COURSE PLAN

Name of the Course: Modern Pharmaceutical Analytical Techniques (Theory)	
Course code: (MPC101T)	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC101T.1	Explain the basic principles and theories of analytical techniques: spectroscopy, chromatography, electroanalytical, electrophoretic and Thermal analytical techniques.
MPC101T.2	Describe the concept, instrumentation and operations of analytical techniques.
MPC101T.3	Comprehend the specialties and applications of various analytical techniques.
MPC101T.4	Measure and estimate pharmaceutical compounds qualitatively and quantitatively using analytical techniques.
MPC101T.5	Illustrate skills to summarize, interpret and predict the structure of medicinal compounds using inputs from analytical techniques.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC101T.1	3	1	1	2							1
MPC101T.2	2	1		3	2						1
MPC101T.3	1	3		3	2		1	1		1	2
MPC101T.4	1	1	3	2		1		1			2
MPC101T.5	2	1	3	2	3	2		3	1		3

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Drug Delivery System (Theory)	
Course code: MPH102T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH102T.1	To understand the principles & technology used in the design of sustained release & controlled release drug delivery systems.
MPH102T.2	To know the criteria for selection drugs & polymers for the development of drug delivering system.
MPH102T.3	To know the various approaches for development of novel drug delivery systems.
MPH102T.4	Explain the formulation & evaluation of novel drug delivery systems.

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPH102T.1	3	3		2							
MPH102T.2	3	3								2	
MPH102T.3	3	2							2		
MPH102T.4	3	3	2	2							

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Modern Pharmaceutics (Theory)	
Course code: MPH103T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

Code	
MPH103T.1	To understand the elements of pre-formulation studies
MPH103T.2	Able to develop active pharmaceutical ingredient and generic drug product.
MPH103T.3	To understand the concept and need for industrial management and GMP consideration.
MPH103T.4	To know the various techniques of optimization and pilot plant scale up techniques.
MPH103T.5	To know various methods of sterilization process.
MPH103T.6	To know various guidelines for stability testing and packaging methods of dosage forms.

MAPPING OF CO-PO MATRICES

Subject: Modern Pharmaceutics

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
MPH103T.1	3	-	-	-	-	-	-	-	-	-	-
MPH103T.2		2	2	3	-	-	-	-		-	-
MPH103T.3	3	-	-	-	-	-	2	-	-	2	-
MPH103T.4	3	2	-	3	-	-	-	-	-	-	-
MPH103T.5	3	-	-	-	2	-	-	-	-	-	-
MPH103T.6	-	-	-	3	-	2	1	-	-	-	-

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Regulatory Affairs (Theory)	
Course code: MPH104T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH104T.1	Define Concepts of innovator and generic drugs, drug development process
MPH104T.2	Explain Regulatory guidance's and guidelines for filing and approval process
MPH104T.3	Comprehend Preparation of Dossiers and their submission to regulatory agencies in different countries
MPH104T.4	Asses Post approval regulatory requirements for actives and drug products
MPH104T.5	Design Submission of global documents in CTD/ eCTD formats
MPH104T.6	Paraphrase Clinical trials requirements for approvals for conducting clinical trials
MPH104T.7	Illustrate the importance of Pharmacovigilance and process of monitoring in clinical trials.

CO-PO Articulation Matrix

CO	**PO**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPH104T.1	**2**	**3**	**2**	**2**	**1**	**2**	**2**		**1**		**2**
MPH104T.2	**2**	**3**	**2**		**2**		**2**	**2**	**1**		**2**
MPH104T.3		**3**	**2**		**1**		**1**		**1**		**1**
MPH104T.4	**2**		**3**		**2**	**3**		**1**	**2**		**1**
MPH104T.5	**2**	**3**	**2**		**2**			**2**			**2**
MPH104T.6	**3**	**2**	**2**		**2**					**2**	
MPH104T.7	**2**	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**1**

Degree of compliance **1** Low **2**: Medium **3**: High

PHARMACEUTICS PRACTICAL -I

COURSE PLAN

Name of the Course: Pharmaceutics practical -I	
Course code: MPH105P	**Semester: I**
Teaching hours: 12 Hrs/week	Maximum Marks: 150

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH105P.1	Analyze and interpret the data of various pharmacopoeial compounds by UV spectrophotometer, HPLC Flurometry and Flame photometry
MPH105P.2	Application of preformulation parameters in development of various dosage forms
MPH105P. 3	Development of Method for Dissolution studies of Controlled release and sustained release Formulations
MPH105P.4	Formulate and evaluate various sustained and controlled release drug delivery systems
MPH105P.5	Mathematical Modelling to optimize dosage forms- Kinetics and similarity and difference factor

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPH105P.1	3	1	3	3		2				1	1
MPH105P.2		3	2	2							
MPH105P.3			2	3	2		2	2	2		
MPH105P.4	3	3	3	3							1
MPH105P.5	2	3	3	3			2	2			

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Modern Pharmaceutical Analytical Techniques (Theory)	
Course code: (MPC101T)	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC101T.1	Explain the basic principles and theories of analytical techniques: spectroscopy, chromatography, electroanalytical, electrophoretic and Thermal analytical techniques.
MPC101T.2	Describe the concept, instrumentation and operations of analytical techniques.
MPC101T.3	Comprehend the specialties and applications of various analytical techniques.
MPC101T.4	Measure and estimate pharmaceutical compounds qualitatively and quantitatively using analytical techniques.
MPC101T.5	Illustrate skills to summarize, interpret and predict the structure of medicinal compounds using inputs from analytical techniques.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC101T.1	3	1	1	2							1
MPC101T.2	2	1		3	2						1
MPC101T.3	1	3		3	2		1	1		1	2
MPC101T.4	1	1	3	2		1		1			2
MPC101T.5	2	1	3	2	3	2		3	1		3

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Advanced Pharmacology I (Theory)	
Course code: MPL102T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL102T.1	Discuss the Pharmacokinetics and Pharmacodynamics
MPL102T.2	Describe the Neurohumoural transmission
MPL102T.3	Discuss the pathophysiology and pharmacotherapy of certain diseases
MPL102T.4	Explain the mechanism of drug actions at cellular and molecular level
MPL102T.5	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPL102T.1	2	-	1	-	-	-	-	1	-		1
MPL102T.2	1	-	-	1	-	-	-	-	-	1	2
MPL102T.3	1	-	-	1	1	1	-	-	-	-	2
MPL102T.4	1	-	-	1	1	-	-	-	-	-	2
MPL102T.5	1	-	2	-	-	-	-	-	1	-	1

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmacological and Toxicological Screening Methods-I (Theory)	
Course code: MPL103T	Semester: I
Teaching hours: Theory 60 Hrs	Maximum Marks: 100

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL103T.1	Appraise the regulations and ethical requirement for the usage of experimental animals.
MPL103T.2	Describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals.
MPL103T.3	Describe the various newer screening methods involved in the drug discovery process.
MPL103T.4	Appreciate and correlate the preclinical data to humans.

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPL103T.1			2				2				1
MPL103T.2	2			2						1	
MPL103T.3			2	2							1
MPL103T.4	2		2								1

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Cellular and Molecular Pharmacology (Theory)	
Course code: MPL104T	Semester: I
Teaching hours: Theory 60h	Maximum Marks: 100

COURSE OUTCOMES (COs)

After completion of course student will be able to

MPL104T.1	Explain the receptor signal transduction processes.
MPL104T.2	Explain the molecular pathways affected by drugs.
MPL104T.3	Appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.
MPL104T.4	Demonstrate molecular biology techniques as applicable for pharmacology

CO-PO Articulation Matrix

CO	**PO**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPL104T.1	3	2	3								
MPL104T.2	3	3	3								
MPL104T.3	3		2	3							
MPL104T.4	3			3							3

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmacology -I (Practical)	
Course code: MPL105P	Semester: I
Teaching hours: 12 Hrs/week	Maximum Marks: 150

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL105P.1	Analyze various pharmacopoeial compounds using UV spectrophotemeter.
MPL105P.2	Estimate various drugs by fluorimetry and flame photometry.
MPL105P.3	Different routes of drug administration in animals, Different methods of blood collection and Isolation of different tissues and organs in animals.
MPL105P.4	Evaluate various pharmacological activities of test drugs on experimental animals.
MPL105P.5	Perform various molecular biology experiments

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPL105P.1	2	-	-	2	-	-	-	-	-	-	1
MPL105P.2	2	-	-	2	-	-	-	-	-	-	1
MPL105P.3	-	-	2	-	-	-	2	-	-	-	-
MPL105P.4	1	2	-	-	-	-	2	-	-	-	-
MPL105P.5	1	-	-	2	2	-	-	-	-	-	1

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Modern Pharmaceutical Analytical Techniques (Theory)	
Course code: (MPC101T)	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC101T.1	Explain the basic principles and theories of analytical techniques: spectroscopy, chromatography, electroanalytical, electrophoretic and Thermal analytical techniques.
MPC101T.2	Describe the concept, instrumentation and operations of analytical techniques.
MPC101T.3	Comprehend the specialties and applications of various analytical techniques.
MPC101T.4	Measure and estimate pharmaceutical compounds qualitatively and quantitatively using analytical techniques.
MPC101T.5	Illustrate skills to summarize, interpret and predict the structure of medicinal compounds using inputs from analytical techniques.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC101T.1	3	1	1	2							1
MPC101T.2	2	1		3	2						1
MPC101T.3	1	3		3	2		1	1		1	2
MPC101T.4	1	1	3	2		1		1			2
MPC101T.5	2	1	3	2	3	2		3	1		3

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course :Advanced Organic Chemistry-I (Theory)	
Course code: MPC102T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPC102T.1	To attain knowledge about, naming reactions in multistep process in manufacturing of drugs and drug intermediates special reactive intermediates including carbenes, carbanions and free radicals.
MPC102T.2	To understand about chemistry of heterocyclic compounds and The mechanism & applications of various named reactions.
MPC102T.3	To recognize organic reaction; including purifying, characterizing and various catalysts used in organic reactions.
MPC102T.4	Able identify, design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
MPC102T.5	To understand concept of; the structure, theory and applications of retrosynthesis.

CO-PO Articulation Matrix

Code	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC102T.1	**1**	**2**	**2**	**2**	**1**	**2**	**2**		**1**		**2**
MPC102T.2	**2**	**2**	**2**		**2**		**2**	**2**	**1**		**2**
MPC102T.3	**1**	**2**	**3**	**2**	**1**		**1**		**1**		**1**
MPC102T.4	**2**		**3**		**2**	**2**		**1**	**2**		**1**
MPC102T.5	**2**	**3**	**3**	**2**	**2**			**2**			**2**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: ADVANCED MEDICINAL CHEMISTRY (Theory)	
Course code: MPC 103T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

At completion of this course, students will be able

MPC103T.1	To attain knowledge about, different stages of drug discovery, Identification, Validation and diversity of drug targets, and role of medicinal chemistry in drug research
MPC103T.2	To understand about prodrug design, combating drug resistance and analog design.
MPC103T.3	To describe medicinal chemistry aspects including SAR, MOA and synthesis of new generation molecules of various class of drugs.
MPC103T.4	To explicate rational design of enzyme inhibitors.
MPC103T.5	To understand therapeutic values and design of peptidomimetics, and Chemistry of prostaglandins, leukotrienes and thromboxones

CO-PO Articulation Matrix

Code	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPC103T.1	2	2	2	2	1	2	2		1		2
MPC103T.2	2	2	3	2	2		2	2	1		2
MPC103T.3	2	2	3	2	1		1		1		1
MPC103T.4	2	2	3	2	2	2		1	2		1
MPC103T.5	2	2	2	2	2			2			2

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course : Chemistry of Natural Products (Theory)	
Course code: MPC104T	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPC104T.1	To attain knowledge about Chemistry of Different types of medicinal compounds from natural origin
MPC104T.2	To recognize different types of natural products, their occurrence, structure, biosynthesis and properties.
MPC104T.3	To attain knowledge regarding isolation and purification of medicinal compounds from natural origin
MPC104T.4	To understand general methods of structural elucidation of medicinally active natural compounds.
MPC104T.5	The importance of natural compounds as lead molecules for new drug discovery

CO-PO Articulation Matrix

Code	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC104T.1	**2**	**2**	**2**	**2**	**1**	**2**	**2**		**1**		**2**
MPC104T.2	**2**	**2**	**3**		**2**		**2**	**2**	**1**		**2**
MPC104T.3		**2**	**3**		**1**		**1**		**1**		**1**
MPC104T.4	**2**		**3**		**2**	**3**		**1**	**2**		**1**
MPC104T.5	**2**	**3**	**2**		**2**			**2**			**2**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmaceutical Chemistry Practical- I	
Course code: (MPC105P)	**Semester: I**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC105P.1	Demonstrate the basic principles and theories of analytical techniques namely spectroscopy, chromatography, electroanalytical, electrophoretic and Thermal analytical techniques.
MPC105P.2	Execute the principle and experimentation various chromatographic techniques
MPC105P.3	Identify the principles and mechanism of various organic reactions
MPC105P.4	To recognize different types of natural products, their occurrence, structure, biosynthesis and properties.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC105P.1	3	1	1	2							1
MPC105P.2	2	1		3	2						1
MPC105P.3	1	3		3	2		1	1		1	2
MPC105P.4	1	1	3	2		1		1			2

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Molecular Pharmaceutics	
Course code: MPH201T	**Semester: II**
Teaching hours: Theory 60Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH201T.1	Design drug delivery system for targeting drugs to tumor and brain specific delivery
MPH201T.2	Understand types, preparation and evaluation of nanoparticles and liposomes
MPH201T.3	Study the criteria for selection of drugs and polymers for the development of microspheres
MPH201T.4	Formulate nicosomes, aquasomes, phytosomes,electrosomes for various applications in drug targeting
MPH201T.5	Study preparation and applications of monoclonal antibodies
MPH201T.6	Describe preparation and evaluation of pulmonary drug delivery system by using suitable propellants and containers
MPH201T.7	Apply gene therapy in treatment of cancer and inherited disease and understand the knowledge of therapeutic antisense molecules and aptamers in novel drug delivery system

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPH201T.1	**1**	**1**	**1**	**1**							
MPH201T.2	**1**	**1**		**2**	**2**						
MPH201T.3	**2**	**1**									
MPH201T.4	**1**	**1**	**2**	**2**	**1**						
MPH201T.5	**2**			**2**		**1**					
MPH201T.6	**1**	**1**	**1**	**2**	**1**						
MPH201T.7	**1**	**1**		**2**	**2**				**1**		

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Advanced Biopharmaceutics & Pharmacokinetics(Theory)	
Course code: MPH202T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH202T.1	To understand the basic concepts in bio pharmaceutics & pharmacokinetics.
MPH202T.2	Understand basic considerations of pharmacokinetic models.
MPH202T.3	To critically evaluate biopharmaceutics studies involving drug product equivalency.
MPH202T.4	Explain different types of drug interactions.
MPH202T.5	Explain the design & evaluation of dosage regimens of the drugs using pharmacokinetic & biopharmaceutics parameters.
MPH202T.6	To understand the applications of pharmacokinetics of drugs.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPH202T.1	**3**										
MPH202T.2	**3**										
MPH202T.3	**3**	**2**		**2**							
MPH202T.4	**3**		**2**								
MPH202T.5	**3**	**2**		**2**							
MPH202T.6	**3**			**1**							

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: COMPUTER AIDED DRUG DEVELOPMENT (Theory)	
Course code: (MPH203T)	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH203T.1	Describe History of Computers in Pharmaceutical Research, preclinical development, Market Analysis, Clinical development
MPH203T.2	Paraphrase statistical modeling principles & optimization using computer applications
MPH203T.3	COMPREHEND THE APPLICATION OF Computational Modeling of Drug Disposition in designing new dosage forms
MPH203T.4	Illustrate Optimization Techniques in Pharmaceutical Formulation
MPH203T.5	Describe the need of industrial automation by application of artificial intelligence, robotics and computational fluid dynamics

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPH203T.1	**3**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**1**	**1**	**2**
MPH203T.2		**3**	**3**	**1**				**1**	**1**		**1**
MPH203T.3		**3**	**3**	**1**	**2**	**1**		**1**			
MPH203T.4	**2**	**3**	**3**	**1**		**1**		**1**	**1**		
MPH203T.5	**2**	**3**	**3**	**2**	**2**					**2**	**2**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Cosmetics and cosmeceuticals (Theory)	
Course code: (MPH204T)	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

Code	
MPH204T.1	To understand use of suitable ingredients in cosmetics and cosmeceuticals.
MPH204T.2	To understand the need of using building blocks for various cosmetic formulation.
MPH204T.3	To update the current technologies in the market.
MPH204T.4	To know the key ingredients and understand basic science to develop various cosmetics and cosmeceuticals.
MPH204T.5	To have sufficient knowledge in developing cosmetic product with desired safety, stability and efficacy.

MAPPING OF CO-PO MATRICES

Subject: Modern Pharmaceutics

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
MPH103T.1	3	-	-	-	-	-	-	-	-	-	-
MPH103T.2	3	-	-	-	-	-	-	-	-	-	-
MPH103T.3	-	-	-	-	-	-	2	-	3	-	1
MPH103T.4	-	-	-	3	-	-	-	-	-	2	2
MPH103T.5	-	-	-	-	-	-	-	-	3	2	3

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmaceutics practical -II	
Course code: MPH205P	**Semester: II**
Teaching hours: 12 Hrs/week	Maximum Marks: 150

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPH205P.1	Demonstrate dissolution rate enhancement techniques for poorly soluble drugs – Solid dispersion and co solvency
MPH205P.2	Development of micro and nano particulate dosage forms- Microcapsules, Beads, Microspheres, Spherules, liposomes and niosomes
MPH205P.3	Biopharmaceutics and pharmacokinetics evaluation of the data using softwares – Protein Bindings studies, IVIVC, Permeation Metabolism
MPH205P.4	Formulation Development through QbD Concept(DoE and Data analysis)
MPH205P.5	Computer simulations and modelling for Pharmacodynamics and pharmacokinetics data
MPH205P.6	Statistical analysis of the data- ANOVA, Sensitivity and population Modelling
MPH205P.7	Development of herbal and chemical Based cosmetic preparations

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPH205P.1	3	3	3								
MPH205P.2		3	3			2	2			1	
MPH205P.3	3	3	3	3	2						
MPH205P.4	2	2	2		3	2	3				3
MPH205P.5	3	3	2	3	2		2	1	2		2
MPH205P.6	1	2	3	3							2
MPH205P.7	3	2	3								

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Advanced Pharmacology II (Theory)	
Course code: MPL201T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL201T.1	Explain the endocrine pharmacology
MPL201T.2	Discuss chemotherapy and chemotherapy of certain diseases
MPL201T.3	Describe immunopharmacology
MPL201T.4	Explain gastrointestinal pharmacology
MPL201T.5	Discuss free radicals and its role in certain diseases
MPL201T.6	Describe recent advances in treatment of certain diseases

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPL201T.1	-	-	-	-	1	-	-	2	-	-	1
MPL201T.2	2	-	-	-	-	2	-	-	-	-	1
MPL201T.3	-	-	-	-	-	-	1	-	-	1	2
MPL201T.4	1	-	-	-	1	-	-	-	-	-	1
MPL201T.5	-	1	-	-	-	2	-	-	-	-	1
MPL201T.6	1	-	-	-	-	-	-	1	-	-	2

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmacological and Toxicological Screening Methods-II (Theory)	
Course code: MPL202T	Semester: II
Teaching hours: Theory 60 Hrs	Maximum Marks: 100

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL202T.1	Explain the various types of toxicity studies.
MPL202T.2	Appreciate the importance of ethical requirements for toxicity studies.
MPL202T.3	Appreciate the importance of regulatory requirements for toxicity studies.
MPL202T.4	Demonstrate the practical skills required to conduct the preclinical toxicity studies.

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPL202T.1	2			2							1
MPL202T.2	2						2			1	
MPL202T.3			2				2				1
MPL202T.4		2		2							1

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Principles of Drug Discovery (Theory)	
Course code: MPL203T	Semester: II
Teaching hours: Theory 60h	Maximum Marks: 100

COURSE OUTCOMES (COs)

After completion of course student will be able to

MPL203T.1	Explain the various stages of drug discovery.
MPL203T.2	Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery
MPL203T.3	Explain various targets for drug discovery.
MPL203T.4	Explain various lead seeking method and lead optimization
MPL203T.5	Appreciate the importance of the role of computer aided drug design in drug discovery

CO-PO Articulation Matrix

CO	**PO**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPL203T.1	3					2		3			
MPL203T.2	3			3							3
MPL203T.3	3		2					3			
MPL203T.4	3		3	3							
MPL203T.5	3		3	3							

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Clinical Research and Pharmacovigilance (Theory)	
Course code: MPL204T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL204T.1	Explain the regulatory requirements for conducting clinical trial with emphasis on structure and functioning of ethical committee and informed consent process.
MPL204T.2	Demonstrate the types of clinical trial designs and explain the responsibilities of key players involved in clinical trials
MPL204T.3	Explain the principles, basic aspects and terminologies of Pharmacovigilance along with execution of safety monitoring, detection, assessment and safety reporting of new adverse drug reactions.
MPL204T.4	Assimilate the process of adverse drug reaction reporting systems and inculcate the communication in Pharmacovigilance
MPL204T.5	Describe and execute, Pharmacoepidemiology, Pharmacoeconomics and Safety Pharmacology activities.

CO-PO Articulation Matrix

CO	**PO**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPL204T.1	3	3	2		3	2	3	3			3
MPL204T.2	1	3			2	2	3				
MPL204T.3	3	2	2		3	3	3	3	3		2
MPL204T.4	3	2		3			2		3		
MPL204T.5	2	2			3	3	2	3	3	1	2

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmacology-II (Practical)	
Course code: MPL205P	Semester: II
Teaching hours: 12 Hrs/week	Maximum Marks: 150

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPL205P.1	Determine strength of unknown compounds by different bioassay methods using tissues of experimental animals.
MPL205P.2	Recording of BP, heart rate and ECG in experimental animals
MPL205P.3	Conduct of acute oral and dermal toxicity study as per OECD guidelines.
MPL205P.4	Conduct repeated dose toxicity study and measurement of various biochemical parameters.
MPL205P.5	Designing the ADR monitoring and clinical trial protocol.

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPL205P.1	2	-	-	-	-	-	2	-	-	-	1
MPL205P.2	1	-	-	2	2	-	-	-	-	-	-
MPL205P.3	-	2	-	-	-	-	2	-	-	1	-
MPL205P.4	-	2	-	-	-	-	2	-	-	1	-
MPL205P.5	-	2	-	-	-	-	2	-	-	-	1

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Advanced Spectral Analysis (Theory)	
Course code: (MPC201T)	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC201T.1	Describe the principles of spectroscopy, chromatography, thermal analysis and Radio immuno assay in identification, characterization and quantification of drugs.
MPC201T.2	Explain the rules, steps and techniques in interpretation of organic compounds.
MPC201T.3	Comprehend the specialties and applications of various analytical techniques.
MPC201T.4	Effectively demonstrate skills to summarize and predict the structure of organic compounds.
MPC201T.5	Explore optimal analytical alternatives for a given sample.

CO-PO Articulation Matrix

CO	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC201T.1	**1**			**2**							
MPC201T.2	**1**			**1**							**1**
MPC201T.3		**1**	**1**	**1**							
MPC201T.4			**3**	**1**		**1**		**1**			**2**
MPC201T.5		**2**	**3**	**2**		**2**	**1**	**1**		**1**	**1**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Advanced Organic Chemistry-II (Theory)	
Course code: MPC202T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPC202T.1	To apply green chemistry concepts and to be the effective substitute for conventional chemistry.
MPC202T.2	To recognize all the catalysis in single & multistep process in manufacturing of drugs and drug intermediates.
MPC202T.3	To identify synthesize novel peptidomimetics using peptide chemistry.
MPC202T.4	To understand stereo-chemical features including conformation and stereo electronic effects; reaction dynamics, and photochemical reactions.
MPC202T.5	To apply knowledge in the field of sonochemistry.

CO-PO Articulation Matrix

Code	PO										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC202T.1	**1**	**2**	**2**	**2**	**1**	**2**	**2**		**1**		**1**
MPC202T.2	**2**	**2**	**2**		**2**		**2**	**2**	**1**		**1**
MPC202T.3	**1**	**2**	**3**	**2**	**1**		**1**		**1**		**1**
MPC202T.4	**2**	**1**	**2**		**2**	**3**		**1**	**2**		**2**
MPC202T.5	**2**	**3**	**3**	**2**	**2**			**2**			**2**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: COMPUTER AIDED DRUG DESIGN (Theory)	
Course code: MPC203T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

At completion of this course, students will be able

MPC203T.1	To attain knowledge about Introduction to Computer Aided Drug Design, history and development of QSAR
MPC203T.2	To recognize different types applications of Quantitative Structure Activity Relationships.
MPC203T.3	To attain knowledge regarding Molecular and Quantum Mechanics in drug design, and Molecular docking and drug receptor interactions
MPC203T.4	To understand general methods of Prediction and analysis of ADMET properties of new molecules, and De novo drug design.
MPC203T.5	To describe the concept of Pharmacophore Mapping and Virtual Screening

CO-PO Articulation Matrix

Code	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPC203T.1	2	2	3	2	2	2	2	2	2		2
MPC203T.2	2	2	3	2	2		2	2	2		2
MPC203T.3	2	2	3	2	2		2		2		2
MPC203T.4	2	2	3	2	2			2	2		2
MPC203T.5	2	2	3	2	2			2			2

Degree of compliance **1** Low **2**: Medium **3**: High

Name of the Course: Pharmaceutical Process chemistry (Theory)	
Course code: MPC204T	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion, of Course student will be able to

MPC204T.1	To recognize the synthetic routes that is safe, efficient, cost-effective, and environmentally friendly.
MPC204T.2	To attain knowledge of optimization on the development of synthetic route/s.
MPC204T.3	To understand the pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phase
MPC204T.4	To create and carry out work up and separation techniques.
MPC204T.5	To recognize the outcome of organic reactions using a basic understanding of functional groups

CO-PO Articulation Matrix

Code	**PO**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
MPC204T.1	**1**	**2**	**3**	**2**	**1**	**2**	**2**		**1**		**1**
MPC204T.2	**2**	**2**	**2**		**2**		**2**	**2**	**1**		**2**
MPC204T.3	**1**	**2**	**2**	**2**	**1**		**1**		**1**		**1**
MPC204T.4	**2**	**1**	**3**		**2**	**3**		**1**	**2**		**2**
MPC204T.5	**2**	**2**	**2**	**2**	**2**			**2**			**1**

Degree of compliance **1** Low **2**: Medium **3**: High

COURSE PLAN

Name of the Course: Pharmaceutical Chemistry Practical –II	
Course code: (MPC205P)	**Semester: II**
Teaching hours: Theory 60 Hrs	**Maximum Marks: 100**

COURSE OUTCOMES (CO'S)

After Completion of Course student will be able to

MPC205P.1	Effectively demonstrate skills to summarize and predict the structure of organic compounds.
MPC205P.2	Identify the principles and experimentation of various extraction process.
MPC205P.3	To recognize the synthetic routes that is safe, efficient, cost-effective, and environmentally friendly.
MPC205P.4	Effectively demonstrate skills to summarize and predict the structure of organic compounds.

CO-PO Articulation Matrix

CO	PO										
	1	2	3	4	5	6	7	8	9	10	11
MPC205P.1	3	1	1	2							2
MPC205P.2	2	1		3	2						2
MPC205P.3	1	3		3	2		1	1		1	3
MPC205P.4	2	1	3	2		1		1			3