POSTGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)

. Establish the correlation between the courses and the Program Outcomes

(NBA defined Program Outcomes as mentioned in Annexure I)

. Course Outcomes (should include course outcomes of one course from each semester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
MPT101: Theory Modern Pharmaceutical Analytical Techniques	
S. NO.	**Statements**
MPT101.1	The thorough theoretical and practical understanding of advanced analytical instruments of various spectroscopic techniques including NMR spectroscopy, Mass Spectroscopy.
MPT101.2	The principle, instrumentation and applications of separation techniques like Electrophoresis and chromatography. and X ray Crystallography.
MPT101.3	The analysis of various drugs in single and combination dosage forms.
MPT101.4	To acquire sufficient skill in handling of equipment's/procedures for estimation of pharmaceuticals.
MPT101.5	Able to work in a team so as to involve in interdisciplinary research projects
MPC102: Theory Advanced Organic Chemistry – I	
S. NO.	**Statements**
MPC102.1	Basic aspects of organic chemistry, detailed knowledge about reactive intermediates; reactions, mechanism, their relative reactivity and orientation
MPC102.2	Study on the mechanism and synthetic applications of various named reactions
MPC102.3	Study on the mechanism and synthetic applications of various synthetic reagents. Role of protection and protecting groups in organic synthesis.
MPC102.4	The chemistry of heterocyclic compounds. The organic naming reactions with their respective mechanism, applications and synthesis of a few representative drugs containing heterocyclic nucleus.
MPC102.5	The principle and applications of retrosynthesis and concept of disconnection to develop synthetic routes for small target molecules.

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On successful completion of this Course, students will be able to:	
MPC103: Theory Advanced Medicinal Chemistry	
S. NO.	**Statements**
MPC103.1	Different stages of drug discovery and role of medicinal chemistry in drug research. Types of receptors and various theories of drug receptor interactions.
MPC103.2	Different techniques for drug discovery such as prodrug design and analog design. Note on combating drug design.
MPC103.3	Medicinal chemistry aspects of different class of drugs. Details on stereochemistry and drug action
MPC103.4	Knowledge on rational design of enzyme inhibition.
MPC103.5	Role of peptidomimetics and it's therapeutic value.
MPC104: Theory Chemistry of Natural Products	
S. NO.	**Statements**
MPC104.1	Study of natural products as leads for new pharmaceuticals for various class of drugs and their importance new drug discovery.
MPC104.2	Different types of natural compounds such as alkaloids, flavonoids, steroids their chemistry and medicinal importance. General methods of structural elucidation, isolation, purification and characterization of chemical constituents from natural source.
MPC104.3	Classification, isolation and structural elucidation of terpenoids, isoprene rule. Chemistry and physiological significance of vitamins.
MPC104.4	The concept of rDNA technology tool for new drug discovery. Active constituents of certain crude drugs used in indigenous system such as diabetic therapy, liver dysfunction, antitumor.
MPC104.5	Structural characterization of natural compounds using IR, H NMR, C NMR, and MS spectroscopy.
MPC105: Practical Pharmaceutical Chemistry I	
S. NO.	**Statements**
MPC105.1	Experiment based on UV spectroscopy, HPLC, Fluorimetry and Flame photometry.
MPC105.2	Synthesis and characterization of various naming reactions.
MPC105.3	Synthesis of medicinally important compounds along with purification and characterization.
MPC105.4	Estimation of elements and functional groups in organic natural compounds.
MPC105.5	Isolation, characterization and identification of naturally occurring compounds.

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On successful completion of this Course, students will be able to:	
MPC201: Theory Advanced Spectral Analysis	
S. NO.	**Statements**
MPC201.1	Woodward-Fieser rule and interpretation compounds of enones. IR interpretation of organic compounds.
MPC201.2	Different NMR techniques and interpretation of organic compounds by NMR.
MPC201.3	Mass fragmentation and it's rule. Fragmentation of important functional groups. Mass interpretation of organic compounds.
MPC201.4	Principle, instrumentation and applications of various chromatography and hyphenated techniques.
MPC201.5	Introduction, principle, instrumentation and applications of thermal method of analysis, Raman spectroscopy and RIA.
MPC202: Theory Advanced Organic Chemistry - II	
S. NO.	**Statements**
MPC202.1	Introduction, principle and applications of green chemistry.
MPC202.2	Concept of peptide chemistry.
MPC202.3	Principles of photochemical reactions and pericyclic reactions.
MPC202.4	Detailed knowledge on catalysis and various types of catalysts used in organic reactions
MPC202.5	The concept of stereochemistry and asymmetric synthesis.

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On successful completion of this Course, students will be able to:	
MPC203: Theory Computer Aided Drug Design	
S. NO.	**Statements**
MPC203.1	Introduction to computer aided drug design.
MPC203.2	Introduction and applications of quantitative structure activity relationship.
MPC203.3	Concept of molecular modelling and docking.
MPC203.4	Prediction and analysis of ADMET properties. Study on De novo drug design and homology modelling.
MPC203.5	Concept of pharmacophore mapping and virtual screening. Study of in silico screening protocols.
MPC204: Theory Pharmaceutical Process Chemistry	
S. NO.	**Statements**
MPC204.1	Introduction to process chemistry and strategies of scale up process.
MPC204.2	Study of various unit operations such as extraction, filtration, distillation, evaporation and crystallization.
MPC204.3	Study of unit processes such as nitration, halogenation and oxidation.
MPC204.4	Study of unit processes such as reduction and fermentation. Concept of reaction progress kinetic analysis.
MPC204.5	Note on industrial safety. Details on MSDS, hazard labels, PPE, fire hazards, OHSAS-1800, and ISO-14001.

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On successful completion of this Course, students will be able to:	
MPC205: Practical Pharmaceutical Chemistry II	
S. NO.	**Statements**
MPC205.1	Interpretation of organic compounds by IR, NMR, and MS.
MPC205.2	Prediction of ADMET properties of drug molecules and its analysis using software.
MPC205.3	Perform the microwave irradiated reactions of synthetic importance.
MPC205.4	Synthesis of organic compounds by adapting different approaches involving oxidation, reduction, nitration.
MPC205.5	Synthesis of some organic compounds.
MRM301: Research Methodology and Biostatistics	
S. NO.	**Statements**
MRM301.1	Analyze the value, scope, objectives and requirements of research.
MRM301.2	Discuss the basic concepts of statistical analysis
MRM301.3	Apply the basic principles of medical research and ethics.
MRM301.4	Understand the guidelines for the maintenance of laboratory animals(CPCSEA Guidelines).
MRM301.5	Create efficiency in thesis writing editing and formating.