1. Course Outcomes of M.Pharm First Year First Semester (Pharmaceutics)

S.No	Course Name with code	Co Number	Course Outcome
M.Pharm First Year first semester			
1	Modern Pharmaceutical Analytical Techniques (MPH101T)	CO1	Demonstrates about UV-Visible spectroscopy, IR spectroscopy, Spectro flourimetry, Flame emission spectroscopy and Atomic absorption spectroscopy and instrumentations.
		CO2	Develops knowledge of NMR spectroscopy Quantum numbers and their role in NMR, and also principles of FT-NMR and 13CNMR.
		CO3	Demonstrates the Mass Spectroscopy Principle, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation, Meta stable ions, Isotopic peaks.
		CO4	Chromatography of TLC, HPLC, HPTLC, Ultra-HPLC,ION exchange chromatography,column chromatography, gas chromatography, gel chromatography.
		CO5	Explains about Paper electrophoresis, Gel electrophoresis, Capillary electrophoresis, Zone electrophoresis, Moving boundary electrophoresis, Iso-electric focusing. X ray Crystallography
		CO6	Immunoassays- RIA, Elisa,Bio-luminescence assays.

2	Drug Delivery system (MPH102T)	CO1	Describe the concepts of Sustained release & Controlled release formulations and gain knowledge about the polymers used in Novel formulations and personalized medicines. (Remember)
		CO2	Formulate and attain knowledge on fundamentals, types and activation of different modulated drug delivery systems. (Create)
		CO3	Formulate and Evaluate Gastro retentive & Buccal drug delivery systems and Know about the modulation of GI transit time & mechanism of drug permeation. (Create)
		CO4	Recognize the Barriers involved in ocular and protein drug delivery and mechanisms to overcome the barriers. (Understand)
		CO5	Classify Transdermal Drug Delivery Systems and Formulate and Evaluate different Transdermal and Protein Drug Delivery Systems. (Analyse)
		CO6	Explain the mechanism of vaccine uptake and delivery of vaccines through different routes. (Understand)
3	Modern Pharmaceutics (MPH103T)	CO1	Describe about the basic concepts of preformulation studies.
		CO2	Discuss about the dispersion systems, parenterals and optimization process.
		CO3	Explain about the validation of process, equipment and product.
		CO4	Describe the cGMP concepts of layout of building, services and their maintenance & about the production management.
		CO5	Describe the concepts of compression and compaction.
		CO6	Explain about the parameters of consolidation and their applications.
4	Regulatory Affairs(MPH104T)	CO1	Explain the requirements for development
		CO2	Evaluate, analyze and apply the concepts of innovator and generic drugs, drug development process,the Regulatory guidance's and guidelines for filing and approval process Preparation of Dossiers and their submission to regulatory agencies in different countries
		CO3	Describe the post approval regulatory requirements for actives and drug products
		CO4	Apply the regulatory requirements for submission of global documents in CTD/ eCTD formats
		CO5	Identify the clinical trials requirements for approvals for conducting clinical trials
		CO6	Assess the requirements of Pharmacovigilance and process of monitoring in clinical trials.
5	Pharmaceutical Practical I	CO1	Estimation of drug(s) by various analytical techniques.
		CO2	Demonstration of Gas Chromatography
		CO3	Demonstration of HPLC
		CO4	Determination of pre-formulation studies of the given drug
		CO5	Study of effect of binder on disintegration of tablet
		CO6	Determination of flow properties of given drug.

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M.Pharm First Year first semester			
1	Molecular Pharmaceutics (Nano Tech and Targeted DDS) (MPH201T)	CO1	Describe about the basic concepts of targeted drug delivery systems.
		CO2	Explain about the targeting models.
		CO3	Describe about the concepts, classification, methods of preparation and evaluation of nanoparticle technology & Liposomes.
		CO4	Describe about the concepts, classification, methods of preparation and evaluation of microparticle technology.
		CO5	Discuss about the pulmonary drug delivery systems.
		CO6	Describe about the concepts of gene targeting; Explain about various gene targeted drug delivery systems.
2	Advanced Biopharmaceutics &Pharmacokinetics (MPH202T)	CO1	Demonstrate drug absorption through GIT- Mechanisms, factors & methods of study **(UNDERSTAND)**
		CO2	Integrate biopharmaceutical considerations of drug design & *in-vivo* drug product performance **(CREATE)**
		CO3	Discuss pharmacokinetic models and evaluation of pharmacokinetic parameters by different models **(UNDERSTAND)**
		CO4	Review bioavailability and bioequivalence protocols & studies **(UNDERSTAND)**
		CO5	Summarize the applications of pharmacokinetics, pharmacokinetic & Pharmacodynamic drug interactions **(UNDERSTAND)**
		CO6	Discuss Pharmacokinetics and Pharmacodynamics to biotechnological drugs **(UNDERSTAND)**
3	Computer Aided Drug Design (MPH203T)	CO1	To recall the basics of computers in pharmaceutical research and development, population modelling, and sensitivity analysis (REMEMBER)
		CO2	To illustrate the quality by design principles, computational modeling of drug disposition, application of drug transporters (UNDERSTAND)
		CO3	To determine the concepts for computer-aided formulation development, ethics of computing in pharmaceutical research (APPLY)
		CO4	To justify the pharmacokinetic and pharmacodynamic characteristics of drugs by simulations (EVALUATE)
		CO5	To assess the applications of computers in clinical datamanagement (EVALUATE)
		CO6	To discuss the impact of artificial intelligence, robotics and computational fluid dynamics (UNDERSTAND)
		CO7	

4	Cosmetic and Cosmeceuticals(MPH 204T)	CO1	Describe various drug-excipient compatibility studies. crystal morphology and variations, powder flow, structure modification, drug-excipient compatibility studies, methods of determination. (Remember)
		CO2	Summarize the concept of role of formulation additives in the Design of experiments like factorial design for product and process development. (Understand)
		CO3	Classify on solubility techniques, Theories and mechanisms of dissolution, in-vitro dissolution testing models – sink and non-sink, Data handling and correction factor. Bio relevant media, in-vitro and in-vivo correlations, levels of correlations. (Analyze)
		CO4	Explain the salient features protocols, reports and ICH guidelines of drugs stability. (Understand)
		CO5	Formulate the following cosmetic products like Dentifrices, Baby care products, Manicure preparations, Shampoos, Creams. (Create)
		CO6	Assessment and packaging of the following cosmetic products like Dentifrices, Baby care products, Manicure preparations, Shampoos, Creams. (Evaluate)
5	Pharmaceutical Practical II (MPH205P)	CO1	Study of effect of various factors on drug dissolution.
		CO2	Study of powder characteristics by constructing heckle plots.
		CO3	Study of comparative dissolution studies between various dosage forms.
		CO4	Evaluation of different dosage forms.
		CO5	Design and evaluation of different oral dosage forms
		CO6	Design and evaluation of different trasdermal dosage forms