



VIGNAN
INSTITUTE OF PHARMACEUTICAL TECHNOLOGY
(Approved By AICTE, PCI New Delhi & Affiliated to JNTUK - Kakinada)
An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Institution

Program Outcomes:

Program outcomes are statements conveying the intent of a program of study. Specifically, program outcomes refer to what a student should know or be able to do at the end of a program. They are often seen as the knowledge and skills students will have obtained by the time they have received their intended degree.

Program Outcomes for Doctor of Pharmacy (Pharm.D) Program

- 1. Clinical and pharmacy knowledge:** Demonstrate knowledge of pharmacy practice and the ability to acquire, manage and use current information for problem solving, patient-specific, population-specific, evidence-based care to promote safe and optimal pharmacotherapy outcomes.
- 2. Evidence based practice and patient centered care:** Provide patient-centered care to diverse patients using the best available evidence and in consideration of patients' circumstances to devise, modify, implement, document and monitor pharmacotherapy care plans, either independently or as part of healthcare teams.
- 3. Social and cultural awareness:** Recognize social determinants of health and respect patients' cultural, social and religious perspectives to produce safe and appropriate medication use throughout society. Reflect their knowledge, experiences, values, attitudes, biases and beliefs, to show evidence of being self-aware and life-long learners
- 4. Professional ethics:** Demonstrate professional behaviour, ethical behaviour, integrity and values while interacting with patients, healthcare providers and society.
- 5. Problem Solving & Decision Making:** Demonstrate the ability to use observational, analytical and critical thinking skills to develop, implement and evaluate solutions that solve pharmacotherapy problems and build the ability to take decisions based on evidenced based practice.
- 6. Innovation and Entrepreneurship:** Engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals. Utilize the principles of scientific enquiry and critical thinking while solving problems and making decisions in daily practice. Attain the key ability to start a community pharmacy or chain community pharmacies with patient care services
- 7. Leadership Skills and Abilities:** The student acquires knowledge of leadership traits and skills through curricular and co-curricular activities and applies skills and abilities that will enable them to lead or actively contribute to positive change.
- 8. Communication Skills:** Demonstrate effective interpersonal written and verbal skills, adapt to socioeconomic and cultural factors as well as situational applications. Effectively educate families, patients, caregivers and other health care professional (HCPs). Function effectively in a team and act in a consultative position for other members of the health care team, regulatory agencies and policy makers.
- 9. Environment and sustainability:** To understand, protect and cooperate environmental concerns for sustaining biodiversity.
- 10. Lifelong learning:** To develop the habit of updating knowledge from time to time to meet clinical demands and social needs for having a fruitful career.

Course Outcomes:

Course Outcomes are narrower statements that describe what students are expected to know, and be able to do at the end of each course. These relate to the skills, knowledge, and behaviour that students acquire in their enrolment through the course.

| Name of the Course Course Code | Course Outcome Code | Course Outcome Statements |
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| I PHARM.D | | |
| HUMAN ANATOMY AND PHYSIOLOGY T1101 | T1101.1 | Describe the structure (gross and histology) and functions of various organs of the human body |
| | T1101.2 | Discuss the various homeostatic mechanisms and their imbalances of various systems |
| | T1101.3 | Identify the various tissues and organs of the different systems of the human body |
| | T1101.4 | Recognize coordinated working pattern of different organs of each systems. |
| | T1101.5 | Recognize the interlinked mechanisms in the maintenance of normal functioning of human body. |
| | T1101.6 | Learn the interlinked mechanisms in the maintenance in normal and physical exercise conditions. |
| PHARMACEUTICS T1102 | T1102.1 | Describe the evolution of Pharmacy and Pharmacopoeias |
| | T1102.2 | Discuss the need and identification of different dosage forms |
| | T1102.3 | Design a suitable formulation/dosage form with the use of appropriate ingredients |
| | T1102.4 | Discuss the different techniques involved in formulation of a dosage form |
| | T1102.5 | Analyze the instabilities observed in formulations and suggest suitable remedial measures to overcome the instabilities of dosage form |
| | T1102.6 | Prepare appropriate labels and recommend storage conditions for dosage forms |
| MEDICINAL BIOCHEMISTRY T1103 | T1103.1 | learn the catalytic activities of enzymes and importance of isoenzymes in diagnosis of disease |
| | T1103.2 | Understand the metabolic process of biomolecules in health and illness |
| | T1103.3 | Illustrate the genetic organization of mammalian genome |
| | T1103.4 | learn about protein synthesis, replication ,mutation |
| | T1103.5 | Apply the biochemical principles of organ function tests |
| | T1103.6 | Perform qualitative analysis and determination of biomolecules in body fluids |

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| PHARMACEUTICAL ORGANIC CHEMISTRY T1104 | T1104.1 | Derive IUPAC Name from structure and vice-versa of simple organic compounds belonging to different classes. |
| | T1104.2 | Understand the important physical properties, reactivity, stability and chemical properties of organic Compounds. |
| | T1104.3 | Knowledge on different organic reactions (Elimination, substitution, addition, oxidation, reduction,.....) and their applications in synthesis of drugs |
| | T1104.4 | Account for various reaction intermediates, their stabilities and reactivity. |
| | T1104.5 | Learn some named reactions, reaction mechanism and their applications. |
| | T1104.6 | Describe the preparation, test for purity medicinal uses and assay of some official organic compounds. |
| PHARMACEUTICAL INORGANIC CHEMISTRY T1105 | T1105.1 | Understand the errors in pharmaceutical analysis and principles of volumetric analysis |
| | T1105.2 | Acquires the knowledge about acid-base titrations and limit tests for inorganic compounds |
| | T1105.3 | Select the appropriate titrimetric method for analysis of drugs |
| | T1105.4 | Know the classify and study the method of preparation and assay of selected inorganic compounds |
| | T1105.5 | Appreciate the importance of inorganic pharmaceuticals in preventing and curing the disease |
| | T1105.6 | Discuss about radioisotopes and applications of radiopharmaceuticals |
| REMEDIAL MATHEMATICS T1106 | T1106.1 | Apply mathematical concepts and principles to perform computation for Pharmaceutical sciences |
| | T1106.2 | Create, use and analyze mathematical representation and mathematical relationships |
| | T1106.3 | Communicate mathematical knowledge and understanding to help in the field of pharmacy |
| | T1106.4 | Apply knowledge to solve different problems in various mathematical concepts |
| HUMAN ANATOMY AND PHYSIOLOGY LAB T1108 | T1108.1 | Illustrate different types of Tissues and explain various Anatomical model |
| | T1108.2 | Identify the bones of Skeletal system |
| | T1108.3 | Determine Blood cell count, Hemoglobin, Blood grouping, ESR, Bleeding time and Clotting time |
| | T1108.4 | Record Blood Pressure, Pulse rate, Body temperature |
| | T1108.5 | Identify family planning devices and conduct Pregnancy diagnosis test |

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| PHARMACEUTICS LAB T1109 | T1109.1 | Remember the principles used in the preparation of liquid, semisolid and solid dosage forms. |
| | T1109.2 | Illustrate monophasic internal and external liquid dosage forms. |
| | T1109.3 | Experimentation with biphasic liquid dosage forms. |
| | T1109.4 | Formulation of powder dosage forms. |
| | T1109.5 | appraise the formulation of suppositories. |
| | T1109.6 | To solve the prescriptions having the incompatibility problems. |
| MEDICINAL BIOCHEMISTRY LAB T110A | T110A.1 | Detect and identify proteins, amino acids and carbohydrates by various qualitative as well as quantitative tests. |
| | T110A.2 | Determine the blood creatinine, sugar & serum total cholesterol |
| | T110A.3 | Prepare the buffer solution and measurement of Ph |
| | T110A.4 | Demonstrate action of salivary amylase on starch |
| | T110A.5 | Determine of sodium, calcium in serum |
| | T110A.6 | Perform lipid profile tests |
| PHARMACEUTICAL ORGANIC CHEMISTRY LAB T110B | T110B.1 | Systematically analyze organic compounds belonging to different functional groups. |
| | T110B.2 | Determine the melting and boiling points of organic compounds. |
| | T110B.3 | Prepare derivatives of organic compounds and identify them. |
| | T110B.4 | Synthesis of selected organic compounds using various organic reactions studied in theory. |
| | T110B.5 | Plan and report the yield of compounds prepared in laboratory. |
| | T110B.6 | Construct, identify and explain the chemistry of stereo models. |
| PHARMACEUTICAL INORGANIC CHEMISTRY LAB T110C | T110C.1 | Learn the glassware and apparatus used in volumetric analysis |
| | T110C.2 | Find the limit test for impurities in inorganic compounds |
| | T110C.3 | Perform Quantitative analysis of pharmaceutical in organic components by titrimetric method |
| | T110C.4 | Estimate the component present in a mixture of sample |
| | T110C.5 | Qualitative analysis of inorganic substances |
| | T110C.6 | Preparation and purity of Inorganic components |

II PHARM.D

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| PATHOPHYSIOLOGY T2101 | T2101.1 | Explain the pathogenesis and morphology of reversible and irreversible cell injury; enumerate various lipoproteins and describe lipoprotein disorders |
| | T2101.2 | Illustrate events involved in acute and chronic inflammation |
| | T2101.3 | Recognize the biological significance of various hypersensitivity disorders |
| | T2101.4 | Discuss the mechanisms involved in autoimmune diseases and allograft rejection |
| | T2101.5 | Discuss the etiopathogenesis of selected diseases |
| | T2101.6 | Describe the general biology of cancer, mechanism of shock and effects of radiation exposure |
| PHARMACEUTICAL MICROBIOLOGY T2102 | T2102.1 | Understand diversity of microorganisms with relevance to their nutritional and physical growth requirements for culturing |
| | T2102.2 | Identify bacteria by staining and biochemical reactions and apply controlling methods |
| | T2102.3 | Categorize disinfecting agents and analyze concentration of disinfectants, antibiotics, vitamins etc., using microorganisms |
| | T2102.4 | Classify types of immunity, immunological reactions and different immunological products |
| | T2102.5 | Apply different diagnostic tests for identification of diseases |
| | T2102.6 | Understand the pathogenicity and treatment of various microbial infections |
| PHARMACOGNOSY & PHYTOPHARMACEUTICALS T2103 | T2103.1 | Understand the basic principles of cultivation, collection and storage of crude drugs |
| | T2103.2 | Describe the source, active constituents, method of preparation and uses of crude drugs |
| | T2103.3 | Enlist the applications of primary and secondary metabolites of the plant |
| | T2103.4 | Discuss substitutes, adulterants and identification tests of various crude drugs |
| PHARMACOLOGY-I T2104 | T2104.1 | Define the fundamental concepts of pharmacology, pharmacokinetics and to understand the basics of drugs interactions, drug discovery and toxicity studies. |
| | T2104.2 | Classify the role of neurotransmitter in autonomic nervous system and summarize the drugs action on it. |
| | T2104.3 | Organize the pharmacology of the drugs acting on cardiovascular system |
| | T2104.4 | Analyze the role of neurotransmitter in central nervous system and summarize the drugs action on CNS and respiratory system. |
| | T2104.5 | Appraise the physiological role of hormones and assess the therapeutic effects of its replacement therapy |
| | T2104.6 | Predict the role of autocooids in pathological conditions and their importance in treating various diseases. |

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| COMMUNITY PHARMACY T2105 | T2105.1 | Discuss the roles and responsibilities of community pharmacist |
| | T2105.2 | Outline the layout and infrastructure requirements for community pharmacy |
| | T2105.3 | Recognise the need of inventory control and discuss the various methods |
| | T2105.4 | Discuss the factors affecting medication adherence |
| | T2105.5 | Perform general patient counseling |
| | T2105.6 | Apply health screening services in community pharmacy |
| PHARMACOTHERAPY T2106 | T2106.1 | Describe the pathophysiology and management of cardiovascular, respiratory and endocrine diseases |
| | T2106.2 | Develop the patient case-based assessment Skills |
| | T2106.3 | Describe the quality use of medicines issues surrounding the therapeutic agents in the treatment of these diseases |
| | T2106.4 | Develop clinical skills in the therapeutic management of these conditions |
| | T2106.5 | Continue to develop communication skills |
| | T2106.6 | Students will provide patient – centered care to diverse patients using the evidence-based medicine |
| PHARMACEUTICAL MICROBIOLOGY LAB T2107 | T2107.1 | Explain about apparatus used in experimental microbiology |
| | T2107.2 | Describe the different methods of sterilizations |
| | T2107.3 | Summarize the Staining techniques, motility characters, Enumeration of micro-organisms |
| | T2107.4 | Demonstrate the isolation of pure culture and Bio chemical testing for the identification of micro-organisms |
| | T2107.5 | Analyze the antibiotics, enzymes and Vitamins by using microbiological assay |
| | T2107.6 | Emphasize the Diagnostic tests for some common diseases |
| PHARMACOGNOSY & PHYTOPHARMACEUTICALS LAB T2108 | T2108.1 | Identify crude drugs with the help of organoleptic and microscopical features |
| | T2108.2 | Identify crude drugs with the help of Chemical tests |
| | T2108.3 | Conduct analysis of lipids |
| | T2108.4 | Determine Powder characteristics of various crude drugs |

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| PHARMACOTHERAPY-I LAB T2109 | T2109.1 | Enlist the sign and symptoms, laboratory parameters of the cardiovascular diseases |
| | T2109.2 | Identify the drug interactions and find a solutions to overcome drug interactions in the given prescriptions. |
| | T2109.3 | Plan an individual care plan in the cases with endocrine and thyroid disorders. |
| | T2109.4 | Analyze the prescription for rational drug use. |
| | T2109.5 | Explain the safety of oral contraceptives, hormone replacement therapy and the drugs used on ocular disorder |
| | T2109.6 | Minimize the drug related problems in the prescriptions and to choose a choice of drugs in various diseases. |
| III PHARM.D | | |
| PHARMACOLOGY-II T3101 | T3101.1 | Understand the pharmacological aspects of drugs acting on the renal system, the blood and the immune system. |
| | T3101.2 | Discuss the pharmacological aspects of chemotherapeutic drugs. |
| | T3101.3 | Explain the basics of Molecular biology |
| | T3101.4 | Appreciate the importance of pharmacology subject as a basis of therapeutics. |
| | T3101.5 | Enable the students to apply theoretical knowledge into clinical practice. |
| | T3101.6 | Design & execute animal experiments to identify the pharmacological properties of known drugs and unknown samples. |
| PHARMACEUTICAL ANALYSIS T3102 | T3102.1 | Understand the principle and theory of instrumental analytical techniques |
| | T3102.2 | Outline the instrumentation of spectroscopic, chromatographic and thermal techniques |
| | T3102.3 | Apply the knowledge of spectroscopic, chromatographic and thermal methods in analysis of drugs |
| | T3102.4 | Analysis of API's and formulation by using advance instrumental analysis |
| | T3102.5 | Explain theory, instrumentation and applications of electrometric methods of analysis |
| | T3102.6 | Discuss the concepts of validation, calibration, ICH, GLP, ISO9000, TQM and quality variation concepts |
| PHARMACOTHERAPY-II T3103 | T3103.1 | Explain the etiopathogenesis of selected infectious diseases, musculoskeletal and renal disorders |
| | T3103.2 | Discuss the principles of cancer therapy and dermatological disorders |
| | T3103.3 | Identify the patient-specific parameters relevant in initiating and monitoring drug therapy and adverse effects |
| | T3103.4 | Discuss the therapeutic approach in the management of selected diseases and controversies in drug therapy |
| | T3103.5 | Prepare individualized therapeutic plans based on diagnosis |
| | T3103.6 | Recognise the role of pharmacist in essential and rational drug use |

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| PHARMACEUTICAL JURISPRUDENCE T3104 | T3104.1 | Understand the evolution of various pharmaceutical legislation in India |
| | T3104.2 | Explain various laws as prescribed by the Pharmacy Council of India from time to time including International Laws. |
| | T3104.3 | Describe the labelling requirements and packaging guidelines for drugs and cosmetics |
| | T3104.4 | Discuss the concepts of drugs & Cosmetic act, Drug policy, DPCO, Patent and design act, Dangerous Drugs Act, Pharmacy Act and Excise duties Act |
| MEDICINAL CHEMISTRY T3105 | T3105.1 | Understand the importance of drug design and different methods of drug design |
| | T3105.2 | Understand the chemistry of various drugs with respect to their biological activities |
| | T3105.3 | Learn the mechanism of action and adverse drug reactions of various drugs |
| | T3105.4 | learn the synthesis of various drug molecules |
| | T3105.5 | learn the SAR of important classes of drugs |
| | T3105.6 | learn about different marketed products along with their side effects |
| PHARMACEUTICAL FORMULATIONS T3106 | T3106.1 | Understand the significance of formulation, preparation and evaluation of various pharmaceutical dosage forms |
| | T3106.2 | Enable the students to learn about various formulation additives for various dosage forms |
| | T3106.3 | Student will assess about suitable measures for stability of the dosage forms |
| | T3106.4 | Learn about the manufacturing methods of solid, semisolid, parenteral and ophthalmic products |
| | T3106.5 | Student can Evaluate different dosage forms with appropriate quality control test for a given drug |
| | T3106.6 | Learn about suitable packaging material for a dosage form of a given drug |
| PHARMACOLOGY-II LAB T3107 | T3107.1 | Demonstrate various routes of administration of drugs in animals, maintenance of animals and describe different anaesthetics used in laboratory animals |
| | T3107.2 | Enable the students to learn about laboratory appliances used in experimental pharmacology |
| | T3107.3 | Explain about the significance of various physiological salt solution used for different isolated tissue |
| | T3107.4 | To Perform various bioassay procedure and creates Dose Response Curve for various agonist and antagonists |
| | T3107.5 | Demonstrate the screening methods for different drugs acting on various systems of the body |
| | T3107.6 | Conduct experiments and prepare report in a standard format |

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| PHARMACEUTICAL ANALYSIS LAB T3108 | T3108.1 | Learn the separation and identification of compounds by chromatographic techniques |
| | T3108.2 | Determination of qualitative and quantitative analysis of drugs by spectroscopic techniques |
| | T3108.3 | Analysis of API as per IP |
| | T3108.4 | Comparison of UV spectra of a compound with that of its derivatives |
| | T3108.5 | Find the concentration of electrolyte ions by electrometric analysis |
| | T3108.6 | Interpretation of IR and NMR Spectra Data |
| PHARMACOTHERAPY II LAB T3109 | T3109.1 | Identify drug interactions and rationalize the prescription |
| | T3109.2 | Discuss the therapeutic approach to management of selected diseases |
| | T3109.3 | Prepare individualized therapeutic plans based on diagnosis |
| | T3109.4 | Perform patient counseling |
| | T3109.5 | Conduct planned experiments and prepare laboratory report in a standard format |
| | T3109.6 | To improve the skills on patient – centred approach to improve treatment satisfaction and perform patient counselling |
| MEDICINAL CHEMISTRY LAB T3110 | T3110.1 | Describe the importance of laboratory reagents, their quality and biohazardous nature, green chemicals for the protection of environment |
| | T3110.2 | Categorize the type of assays and apparatus used |
| | T3110.3 | Establish the use of chemicals in different quantities for a synthetic reaction with safety precautions and eco-friendly nature |
| | T3110.4 | Demonstrate the synthetic protocol and purification techniques with good laboratory skills and analyse the yield, results. |
| | T3110.5 | Determine the physicochemical properties |
| | T3110.6 | Drawing structures using chemistry software |
| PHARMACEUTICAL FORMULATIONS LAB T3111 | T3111.1 | Prepare formulations of different dosage forms as per the batch formula |
| | T3111.2 | Operate different equipment and instruments used in preparation of dosage forms |
| | T3111.3 | Select suitable packaging container for a dosage form |
| | T3111.4 | Evaluate different dosage forms by performing quality control tests |
| | T3111.5 | Prepare and evaluate cosmetics such as lipstick, cold cream and shampoo |
| | T3111.6 | Conduct planned experiments and prepare laboratory report in a standard format |

IV PHARM.D

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| PHARMACOTHERAPY-III T4101 | T4101.1 | Explain the etiopathogenesis of selected gastrointestinal, haematological, neurological and psychiatric diseases |
| | T4101.2 | Discuss the principles of evidence-based therapy and pain management |
| | T4101.3 | Identify the patient-specific parameters relevant in initiating and monitoring drug therapy and adverse effects |
| | T4101.4 | Discuss the therapeutic approach in the management of selected diseases and controversies in drug therapy |
| | T4101.5 | Prepare individualized therapeutic plans based on diagnosis |
| | T4101.6 | To develop skills on evidence-based practice in diseases management to become a competent pharmacist. |
| HOSPITAL PHARMACY T4102 | T4102.1 | Explain the Hospital and Hospital Pharmacy Organization |
| | T4102.2 | Understand Budget Preparation and its Implementation |
| | T4102.3 | Describe the Hospital drug policy and functions of various committees |
| | T4102.4 | Illustrate the procedure for Procurement, inventory control, drug distribution, dispensing of Narcotics |
| | T4102.5 | Discuss Manufacturing of Various Pharmaceutical Dosage forms and handling, packaging of Radiopharmaceuticals. |
| | T4102.6 | Understand Various Continuous Professional Development Programmes, Practices of Hospital Pharmacist. |
| CLINICAL PHARMACY T4103 | T4103.1 | To understand and explain the daily activities of clinical pharmacist and to monitor the patient drug therapy through medication chart review and clinical review |
| | T4103.2 | To obtain medication history interview and counsel the patients on various diseases and lifestyle modifications and by applying communication skills. |
| | T4103.3 | To provide response to a drug and poison information queries using modified systemic approach and to gain ability to establish a drug and poison information centre. |
| | T4103.4 | To interpret selected laboratory results of specific disease states mentioned and to report ADRs and understand the process of pharmacovigilance. |
| | T4103.5 | To identify and resolve drug related problems and medication errors. |
| | T4103.6 | To critically evaluate biomedical literature in order to get unbiased clinical evidence to develop individualized pharmaceutical care plan. |

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| BIOSTATISTICS & RESEARCH METHODOLOGY T4104 | T4104.1 | Explain qualitative and quantitative aspects of clinical study design |
| | T4104.2 | Interpret Various Biostatistical methods in Experimental studies |
| | T4104.3 | Describe various ethical guidelines for biomedical research. |
| | T4104.4 | Enumerate various CPCSEA guidelines for laboratory animal facility. |
| | T4104.5 | Discuss the principals of Declaration of Helsinki for Medical Research. |
| | T4104.6 | Understand Research writing and Review of Literature |
| BIOPHARMACEUTI CS & PHARMACOKINETI CS T4105 | T4105.1 | Analyze basic concepts of absorption, distribution, metabolism and excretion of drugs. |
| | T4105.2 | understand the mechanisms, interpret various factors affecting drug absorption, distribution, metabolism and excretion of drugs. |
| | T4105.3 | apply the pharmacokinetic models for the determination of pharmacokinetic parameters. |
| | T4105.4 | examine multiple dosage regimens based on pharmacokinetic parameters for maximizing therapeutic effectiveness and patient compliance. |
| | T4105.5 | Evaluate various pharmacokinetic parameters for the drugs exhibiting saturation kinetics. |
| | T4105.6 | Design the bioavailability testing protocol of a drug and compare the bioequivalence between marketed products. |
| CLINICAL TOXICOLOGY T4106 | T4106.1 | Describe the mechanism of action of common poisons and antidotes |
| | T4106.2 | Detect and differentiate acute and chronic poisoning by clinical symptoms |
| | T4106.3 | Select appropriate laboratory tests to identify and determine the severity of poisoning |
| | T4106.4 | Detect signs and symptoms of drug abuse and suggest suitable remedial measures |
| | T4106.5 | Recommend the standard procedures to deal with cases of poisoning |
| | T4106.6 | To compare the characteristics and specific standard treatment guideline for the treatment of various toxins |
| PHARMACOTHERAP EUTICS-III LAB T4107 | T4107.1 | Identify drug interactions and rationalize the prescription |
| | T4107.2 | Discuss the therapeutic approach to management of selected diseases |
| | T4107.3 | Prepare individualized therapeutic plans based on diagnosis |
| | T4107.4 | Conduct patient counseling |
| | T4107.5 | Conduct planned experiments and prepare laboratory report in a standard format |
| | T4107.6 | To develop skills on drug of choice and patient education in management of diseases. |

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| HOSPITAL PHARMACY LAB T4108 | T4108.1 | Assess drug interactions in the given prescription and find out the suitable management |
| | T4108.2 | Interpret drug information queries for a given case by modified systemic approach |
| | T4108.3 | Determine various methods of inventory control |
| | T4108.4 | Enumerate manufacturing of various Pharmaceutical formulations |
| | T4108.5 | Categorize the drugs by implementing ABC Analysis |
| | T4108.6 | Develop hospital formulary for a bedded hospital |
| CLINICAL PHARMACY LAB T4109 | T4109.1 | To create awareness in patients by counselling them on various diseases and drugs using clinical knowledge and communication skills. |
| | T4109.2 | To conduct comprehensive and meticulous medication history interview for the preparation of individualized pharmaceutical care plan. |
| | T4109.3 | To interpret laboratory results of specific disease states mentioned and correlating with patient drug therapy while monitoring disease progression. |
| | T4109.4 | To provide response to a drug and poison information queries using modified systemic approach by critically appraising the biomedical literature. |
| | T4109.5 | To report and assess causality of adverse drug reactions to establish a causal relation between an ADR and a drug. |
| | T4109.6 | Perform patient counseling on medication and conduct medication history interview |
| BIOPHARMACEUTI CS & PHARMACOKINETI CS LAB T4110 | T4110.1 | Recall the concepts in biopharmaceutics, basic pharmacokinetic parameters and their significance |
| | T4110.2 | Interpret the effect of surfactant, diluents, lubricant and polymorphism on rate of drug dissolution |
| | T4110.3 | Solve bioavailability parameters of drugs by using plasma data and methods to improve bioavailability |
| | T4110.4 | Analyze absorption rate constant, KE, biological half-life, mean residence time and mean absorption time for the given data. |
| | T4110.5 | Estimate the extent of protein binding by equilibrium dialysis or dynamic dialysis methods |
| | T4110.6 | Predict the pharmacokinetic parameters for the given data as per one compartment and two compartment models |

V PHARM.D

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| CLINICAL RESEARCH T5101 | T5101.1 | Illustrate various approaches to drug discovery |
| | T5101.2 | Describe various methods of Post marketing surveillance |
| | T5101.3 | Discuss various ICH- GCP guidelines, CDSCO guidelines |
| | T5101.4 | Explain twelve principles of ethical guidelines of biomedical research and the challenges in implementation of guidelines |
| | T5101.5 | Understand the roles and responsibilities of various clinical trial personnel |
| | T5101.6 | Illustrate the designing of various essential documents |
| PHARMACOEPIDEMI IOLOGY AND PHARMACOECONO MICS T5102 | T5102.1 | To remember and recall the origin and need; measurement of outcomes in pharmacoepidemiology and pharmacoconomics. |
| | T5102.2 | To understand the various concepts of risks in pharmacoepidemiology |
| | T5102.3 | To apply the concepts of pharmacoepidemiological methods in conducting various research studies with the help of case studies and available software's. |
| | T5102.4 | To distinguish the selected special applications of pharmacoepidemiology. |
| | T5102.5 | To evaluate the outcome by using various Pharmaco-economic methods. |
| | T5102.6 | To solve various case studies by applying the concepts of pharmacoepidemiology and Pharmacoconomics in designing a good outcome. |
| CLINICAL PHARMACOKINETI CS & PHARMACOTHERAP EUTIC DRUG MONITORING T5103 | T5103.1 | Discuss the pharmacokinetic principles to individualize drug therapy in patient care situations |
| | T5103.2 | Determine dose, dosing intervals and dosage adjustments of a drug for a given patient |
| | T5103.3 | Apply the principles of pharmacokinetics to analyse and predict drug interactions |
| | T5103.4 | Prepare protocol for TDM of drugs for selected diseases |
| | T5103.5 | Discuss the concept of genetic polymorphism in metabolism, transport and target of a drug |
| | T5103.6 | To develop the skills on individualization of drug dosage regimen in special population by considering TDM indications. |
| CLERKSHIP T5104 | T5104.1 | Discuss the role of Pharmacist in clinical pharmacy services |
| | T5104.2 | Demonstrate the skills of a clinical Pharmacist |
| | T5104.3 | Discuss the available therapeutic options in the management of diseases |
| | T5104.4 | Prepare a pharmaceutical care plan for a given case |
| | T5104.5 | Detect, Interpret and report medication errors and drug interactions |
| | T5104.6 | To build effective and empathetical skills in counseling the patients on their medications and life style modifications. |

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| PROJECT WORK T5105 | T5105.1 | Address a problem related to Pharmacy practice in hospital, community service or clinical set up with a wider perspective and generality |
| | T5105.2 | Define the problem to be addressed and translate it into a statement of aim, objectives, scope and plan for the project |
| | T5105.3 | Carry out and report an information survey and take account of findings in executing project |
| | T5105.4 | 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 |
| | T5105.5 | 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 |
| | T5105.6 | Present a coherent, logically argued, fully referenced report and engage in a professional manner in a viva-voce discussion about the project |