PROGRAM: M. PHARMACY (PHARMACOLOGY)					
S.NO	**COURSE/CODE**	**GENDER**	**ENVIRONMENT AND SUSTAINABILITY**	**HUMAN VALUES**	**PROFESSIONAL ETHICS**
1.	Pharmacological and Toxicological screening methods-1 **(MPL103T)**			**Laboratory Animals Common laboratory animals:** Description, handling and applications of different species and strains of animals. **Transgenic animals:** Production, maintenance and applications Anesthesia and euthanasia of experimental animals. Maintenance and breeding of laboratory animals. CPCSEA guidelines to conduct experiments on animals Good laboratory practice. Bioassay-Principle, scope and limitations and methods	**Preclinical screening of new substances for the pharmacological activity using *In-vivo, In-vitro,* and other possible animal alternative models.** **Respiratory Pharmacology:** anti-asthmatics, drugs for COPD and anti allergics. **Reproductive Pharmacology:** Aphrodisiacs and antifertility agents, Analgesics, anti-inflammatory and antipyretic agents, Gastrointestinal drugs: anti ulcer, anti -emetic, antidiarrheal and laxatives. Preclinical screening of new substances for the pharmacological activity using *in-vivo*, *in-vitro,* and other possible animal alternative models **Cardiovascular Pharmacology:** antihypertensives, antiarrythmics,

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2.	Advanced Pharmacology-II **(MPL201T)**				Free radicals Pharmacology Generation of free radicals, role of free radicals in etiopathology of various diseases such as diabetes, neurodegenerative diseases and cancer. Protective activity of certain important antioxidant **Recent Advances In Treatment:** Alzheimer's disease, Parkinson's disease, Cancer, Diabetes mellitus
3.	Pharmacological and Toxicological Screening methods-II **(MPL202T)**	Reproductive toxicology studies, Male reproductive toxicity studies, female reproductive studies (segment I and segment III), teratogenecity studies (segment II) Genotoxicity studies (Ames Test, in vitro and in vivo			Basic definition and types of toxicology (general, mechanistic, regulatory and descriptive) Regulatory guidelines for conducting toxicity studies OECD, lCH EPA and Schedule y OECD principles of Good laboratory practice (GLP) History, concept and its importance in drug development IND enabling studies (IND studies) - Definition of IND,

					Lead Identification- combinatorial chemistry & high throughput screening, in silico lead discovery techniques, Assay development for hit identification. Protein structure Levels or protein structure, Domains, motifs, and folds in protein structure. Computational prediction of protein structure: Threading and homology modeling methods. Application or NMR and X-ray crystallography in protein structure prediction **Rational Drug Design** Traditional vs rational drug design, Methods followed in traditional drug design, High throughput screening, concepts or Rational Drug Design, Rational Drug Design Methods: Structure and Pharmacophore based approaches virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening, Molecular docking Rigid docking, flexible docking, manual docking; Docking based screening. De novo

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				Significance or safety monitoring, Pharmacovigilance in India and international aspects, WHO international drug monitoring programme, WHO and Regulatory terminologies of ADR, evaluation of medication safety, Establishing pharmacovigilance centres in Hospitals, Industry and National programmes related to pharmacovigilance. Roles and responsibilities in Pharmacovigilance	(ICH-GCP) guidelines Ethical committee: Institutional Review Board, Ethical Guidelines for Biomedical Research and Human Participant- Schedule Y, ICMR Informed Consent Process: Structure and content or an Informed Consent Process Ethical principles governing informed consent process **clinical Trials:** Types and Design Experimental Study- RCT and Non RCT, **observation Study:** cohort, Case Control, Cross sectional Clinical Trial Study Team • Roles and responsibilities of Clinical Trail Personnel: Investigator, study Coordinator, Sponsor, Contract Research Organization and its management Clinical Trial Documentation- Guidelines to the preparation of documents, Preparation or protocol, Investigator Brochure, case Report Forms, Clinical Study Report Clinical Trial Monitoring-