



MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES

MANIPAL

(A constituent unit of MAHE, Manipal)

DOCTOR OF PHARMACY POST BACCALAUREATE (PHARM.D-PB)

FIRST YEAR - COURSE OUTCOMES (COs)

PPR 4.1T: PHARMACOTHERAPEUTICS-III

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

1. Therapeutic approach to the management of gastrointestinal disorders, hematological disorders, neurological disorders, psychiatric disorders and pain management.
2. Treatment objectives for the individual patients and the diseases.
3. Importance of developing individualized therapeutic plans.
4. Prescribing guidelines for the special populations.
5. Patient-specific parameters for selection, initiation and monitoring of drug therapies.
6. Most recent updates in relevant treatment guidelines.

PPR 4.1L: PHARMACOTHERAPEUTICS-III LAB

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

1. Understand therapeutic approach for the management of gastrointestinal disorders, hematological disorders, neurological disorders, psychiatric disorders and pain management.
2. Identify the treatment goals for specific disease and able to develop the individualized therapeutic plans.
3. To identify the patient-specific parameters for selection, initiation and monitoring of drug therapies.
4. Provide the feedback regarding the drug related issues to the physicians.

PPR 4.2T: HOSPITAL PHARMACY

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

1. Know various drug distribution methods.
2. Know the professional practice management skills in hospital pharmacies.
3. Provide unbiased drug information to the doctors.
4. Know the manufacturing practices of various formulations in hospital set up.
5. Appreciate the practice based research methods.
6. Appreciate the stores management and inventory control.

PPR 4.2L: HOSPITAL PHARMACY LAB

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

1. Provide unbiased drug information to the physician.
2. Assess the prescription for drug-drug interaction and its management.
3. Know the manufacturing practice of various formulations in hospital setup.
4. Appreciate the stores management & inventory control.

PPR 4.3T: CLINICAL PHARMACY

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

1. Monitor drug therapy of patient through medication chart review and clinical review.
2. Obtain medication history interview and counsel the patients.
3. Identify and resolve drug related problems.
4. Detect, assess and monitor adverse drug reactions.
5. Interpret selected laboratory results (as monitoring parameter in therapeutics) of specific disease states.
6. Retrieve, analyze, interpret and formulate drug or medicine information.

PPR 4.3L: CLINICAL PHARMACY LAB

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

1. Provide drug information services to the health care professionals and patients.

2. Perform patient medication history interview and counseling as a part of pharmaceutical care.
3. Interpret the clinical laboratory investigational reports and its significance in disease management.

PPR 4.4T: BIostatistics & RESEARCH METHODOLOGY

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

1. Various study designs.
2. Development of protocol and biomedical literature search.
3. Understand the application of various statistical analysis in data analysis and interpretation.
4. Writing research paper and presentation of results.

PPR 4.5T: BIOPHARMACEUTICS & PHARMACOKINETICS

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

1. Understand basic concepts of absorption, distribution, metabolism and elimination.
2. Have thorough understanding on pharmacokinetic and bioavailability studies.
3. Understand compartment and non-compartment models.
4. Appreciate the concepts of multiple dosage regimen.
5. Understand the concepts of non-linear kinetics.

PPR 4.5L: BIOPHARMACEUTICS & PHARMACOKINETICS LAB

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

1. Understand the concepts of absorption, distribution and Excretion
2. Apply the pharma cokinetic principles for dosage regimen design and bio-availability studies

PPR 4.6T: CLINICAL TOXICOLOGY

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

1. Learn general principles in the management of poisoning.
2. Know clinical symptoms and management of acute poisoning.
3. Learn clinical symptoms and management of chronic poisoning.
4. Understand toxic effects and general management of snake bite.
5. Learn plant, mushroom and food poisoning and envenomation.
6. Understand substance abuse and treatment of dependence.

PPR 4.7T: PHARMACOTHERAPEUTICS-I&II

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

1. Therapeutic approach to the management of cardiovascular, respiratory and ophthalmic diseases.
2. Treatment objectives for the individual patients and the diseases.
3. Importance of developing individualized therapeutic plans.
4. Prescribing guidelines for the special populations.
5. Patient-specific parameters for selection, initiation and monitoring of drug therapies.
6. Most recent updates in relevant treatment guidelines

PPR 4.7L: PHARMACOTHERAPEUTICS-I&II LAB

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

1. Learn diseases with real case based learnings.
2. Learn pharmacotherapy of diseases with laboratory investigations, and interpretations to diagnosis of diseases.
3. Learn medication related problems by assessing the prescriptions and case records.
4. Recommend therapeutics recommendations based on clinical condition of patients.





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**SECOND YEAR - COURSE
OUTCOMES (COs)**

PPR 5.1T: CLINICAL RESEARCH

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

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

PPR 5.2T: PHARMACOEPIDEMIOLOGY & PHARMACOECONOMICS

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

1. Understand the various epidemiological methods and their applications.
2. Understand the fundamental principles of pharmacoeconomics.
3. Identify and determine relevant cost and consequences associated with pharmacy products and services.
4. Perform key pharmacoeconomics analysis methods.
5. Understand the pharmacoeconomic decision analysis methods and its applications.
6. Describe current pharmacoeconomic method and issues.
7. Understand the applications of pharmacoeconomics to various pharmacy settings.

**PPR 5.3T: CLINICAL PHARMACOKINETICS & PHARMACOTHERAPEUTICS
DRUG MONITORING**

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

1. Design dosage regimen.
2. Understand Pharmacokinetic drug interactions.
3. Learn and apply the concepts of therapeutic drug monitoring.
4. Appreciate the concepts of dosage adjustment in special populations.
5. Understand the concepts of population pharmacokinetics.
6. Learn the concepts of pharmacogenetics and its application in pharmacokinetics.

PPR 5.4L: CLERKSHIP

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

1. Understand the concepts of case assessment and pharmacotherapy.
2. Apply pharmaceutical care plan considering the therapeutic and toxic monitoring plans.

PPR 5.5P: PROJECT WORK

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

1. Undertake literature search, identify topics, design, plan, execute studies, document, compile, analyze and interpret data.
2. Present the results of the project work as a written report, conference presentations and publications in peer reviewed journals.





PPR 6.1R: INTERNSHIP

1. To provide patient care in cooperation with patients, prescribers, and other inter-professional health care teams based upon sound therapeutic principles and evidence-based data.
2. To manage and use the health care system's resources to promote health; to provide, assess, and coordinate safe, accurate, and time-sensitive medication distribution; and improve therapeutic outcomes of medication use.
3. To promote health, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers.
4. To demonstrate skills in monitoring the national health programs and schemes, oriented to provide preventive and promotive health care services to the community.
5. To develop leadership qualities to function effectively as a member of the health care team organized to deliver the health and family welfare services in the existing socio-economic, political, and cultural environment.
6. To communicate effectively with patients and the community.

