



## VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN

Enikepadu, VIJAYAWADA – 521108

Permitted by Govt. of A.P; Approved by AICTE, New Delhi  
Pharmacy Council of India, New Delhi & Affiliated to JNTU Kakinada  
**ISO 9001:2015 Certified Institution**

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### Program: Doctor of Pharmacy (Post Baccalaureate)

**Duration: 3 years**

### Program Outcomes (PO):

PO Nos.	Program Objective	Program Outcome
PO1	Pharmacy Knowledge	Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
PO2	Planning Abilities	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
PO3	Problem analysis	Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
PO4	Modern tool usage	Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations
PO5	Leadership skills	Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
PO6	Professional Identity	Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
PO7	Pharmaceutical Ethics	Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
PO8	Communication	Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and

		write effective reports, make effective presentations and documentation, and give and receive clear instructions.
<b>PO9</b>	<b>The Pharmacist and society</b>	Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
<b>PO10</b>	<b>Environment and sustainability</b>	Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO11</b>	<b>Life-long learning</b>	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis



## **Pharm D (Post Baccalaureate)**

### **COURSE OBJECTIVES & OUTCOMES**

#### **FIRST YEAR (I/III)**

##### **T4101. Pharmacotherapeutics-III (Theory)**

**OBJECTIVE:** This course is designed to impart knowledge and skills necessary for contribution to quality use of medicines. Chapters dealt cover briefly pathophysiology and mostly therapeutics of various diseases. This will enable the student to understand the pathophysiology of common diseases and their management.

##### **OUTCOMES:**

**Upon completion of the course student will be able to**

1. The Pathophysiology and Pharmacotherapy of Several Common Disease States
2. The Principles of Pharmacotherapy in Particular Patients Groups.
3. Apply knowledge and clinical skills to problem solving in unfamiliar situations.
4. Obtain and interpret information from literature and apply this information in a clinical situation.
5. Present information on the therapeutic use of drugs to fellow students and staff in a clear and professional manner.
6. Be able to undertake medication reviews.

##### **T4107. Pharmacotherapeutics-III (Practical)**

**Upon completion of the course student will be able to**

1. Identify drug interactions and rationalize the prescription.
2. Discuss the therapeutic approach to management of selected diseases.
3. Prepare individualized therapeutic plans based on diagnosis.
4. Perform patient counselling.
5. Conduct planned experiments and prepare laboratory report in standard forma.

##### **T4111. Pharmacotherapeutics I&II (Theory)**

**OBJECTIVE:** This course is designed to impart knowledge and skills necessary for contribution to quality use of medicines. Chapters dealt cover briefly pathophysiology and mostly therapeutics of various diseases. This will enable the student to understand the pathophysiology of common diseases and their management.

##### **OUTCOMES:**

**Upon completion of the course student will be able to**

1. Know the pathophysiology and management of cardiovascular, Respiratory and Endocrine diseases.

2. Understand the therapeutic approach to the management of these diseases.
3. Know the importance of preparation of individualized therapeutic plans based on diagnosis.
4. Develop clinical skills in the therapeutic management of these conditions.
5. Know the controversies in drug therapy.
6. Provide patient – centred care to diverse patients using the evidence based medicine.
7. Understand the pathophysiology and management of Cancer, Renal, Infectious and Skin diseases.
8. Develop Patient case based Assessment Skills.
9. Choose and justify appropriate drug and treatment duration to a given patient with regard to current recommendations and patient-related factors such as other diseases, age, organ functions and other drug treatment.
10. Calculate creatinine clearance using the Cockcroft - Gaults equation and by results and patient factors evaluate renal function and the need for adjustment of drug therapy.
11. Apply Knowledge and clinical skills to care of patients.
12. Provide patient – centred care to diverse patients using the evidence-based medicine.

#### **T4112. Pharmacotherapeutics I&II (Practical)**

**Upon completion of the course student will be able to**

1. Identify drug interactions and rationalize the prescription
2. Discuss the therapeutic approach to management of selected diseases
3. Prepare individualized therapeutic plans based on diagnosis
4. Perform patient counselling
5. Conduct planned experiments and prepare laboratory report in a standard forma
6. Identify drug interactions and rationalize the prescription.
7. Discuss the therapeutic approach to management of selected diseases.
8. Prepare individualized therapeutic plans based on diagnosis.
9. Perform patient counselling.
10. Conduct planned experiments and prepare laboratory report in a standard forma.

#### **T4102. Hospital Pharmacy (Theory)**

**OBJECTIVE:** In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug dispensing, manufacturing of parenteral preparations, drug information, patient counselling, and therapeutic drug monitoring for improved patient care.

#### **OUTCOMES:**

**Upon completion of the course student will 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 Practice Based Research Methods, stores management and inventory control.

#### **T4108. Hospital Pharmacy (Practical)**

**Upon completion of the course student will be able to**

1. Analyse prescriptions for drug interaction.
2. Formulate and prepare parenteral formulations and powders.
3. Perform inventory analysis.
4. Answer drug information queries through literature search.
5. Conduct planned experiments and prepare laboratory report in a standard format.

#### **T4103. Clinical Pharmacy (Theory)**

**OBJECTIVE:**

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 reaction.

**OUTCOMES:**

**Upon completion of the course student will be able to**

1. Explain the roles and responsibilities of clinical pharmacist
2. Analyse and interpret the laboratory test results for clinical diagnosis
3. Conduct interview to elicit medication history and perform patient counselling
4. Identify, monitor, assess, manage, prevent, document and report suspected adverse drug reactions.
5. Provide drug and poison information through critical analysis.
6. Recognise the potential sources of medication errors and act for its prevention.

#### **T4109. Clinical Pharmacy (Practical)**

**Upon completion of the course student will be able to**

1. Assess prescriptions for drug interaction and answer drug information query.
2. Perform patient counselling on medication and conduct medication history interview.
3. Analyse and interpret the data obtained through laboratory tests.
4. Conduct planned experiments and prepare laboratory report in a standard format.

#### **T4104. Biostatistics & Research Methodology (Theory)**

**Upon completion of the course student will be able to**

1. Know basic research methods which are used in clinical study design that relates to experimental and observational studies, collecting data, study and analyse. Observe Errors relating experimentation.
2. Observe relation between components also measure and study linearly. We can observe one component influence with multiple factors.
3. Understand Testing the hypothesis, how far population parameter significant based on estimator with the help of parametric tests. Non parametric tests can also observed.
4. Understand analysis of variance helps in study total variation observational data.

5. Know application of analysis in field or lab experimental to design. Factorial experiments.
6. Know research objects about reliability and validity experimental and clinical study.

#### **T4105. Biopharmaceutics & Pharmacokinetics (Theory)**

##### **Upon completion of the course student will be able to**

1. Know basic concepts and factors influencing absorption, distribution and elimination of drugs.
2. Understand various pharmacokinetic models used in calculating various pharmacokinetic parameters.
3. Study the pharmacokinetic parameters of drugs administered through intravenous bolus and infusion routes that follows one compartment open model.
4. Determine the pharmacokinetic parameters of drugs administered through intravenous bolus and infusion routes that follows two compartment open model.
5. Understand the concept of multiple dosage regimen and determine pharmacokinetic parameters of drugs administered through intravenous bolus, infusion and oral routes.
6. Understand the non-linear pharmacokinetic model and its parameters of drugs.
7. Determine pharmacokinetic parameters by using non-compartmental model.
8. Understand basic concepts, estimation and factors influencing bioavailability and bioequivalence of drugs.

#### **T4110. Biopharmaceutics & Pharmacokinetics (Practical)**

##### **Upon completion of the course student will be able to**

1. Enhance dissolution characteristics of slightly soluble drugs by co-solvency, solid dispersion and use of surfactant.
2. Compare dissolution studies of two different marketed products of same drug.
3. Perform Protein binding studies of a drug and Calculation of bioavailability.
4. Calculate the Pharmacokinetic parameters like  $K_a$ ,  $K_e$ ,  $t_{1/2}$ ,  $C_{max}$ , AUC, AUMC, MRT etc. from blood profile data.
5. Calculate bioavailability from urinary excretion data for two drugs.
6. Determine metabolic pathways for different drugs based on elimination kinetics data.
7. Perform absorption studies in animal inverted intestine using various drugs.

#### **T4106. Clinical Toxicology (Theory)**

##### **Upon completion of the course student will be able to**

1. Demonstrate an understanding of the roles of various health care personnel in the prevention and management of poisonings.
2. Demonstrate an understanding of the health and economic implications of toxic exposures.
3. Demonstrate and apply an understanding of general toxicology principles and clinical management practice.
4. Demonstrate and apply an understanding of the history, assessment, and therapy considerations associated with the management of a toxic exposure.
5. Demonstrate and apply an understanding of the characteristics of and treatment guidelines for specific toxic substances.

6. Propose several preventive approaches to reduce unintentional poisonings.
7. Enable the pharmacist to function as contributing health care team member when faced with a toxic exposure experience, including emergencies.



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## **Pharm D (Post Baccalaureate)**

### **SECOND YEAR (II/III)**

#### **T5101. Clinical Research (Theory)**

**Upon completion of the course student will be able to**

1. Understand new drug development process.
2. Understand clinical studies scenario in Indian and other countries.
3. Understand the regulatory and ethical requirement in clinical trails.
4. Know the role and responsibilities of clinical trial personnel.
5. Know the designing of clinical trial documents.
6. Manage the clinical trial coordination process.
7. Know safety monitoring and reporting in clinical trails.

#### **T5102. Pharmacoepidemiology and Pharmacoeconomics (Theory)**

**Upon completion of the course student will be able to**

1. Compare and contrasts different study designs.
2. Distinguish methods of data collection and recording.
3. Understand issues involved in selecting sample and recruiting participants.
4. Discuss threats to validity and issues of interpretations
5. Discuss applications of pharmacoepidemiological concepts and methods to pharmacy practice.
6. Explain measures of disease occurrence and association.
7. Demonstrate knowledge and understanding of statistical theory.
8. Select and apply appropriate statistical techniques for managing common types of medical data.
9. Interpret correctly the results of statistical analyses

#### **T5103. Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring (Theory)**

**Upon completion of the course student will be able to**

1. Apply PK-PD principles in cases using patient data to optimize pharmacotherapy and drug dosing for maximal efficacy and minimal toxicity.
2. Recognise, document and manage drug dosing in cases involving significant patient pharmacokinetic variability due to physiology or disease (eg age, obesity, pregnancy, malabsorption, organ dysfunction, critical illness, therapeutic target site).
3. Recognize, characterize and manage cases with clinically significant PK-PD drug interactions.



4. Demonstrate appropriate therapeutic drug management (TDM) in cases with medications for which concentrations can be measured or predicted from available PK research data.

#### **T5104. Clerkship**

**Upon completion of the course student will be able to**

1. Discuss the role of Pharmacist in clinical pharmacy services
2. Demonstrate the skills of a clinical Pharmacist
3. Discuss the available therapeutic options in the management of diseases
4. Prepare a pharmaceutical care plan for a given case
5. Detect, Interpret and report medication errors and drug interactions

#### **T5105. Project Work**

**Upon completion of the course student will be able to**

1. Address a problem related to Pharmacy practice in hospital, community service or clinical set up with a wider perspective and generality
2. Address a problem related to Pharmacy practice in hospital, community service or clinical set up with a wider perspective and generality
3. Define the problem to be addressed and translate it into a statement of aim, objectives, scope and plan for the project
4. Carry out and report an information survey and take account of findings in executing project
5. Evaluate, select and apply relevant theories and techniques from the full range of courses studied using conceptual models and frameworks to enhance depth of understanding
6. Select appropriate methodology for investigative work, taking into account the pros and cons of the alternatives available and develop solution proposals based on reasoned judgement
7. Present a coherent, logically argued, fully referenced report and engage in a professional manner in a viva-voce discussion about the project drug



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### **THIRD YEAR (III/III)**

#### **Internship**

#### **Upon completion of the course student will be able to**

1. To provide patient care in cooperation with patients, prescribers and other members of an inter-professional health care team based health care team based upon sound therapeutic principles and evidence based data, taking into account relevant legal, ethical, social cultural, economic and professional issues, emerging technologies and evolving biomedical, pharmaceutical, social or behavioural or administrative and clinical sciences that may impact therapeutic outcomes.
2. To manage and use resources of the health care system in cooperation with patients, prescribers, other health care providers, administrative and supportive personnel to promote health, to provide, assess and coordinate safe, accurate and time sensitive medication distribution and to improve therapeutic outcome of medication use.
3. To promote health improvement, wellness and prevention in co-operation with patients, communities, at risk population, and other members of inter professional team of health care providers.
4. To demonstrate skills in monitoring of the national health programmes 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 organised to deliver the health and family welfare services in existing socio-economic, political and cultural environment.
6. To communicate effectively with patients and the community.