



छत्रपति शाहू जी महाराज विश्वविद्यालय, कानपुर

CHHATRAPATI SHAHUJI MAHARAJ UNIVERSITY, KANPUR

(पूर्ववर्ती कानपुर विश्वविद्यालय कानपुर)

Formerly Kanpur University, Kanpur – 208024

A Documentary Support

For

Matric No. – 1.1.1

Programme Outcomes & Course Outcomes

Under the

Criteria - I

(Curriculum Design and Development)

Key Indicator - 1.1

In

Matric No. – 1.1.1

M.Pharm. (Pharmacology)


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M.Pharm Pharmacology
School of Pharmaceutical Sciences

Program Outcomes (PO)

The course has a broad relevance from its importance in the diagnosis and treatment of diseases and is very well connected to other courses of the curriculum. Student learns anatomy and physiology of human system which intern is required to understand the pathophysiology of diseases and mechanisms of action of various drugs. PG course relates to research aspects of pharmacological screening, development of newer animal models, pharmacovigilance, in-vivo drug interactions, clinical trials and toxicity studies during drug discovery process.

PSO - (Programme Specific Outcome) M. Pharm – graduates will be able to

PSO1: Graduates will gain in depth knowledge about the drug action, drug delivery and advancement in analysis.

PSO2: Graduates will be able to apply molecular techniques, bioanalytical methods in new drug designing, formulation, and carry out preclinical testing as per regulatory requirements

PSO3: Graduates can design and participate in clinical research by following regulatory ethical guidelines and pharmacovigilance of target drugs with more emphasize on pharmaceutical care.

PSO4: Create, select and apply appropriate resources such as modern, molecular and IT tools to predict, model and understand the behaviour of cellular systems activities and limitations.

PSO5: Interpretation of biological variations related to drug action and application of pharmacometrics and genetic variations relating to therapeutics, clinical trial, pharmacy practice and pharmacoeconomics.

PSO6: Graduates will be able to follow pharmacopoeial standards and international guidelines to emphasize the significance of quality control and assurance in drug analysis and formulation development

PSO7: Develop required skills in formulation and dispensing in catering to patient needs as well as overcoming potential incompatibilities in formulations

PSO8: Impart basic knowledge and skills to practice quality use of medicines, in clinical practice, analysis of risk and benefits, and identify medication related problems.

M.Pharm Pharmacology First Semester

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPL 101T)

Course Outcomes: - After undergoing this course students will be able to recognize the importance of modern instruments in the pharmaceutical analysis. Discuss the fundamental principles and applications of UV-visible, IR, flame emission, atomic absorption, NMR and Mass spectroscopy Document the principles and applications of chromatographic, and electrophoretic separation techniques. Appraise X-ray crystallographic methods and radio immunological assays. Summarize the instrumentation of the modern analytical techniques. Assess appropriate techniques for the analysis of various drugs and formulations

ADVANCED PHARMACOLOGY - I (MPL 102T)

Course Outcomes:- After undergoing this course students will be able to discuss the concepts and principles related to pharmacokinetics, pharmacodynamics and pharmacotherapeutics, demonstrate an understanding of the major drug classifications in terms of indications, rationale, efficacy and risks for pharmacotherapeutic agents commonly prescribed in primary care and acute care settings. Can also evaluate current and relevant research findings to establish prudent pharmacological interventions. Design appropriate pharmacologic interventions for treatment of select health conditions or diseases, considering the impact of race, ethnic group, age and special populations. Describe strategies for monitoring expected effects and potential adverse effects of medications including legal and ethical ramifications.

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS - I

(MPL 103T)

Course Outcomes:- After undergoing this course students will be able to understand the preclinical screening of new substances for pharmacological activities using invivo & in-vitro animal which is done according to CPCSEA & GLP & also learn various Immunoassay methods for detection of antigens & antibodies.

CELLULAR AND MOLECULAR PHARMACOLOGY (MPL 104T)

Course Outcomes:- After undergoing this course students will be able to know the basic cell biology, recombinant DNA technology, transfer of genes to mammalian cells. Students are also able to apprehend the genetic elements of DNA, fingerprint analysis and various molecular techniques applicable in drug discovery.

PHARMACOLOGICAL PRACTICAL - I (MPL 105T)

Course Outcomes • Upon completion of the course the students are able to: • Do research work on the basis of the prescribed experiments. • Perform animal restraining, routes of drug administration, blood and tissue sampling techniques, • serum/plasma/tissue processing techniques. • Perform estimation of serum and plasma biomarkers. • Perform estimation of tissue biomarkers. • Perform oral glucose tolerance test, • Do antiulcer, analgesic, anti-anxiety, anti-inflammatory studies.

M.Pharm Pharmacology Second Semester

ADVANCED PHARMACOLOGY - II (MPL 201T)

Course Outcomes After undergoing this course students will be able to know: The mechanism of drug actions at cellular and molecular level Discuss the Pathophysiology and pharmacotherapy of certain diseases along with understanding of adverse effects, contraindications and clinical uses of drugs used in treatment of diseases. The students will also able to demonstrate their knowledge regarding the pathophysiology of the disease and pharmacology of the drugs studied by identifying various new targets for drug action and address the issues regarding the clinical indications for the use of the therapeutic agents studied in the syllabus.

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II

(MPL 202T)

Course Outcomes After undergoing this course students will be able to know: competent of all regulatory guideline (ICH, OECD, EPA and Schedule-Y) required to perform preclinical toxicity studies in laboratories and able to demonstrate the practical skill required for preclinical toxicity studies. The student will also recognize importance of IND submission in new drug discovery

PRINCIPLES OF DRUG DISCOVERY (MPL 203T)

Course Outcomes After undergoing this course students will be able to know: Explain the modern drug discovery process and basics of drug development, identify the role of Genomics, Proteomics and Bioinformatics in drug discovery and validation process and to identify the role of transgenic animals in target validation. It also provides knowledge about virtual screening techniques, De-novo drug designing and Molecular docking methods.

CLINICAL RESEARCH AND PHARMACOVIGILANCE (MPL 204T)

Course Outcomes After undergoing this course students will be able to know: the concept of regulatory perspectives, types, design and documentation implemented in clinical trials. It imparts the knowledge on basic aspects, terminologies, establishment, methods, ADR reporting and tools of Pharmacovigilance.

PHARMACOLOGICAL PRACTICAL – II (MPL 205T)

Couse outcome Upon completion of the course the students are able to: • Do research work on the basis of the prescribed experiments. • Perform effect of drugs on ECG in experimental animals • Study effect of drugs on isolated tissues of the animals using power labs • Determine serum cholinesterase using autoanalyzer. • Estimate the tissue biomarkers like SOD, catalase, GSH, lipid peroxidase

M.Pharm Pharmacology Third and Fourth Semester

RESEARCH METHODOLOGY & BIOSTATISTICS (MRM301T)

Couse outcome Upon completion of the course the students are able to: able to understand the basic concept and importance of statistical analysis and get the knowledge of applications of biostatistics in medical research for the development of knowledge in the field of medicine.

DISCUSSION / SYNOPSIS PRESENTATION 1. Identify the research problem 2. Discuss research problem with team and peers for solution 3. Develop a protocol report on the critically appraised research problem 4. Present the critically appraised research problem in appropriate forum **GROUP PROJECT** 1. Work in a team and undertake a project in the area of Pharmaceutical Sciences 2. Apply concepts of pharmaceutical sciences for executing the project 3. Apply appropriate research methodology while formulating a project 4. Generate specifications, synthesize, analyse, develop and evaluate a project 5. Defend the project, exhibit, make a presentation and document the work

JOURNAL CLUB 1. Select scientific articles from reputed journals 2. Use search engines to select scientific articles 3. Critically appraise scientific articles and assess the quality 4. Develop a report on the critically appraised article 5. Present the critically appraised article in appropriate forum

RESEARCH METHODOLOGY AND BIOSTATISTICS 1. Recognize the value, scope, objective and requirements of research 2. Discuss the basic concept and importance of

statistical analysis 3. Outline the basic principles of medical research 4. Summarize the guidelines for the maintenance of laboratory animals 5. Perform the profession of Pharmacy with code of conduct and ethics 6. Apply the principles of medical research for the development of knowledge in the field of medicine

DISCUSSION / COLLOQUIUM PRESENTATION

1. Identify the research problem 2. Discuss research problem with team and peers for solution 3. Develop a protocol report on the critically appraised research problem 4. Present the critically appraised research problem in appropriate forum

RESEARCH WORK

1. Review scholarly literature collected from various sources critically for the project and formulate a research problem 2. Prepare and present a research proposal 3. Conduct research to achieve research objectives 4. Propose new ideas/ methodologies or procedures for further improvement of the research problem 5. Create research document of the findings 6. Defend the research findings in front of scholarly audience