Master of pharmacy (Pharmaceutics and Industrial pharmacy)

Program Outcomes (PO's)

Master of pharmacy (Pharmaceutics and Industrial pharmacy) is a dynamic and interdisciplinary field that aims to integrate fundamental principles of physicochemical properties of drug and excipients and engineering, biochemistry, and biology to understand how to optimize delivery of drugs to the body and translate this integrated understanding into new and improved therapies against human disease. The program is designed to strengthen the basic knowledge in the field of development of researchers and educators in pharmaceutical dosage form science. Who can work in areas of modern pharmaceutical industry, including biotechnology and clinical research organization. The course input is for the development of Professional Identity, technical knowledge in the area of design, evaluation and manufacture of various dosage form, planning abilities, professional Communication, Problem analysis/ cognitive ability, entrepreneurship / Leadership skill, Pharmaceutical Ethics, pharmaceutical regulation.

Program Specific Outcomes (PSO's)

1. Imparting knowledge on various aspects viz. preformulation studies, Active Pharmaceutical Ingredients, design and evaluation of various types of dosageforms and manufacturing of bulk, formulations in pharmaceutical industries.
2. The knowledge of Biopharmaceutics & Pharmacokinetics is for understanding ADME of drugs following various routes of administration and development of skills necessary for understanding Pharmacokinetics, dose calculations, dose adjustments under disease conditions and to and apply biopharmaceutics theories in practical problem solving.
3. To understand physicochemical properties and principles involved in dosage forms/formulations. Theory and practical components of the subject which help to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.
4. To understand various aspects of quality assurance in pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, equipment validation and mainatance quality certifications Industrial Management, Optimization Techniques, Pilot Plant Scale Up Techniques, Stability Testing
5. In depth knowledge in the area of advances in novel drug delivery systems, drug targeting protein and peptide drugs and macro molecular drug delivery. This shall enable students to know the approaches for development of novel drug delivery systems, criteria for selection of drugs, polymers and delivering system and about the formulation and evaluation of Novel drug delivery systems.

6. The information on regulatory affairs serves to gain advanced knowledge and skills required to learn the concept of generic drug and their development, various regulatory filings in different countries, different phases of clinical trials and submitting regulatory documents : filing process of IND, NDA and ANDA.

Course Outcomes

Bio Pharmaceutics & Pharmacokinetics

On completion of this course it is expected that students will be able to understand,

1. Understanding of ADME process for the drugs
2. The use of raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
3. To critically evaluate Biopharmaceutics studies involving drug product equivalency.
4. To design and evaluate dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters

Pharmaceutical formulation technology

On completion of this course it is expected that students will be able to understand,

1. To understand elements of preformulation and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product
2. To impart fundamental knowledge on pharmaceutical product development (solids, liquids, semisolids, aerosols, parenteral dosageforms and translation from laboratory to market.

Quality Assurance

On completion of this course it is expected that students will be able to understand,

1. Understanding of Plant layout designs to manufacture various types of dosageforms
2. To understand the responsibilities of QA & QC departments
3. Stability testing of drug and drug substances
4. Statistical approaches for quality
5. Applications of Optimization to achieve best quality

Physical Pharmaceutics

On completion of this course it is expected that students will be able to understand,

1. Solubility and its importance, techniques to enhance solubility
2. Interfacial phenomenon and formulation and stability of disperse systems
3. Principles of chemical stability and testing, evaluation of shelf life
4. Dissolution and its importance and equipment
5. Polymers the their properties and application
6. Compression and consolidation of powers.

Pharmaceutical Production Management

On completion of this course it is expected that students will be able to understand,

1. Pilot plant scale up studies, and technology transfer
2. Handle the scheduled activities in a Pharmaceutical firm and documentation
3. Types of business organizations and their maintenances
4. marketing and Sales pharmaceuticals

Novel drug delivery systems - I

On completion of this course it is expected that students will be able to understand,

1. The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms related to oral, parenteral, transdermal, implants, bio adhesives and site specific drug delivery systems.
2. Understand the concept of basis of drug targeting, and various approaches for drug targeting
3. To formulate and evaluate various carrier based drug delivery systems and their application in drug targeting.

Novel drug delivery systems – II

On completion of this course it is expected that students will be able to understand,

1. Role of biological barriers in the absorption of lipids, macro molecules.
2. Concepts of Gene therapy and their applications,
3. Various types of vaccines and vaccine delivery systems.
4. Proteins and peptides as drugs and their delivery methods
5. Monoclonal antibody based drugs and their delivery and targeting

Pharmaceutical equipment

At completion of this course, it is expected that students will be able to understand

1. The concepts of calibration, qualification and validation
2. Construction, working and regular maintance of important equipment
3. The qualification of various equipments and instruments
4. Process validation of different dosage forms
5. Validation of analytical method for estimation of drugs

Drug regulatory affairs

At completion of this course, it is expected that students will be able to understand

1. Drug Regulatory Aspects (India) . Indian drug regulatory authorities, Central and State regulatory bodies (FDA) . Drugs and Cosmmetics Act and Rules with latest Amendments (Selective) Special emphasis – Schedule M and Y
2. concept of generic drug and their development, various regulatory filings in different countries, different phases of clinical trials and submitting regulatory documents : filing process of IND, NDA and ANDA
3. Students be aware of technical aspects pertaining to the marketing authoritization application• (MAA)
4. It covers the important aspects like cGMP, GLP quality certifications like ISO9000, TQM, Intellectual property rights