



**ST. JAMES' COLLEGE OF PHARMACEUTICAL SCIENCES, RIVER BANK, CHALAKUDY**  
**(NAAC ACCREDITED)**  
**COURSE OBJECTIVES**

**BACHELOR OF PHARMACY**

**Course Code: 009**

**(2017-18 Academic year onwards)**

**Objectives of course**

The objective of the course is to mold the student to suit the varied requirements of

1. Pharmaceutical industry –Research & Development, Manufacturing, Formulation, Quality Control, Quality assurance, Packaging, Marketing.
2. Practice settings in –Hospital Pharmacy, Clinical Pharmacy and Community Pharmacy.
3. Academics.
4. Regulatory affairs
5. Clinical Research
6. Drug discovery and development



**ST. JAMES' COLLEGE OF PHARMACEUTICAL SCIENCES, RIVER BANK, CHALAKUDY**  
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**Semester-I**

**BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)**

**Objectives:**

Upon completion of this course the student should be able to

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

**BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**Objectives:**

Practical physiology is complimentary to the theoretical discussions in physiology. Practical allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

**BP102T. PHARMACEUTICAL ANALYSIS (Theory)**

**Objectives:**

Upon completion of the course student shall be able to

1. understand the principles of volumetric and electro chemical analysis
2. Carryout various volumetric and electrochemical titrations
3. develop analytical skills



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**BP103T. PHARMACEUTICS- I (Theory)**

**Objectives:**

Upon completion of this course the student should be able to:

1. Know the history of profession of pharmacy
2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
3. Understand the professional way of handling the prescription
4. Preparation of various conventional dosage forms

**BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)**

**Objectives:**

Upon completion of course, student shall be able to

1. know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
2. understand the medicinal and pharmaceutical importance of inorganic compounds

**BP105T.COMMUNICATION SKILLS (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
2. Communicate effectively (Verbal and Non-Verbal)
3. Effectively manage the team as a team player
4. Develop interview skills
5. Develop Leadership qualities and essentials



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**BP 106 RBT.REMEDIAL BIOLOGY (Theory)**

**Objectives:**

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

1. know the classification and salient features of five kingdoms of life
2. understand the basic components of anatomy & physiology of plant
3. know understand the basic components of anatomy & physiology animal with special reference to human

**BP 106 RMT.REMEDIAL MATHEMATICS (Theory)**

**Objectives:**

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

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

## **Semester II**

**BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)**

**Objectives:**

Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances
3. Identify the various tissues and organs of different systems of human body
4. Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc. and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body



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**BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**Objective:**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

**BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. identify/confirm the identification of organic compound

**BP203 T. BIOCHEMISTRY (Theory)**

**Objectives:**

Upon completion of course, student shall able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins

**BP 204T.PATHOPHYSIOLOGY (THEORY)**

**Objectives:**

Upon completion of the subject student shall be able to –

1. Describe the etiology and pathogenesis of the selected disease states;



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2. Name the signs and symptoms of the diseases; and

3. Mention the complications of the diseases

**BP205 T. COMPUTER APPLICATIONS IN PHARMACY (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. know the various types of application of computers in pharmacy
2. know the various types of databases
3. know the various applications of databases in pharmacy

**BP 206 T. ENVIRONMENTAL SCIENCES (Theory)**

**Objectives:**

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

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature

## **Semester- III**

**BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY - II (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound



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2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. prepare organic compound

**BP302T. PHYSICAL PHARMACEUTICS-I (Theory)**

**Objectives.:**

upon the completion of the course student shall be able to Understand various physicochemical properties of drug molecules in the designing the dosage form

1. Demonstrate use of physicochemical properties in evaluation of dosage forms.
2. Appreciate physicochemical properties of drug molecules in formulation research and development.

**BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)**

**Objectives:**

Upon completion of the subject student shall be able to;

1. Understand methods of identification, cultivation and preservation of various microorganisms
2. Importance of sterilization in microbiology. and pharmaceutical industry
3. Learn sterility testing of pharmaceutical products.
4. Microbiological standardization of Pharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries

**BP304T. PHARMACEUTICAL ENGINEERING (Theory)**

**Objectives:**

Upon completion of the course student shall be able:

1. To know various unit operations used in Pharmaceutical industries.
2. To understand the material handling techniques.
3. To perform various processes involved in pharmaceutical manufacturing process.
4. To carry out various test to prevent environmental pollution.



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5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

## **Semester-IV**

### **BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)**

#### **Objectives:**

At the end of the course, the student shall be able to

1. understand the methods of preparation and properties of organic compounds
2. explain the stereo chemical aspects of organic compounds and stereo chemical reaction
3. know the medicinal uses and other applications of organic compounds

### **BP402T. MEDICINAL CHEMISTRY – I (Theory)**

#### **Objectives:**

Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacological activity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class of drugs
4. write the chemical synthesis of some drugs

### **BP 403 T. PHYSICAL PHARMACEUTICS-II (Theory)**

#### **Objectives:**

Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage form
2. Know the principles of chemical kinetics & to use them in assigning expiry date for Formulation





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3. Demonstrate use of physicochemical properties in evaluation of dosage forms
4. Appreciate physicochemical properties of drug molecules in formulation research and Development

**BP 404 T. PHARMACOLOGY-I (Theory)**

**Objectives:**

Upon completion of this course the student should be able to

1. Understand the pharmacological actions of different categories of drugs
2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases
4. Observe the effect of drugs on animals by simulated experiments
5. Appreciate correlation of pharmacology with other bio medical science

**BP 405 T. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)**

**Objectives:**

Upon completion of the course, the student shall be able

1. To know the techniques in the cultivation and production of crude drugs
2. To know the crude drugs, their uses and chemical nature
3. To know the evaluation techniques for the herbal drugs
4. To carry out the microscopic and morphological evaluation of crude drug



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**Semester-V**

**BP501T. MEDICINAL CHEMISTRY – II (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacological activity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structure Activity Relationship of different class of drugs
4. Study the chemical synthesis of selected drugs

**BP 502 T. FORMULATIVE PHARMACY (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

**BP503. T. PHARMACOLOGY-II (Theory)**

**Objectives:**

Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical science



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**BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory)**

**Objectives:**

Upon completion of the course, the student shall be able

1. to know basic metabolic pathways and formation of different secondary metabolites
2. to know various medicinally important secondary metabolites
3. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
4. to carryout isolation and identification of phytoconstituents

**BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)**

**Objectives:**

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

1. The Pharmaceutical legislations and their implications in the development and marketing
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

## **Semester-VI**

**BP601T. MEDICINAL CHEMISTRY III (Theory)**

**Objectives:**

Upon completion of the course student shall be able to

1. Understand the importance of drug design and different techniques of drug design.
2. Understand the chemistry of drugs with respect to their biological activity.
3. Know the metabolism, adverse effects and therapeutic value of drugs.
4. Know the importance of SAR of drugs



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**BP602 T. PHARMACOLOGY-III (Theory)**

**Objectives:**

Upon completion of this course the student should be able to:

1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
2. comprehend the principles of toxicology and treatment of various poisoning sand
3. appreciate correlation of pharmacology with related medical sciences.

**BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)**

**Objectives:**

Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP.
5. To understand the preparation and development of herbal formulation
6. To understand the herbal drug interactions.

**BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory)**

**Objectives:**

Upon completion of the course student shall be able to

1. Understand the basic concepts in biopharmaceutics and pharmacokinetics.
2. Use plasma data and derive the pharmacokinetic parameters to describe the process of drug absorption, distribution, metabolism and elimination.
3. Critically evaluate biopharmaceutic studies involving drug product equivalency
4. Design and evaluate dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.



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5. Detect potential clinical pharmacokinetic problems and apply basic pharmacokinetic principles to solve them

**BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY (Theory)**

**Objectives:**

Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
2. Genetic engineering applications in relation to production of pharmaceuticals
3. Importance of Monoclonal antibodies in Industries
4. Appreciate the use of microorganisms in fermentation technology

**BP606 T PHARMACEUTICAL QUALITY ASSURANCE (Theory)**

**Objectives:**

Upon completion of the course student shall be able to:

1. understand the CGMP aspects in a pharmaceutical industry appreciate the importance of documentation
2. understand the scope of quality certifications applicable to pharmaceutical industries
3. understand the responsibilities of QA & QC department

## **Semester-VII**

**BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)**

**Objectives:**

Upon completion of the course the student shall be able to

1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.



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**BP702T. INDUSTRIAL PHARMACY(Theory)**

**Objectives:**

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

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different laws and acts that regulate pharmaceutical industry in India and US
4. Understand the approval process and regulatory requirements for drug products

**BP 703T. PHARMACY PRACTICE (Theory)**

**Objectives:**

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

1. Know various drug distribution methods in a hospital.
2. Appreciate the pharmacy stores management and inventory control.
3. Monitor drug therapy of patient through medication chart review and clinical review.
4. Obtain medication history interview and counsel the patients.
5. Identify drug related problems.
6. Detect and assess adverse drug reactions.
7. Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states.
8. Know pharmaceutical care services.
9. Do patient counseling in community pharmacy.
10. Appreciate the concept of rational drug therapy.

**BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)**

**Objectives:**

Upon completion of the course student shall be able



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1. To understand various approaches for development of novel drug delivery systems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

## **SEMESTER VIII**

### **BP801T- RESEARCH METHODOLOGY AND BIOSTATISTICS**

#### **Objectives:**

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

1. How to select a research topic in his/her areas of interest.
2. The fundamentals of collecting, analyzing and interpreting the relevant data.
3. Different computational methods and software 's facilitating research

### **BP 802T SOCIAL AND PREVENTIVE PHARMACY**

#### **Objectives:**

After the successful completion of this course, the student shall be able to:

1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
2. Have a critical way of thinking based on current health care development.
3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues

### **BP803ET. PHARMACEUTICAL MARKETING (Theory)**

#### **Objectives:**

The course aim is to provide an understanding of marketing concepts and techniques and the application of the same in the pharmaceutical industry

### **BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE (Theory)**

#### **Objectives:**



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Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery and development
2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
3. Know the regulatory approval process and their registration in Indian and international markets

**BP 805T: PHARMACOVIGILANCE (Theory)**

**Objectives:**

1. Why drug safety monitoring is important?
2. History and development of pharmacovigilance.
3. National and international scenario of pharmacovigilance.
4. Dictionaries, coding and terminologies used in pharmacovigilance.
5. Detection of new adverse drug reactions and their assessment.
6. International standards for classification of diseases and drugs.
7. Adverse drug reaction reporting systems and communication in pharmacovigilance.
8. Methods to generate safety data during pre-clinical, clinical and post approval phases of drugs 'life cycle.
9. Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation.
10. Pharmacovigilance Program of India (PvPI).
11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning.
12. CIOMS requirements for ADR reporting.
13. Writing case narratives of adverse events and their quality

**BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS (Theory)**

**Objectives:**

Upon completion of the subject student shall be able to;

1. know WHO guidelines for quality control of herbal drugs
2. know Quality assurance in herbal drug industry





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3. know the regulatory approval process and their registration in Indian and international markets
4. appreciate EU and ICH guidelines for quality control of herbal drugs

**BP 807 ET. COMPUTER AIDED DRUG DESIGN (Theory)**

**Objectives:**

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

1. Design and discovery of lead molecules
2. The role of drug design in drug discovery process
3. The concept of QSAR and docking
4. Various strategies to develop new drug like molecules.
5. The design of new drug molecules using molecular modeling software

**BP808ET.CELL AND MOLECULAR BIOLOGY**

**Objectives:**

Upon completion of the subject student shall be able to;

1. Summarize cell and molecular biology history.
2. Summarize cellular functioning and composition.
3. Describe the chemical foundations of cell biology.
4. Summarize the DNA properties of cell biology.
5. Describe protein structure and function.
6. Describe cellular membrane structure and function.
7. Describe basic molecular genetic mechanisms.
8. Summarize the Cell Cycle

**BP809ET. COSMETIC SCIENCE (Theory)**

**Objectives:**

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



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1. Know the cosmetic principles to address the needs of cosmetic industry.
2. Understand formulation science and analytical techniques required to scientifically design and develop cosmetic products.
3. Explain the scientific and technical aspects, high standards of practice and professional ethics within the cosmetic and toiletries industry.

**BP810ET.EXPERIMENTAL PHARMACOLOGY (PHARMACOLOGICAL SCREENING METHODS)**

**Objectives:**

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

1. Appreciate the applications of various commonly used laboratory animals.
2. Appreciate and demonstrate the various screening methods used in preclinical research
3. Appreciate and demonstrate the importance of biostatistics and research methodology
4. Design and execute a research hypothesis independently

**BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES**

**Objectives:**

Upon completion of the course the student shall be able to

1. understand the advanced instruments used and its applications in drug analysis
2. understand the chromatographic separation and analysis of drugs.
3. understand the calibration of various analytical instruments know analysis of drugs using various analytical ins



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**POST GRADUATE COURSE IN PHARMACY**

**Master of Pharmacy (M. Pharm.)**

**PHARMACEUTICAL ANALYSIS (MPA)**

**KUHS Course Code :279**

**(2019-20 Academic year onwards)**

**MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPT 101T)**

**Objective:**

Upon completion of the course, student shall be able to know about

- Chemicals and excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills for handling of the instruments

**ADVANCED PHARMACEUTICAL ANALYSIS (MPA 102T)**

**Objective:**

After completion of the course students shall able to know,

- Appropriate analytical skills required for the analytical method development.
- Principles of various reagents used in functional group analysis that renders necessary support in research methodology and demonstrates its application in the practical related problems.
- Analysis of impurities in drugs, residual solvents and stability studies of drugs and biological products



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**PHARMACEUTICAL VALIDATION (MPA 103T)**

**Objectives:**

Upon completion of the subject student shall be able to

- Explain the aspect of validation
- Carryout validation of manufacturing processes
- Apply the knowledge of validation to instruments and equipment
- Validate the manufacturing facilities

**FOOD ANALYSIS (MPA 104T)**

**Objectives:**

At completion of this course student shall be able to understand various analytical techniques in the determination of

- Food constituents
- Food additives
- Finished food products
- Pesticides in food
- And also, student shall have the knowledge on food regulations and legislations

**ADVANCED INSTRUMENTAL ANALYSIS (MPA 201T)**

**Objectives:**

After completion of course, student is able to know:

- interpretation of the NMR, Mass and IR spectra of various organic compounds
- theoretical and practical skills of the hyphenated instruments
- identification of organic compounds



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**MODERN BIO-ANALYTICAL TECHNIQUES (MPA 202T)**

**Objectives:**

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

- Extraction of drugs from biological samples
- Separation of drugs from biological samples using different techniques
- Guidelines for BA/BE studies.

**QUALITY CONTROL AND QUALITY ASSURANCE (MPA 203T)**

**Objectives:**

At the completion of this subject it is expected that the student shall be able to know

- the cGMP aspects in a pharmaceutical industry
- to appreciate the importance of documentation
- to understand the scope of quality certifications applicable to Pharmaceutical industries
- to understand the responsibilities of QA & QC departments

**HERBAL AND COSMETIC ANALYSIS (MPA 204T)**

**Objectives:**

At completion of this course student shall be able to understand

- Determination of herbal remedies and regulations
- Analysis of natural products and monographs
- Determination of Herbal drug-drug interaction
- Principles of performance evaluation of cosmetic products.



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**POST GRADUATE COURSE IN PHARMACY**

**Master of Pharmacy (M.Pharm.)**

**PHARMACEUTICAL CHEMISTRY(MPC)**

**KUHS Course Code :277**

**(2019-20 Academic year onwards)**

**MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPT 101T)**

**Objective:**

Upon completion of the course, student will be able to know about

- Chemicals and excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills for handling of the instruments

**ADVANCED ORGANIC CHEMISTRY - I (MPC 102T)**

**Objectives:**

Upon completion of course, the student shall be to understand

- The principles and applications of retrosynthesis
- The mechanism and applications of various named reactions
- The concept of disconnection to develop synthetic routes for small target molecule.
- The various catalysts used in organic reactions
- The chemistry of heterocyclic compounds



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**ADVANCED MEDICINAL CHEMISTRY (MPC 103T)**

**Objectives:**

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

- Different stages of drug discovery
- Role of medicinal chemistry in drug research
- Different techniques for drug discovery
- Various strategies to design and develop new drug like molecules for biological targets
- Peptidomimetics

**CHEMISTRY OF NATURAL PRODUCTS (MPC 104T)**

**Objectives:**

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

- Different types of natural compounds and their chemistry and medicinal importance
- The importance of natural compounds as lead molecules for new drug discovery
- The concept of rDNA technology tool for new drug discovery
- General methods of structural elucidation of compounds of natural origin
- Isolation, purification and characterization of simple chemical constituents from natural source

**ADVANCED SPECTRAL ANALYSIS (MPC 201T)**

**Objectives:**

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

- Interpretation of the NMR, Mass and IR spectra of various organic compounds
- Theoretical and practical skills of the hyphenated instruments
- Identification of organic compounds





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**ADVANCED ORGANIC CHEMISTRY - II (MPC 202T)**

**Objectives:**

Upon completion of course, the student shall able to understand

- The principles and applications of Green chemistry
- The concept of peptide chemistry.
- The various catalysts used in organic reactions
- The concept of stereochemistry and asymmetric synthesis.

**COMPUTER AIDED DRUG DESIGN (MPC 203T)**

**Objectives:**

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

- Role of CADD in drug discovery
- Different CADD techniques and their applications
- Various strategies to design and develop new drug like molecules.
- Working with molecular modeling software to design new drug molecules
- The in silico virtual screening protocols

**PHARMACEUTICAL PROCESS CHEMISTRY (MPC 204T)**

**Objectives:**

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

- The strategies of scale up process of APIs and intermediates
- The various unit operations and various reactions in process chemistry



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**POST GRADUATE COURSE IN PHARMACY**

**Master of Pharmacy (M.Pharm.)**

**PHARMACEUTICS (MPH)**

**KUHS Course Code: 276**

**(2019-20 Academic year onwards)**

**MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPT 101T)**

**Objective:**

Upon completion of the course, student shall be able to know about

- Chemicals and excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills for handling of the instruments

**DRUG DELIVERY SYSTEMS (MPH 102T)**

**Objective:**

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

- The various approaches for development of novel drug delivery systems.
- The criteria for selection of drugs and polymers for the development of delivering system
- The formulation and evaluation of Novel drug delivery systems.



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**MODERN PHARMACEUTICS (MPH 103T)**

**Objective:**

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

- The elements of preformulation studies.
- The Active Pharmaceutical Ingredients and Generic drug Product development
- Industrial Management and GMP Considerations.
- Optimization Techniques & Pilot Plant Scale Up Techniques
- Stability Testing, sterilization process & packaging of dosage forms.

**REGULATORY AFFAIRS (MPH 104T)**

**Objective:**

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

- The Concepts of innovator and generic drugs, drug development process
- The Regulatory guidance's and guidelines for filing and approval process
- Preparation of Dossiers and their submission to regulatory agencies in different countries.
- Post approval regulatory requirements for actives and drug products
- Submission of global documents in CTD/ eCTD formats
- Clinical trials requirements for approvals for conducting clinical trials
- Pharmacovigilance and process of monitoring in clinical trials.

**MOLECULAR PHARMACEUTICS (NANOTECHNOLOGY & TARGETED DRUG DELIVERY SYSTEMS) (MPH 201T)**

**Objective:**

Upon completion of the course student shall be able to understand

- The various approaches for development of novel drug delivery systems.
- The criteria for selection of drugs and polymers for the development of NTDS
- The formulation and evaluation of novel drug delivery systems.



**ST. JAMES' COLLEGE OF PHARMACEUTICAL SCIENCES, RIVER BANK, CHALAKUDY  
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**ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS (MPH 202T)**

**Objective:**

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

- The basic concepts in biopharmaceutics and pharmacokinetics.
- The use raw data and derive the pharmacokinetic models and parameters the best describes the process of drug absorption, distribution, metabolism and elimination.
- The critical evaluation of biopharmaceutical studies involving drug product equivalency.
- The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutical parameters.
- The potential clinical pharmacokinetic problems and application of basics of pharmacokinetics

**COMPUTER AIDED DRUG DEVELOPMENT (MPH 203T)**

**Objective:**

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

- History of Computers in Pharmaceutical Research and Development
- Computational Modeling of Drug Disposition
- Computers in Preclinical Development
- Optimization Techniques in Pharmaceutical Formulation
- Computers in Market Analysis
- Computers in Clinical Development
- Artificial Intelligence (AI) and Robotics
- Computational fluid dynamics (CFD)

**COSMETICS AND COSMECEUTICALS (MPH 204T)**

**Objective:**

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



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- Key ingredients used in cosmetics and cosmeceuticals.
- Key building blocks for various formulations.
- Current technologies in the market
- Various key ingredients and basic science to develop cosmetics and cosmeceuticals
- Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.



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**POST GRADUATE COURSE IN PHARMACY**

**Master of Pharmacy (M.Pharm.)**

**PHARMACY PRACTICE(MPP)**

**KUHS Course Code :281**

**(2019-20 Academic year onwards)**

**CLINICAL PHARMACY PRACTICE (MPP 101T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Understand the elements of pharmaceutical care and provide comprehensive patient care services
- Interpret the laboratory results to aid the clinical diagnosis of various disorders
- Provide integrated, critically analyzed medicine and poison information to enable health care professionals in the efficient patient management

**PHARMACOTHERAPEUTICS-I (MPP 102T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Describe and explain the rationale for drug therapy
- Summarize the therapeutic approach for management of various disease conditions including reference to the latest available evidence
- Discuss the clinical controversies in drug therapy and evidence-based medicine
- Prepare individualized therapeutic plans based on diagnosis



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- Identify the patient specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effect/s)

**HOSPITAL & COMMUNITY PHARMACY (MPP 103T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Understand the organizational structure of hospital pharmacy
- Understand drug policy and drug committees
- Know about procurement & drug distribution practices
- Know the admixtures of radio pharmaceuticals
- Understand the community pharmacy management
- Know about value added services in community pharmacies

**CLINICAL RESEARCH (MPP 104T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Know the new drug development process.
- Understand the regulatory and ethical requirements.
- Appreciate and conduct the clinical trials activities
- Know safety monitoring and reporting in clinical trials
- Manage the trial coordination process

**PHARMACY PRACTICE PRACTICAL – I (MPP 105P)**

**Objective:**

Pharmacy Practice practical component includes experiments covering important topics of the courses Clinical Pharmacy Practice, Pharmacotherapeutics-I, Hospital & Community Pharmacy and Clinical Research.





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(NAAC ACCREDITED)**

**PRINCIPLES OF QUALITY USE OF MEDICINES (MPP201T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Understand the principles of quality use of medicines
- Know the benefits and risks associated with use of medicines
- Understand regulatory aspects of quality use of medicines
- Identify and resolve medication related problems
- Promote quality use of medicines
- Practice evidence-based medicines

**PHARMACOTHERAPEUTICS II (MPP 202T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Describe and explain the rationale for drug therapy
- Summarize the therapeutic approach for management of various disease conditions including reference to the latest available evidence
- Discuss the clinical controversies in drug therapy and evidence-based medicine
- Prepare individualized therapeutic plans based on diagnosis
- Identify the patient specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effect/s)

**CLINICAL PHARMACOKINETICS AND THERAPEUTIC DRUG MONITORING  
(MPP203T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Design the drug dosage regimen for individual patients



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- Interpret and correlate the plasma drug concentrations with patients' therapeutic outcomes
- Recommend dosage adjustment for patients with renal/hepatic impairment
- Recommend dosage adjustment for pediatrics and geriatrics
- Manage pharmacokinetic drug interactions
- Apply pharmacokinetic parameters in clinical settings
- Interpret the impact of genetic polymorphisms of individuals on pharmacokinetics and or pharmacodynamics of drugs
- Do pharmacokinetic modeling for the given data using the principles of pharmacometrics

**PHARMACOEPIDEMIOLOGY & PHARMACOECONOMICS (MPP 204T)**

**Objectives:**

Upon completion of this course it is expected that students shall be able to:

- Understand the various epidemiological methods and their applications
- Understand the fundamental principles of Pharmacoeconomics.
- Identify and determine relevant cost and consequences associated with pharmacy products and services.
- Perform the key Pharmacoeconomics analysis methods
- Understand the Pharmacoeconomic decision analysis methods and its applications.
- Describe current Pharmacoeconomic methods and issues.
- Understand the applications of Pharmacoeconomics to various pharmacy settings.

**PHARMACY PRACTICE PRACTICAL - II (MPP 205P)**

**Objective:**

Pharmacy Practice practical component includes experiments covering important topics of the courses Principles of Quality Use of Medicines, Pharmacotherapeutics-II, Clinical Pharmacokinetics & Therapeutic Drug Monitoring and Pharmacoepidemiology and Pharmacoeconomics.



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(NAAC ACCREDITED)**

**DOCTOR OF PHARMACY (PHARM D)  
Course Code: 282**

**(2016-17 Academic year onwards)**

**Objective of course**

The Doctor of Pharmacy education will aim at producing post graduates, having profound knowledge of pharmacy supplemented with knowledge of scientific advances in Modern medicine along with extensive practical training; who will become efficient Physicians fully competent to serve the health care professional.

The aim of the course is to mould the student to suit the varied requirements of

- i. Practice settings in – Hospital Pharmacy and Community Pharmacy.
- ii. Clinical Pharmacy services
  - A. Patient counseling
  - B. Drug information
  - C. Therapeutic Drug Monitoring (TDM) and Dose calculation
- iii. Academics.
- iv. Regulatory affairs.



**ST. JAMES' COLLEGE OF PHARMACEUTICAL SCIENCES, RIVER BANK, CHALAKUDY**  
**(NAAC ACCREDITED)**  
**FIRST YEAR**

**1.1 - HUMAN ANATOMY & PHYSIOLOGY (THEORY)**

**Objectives:**

This course is designed to impart a fundamental knowledge on the structure and functions of the human body. It also helps in understanding both homeostasis mechanisms and homeostatic imbalances of various body systems. Since a medicament, which is produced by a pharmacist, is used to correct the deviations in the human body, it enhances the understanding of how the drugs act on the various body systems in correcting the disease state of the organs.

**1.2 - PHARMACEUTICS (THEORY)**

**objectives:** This course are designed to impart a fundamental knowledge on the art and science of formulating different dosage forms. It prepares the students for the most basic of the applied field of pharmacy.

**1.3 - MEDICINAL BIOCHEMISTRY (THEORY)**

**Objective:**

Applied biochemistry deals with complete understanding of the molecular level of the chemical process associated with living cells. Clinical chemistry deals with the study of chemical aspects of human life in health and illness and the application of chemical laboratory methods to diagnosis, control of treatment, and prevention of diseases.



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**1.4 - PHARMACEUTICAL ORGANIC CHEMISTRY (THEORY)**

**objectives:**

This course is designed to impart a very good knowledge about

- a) IUPAC/Common system of nomenclature of simple organic compounds belonging to different classes of organic compounds;
- b) Some important physical properties of organic compounds;
- c) Free radical/ nucleophilic [alkyl/ acyl/ aryl] /electrophyllic substitution, free radical/ nucleophyllic / electrophyllic addition, elimination, oxidation and reduction reactions with mechanism, orientation of the reaction, order of reactivity, stability of compounds;
- d) Some named organic reactions with mechanisms; and
- e) Methods of preparation, test for purity, principle involved in the assay, important medicinal uses of some important organic compounds.

**1.5 - PHARMACEUTICAL INORGANIC CHEMISTRY (THEORY)**

**objectives:**

This course mainly deals with fundamentals of Analytical chemistry and also the study of inorganic pharmaceuticals regarding their monographs and also the course deals with basic knowledge of analysis of various pharmaceuticals.

**1.6 - REMEDIAL MATHEMATICS/BIOLOGY (THEORY)**

**objectives:**

This is an introductory course in mathematics. This subject deals with the introduction to matrices, determinants, trigonometry, analytical geometry, differential calculus, integral calculus, differential equations, laplace transform.

**BIOLOGY :**



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**objectives:**

This is an introductory course in Biology, which gives detailed study of natural sources such as plant and animal origin. This subject has been introduced to the pharmacy course in order to make the student aware of various naturally occurring drugs and its history, sources, classification, distribution and the characters of the plants and animals. This subject gives basic foundation to Pharmacognosy.

## **SECOND YEAR**

### **2.1 - PATHOPHYSIOLOGY (THEORY)**

**Objectives:**

Upon completion of the subject student shall be able to

- a) describe the etiology and pathogenesis of the selected disease states;
- b) name the signs and symptoms of the diseases; and
- c) mention the complications of the diseases.

### **2.2 - PHARMACEUTICAL MICROBIOLOGY (THEORY)**

**Objectives**

Upon completion of the subject student shall be able to –

- a. knows the anatomy, identification, growth factors and sterilization of microorganisms;
- b. knows the mode of transmission of disease-causing microorganism, symptoms of disease, and treatment aspect;
- c. does estimation of RNA and DNA and there by identifying the source;
- d. does cultivation and identification of the microorganisms in the laboratory;



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- e. does identification of diseases by performing the diagnostic tests; and
- f. appreciates the behavior of motility and behavioral characteristics of microorganisms.

### **2.3 - PHARMACOGNOSY & PHYTOPHARMACEUTICALS (THEORY)**

#### **objectives:**

This subject has been introduced for the pharmacy course in order to make the student aware of medicinal uses of various naturally occurring drugs its history, sources, distribution, method of cultivation, active constituents, medicinal uses, identification tests, preservation methods, substitutes and adulterants.

### **2.4 - PHARMACOLOGY – I (THEORY)**

#### **Objectives:**

Upon completion of the subject student shall be able to

(Know, do, appreciate) –

- a. understands the pharmacological aspects of drugs falling under the above mentioned chapters;
- b. handle and carry out the animal experiments;
- c. appreciates the importance of pharmacology subject as a basis of therapeutics;
- d. correlate and apply the knowledge therapeutically.

### **2.5 - COMMUNITY PHARMACY (THEORY)**

#### **Objectives:**

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

- a. knows pharmaceutical care services;
- b. knows the business and professional practice management skills in community pharmacies;
- c. does patient counselling & provide health screening services to public in community



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pharmacy;

- d. responds to minor ailments and provide appropriate medication;
- e. show empathy and sympathy to patients; and
- f. appreciates the concept of Rational drug therapy

## **2.6 - PHARMACOTHERAPEUTICS - I (THEORY)**

### **Objectives:**

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

- a. the pathophysiology of selected disease states and the rationale for drug therapy;
- b. the therapeutic approach to management of these diseases;
- c. the controversies in drug therapy;
- d. the importance of preparation of individualized therapeutic plans based on diagnosis;
- e. needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects);
- f. describes the pathophysiology of selected disease states and explain the rationale for drug therapy;
- g. summaries the therapeutic approach to management of these diseases including reference to the latest available evidence;
- h. discusses the controversies in drug therapy;
- i. discusses the preparation of individualized therapeutic plans based on diagnosis; and
- j. identifies the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).





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**(NAAC ACCREDITED)**  
**THIRD YEAR**

**3.1 - PHARMACOLOGY – II (THEORY)**

**Objectives :**

Upon completion of the subject student shall be able to:

- a. understand the pharmacological aspects of drugs falling under the above mentioned chapters,
- b. carries out the animal experiments confidently,
- c. appreciates the importance of pharmacology subject as a basis of therapeutics,
- d. correlate and apply the knowledge therapeutically.

**3.2 - PHARMACEUTICAL ANALYSIS (THEORY)**

**Objectives :**

Upon completion of the subject student shall be able to:

- a. Understand Fundamental Concepts of Pharmaceutical Analysis
- b. Develop Proficiency in Analytical Techniques
- c. Learn Principles of Spectroscopy and Chromatography
- d. Ensure Quality Assurance in Pharmaceuticals
- e. Interpret Analytical Data and Results

**3.3 - PHARMACOTHERAPEUTICS – II (THEORY)**

**Objectives:**

completion of the subject student shall be able to –

- a. knows the pathophysiology of selected disease states and the rationale for drug therapy
- b. knows the therapeutic approach to management of these diseases;
- c. knows the controversies in drug therapy;
- d. knows the importance of preparation of individualized therapeutic plans based on diagnosis; and



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e. appreciates the needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, timecourse of clinical and laboratory indices of therapeutic response and adverse effects).

### **3.4 - PHARMACEUTICAL JURISPRUDENCE (THEORY)**

#### **Objectives:**

Upon completion of the subject student shall be able to

(Know, do, and appreciate) –

- a. practices the Professional ethics;
- b. understands the various concepts of the pharmaceutical legislation in India;
- c. knows the various parameters in the Drug and Cosmetic Act and rules;
- d. knows the Drug policy, DPCO, Patent and design act;
- e. understands the labeling requirements and packaging guidelines for drugs and cosmetics;
- f. be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act; and
- g. other laws as prescribed by the Pharmacy Council of India from time to time including International Laws.

### **3.5 - MEDICINAL CHEMISTRY (THEORY)**

#### **Objectives:**

Upon completion of the subject student shall be able to (Know, do, appreciate)

- f. Understand Drug Design Principles
- g. Explore Structure-Activity Relationships (SAR)
- h. Understand Pharmacokinetics and Metabolism
- i. Apply Medicinal Chemistry Concepts in Drug Development



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**3.6 - PHARMACEUTICAL FORMULATIONS (THEORY)**

**Objectives:**

Upon completion of the subject student shall be able to (Know, do, appreciate) –

- a. understands the principle involved in formulation of various pharmaceutical dosage forms;
- b. prepares various pharmaceutical formulation;
- c. performs evaluation of pharmaceutical dosage forms; and
- d. understands and appreciate the concept of bioavailability and bioequivalence, their role in clinical situations.

**FOURTH YEAR**

**4.1 - PHARMACOTHERAPEUTICS – III (THEORY)**

**Objectives:**

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

- a. the pathophysiology of selected disease states and the rationale for drug therapy;
- b. the therapeutic approach to management of these diseases;
- c. the controversies in drug therapy;
- d. the importance of preparation of individualized therapeutic plans based on diagnosis;
- e. needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects);
- f. describes the pathophysiology of selected disease states and explain the rationale for drug therapy;
- g. to summarize the therapeutic approach to management of these diseases



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including reference to the latest available evidence;

h. to discuss the controversies in drug therapy;

i. to discuss the preparation of individualized therapeutic plans based on diagnosis;

and

j. identifies the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

#### **4.2 - HOSPITAL PHARMACY (THEORY)**

##### **Objectives:**

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

know various drug distribution methods;

know the professional practice management skills in hospital pharmacies;

provide unbiased drug information to the doctors;

know the manufacturing practices of various formulations in hospital set up;

appreciate the practice-based research methods; and

appreciate the stores management and inventory control

#### **4.3 - CLINICAL PHARMACY (THEORY)**

##### **Objectives:**

Upon completion of the subject student shall be able to (Know, do, appreciate) – a. monitor drug therapy of patient through medication chart review and clinical review; b. obtain medication history interview and counsel the patients; c. identify and resolve drug related problems; d. detect, assess and monitor adverse drug reaction; e. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and f. retrieve, analyse, interpret and formulate drug or medicine information



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**4.4 - BIostatISTICS AND RESEARCH METHODOLOGY (THEORY)**

**Objectives:**

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

- a. Understand Fundamental Concepts of Biostatistics
- b. Develop Skills in Data Collection and Analysis
- c. Learn Statistical Tests and Their Applications
- d. Understand Research Methodology and Study Design
- e. Enhance Skills in Writing and Presenting Research

**4.5 - BIOPHARMACEUTICS AND PHARMACOKINETICS (THEORY)**

**Objectives:**

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

- a. Understand the Principles of Biopharmaceutics
- b. Comprehend Pharmacokinetic Processes and Parameters
- c. Analyze Drug Absorption and Bioavailability
- d. Study Drug Distribution and Factors Affecting It
- e. Understand Concepts of Bioequivalence and Therapeutic Equivalence

**4.6 - CLINICAL TOXICOLOGY (THEORY)**

**Objectives:**

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

- a. Understand Fundamental Concepts of Toxicology
- b. Identify Common Poisons and Toxic Agents
- c. Learn the Clinical Presentation of Toxicity
- d. Study Poison Management and Decontamination Techniques
- e. Learn Toxicokinetics and Toxicodynamic
- f. Understand Legal and Ethical Considerations in Toxicology



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**FIFTH YEAR**

**5.1 - CLINICAL RESEARCH (THEORY)**

**Objectives:**

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

- a. Understand the Fundamentals of Clinical Research
- b. Learn the Phases and Types of Clinical Trials
- c. Good Clinical Practice (GCP) Guidelines
- d. Study Regulatory Requirements and Compliance
- e. Understand the Role of Pharmacovigilance in Clinical Research

**5.2 - PHARMACOEPIDEMOLOGY AND PHARMACOECONOMICS (THEORY)**

**Objectives:**

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

- a. Understand the Fundamentals of Pharmacoepidemiology
- b. Learn Study Designs in Pharmacoepidemiology
- c. Evaluate Drug Safety and Effectiveness in Populations
- d. Understand the Principles of Pharmacoeconomics
- e. Learn the Regulatory and Ethical Aspects of Pharmacoepidemiology and Pharmacoeconomics
- f. Develop Critical Thinking and Analytical Skills

**5.3 - CLINICAL PHARMACOKINETICS AND THERAPEUTIC DRUG MONITORING (THEORY)**

**Objectives:**

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

- a. Understand the Basics of Pharmacokinetics
- b. Learn Key Pharmacokinetic Parameters
- c. Apply Pharmacokinetic Models in Clinical Practice
- d. Introduce Therapeutic Drug Monitoring (TDM)
- e. Learn Techniques for Monitoring Drug Levels
- f. Discuss the Role of Pharmacokinetics in Drug Development



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(NAAC ACCREDITED)**

**DOCTOR OF PHARMACY  
(PHARM D-POST BACCALAUREATE)**

**Course Code:283**

**(2016-17 Academic year onwards)**

**Objectives of course**

The Doctor of Pharmacy (Pharm D – Post Baccalaureate) education will aim at producing post graduates, having profound knowledge of pharmacy supplemented with knowledge of scientific advances in Modern medicine along with extensive clinical training; who will become efficient and competent health care professional.

The aim of the course is to mould the student to suit the varied requirements of

- i. Practice settings in – Hospital Pharmacy and Community Pharmacy.
- ii. Clinical Pharmacy services a. Patient counseling b. Drug information c. Therapeutic Drug Monitoring (TDM) and Dose calculation
- iii. Academics.
- iv. Regulatory affairs.



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## **First Year**

### **1.1 - PHARMACOTHERAPEUTICS I & II (THEORY)**

#### **Objectives:**

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

- a. the pathophysiology of selected disease states and the rationale for drug therapy;
- b. the therapeutic approach to management of these diseases;
- c. the controversies in drug therapy;
- d. the importance of preparation of individualized therapeutic plans based on diagnosis;
- e. needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects);
- f. describes the pathophysiology of selected disease states and explain the rationale for drug therapy;
- g. summarizes the therapeutic approach to management of these diseases including reference to the latest available evidence;
- h. discusses the controversies in drug therapy;
- i. discusses the preparation of individualized therapeutic plans based on diagnosis; and
- j. identifies the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

### **1.1 - PHARMACOTHERAPEUTICS - I & II (PRACTICAL)**

#### **Objective:**

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation. A minimum of 20 cases should be presented and recorded covering most common diseases.

### **1.2 - PHARMACOTHERAPEUTICS – III (THEORY)**

#### **Objectives:**

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

- a. the pathophysiology of selected disease states and the rationale for drug therapy;
- b. the therapeutic approach to management of these diseases;
- c. the controversies in drug therapy;
- d. the importance of preparation of individualized therapeutic plans based on diagnosis;
- e. needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects);





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- f. describes the pathophysiology of selected disease states and explain the rationale for drug therapy;
- g. to summarize the therapeutic approach to management of these diseases including reference to the latest available evidence;
- h. to discuss the controversies in drug therapy;
- i. to discuss the preparation of individualized therapeutic plans based on diagnosis; and
- j. identifies the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

**1.2 - PHARMACOTHERAPEUTICS – III (PRACTICAL)**

**Objective:**

Hospital postings for a period of at least 50 hours is required to understand the principles and practice involved in ward round participation and clinical discussion on selection of drug therapy. Students are required to maintain a record of 15 cases observed in the ward and the same should be submitted at the end of the course for evaluation. Each student should present at least two medical cases they have observed and followed in the wards

**1.3 - HOSPITAL PHARMACY (THEORY)**

**Objectives:**

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

- a. knows various drug distribution methods;
- b. knows the professional practice management skills in hospital pharmacies;
- c. provides unbiased drug information to the doctors;
- d. knows the manufacturing practices of various formulations in hospital set up;
- e. appreciates the practice-based research methods; and
- f. appreciates the stores management and inventory control.

**1.4- CLINICAL PHARMACY (THEORY)**

**Objectives:**

Upon completion of the subject student shall be able to (Know, do, appreciate) –

- a. monitor drug therapy of patient through medication chart review and clinical review;
- b. obtain medication history interview and counsel the patients;
- c. identifies and resolve drug related problems;
- d. detects, assess and monitor adverse drug reaction;
- e. interprets selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and
- f. retrieve, analyse, interpret and formulate drug or medicine information.



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(NAAC ACCREDITED)**

**1.5- BIOSTATISTICS AND RESEARCH METHODOLOGY (THEORY)**

**Objectives:**

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

- a. Understand Fundamental Concepts of Biostatistics
- b. Develop Skills in Data Collection and Analysis
- c. Learn Statistical Tests and Their Applications
- d. Understand Research Methodology and Study Design
- e. Enhance Skills in Writing and Presenting Research

**1.6- BIOPHARMACEUTICS AND PHARMACOKINETICS (THEORY)**

**Objectives:**

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

- a. Understand the Principles of Biopharmaceutics
- b. Comprehend Pharmacokinetic Processes and Parameters
- c. Analyze Drug Absorption and Bioavailability
- d. Study Drug Distribution and Factors Affecting It
- e. Understand Concepts of Bioequivalence and Therapeutic Equivalence

**1.7 - CLINICAL TOXICOLOGY (THEORY)**

**Objectives:**

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

- a. Understand Fundamental Concepts of Toxicology
- b. Identify Common Poisons and Toxic Agents
- c. Learn the Clinical Presentation of Toxicity
- d. Study Poison Management and Decontamination Techniques
- e. Learn Toxicokinetics and Toxicodynamic
- f. Understand Legal and Ethical Considerations in Toxicology



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**(NAAC ACCREDITED)**  
**Second Year**

**2.1 - CLINICAL RESEARCH (THEORY)**

**Objectives:**

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

- a. Understand the Fundamentals of Clinical Research
- b. Learn the Phases and Types of Clinical Trials
- c. Good Clinical Practice (GCP) Guidelines
- d. Study Regulatory Requirements and Compliance
- e. Understand the Role of Pharmacovigilance in Clinical Research

**2.2 - PHARMACOEPIDEMIOLOGY AND PHARMACOECONOMICS (THEORY)**

**Objectives:**

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

- a. Understand the Fundamentals of Pharmacoepidemiology
- b. Learn Study Designs in Pharmacoepidemiology
- c. Evaluate Drug Safety and Effectiveness in Populations
- d. Understand the Principles of Pharmacoeconomics
- e. Learn the Regulatory and Ethical Aspects of Pharmacoepidemiology and Pharmacoeconomics
- f. Develop Critical Thinking and Analytical Skills

**2.3 - CLINICAL PHARMACOKINETICS AND THERAPEUTIC DRUG MONITORING (THEORY)**

**Objectives:**

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

- a. Understand the Basics of Pharmacokinetics
- b. Learn Key Pharmacokinetic Parameters
- c. Apply Pharmacokinetic Models in Clinical Practice
- d. Introduce Therapeutic Drug Monitoring (TDM)
- e. Learn Techniques for Monitoring Drug Levels
- f. Discuss the Role of Pharmacokinetics in Drug Development



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