruments like UV Vis spectrophotometer, HPLC, Gas Chromatography, Fluorimetry and Flame photometry.
MPH 105 PA.2	Perform Analysis of various drugs and their formulation in single and combination dosage forms.
MPH 105 PA.3	Have knowledge as well as hands on training with respect to the principles of formulation science such as Preformulation studies and Micromeritics.
MPH 105 PA.4	Possess the knowledge about effect of compressional force on tablets Properties.

COURSE NAME: PHARMACEUTICS PRACTICAL –II(Practical)

COURSE CODE: MPH 105PB, I M.PHARMACY I SEM

MPH 105 PB.1	Get knowledge with respect to composition of dosage forms, selection of drugs and polymers for the development of delivering system
MPH 105 PB.2	Formulate and evaluation of various customized, Sustained Release (SR) and Controlled Release (CR) formulations.
MPH 105 PB.3	Formulate and evaluate various novel drug delivery systems: Floating DDS, Muco adhesive tablets and Trans dermal patches

COURSE NAME: MOLECULAR PHARMACEUTICS (NANO TECH AND TARGETED DDS)

(Theory)

COURSE CODE: MPH 201T, I M.PHARMACY II SEM

MPH 201T.1	Understand the various approaches for development of novel drug delivery systems like Tumor targeting and Brain specific delivery.
MPH 201T.2	Understand the criteria for selection of drugs and polymers for the development of NTDS
MPH 201T.3	Know the need, concept, design and evaluation of various targeted drug delivery systems like Nano Particles, Liposomes, Niosomes, Aquasomes, Phytosomes, Electrosomes and Monoclonal Antibodies.
MPH 201T.4	Understand gene therapy and different mode of application approach for clinical use.
MPH 201T.5	Understand the formulation and evaluation of Aerosols and Intra Nasal Route Delivery systems.

COURSE NAME: ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS (Theory)

COURSE CODE: MPH 202T, I M.PHARMACY II SEM

MPH 202 T.1	To impart knowledge and skills necessary for dose calculations, dose adjustments.
MPH 202 T.2	To apply biopharmaceutics theories in practical problem solving.
MPH 202 T.3	To understand the basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics
MPH 202 T.4	To carryout various biopharmaceutics and pharmacokinetics calculations.
MPH 202 T.5	To impart the students the knowledge of how the drug absorption,,metabolism and excretion occurs through latest advances.

COURSE NAME: COMPUTER AIDED DRUG DELIVERY SYSTEM(Theory)

COURSE CODE: MPH203T, I M.PHARMACY II SEM

MPH 203T.1	Understanding of the intersection between computer technologies and pharmaceutical research and development. Identify the challenges and opportunities in drug discovery, bioinformatics tools, Population modeling, virtual screening, Confidence Regions, Optimal modeling. ICH Q8 Guidelines, Scientifically based QbD –examples of application.
MPH 203T.2	Provides structured and comprehensive understanding of how computational modeling is applied to study drug disposition, considering absorption, distribution, metabolism, and excretion processes.
MPH 203T.3	Understands the Computer-Aided Formulation Development" would likely cover the integration of computational tools and techniques in the process of designing and optimizing formulations for pharmaceutical products
MPH 203T.4	Computer-Aided Biopharmaceutical Characterization" would help us to understand the computational methods and tools in understanding the characteristics of biopharmaceuticals which includes model construction, Parameter sensitivity analysis, Virtual Trial, Bio-waiver, Computer Stimulation and study of Clinical data collection and Management and regulation of computer Systems.
MPH 203T.5	Provide a comprehensive overview of AI, robotics, and CFD in relation to the basics of robotics, including robot design, kinematics, and dynamics.AI techniques enhance robotic capabilities, including perception, decision-making, and control.

COURSE NAME: FORMULATION DEVELOPMENT OF PHARMACEUTICAL AND COSMETIC PRODUCTS (Theory)

COURSE CODE: MPH204T, I M.PHARMACY II SEM

MPH 204T.1	The main objective is to know about Molecular optimization of APIs powder flow, structure modification, drug-excipient compatibility studies.
MPH 204T.2	To gain knowledge about Study of different formulation additives, new developments in excipient science, Design of experiments – factorial design for product and process development
MPH 204T.3	To Know about phase- solubility analysis, pH-solubility profile, solubility techniques to improve solubility, dissolution testing for conventional and controlled release product.
MPH 204T.4	To explore about accelerated stability studies, Solid state stability and shelf life assignment. Stability protocols, reports and ICH guidelines.
MPH 204T.5	To gain knowledge about Evaluation and packaging cosmetic products and Dentrifices Manicure preparations, lashes, Baby Soaps and syndetbars

COURSE NAME: PHARMACEUTICS PRACTICAL III (Practical)

COURSE CODE: MPH 205PA, I M.PHARMACY II SEM

MPH 205 PA.1	Know the effect of temperature, non solvent, incompatible polymer addition on preparation of microcapsules.
MPH 205 PA.2	Design and perform in-vitro evaluation studies for various novel drug delivery systems: Alginate beads, gelatin /albumin microspheres, liposomes / niosomes and spherules.
MPH 205 PA.3	Perform in-vitro dissolution of marketed products and interpretation of dissolution data.
MPH 205 PA.4	Calculate the various pharmacokinetic parameters of drugs and pharmaceutical products in animal models / Software.

COURSE NAME: PHARMACEUTICS PRACTICAL IV(Theory)

COURSE CODE: MPH 205PB, I M.PHARMACY II SEM

MPH 205PB.1	Learn how to use the Design Expert Software in the formulation design and data analysis.
MPH 205 PB.2	Calculate the various pharmacokinetic and pharmacodynamics parameters using Computer Simulations / Computational Modeling.
MPH 205 PB.3	Formulate and evaluate various cosmetic products and Multi Vitamin Syrup.
MPH 205 PB.4	Know the optimization techniques in Formulation Development of Tablets.

COURSE NAME: SEMINAR/ASSIGNMENT

1	Improve Oral and written communication skills.
2	Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
3	Understand and discuss current, real-world issues
4	Introduce to different types of scholarly sources and how to access them
5	Provide with preliminary skills to do further research in the field of international relations
6	Know how to break down a piece of writing into its component parts and analyze the arguments
7	Give the opportunity to read in depth on a topic and understand how different pieces of scholarship are engaged in conversation with one another.

COURSE NAME: RESEARCH METHODOLOGY AND BIOSTATISTICS (Theory)

COURSE CODE: MRM 301T, M.PHARMACY III SEM

MRM 301T.1	Learn general research methodology.
MRM 301T.2	Understand the basic concepts of biostatistics and learn different parametric and non-parametric tests.
MRM 301T.3	Understand the functions of ethics committees in medical research.

MRM 301T.4	Understand the CPCSEA guidelines for laboratory animal facility.
MRM 301T.5	Understand the genesis of bioethics with special reference to Helsinki declaration
MRM 301T.6	Learn general research methodology.

COURSE NAME: JOURNAL CLUB

1	Critically appraise the research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills.
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: DISCUSSION / PRESENTATION

1	Select the topic for carryingout the research work and collection of literature on the selected topic.
2	Plan the work to be performed systematically and present it in a neat way.

COURSE NAME: RESEARCH WORK

1	Generate the topic for the project and Collect the information from the relevant sources
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MQA101 T.2	Know principles of NMR spectroscopy, instrumentation and applications.
MQA 101 T.3	Understand the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy.
MQA 101 T.4	Understand the different chromatographic techniques like paper, ion exchange, gas, HPLC, etc
MQA 101 T.5	Know the principles and procedures of paper and capillary electrophoresis; XRD and its applications.
MQA 101 T.6	Understand the principles and procedures of potentiometry and thermal analytical techniques like DSC and TGA.

COURSE NAME: QUALITY MANGEMENT SYSTEMS (Theory)

COURSE CODE: MQA 102T, I M.PHARMACY I SEM

MQA 102 T.1	To build the knowledge of importance of quality in pharmaceutical industry.
MQA 102 T.2	To outline the guidelines related to maintain quality management in pharmaceutical industry
MQA 102 T.3	To select the different tools for quality improvement.
MQA 102 T.4	To compare the ICH guidelines for determining stability of drug and drug substances.
MQA 102 T.5	To make use of statistical approaches to maintain quality of drug and drug products.
MQA 102 T.6	To interpret the regulatory compliance through quality management

COURSE NAME: QUALITY CONTROL & QUALITY ASSURANCE (Theory)

COURSE CODE: MQA 103T, I M.PHARMACY I SEM

MQA 103 T.1	Students have to understand ICH guidelines, Good Laboratory Practice and some quality control related concepts
MQA 103 T.2	Students have the ability to understand the schedule M guidelines, contamination control, cGMP guidelines, good warehousing practice and CPCSEA guidelines
MQA 103 T.3	They have ability to analysis of raw materials, packaging materials, in process quality control and formulations in Pharma Industry according to Indian, US and British pharmacopoeias.
MQA 103 T.4	By this completion students have the capability of – How to maintain, retention and retrieval of documents. How to write Standard Operating Procedures(SOP), Master Formula Record, Quality audit plan and reports.
MQA 103 T.5	Student learns completely about operations like production, manufacturing, cross contaminations preventions and packaging.

COURSE NAME: PRODUCT DEVELOPMENT AND TECHNOLOGY TRANSFER (Theory)

COURSE CODE: MQA104 T, I M.PHARMACY I SEM

MQA 104 T.1	To understand the process of new product development.
MQA 104 T.2	To understand aspects in Preformulation studies, solubility methods, study of crystal properties and Stability testing during product development
MQA 104 T.3	To understand aspects in Pilot plant scale up techniques for large scale manufacturing of solids, Liquids, semisolid and parenteral dosage forms.
MQA 104 T.4	To know aspects of Control tests and Pharmaceutical Packing materials for dosages and devices.
MQA 104 T.5	To know Development of technology by R&D, Qualitative and Quantitative technology models and Documentation in technology transfer

COURSE NAME: PHARMACEUTICAL QUALITY ASSURANCE PRACTICAL (Practical)

COURSE CODE: MQA 105P, I M.PHARMACY I SEM

MQA 105 PA.1	Apply the principles of analytical techniques like spectroscopy and chromatography in the estimation of pharmacopeial and non-pharmacopeial compounds and their products.
MQA 105 PA.2	Understand quality assurance terminologies, their importance, application, and federal guidelines
MQA 105 PA.3	Analyse raw materials, finished products, and related substances as a part of quality assessment.
MQA 105 PA.4	Understand the importance and apply the principles of formulation development and

	analytical method development for the conduct of pre-formulation studies, stability studies, and quality control tests on raw materials, finished products, and packaging materials.
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COURSE NAME: HAZARDS & SAFETY MANAGEMENT (Theory)

COURSE CODE: MQA 201T, I M.PHARMACY II SEM

MQA 201T.1	To convey knowledge necessary to understand and issues related to different kinds of hazard and their management.
MQA 201T.2	To know about basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in pharmaceutical product development process.
MQA 201T.3	It provides the principle based approach to solve the complex tribulations.
MQA 201T.4	Learn about sources and types of hazards.
MQA 201T.5	Learn the rules and guidelines on risk assessment and management.

COURSE NAME: PHARMACEUTICAL VALIDATION (Theory)

COURSE CODE: MQA 202T, I M.PHARMACY II SEM

MQA 202 T.1	Understand the qualification aspects of instruments and the importance of calibration to be performed for the instruments.
MQA 202 T.2	Learn about fundamental aspects of qualification, of various equipment and instruments.
MQA 202 T.3	Gain knowledge on qualification of laboratory equipment's and validation of utility systems.
MQA 202 T.4	Adapt the concept of instrument method validation and process validation
MQA 202 T.5	Understand the cleaning validation of equipment employed in the manufacture of pharmaceuticals along with computerized system validation.
MQA 202 T.6	Learn the importance of validation, patent and intellectual property rights.

COURSE NAME: AUDITS & REGULATORY COMPLIANCE (Theory)

COURSE CODE: MQA 203T, I M.PHARMACY II SEM

MQA 203T.1	To understand the process for auditing in Pharmaceutical industries.
MQA 203T.2	To know the methodology involved in the auditing process of different in pharmaceutical industries.

MQA 203T.3	To learn about auditing report writing.
MQA 203T.4	Prepare and implement the check lists and SOPs for various Good Regulatory Practices.
MQA 203T.5	Implement Good Regulatory Practices in the Healthcare and related Industries.

COURSE NAME: PHARMACEUTICAL MANUFACTURING TECHNOLOGY (Theory)

COURSE CODE: MQA 204T, I M.PHARMACY II SEM

MQA 204T.1	Students get to understand the legal requirements and licenses for API and pharmaceutical formulations and also about production planning.
MQA 204T.2	Understand about processing of sterile dosage forms of LVPs & SVPs and also advanced technology of sterile dosage forms
MQA 204T.3	Understand about non sterile manufacturing processes and automation in pharmaceutical industry.
MQA 204T.4	Understand about various materials used in container and closure technology
MQA 204T.5	Understand about latest technologies of quality improvement in pharmaceutical production

COURSE NAME: PHARMACEUTICAL QUALITY ASSURANCE PRACTICAL (Practical)

COURSE CODE: MQA 205P, I M.PHARMACY II SEM

MQA 205 PA.1	Apply the principles of analytical techniques in the estimation of organic and inorganic contaminants in diverse types of samples.
MQA 205 PA.2	Comprehend the principles of qualification and validation of equipment and analytical instruments.
MQA 205 PA.3	Create checklists for audit of processes, vendors, and areas
MQA 205 PA.4	Describe the principle and application of QbD and PAT in the pharmaceutical industry.

COURSE NAME: SEMINAR/ASSIGNMENT

1	Improve Oral and written communication skills.
2	Explore an appreciation of oneself in relation to its larger diverse social and academic contexts.
3	Understand and discuss current, real-world issues
4	Introduce to different types of scholarly sources and how to access them
5	Provide with preliminary skills to do further research in the field of international relations
6	Know how to break down a piece of writing into its component parts and analyze the arguments
7	Give the opportunity to read in depth on a topic and understand how different pieces of scholarship are engaged in conversation with one another.

COURSE NAME: RESEARCH METHODOLOGY AND BIOSTATICS (Theory)

COURSE CODE: MRM 301T, M.PHARMACY III SEM

MRM 301T.1	Learn general research methodology.
MRM 301T.2	Understand the basic concepts of biostatistics and learn different parametric and non-parametric tests.
MRM 301T.3	Understand the functions of ethics committees in medical research.
MRM 301T.4	Understand the CPCSEA guidelines for laboratory animal facility.
MRM 301T.5	Understand the genesis of bioethics with special reference to Helsinki declaration.

COURSE NAME: JOURNAL CLUB

1	Critically appraise the research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills.
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: DISCUSSION / PRESENTATION

1	Select the topic for carryingout the research work and collection of literature on the selected topic.
2	Plan the work to be performed systematically and present it in a neat way.

COURSE NAME: RESEARCH WORK

1	Generate the topic for the project and Collect the information from the relevant sources
2	Assemble the information into a more realistic draft ethically and conclude the contents.
3	Prepare the presentation and explain outcome of their project along with further scope for research. This develops their oratory and leadership skills