

M.PHARMACY

School of Pharmacy, Desh Bhagat University gets Approval for new program M.Pharmacy from the session 2021-22

M. Pharmacy 1st Semester (Pharmaceutics)

Course Code: MPH 101T

Title of the course: MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (Theory)

Course Outcomes: This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

After completion of course student is able to know:

CO1: To know about the Chemicals and Excipients

CO2: The analysis of various drugs in single and combination dosage forms

CO3: Theoretical and practical skills of the instruments

Course Code: MPH 102T

Title of the course: DRUG DELIVERY SYSTEMS (Theory)

Course Outcomes: This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

Upon completion of the course, student shall be able to understand

CO1: The various approaches for development of novel drug delivery systems.

CO2: The criteria for selection of drugs and polymers for the development of delivering system

CO3: The formulation and evaluation of Novel drug delivery systems.

Course Code: MPH 103T

Title of the course: MODERN PHARMACEUTICS (Theory)

Course Outcomes: Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries Objectives Upon completion of the course, student shall be able to understand

CO1: The elements of pre formulation studies.

CO2: The Active Pharmaceutical Ingredients and Generic drug Product development

CO3: Industrial Management and GMP Considerations.

CO4: Optimization Techniques & Pilot Plant Scale Up Techniques

Course Code: MPH 104T

Title of the course: REGULATORY AFFAIRS (Theory)

Course Outcomes: Course designed to impart 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.

Upon completion of the course, it is expected that the students will be able to understand

CO1: The Concepts of innovator and generic drugs, drug development process

CO2: The Regulatory guidance's and guidelines for filing and approval process

CO3: Preparation of Dossiers and their submission to regulatory agencies in different countries

CO4: Post approval regulatory requirements for actives and drug products

Course Code: MPH 105T

Title of the course: PHARMACEUTICS PRACTICALS - I

Course Outcomes: Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries

Objectives

Upon completion of the course, student shall be able to understand

CO1: The elements of pre formulation studies.

CO2: The Active Pharmaceutical Ingredients and Generic drug Product development

CO3: Industrial Management and GMP Considerations.

CO4: Optimization Techniques & Pilot Plant Scale Up Techniques

M. Pharmacy 2nd Semester (Pharmaceutics)

Course Code: MPH 201T

Title of the course: MOLECULAR PHARMACEUTICS (Nano Technology & Targeted DDS) (NTDS)

Course Outcomes: This course is designed to impart knowledge on the area of advances in novel drug delivery systems. Upon completion of the course student shall be able to understand

CO1: The various approaches for development of novel drug delivery systems.

CO2: The criteria for selection of drugs and polymers for the development of NTDS

CO3: The formulation and evaluation of novel drug delivery systems.

Course Code: MPH 202T

Title of the course: ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS

Course Outcomes:

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

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

CO1: The basic concepts in biopharmaceutics and pharmacokinetics.

CO2: The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.

CO3: The critical evaluation of biopharmaceutic studies involving drug product equivalency.

CO4: The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.

Course Code: MPH 203T

Title of the course: COMPUTER AIDED DRUG DEVELOPMENT

Course Outcomes: This course is designed to impart knowledge and skills necessary for computer Applications in pharmaceutical research and development who want to understand the application of computers across the entire drug research and development process. Basic theoretical discussions of the principles of more integrated and coherent use of computerized information (informatics) in the drug development process are provided to help the students to clarify the concepts.

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

CO1: History of Computers in Pharmaceutical Research and Development

CO2: Computational Modelling of Drug Disposition

CO3: Computers in Preclinical Development

CO4: Optimization Techniques in Pharmaceutical Formulation

Course Code: MPH 204T

Title of the course: COSMETICS AND COSMECEUTICALS

Course Outcomes: This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.

Upon completion of the course, the students shall be able to understand

CO1: Key ingredients used in cosmetics and cosmeceuticals.

CO2: Key building blocks for various formulations.

CO3: Current technologies in the market

CO4: Various key ingredients and basic science to develop cosmetics and cosmeceuticals.

Course Code: MPH 205P

Title of the course: PHARMACEUTICS PRACTICALS – II

Course Outcomes:

CO1: Evaluate surface tension, viscosity, specific surface area, particle size distribution of given material.

CO2: Develop skills and techniques those are parts of pharmaceutical procedures through the actual use of equipment and instruments.

CO3: To interpret scientific data, represent the data in a tabular and/or graphical form

M. Pharmacy 1st Semester (Pharmacology)

Course Code: MPL 101T

Title of the course: MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (Theory)

Course Outcomes: This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

After completion of course student is able to know:

CO1: To know about the Chemicals and Excipients

CO2: The analysis of various drugs in single and combination dosage forms

CO3: Theoretical and practical skills of the instruments

Course Code: MPL 102T

Title of the course: ADVANCED PHARMACOLOGY – I (Theory)

Course Outcomes: The subject is designed to strengthen the basic knowledge in the field of pharmacology and to impart recent advances in the drugs used for the treatment of various diseases. In addition, this subject helps the students to understand the concepts of drug action and mechanisms involved

CO1: To discuss the pathophysiology and pharmacotherapy of certain diseases

CO2: To explain the mechanism of drug actions at cellular and molecular level

CO3: To understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.

Course Code: MPL 103T

Title of the course: PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS – I (Theory)

Course Outcomes: This subject is designed to impart the knowledge on preclinical evaluation of drugs and recent experimental techniques in the drug discovery and development. The subject content helps the student to understand the maintenance of laboratory animals as per the guidelines, basic knowledge of various in-vitro and in-vivo preclinical evaluation processes

Objectives

Upon completion of the course, student shall be able to understand

CO1: To appraise the regulations and ethical requirement for the usage of experimental animals.

CO2: To describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals

CO3: To describe the various newer screening methods involved in the drug discovery process

CO4: To appreciate and correlate the preclinical data to humans

Course Code: MPL 104T

Title of the course: CELLULAR AND MOLECULAR PHARMACOLOGY (Theory)

Course Outcomes:

The subject imparts a fundamental knowledge on the structure and functions of cellular components and help to understand the interaction of these components with drugs. This information will further help the student to apply the knowledge in drug discovery process.

Upon completion of the course, it is expected that the students will be able to understand

CO1: To explain the receptor signal transduction processes.

CO2: To explain the molecular pathways affected by drugs.

CO3: To appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.

CO4: To demonstrate molecular biology techniques as applicable for pharmacology

Course Code: MPL 105P

Title of the course : PHARMACOLOGICAL PRACTICAL - I

Course Outcomes: Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmacological sector.

Objectives

Upon completion of the course, student shall be able to understand

CO1: To analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer

CO2: To simultaneous estimation of multi component containing formulations by UV spectrophotometry

CO3: Experiments based on HPLC

CO4: Experiments based on Gas Chromatography

M. Pharmacy 2nd Semester (Pharmacology)

Course Code: MPL 201T

Title of the course: ADVANCED PHARMACOLOGY – II (Theory)

Course Outcomes: The subject is designed to strengthen the basic knowledge in the field of pharmacology and to impart recent advances in the drugs used for the treatment of various diseases. In addition, the subject helps the student to understand the concepts of drug action and mechanism involved

Upon completion of the course the student shall be able to:

CO1: To explain the mechanism of drug actions at cellular and molecular level

CO2: To discuss the Pathophysiology and pharmacotherapy of certain diseases

CO3: To understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

Course Code : MPL 202T

Title of the course: PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II (Theory)

Course Outcomes: This subject imparts knowledge on the preclinical safety and toxicological evaluation of drug & new chemical entity. This knowledge will make the student competent in regulatory toxicological evaluation.

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

CO1: To explain the various types of toxicity studies.

CO2: To appreciate the importance of ethical and regulatory requirements for toxicity studies.

CO3: To demonstrate the practical skills required to conduct the preclinical toxicity studies.

Course Code: MPL 203T

Title of the course: PRINCIPLES OF DRUG DISCOVERY (Theory)

Course Outcomes: The subject imparts basic knowledge of drug discovery process. This information will make the student competent in drug discovery process

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

CO1: To explain the various stages of drug discovery.

CO2: To appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery

CO3: To explain various targets for drug discovery.

CO4: To explain various lead seeking method and lead optimization

Course Code: MPL 204T

Title of the course: CLINICAL RESEARCH AND PHARMACOVIGILANCE (Theory)

Course Outcomes: This subject will provide a value addition and current requirement for the students in clinical research and pharmacovigilance. It will teach the students on conceptualizing, designing, conducting, managing and reporting of clinical trials. This subject also focuses on global scenario of Pharmacovigilance in different methods that can be used to generate safety data. It will teach the students in developing drug safety data in Pre-clinical, Clinical phases of Drug development and post market surveillance.

CO1: To explain the regulatory requirements for conducting clinical trial

CO2: To demonstrate the types of clinical trial designs

CO3: To explain the responsibilities of key players involved in clinical trials

CO4: To execute safety monitoring, reporting and close-out activity

Course Code: MPL 205P

Title of the course: PHARMACOLOGICAL PRACTICAL - II

Course Outcomes:

CO1: Know the various pharmaceutical dosage forms and their manufacturing techniques.

CO2: Know various considerations in development of pharmaceutical dosage forms

CO3: Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

CO4: Explain formulation, evaluation and labelling of tablets & capsules.

M. Pharmacy 1st Semester (Pharmaceutical Chemistry)

Course Code: MPC 101T

Title of the course: MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (Theory)

Course Outcomes: This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

After completion of course student is able to know about chemicals and excipients

CO1: The analysis of various drugs in single and combination dosage forms

CO2: Theoretical and practical skills of the instruments

Course Code: MPC 102T

Title of the course: ADVANCED ORGANIC CHEMISTRY – I (Theory)

Course Outcomes: The subject is designed to provide in-depth knowledge about advances in organic chemistry, different techniques of organic synthesis and their applications to process chemistry as well as drug discovery.

Upon completion of course, the student shall be to understand

CO1: The principles and applications of retrosynthesis

CO2: The mechanism & applications of various named reactions

CO3: The concept of disconnection to develop synthetic routes for small target molecule.

CO4: The various catalysts used in organic reactions

Course Code: MPC 103T

Title of the course: ADVANCED MEDICINAL CHEMISTRY (Theory)

Course Outcomes: The subject is designed to impart knowledge about recent advances in the field of medicinal chemistry at the molecular level including different techniques for the rational drug design.

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

CO1: Different stages of drug discovery

CO2: Role of medicinal chemistry in drug research

CO3: Different techniques for drug discovery

CO4: Various strategies to design and develop new drug like molecules for biological targets

Course Code: MPC 104T

Title of the course: CHEMISTRY OF NATURAL PRODUCTS (Theory)

Course Outcomes: The subject is designed to provide detail knowledge about chemistry of medicinal compounds from natural origin and general methods of structural elucidation of such compounds. It also emphasizes on isolation, purification and characterization of medicinal compounds from natural origin.

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

CO1: Different types of natural compounds and their chemistry and medicinal importance

CO2: The importance of natural compounds as lead molecules for new drug discovery

CO3: The concept of rDNA technology tool for new drug discovery

CO4: General methods of structural elucidation of compounds of natural origin

Course Code: MPC 105P

Title of the course: PHARMACEUTICAL CHEMISTRY PRACTICAL - I

Course Outcomes: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing

Upon completion of the course the student shall be able to:-

CO1: Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis

CO2: Understand the chromatographic separation and analysis of drugs.

CO3: Perform quantitative & qualitative analysis of drugs using various analytical instruments.

M. Pharmacy 2nd Semester (Pharmaceutical Chemistry)

Course Code: MPC 201T

Title of the course: ADVANCED SPECTRAL ANALYSIS (Theory)

Course Outcomes: This subject deals with various hyphenated analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are LC-MS, GC-MS, ATR-IR, DSC etc.

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

CO1: Interpretation of the NMR, Mass and IR spectra of various organic compounds

CO2: Theoretical and practical skills of the hyphenated instruments

CO3: Identification of organic compounds.

Course Code: MPC 202T

Title of the course: ADVANCED ORGANIC CHEMISTRY - II (Theory)

Course Outcomes: The subject is designed to provide in-depth knowledge about advances in organic chemistry, different techniques of organic synthesis and their applications to process chemistry as well as drug discovery.

Upon completion of course, the student shall able to understand

CO1: The principles and applications of Green chemistry

CO2: The concept of peptide chemistry.

CO3: The various catalysts used in organic reactions

CO4: The concept of stereochemistry and asymmetric synthesis.

Course Code: MPC 203T

Title of the course: COMPUTER AIDED DRUG DESIGN (Theory)

Course Outcomes: The subject is designed to impart knowledge on the current state of the art techniques involved in computer assisted drug design.

Objectives

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

CO1: Role of CADD in drug discovery

CO2: Different CADD techniques and their applications

CO3: Various strategies to design and develop new drug like molecules.

CO4: Working with molecular modeling softwares to design new drug molecules

Course Code: MPC 204T

Title of the course: PHARMACEUTICAL PROCESS CHEMISTRY (Theory)

Course Outcomes: Process chemistry is often described as scale up reactions, taking them from small quantities created in the research lab to the larger quantities that are needed for further testing and then to even larger quantities required for commercial production. The goal of a process chemist is to develop synthetic routes that are safe, cost-effective, environmentally friendly, and efficient. The subject is designed to impart knowledge on the development and optimization of a synthetic route/s and the pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients (APIs) and new chemical entities (NCEs) for the drug development phase.

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

CO1: The strategies of scale up process of APIs and intermediates

CO2: The various unit operations and various reactions in process chemistry

Course Code: MPC 205P

Title of the course: PHARMACEUTICAL CHEMISTRY PRACTICALS – II

Course Outcomes: Upon completion of the course the student shall be able to:-

CO1: Write the structure, name and the type of isomerism of the organic compound

CO2: Write the reaction, name the reaction and orientation of reactions

CO3: Account for reactivity/stability of compounds,

CO4: Prepare organic compounds.