Course Outcomes (CO)

Course Code/ Course name	Course Outcomes	
M. Pharm. I Year Semester I		
MPY-101T Modern Analytical Techniques	MQA101.1	Understand the basic knowledge on single and multiple component assay of pharmaceuticals
	MQA101.2	Developing basic practical skills using instrumentation techniques
	MQA101.3	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	MQA101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances
	MQA101.5	Applying the knowledge learnt in developing new procedures and comparing various methods of analysis
MQA-102T Quality Management System	MQA102.1	Understand the quality parameters and quality attribute in pharmaceutical industry sectors
	MQA102.2	Learning the various tools for quality improvement
	MQA102.3	Knowing the Importance of the quality of medicines in the public.
	MQA102.4	Regulatory body requirements for the import and export pharmaceutical products
	MQA102.5	Knowledge of stability testing of drug and drug substances
MQA103T Quality Control and Quality Assurance	MQY-103.1	Understand the cGMP aspects in a pharmaceutical industry
	MQY-103.2	Understand GLP and regulatory Affairs
	MQY-103.3	Appreciate the importance of documentation
	MQY-103.4	Understand the responsibilities of QA & QC departments
	MQY-103.5	Appreciate the importance of documentation
MQA104T Product Development and Technology Transfer	MQA-104.1	Understand the new product development process
	MQA-104.2	Explain information to transfer technology from R&D to actual manufacturing
	MQA-104.3	Elucidate necessary information to transfer technology of existing products between various manufacturing places
	MQA-104.4	Understand the Quality by design practices of sterile and non sterile dosage forms
	MQA-104.5	Understand the practices of packaging technology

	MQA-104.6	Understand the Regulatory requirements in drug development stages
MQA105P – Pharmaceutical Quality Assurance (Practical)	MQA-105.1	Estimation of process capability
	MQA-105.2	In process and finished product quality control tests for tablets, capsules, parenteral and semisolid dosage forms
	MQA-105.3	Estimation of drug in pharmaceutical by using modern analytical techniques
	MQA-105.4	Development of Stability study protocol for pharmaceuticals
	MQA-105.5	To carry out preformulation study for successful formulation of pharmaceuticals
M. Pharm. Part I Semester II		
MQA201T – Hazards and Safety Management	MQA-201.1	Understand, determine and to take control measures to eliminate or minimize the level of the risks
	MQA-201.2	Support the student to recognize the control measures to eliminate or minimize the level of the risks
	MQA-201.3	Ensure safety standards in pharmaceutical industry
	MQA-201.4	Provide comprehensive knowledge on the safety management
	MQA-201.5	Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere
MQA202T – Pharmaceutical Validation	MQA202.1	Importance of patent and intellectual property rights
	MQA202.2	Knowledge of qualification aspects of various instruments
	MQA202.3	Understanding of cleaning validation of equipments employed in the manufacture of pharmaceuticals
	MQA202.4	Theoretical and practical basis of validation of analytical method for estimation of drugs
	MQA202.5	Fundamental aspects of qualification of various equipment and instruments
MQA203T Audits and Regulatory Compliance	MQA203.1	To understand the importance of auditing in pharmaceuticals
	MQA203.2	To understand the methodology of auditing for pharmaceutical industry
	MQA203.3	To prepare the check list for auditing
	MQA203.4	To carry out the audit process
MQA204T Pharmaceutical Manufacturing Technology	MQA204.1	Knowledge of common practice in the pharmaceutical industry developments, plant layout and production planning
	MQA204.2	Knowledge of principles and practices of aseptic process technology, non-sterile manufacturing technology and packaging technology

	MQA204.3	Explaining principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing
	MQA204.4	Understand the practices of packaging technology
	MQA204.5	Understand the practices of aseptic process technology
MQA205P – Pharmaceutical Quality Assurance (Practical)	MQA205.1	Validation of an analytical method for pharmaceuticals
	MQA205.2	Qualification of Pharmaceutical Testing Equipment
	MQA205.3	Design of plant layout: Sterile and non-sterile
	MQA205.4	Case study on application of QbD
	MQA205.5	Identification & estimation of drug in pharmaceuticals & assess the impurities
M. Pharm. Part II Semester III		
MRM 301T Research Methodology and Biostatistics	MRM301.1	Identify the overall process of designing a research study from its inception to its report.
	MRM301.2	Familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research
	MRM301.3	Identify a research problem stated in a study.
	MRM301.4	Why educational research is undertaken and the audiences that profit from research studies?

Old Scheme Course Outcomes

M. Pharma I Year / I Sem		
Course code/ Course name	**Course outcomes**	
MPY 101 Modern Analytical Technique	MPY101.1	Understand the basic knowledge of single and multiple component assay of pharmaceuticals
	MPY 101.2	Developing basic practical skills using instrumentation techniques
	MPY 101.3	Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	MPY 101.4	Basics theoretical knowledge on various instrumental techniques available for analysis of organic substances
	MPY 101.5	Applying the knowledge learned in developing new procedures and comparing various methods of analysis
MPY 102 Biotechnology and bioinformatics	MPY102.1	Understand the Structure & Function of DNA, DNA Replication & Repair, Expression of Genetic Information, Function of RNA and translation, Post translational modification
	MPY 102.2	Concept of recombinant DNA technology knowledge of Restriction enzymes, Polymerase Chain reaction. Blotting techniques, DNA sequencing, and Pharmaceutical applications.
	MPY 102.3	Understanding the gene therapy and its pharmaceutical significance.
	MPY 102.4	Study of Manufacturing and storage of vaccines. Application of immunology for the development of new vaccines. Gaining knowledge of monoclonal antibodies & hybridoma technology & its applications.
	MPY 102.5	Study of cell organization and reproduction. Understanding the communication between cell and their environment.
	MPY102.6	Application of knowledge of cancer and its treatment strategies.
	MPY102.7	Understanding the molecular mechanism o disease and invivo transgenic models, Genomic protein targets and recombinant therapeutics. Its application for rational drug design, Gene therapy & DNA/ RNA targeted therapeutics.
	MPY102.8	Exploration of biological data bases to study Sequence analysis, Protein structure, Genetic and physical mapping and importance in pharmaceutical research.
	MPY102.9	Learning of handling the biological data by descriptive statistics, Normal distribution, Probability distribution and Sampling plans.

MPY 103 Drug Regulatory Affairs, IPR and Quality assurance Techniques	MPY103.1	Understanding of regulatory requirements of pharmaceutical documentation
	MPY103.2	Basics of documentation for pharmaceutical operations
	MPY103.3	Knowledge of documents for R&D and quality operations
	MPY103.4	Understanding of validation documents for non-sterile formulations
	MPY103.5	Well versed with ICH guidelines for pharmaceutical quality system
MPY 104 Product Development and Formulation	MPY104.1	To obtain knowledge of physical, chemical, and pharmaceutical factors affecting dosage forms.
	MPY104.2	Idea of drug excipient, excipient-excipient interactions affecting formulations
	MPY104.3	Attain knowledge of solubilization and methods to enhance solubility.
	MPY104.4	To study dissolution apparatus dissolution testing of different types of dosage formulation and in-vitro and in-vivo correlation.
	MPY104.5	To update with latest tablet technology and automation in manufacturing process.
	MPY104.6	To get an insight of recent formulation strategies for parenteral and ophthalmic products.
	MPY104.7	Knowledge of pharmaceutical grade polymers and uses in formulation development.
	MPY104.8	To obtain knowledge of nutraceuticals and their usefulness in prevention of diseases.
	MPY104.9	To Obtain knowledge of different types of packages and their quality tests.
	MPY104.10	To understand importance of stability study programs for formulations and ICH guidelines for stability.
	MPY104.11	To explore application of computers in drug development process.
MPY101 Modern Analytical Techniques (Practical)	MPY101P.1	Analysis of Pharmacopoeial compounds and their formulations by UV-Vis spectrophotometer
	MPY101P.2	Explore the Experiments based on Gas Chromatography and HPLC
	MPY101P.3	Explore the instrumentation of HPTLC
MPY 102 Biotechnology & Bioinformatics (Practical)	MPY102P.1	Understand and perform the separation of subnuclear material along with its electrophoretic separation
	MPY102P.1	Explore various ELISA techniques
	MPY102P.1	Understand PCR and its applications

MPY 104 Product Development and Formulation (Practical)	MPY104P.1	Perform solubility studies with different types of BCS drug samples
	MPY104P.2	Study the physicochemical properties of different polymers and practically compare them
	MPY104P.3	Explore dissolution technique
	MPY104P.4	Study pharmaceutical packaging materials
M. Pharm. I Year Semester II		
MPY 201QA Advanced Quality Assurance Techniques –I	MPY201.1q	Understand the fundamental aspects of cGMP in pharmaceutical industry
	MPY 201.2q	Knowledge of the documentation and its importance in pharmaceutical industry
	MPY 201.3q	To be well versed with the key activities in QA and QC.
	MPY 201.4q	Knowledge of basics of risk-based approach in quality management system
	MPY 201.5q	Fundamental aspects of current good laboratory practices and its importance in pharm industry
MPY 202QA Advanced Quality Assurance Techniques –I	MPY202.1q	Basics of various manufacturing operations and its control in pharmaceutical industry.
	MPY 202.2q	Fundamental of outsourcing of manufacturing and planning operations
	MPY 202.3q	Knowledge of post operational activities and handling product complaint
	MPY 202.4q	Well versed with various manufacturing operations and quality control aspects of sterile dosage form
	MPY 202.5q	Understand the concept of sampling and inspection planning in pharmaceutical industry
MPY 203QA Advanced Quality Assurance Techniques –III	MPY203.1q	Knowledge of fundamental aspect and importance of validation
	MPY 203.2q	Basics concepts for carrying out validation of manufacturing processes
	MPY 203.3q	Well versed with applying the knowledge of validation to instruments and equipment
	MPY 203.4q	Fundamentals aspects of manufacturing facilities validation like HVAC and water system etc.
	MPY 203.5q	Understanding of cleaning validation and analytical method validation
	MPY 203.6q	Knowledge of process validation and computer system validation and its regulatory requirements
MPY 201QA Advanced Quality Assurance Techniques –IV	MPY 204.1q	Understanding of the importance of quality ISO management systems
	MPY 204.2q	Well versed with the tools for quality improvement
	MPY	Basics of approaches used in control of quality and

	204.3q	developing quality culture
	MPY 204.4q	Knowing the importance of manufacturing planning for quality
	MPY 204.5q	Statistical approaches for quality and its importance
	MPY204.6q	Fundamental concepts of quality assurance in pharmaceutical industry
MPY 205 QA Lab Work	MPY 205.1	Design important documents related to Pharmaceutical QA Department
	MPY 205.2	Perform the dissolution testing
	MPY 205.3	Perform IPQC test for different formulations
	MPY 205.4	Perform validation of Analytical equipment
	MPY 205.5	Learn and perform validation of different areas
M. Pharm II Year / III Semester		
MPY301QA Elective I Pharm. Quality System and Process Validation	MPY 301.1	Knowledge of quality control test for sterile and non-sterile dosage form
	MPY 301.2	Basics of quality assurance in pharmaceutical packaging operations
	MPY 301.3	Well versed with process validation in pharmaceutical industry
	MPY 301.4	Understanding of sterilization process validation
	MPY 301.5	Fundamentals of biological and biotechnological process validation
MPY 302 QA Elective II Pharmaceutical Documentation and Regulatory Affairs	MPY302.1	Understanding of regulatory requirements of pharmaceutical documentation
	MPY 302.2	Basics of documentation for pharmaceutical operations
	MPY 302.3	Knowledge of documents for R&D and quality operations
	MPY 302.4	Understanding of validation documents for non-sterile formulations
	MPY 302.5	Well versed with ICH guidelines for pharmaceutical quality system