



AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by A.I.C.T.E, P.C.I, New Delhi, Recognized by the Govt. of A.P. & Affiliated to JNTUGV, Vizianagaram)

Cherukupally (Village), Chittivalasa (SO), Bhogapuram (Mandal), Vizianagaram (Dist) -531162.

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ESTD : 2005

DEPARTMENT OF PHARMACY

Program : Pharm D

Regulation : PCI (R08)

No. of Courses : 47

COURSE OUTCOMES

Year: I	Course: Human Anatomy and Physiology (T1101)
CO101.1	Recall the terminologies in the human anatomy and physiology, along with learn the functions of human cell and tissues. Summarize the functions of bones and joints in the skeleton.
CO101.2	Understand the functions of formed elements in the blood along with lymph and its role in immunity.
CO101.3	Compare the anatomical functions of heart, lungs, Digestive system and to analyze their physiology.
CO101.4	Assess the structure and function of brain, spinal cord and cranial nerves and to interpret the physiology of urinary system.
CO101.5	Elaborate the physiology of endocrine glands, reproductive organs.
CO101.6	Understand the anatomy and physiology of sensory organs and skeletal muscles. Discuss the physiology of skeletal muscles.
Year: I	Course: Pharmaceutics (T1102)
CO102.1	Outline the classification of dosage forms, handling of prescription and summarize the importance of posology.
CO102.2	Solve the pharmaceutical calculations involved in design of dosage form.
CO102.3	Understand the formulation of powders, granules & monophasic dosage forms.
CO102.4	Gain knowledge on formulation of bi phasic liquid dosage forms.
CO102.5	Acquire knowledge on formulation of Suppositories & Galenical's.
CO102.6	Identify the types of incompatibilities in dosage forms & avoid the incompatibilities during dispensing.
Year: I	Course: Medicinal Biochemistry (T1103)
CO103.1	Remember the classification, properties, significance and metabolic reactions of carbohydrates, lipids, nucleic acids, proteins and amino acids.
CO103.2	Understand catalytic activity of enzymes and importance of co enzymes in diagnosis of diseases. Know the metabolism of carbohydrates.
CO103.3	Understand the process of metabolism of proteins and lipids.
CO103.4	Acquire knowledge on nucleic acid metabolism and disorders associated with it.
CO103.5	Understand genetic organization of mammalian genome. Interpret qualitative analysis of biomolecules in body fluids.
CO103.6	Elaborate knowledge on immunochemical techniques & electrolytes.



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Year: I	Course: Pharmaceutical Organic Chemistry (T1104)
CO104.1	Capable to give nomenclature and identify isomerism of organic compounds.
CO104.2	Understand the mechanism, reactivity of free radicals chain reactions, nucleophilic aliphatic substitution reaction.
CO104.3	Study the kinetics, mechanism, stereochemistry of free radicals, electrophiles, dehydrogenation of alkyl halides reactions.
CO104.4	Understand T1102 of resonance. Analyze the importance of Cathartics and anti-microbials in treatment of gastric diseases or disorders.
CO104.5	Understand mechanisms of aldol condensation, Hoffmann rearrangement oxidation, reduction reactions.
CO104.6	Identify the tests for purity, medical uses of some pharmaceutical products.
Year: I	Course: Pharmaceutical Inorganic Chemistry (T1105)
CO105.1	Analyze the techniques of acid-base titrations and non-aqueous titrations. Understand the physicochemical concepts of analysis and gain knowledge of sources of errors and minimizing techniques.
CO105.2	Employ volumetric titrations in quality control of pharmaceuticals. Analyze the techniques of gravimetry in quality control of pharmaceuticals.
CO105.3	Identify impurities of compounds by limit tests.
CO105.4	Appreciate the importance of inorganic compounds in preventing Diseases.
CO105.5	Classify the gastrointestinal agents and described the methods of preparation, properties, storage, assay and uses with marketed formulations of inorganic compounds in gastrointestinal agents. Analyze the importance of Cathartics and anti-microbials in treatment of gastric diseases or disorders.
CO105.6	Classify the miscellaneous compounds and know the monographs of inorganic compounds in each category. Understand the radioactivity and study of different radioisotopes, storage, precautions and applications of radioactive substances.
Year: I	Course: Remedial Mathematics (T1106)
CO106a.1	Know Basic mathematical operations.
CO106a.2	Apply trigonometrical principles, calculations in pharmaceutical calculations.
CO106a.3	Utilize mathematical equations in doing problems.
CO106a.4	Analyze solving problems by applying the concepts.
CO106a.5	Appraise the important applications of mathematics, to solve and convert elementary functions using Laplace transform.
Year: I	Course: Remedial Biology (T1107)
CO106b.1	Learn the organization and nomenclature of living things.
CO106b.2	Summarize the functions of various types of tissues in plants and animals.
CO106b.3	Develop knowledge on structural modifications in plants and importance of pollination in plants.



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CO106b.4	Analyze various physiological processes in plants and animals.
CO106b.5	Determine the various taxonomical characters of different families and micro-organisms, to elaborate the study of different kinds of phylum's includes Pisces, Reptiles, Amphibians, Aves& Mammals.
CO106b.6	Summarize the study of fungi, yeast, pencillin and bacteria and animal cell ,animal tissues.
Year: I Course: Human Anatomy and Physiology (T1107)	
CO107.1	To find and relate characteristics of various tissues of human body, To demonstrate bleeding time, clotting time, blood pressure and blood grouping.
CO107.2	To identify the number of RBC and WBC using hemocytometer.
CO107.3	To examine the functions of various organ systems in human body.
CO107.4	To interpret the mechanisms of pregnancy diagnosis tests and various family planning appliances, to construct and record simple curves using frog gastrocnemius sciatic nerve.
Year: I Course: Pharmaceutics (T1108)	
CO108.1	Able to formulate skills of preparing syrups, elixirs, Linctus and solutions.
CO1082	Gain knowledge on preparation of biphasic liquid dosage forms.
CO108.3	Able to prepare various solid dosage forms using different techniques and equipment's.
CO108.4	Understand the preparation of Semisolid dosage forms.
Year: I Course: Medicinal Biochemistry (T1109)	
CO109.1	Identify qualitative, quantitative estimation of normal, abnormal constituents of urine.
CO109.2	Interpret SGOT, SGPT, Glucose, urea, proteins, bilirubin in serum samples.
CO109.3	Study factors affecting enzyme activity, and identify electrolytes in serum.
CO109.4	To perform the liver function tests and lipid profile tests.
Year: I Course: Pharmaceutical Organic Chemistry (T1110)	
CO110.1	Prepare and characterize the derivatives of organic compounds.
CO110.2	Analyze unknown pharmaceutical organic compounds by determining their melting point/boiling point.
CO110.3	Perform qualitative analysis of pharmaceutical organic compounds and identify the extra elements present in the pharmaceutical organic compounds and find the presence of several functional groups in pharmaceutical compounds.
CO110.4	Able to construct molecular models.
Year: I Course: Pharmaceutical Inorganic Chemistry (T1111)	
CO111.1	Know the source of impurities and perform the limit tests for qualitative analysis of



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	impurities for given sample.
CO111.2	Perform the identification test for the pharmaceutical compounds.
CO111.3	Identify the test for purity of compounds.
CO111.4	Able to prepare inorganic pharmaceuticals.
Year: I Course: Remedial Biology (T1112)	
CO112.1	Understand the usage and handling of microscope and study the microscopic investigation of cell and its inclusions.
CO112.2	Identify microscopic and morphological characteristics of stem, root, fruit and flowers.
CO112.3	Identify bones and study frog by using computing models.
CO112.4	Determine physical parameters such as BP, blood groups.
Year: II Course: Pathophysiology (T2101)	
CO201.1	Understand the process of cell injury, morphology of cell injury and cellular adaptations.
CO201.2	Gain knowledge on aetiology, pathogenesis of immunological diseases, cancer.
CO201.3	Understand stages and mechanisms of shock treatment.
CO201.4	To assess the need of balanced diet and the effect of radiation and air pollution on human body.
CO201.5	Explain the etiopathogenesis of hematologic, endocrine, nervous, gastrointestinal, musculoskeletal diseases and Immunopathogenesis of infectious diseases.
CO201.6	Describe the aetiology and pathogenesis of infectious diseases.
Year: II Course: Pharmaceutical Microbiology (T2102)	
CO202.1	Remember the scope of microbiology and its branches, methods of classification. Understand the structure, morphology of bacteria, fungi, viruses.
CO202.2	Know process of cultivation isolation of micro-organisms and study staining techniques.
CO202.3	Understand the importance and implementation of sterilization in pharmaceutical processing and industry, disinfectants in pharmaceutical industry.
CO202.4	Under the importance of immunity, immunization programme.
CO202.5	Summarize the diagnostic tests used for identification of infectious diseases and interpret its results.
CO202.6	Gain knowledge on mode of transmission, aetiology, symptoms, and treatment of infectious diseases.
Year: II Course: Pharmacognosy and Phyto pharmaceuticals (T2103)	
CO203.1	Recall the history, scope and development of pharmacognosy and remember different sources, classification and quality control of crude drugs.
CO203.2	Illustrate about cultivation, collection, processing and storage of crude drugs. Understand



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	the factors affecting the production of crude drugs along with its hybridization.
CO203.3	Illustrate the basic plant metabolites and the various metabolic pathways to form secondary metabolites, Understand systematic pharmacogenetic study of primary metabolites, ayurvedic drugs, marine drugs and teratogens.
CO203.4	To identify the crude drugs by chemical tests: Tragacanth, Acacia, Gelatin, Starch, Honey and lipids.
CO203.5	Study pharmacognosy of proteins, lipids, fibres.
CO203.6	Identify type and methods of adulteration of crude drugs.
Year: II	Course: Pharmacology – I (T2104)
CO204.1	Define the fundamental concepts of pharmacology and pharmacokinetics of drugs. Understand the basic concepts of pharmacodynamics of drugs, adverse drug reactions and drug discovery.
CO204.2	Describe organization, function, and neurohumoral transmission of peripheral nervous system. Employ the knowledge to study the pharmacological actions of drugs acting on peripheral nervous system.
CO204.3	Describe organization, function, of cardiovascular system and employ the knowledge to study the pharmacological actions of drugs acting on cardiovascular system.
CO204.4	Describe neurohumoral transmission of the central nervous system with reference to Excitatory and Inhibitory neurotransmitters and apply the basics in studying the pharmacological actions of drugs acting on the central nervous system.
CO204.5	Describe organization, function, of urinary system and employ the knowledge to study the pharmacological actions of drugs acting on respiratory system.
CO204.6	Gain the knowledge on pharmacology of autocooids and related drugs.
Year: II	Course: Community Pharmacy (T2105)
CO205.1	Understand the roles and responsibilities of community pharmacist. Know process of clinical pharmacy management.
CO205.2	To recollect the parts of prescription and study the concepts of pharmaceutical care.
CO205.3	To identify the best way of improving medication adherence and to excel in conducting patient counselling.
CO205.4	To survey the health status of patients in the community by participating on health screening services and to build the ability to manage minor ailments.
CO205.5	To explain the importance of rational drug therapy, OTC medication counselling and code of ethics to become a competent pharmacist.
CO205.6	To improve the professional skills about health, balance diet, family planning, health promotion and prevention of communicable diseases in community.
Year: II	Course: Pharmacotherapeutics-I (T2106)
CO206.1	Recall the pathophysiology of cardiovascular disorders and relate their etiology with the therapeutic approach including treatment controversies.
CO206.2	Recall the pathophysiology of respiratory system disorders and relate their etiology with the therapeutic approach including treatment controversies.



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CO206.3	Identify various types of respiratory and endocrine disorders with respect to clinical features and laboratory investigation, list their complications along with replacement in their management.
CO206.4	Outline general prescribing guidelines for geriatric, pediatric, pregnant, and feeding people.
CO206.5	Understand etiopathogenesis and pharmacotherapy of ophthalmic diseases.
CO206.6	Analyse role of pharmacist in rational drug use.
Year: II Course: Pharmaceutical Microbiology (T2107)	
CO207.1	Demonstrate various staining methods – simple, gram staining and acid-fast staining.
CO207.2	Test for possible microbial contaminants. Estimate the microbiological assay of antibiotics.
CO207.3	Estimate the motility in the given sample. Choose the correct method to evaluate the microbes to be tested.
CO207.4	Demo on diagnostic tests for some common tests.
Year: II Course: Pharmacognosy and Phyto pharmaceuticals (T2108)	
CO208.1	Remember different morphological and microscopical characteristic features of crude drugs.
CO208.2	Analyse crude drugs as per regulatory guidelines.
CO208.3	Evaluate the crude drugs by quantitative evaluation methods.
CO208.4	Understand the cellular structure of crude drugs.
Year: II Course: Pharmacotherapeutics-I (T2109)	
CO209.1	To recall the pathophysiology of cardiovascular disorders and relate their etiology with the therapeutic approach including treatment controversies. pathophysiology of respiratory system disorders and relate their etiology with the therapeutic approach including treatment controversies.
CO209.2	To identify various types of respiratory and endocrine disorders with respect to clinical features and laboratory investigations, list their complications along with replacement in their management.
CO209.3	Outline general prescribing guidelines for geriatric, pediatric, pregnant, and feeding people.
CO209.4	Understand etiopathogenesis and pharmacotherapy of ophthalmic diseases.
Year: III Course: Pharmacology-II (T3101)	
CO301.1	Describe organization, function, of urinary system and employ the knowledge to study the pharmacological actions of drugs acting on urinary system.
CO301.2	Describe organization, function, of urinary system and employ the knowledge to study the pharmacological actions of drugs acting on urinary system, blood forming agents.



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CO301.3	Summarize the chemotherapy of antibiotics.
CO301.4	Understand the pharmacology of ant infectious agents.
CO301.5	Outline pharmacology of immunosuppressants and stimulants. Discuss principles of animal toxicology.
CO301.6	Understand structure functions of cell and gene.
Year: III Course: Pharmaceutical Analysis (T3102)	
CO302.1	Outline the importance of quality assurance in pharmaceutical drug development.
CO302.2	Elaborate various principles, T1102 and instruments employed for the characterization and analysis of drugs by using chromatographic techniques.
CO302.3	Understand principle, operation and applications of electrochemical methods.
CO302.4	Understand principle, operation and applications of UV visible spectrophotometer and fluorimetry.
CO302.5	Gain maximum knowledge on characterization and estimation of molecules, ions by spectroscopical techniques.
CO302.6	Acquire knowledge on operation and applications of X-RD, DSC, DTA.
Year: III Course: Pharmacotherapeutics-II (T3103)	
CO303.1	To know etiopathogenesis and pharmacotherapy of infectious diseases.
CO303.2	Understand the clinical management therapy of viral, fungal infections.
CO303.3	Assess the drug therapy used for treatment of musculoskeletal disorders.
CO303.4	Understand pharmacotherapy of drug's acting on renal system.
CO303.5	Understand basic principles of chemotherapy of cancer.
CO303.6	Acquire knowledge on pharmacotherapy of dermatological diseases.
Year: III Course: Pharmaceutical Jurisprudence (T3104)	
CO304.1	Understand about objectives of the Drug and Cosmetics Act.
CO304.2	Gain knowledge about the sale of drugs, labeling of drugs.
CO304.3	Gain knowledge about the code of pharmaceutical ethics with the importance of pharmacist role and pharmacists' oath and to remember Pharmacy Act with the education regulation & to get knowledge about Medical and toilet preparation Act.
CO304.4	Understand the constitution and functions of narcotic & Psychotropic consultative committee and to remember the objectives of, offences and penalties.
CO304.5	Remember the objectives of Drug and Magic remedies Act with the prohibition of certain advertisements and prevention of cruelty to animal Act with ethical committee and guidelines. Know about drugprice control order on bulk drugs and the sale price.
CO304.6	Know about the pharmaceutical legislation including different committees and understand about the objectives and rules regulations of Medical Termination and Pregnancy and all types of Intellectual property rights.



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Year: III	Course: Medicinal Chemistry (T3105)
CO305.1	Apply modern techniques like Quantitative Structure Activity Relationship (QSAR), Prodrug concept, Combinatorial Chemistry and Computer Aided Drug Design (CADD) in rational drug design.
CO305.2	Categorize the anti-infective agents based on their mechanism of action, understand their SAR, synthesis and clinical uses.
CO305.3	Categorize the anti-malarial and anti-cancer agents based on their mechanism of action, understand their SAR, synthesis and clinical uses.
CO305.4	Categorize the drugs acting on heart based on their mechanism of action, understand their SAR, synthesis and clinical uses.
CO305.5	Categorize the anti-diabetics and Local anesthetics based on their mechanism of action, understand their SAR, synthesis and clinical uses.
CO305.6	Categorize the drugs acting on Endocrine system based on their mechanism of action, understand their SAR, synthesis and clinical uses.
Year: III	Course Pharmaceutical Formulations (T3106)
CO306.1	Know the importance of preformulation studies, excipients in the development and stability of dosage forms.
CO306.2	Understand the manufacturing techniques, formulation and evaluation methods of Tablets.
CO306.3	Understand the manufacturing techniques, formulation and evaluation methods of Capsules.
CO306.4	Understand the manufacturing techniques, formulation and evaluation methods of Liquid oral preparations. Gain the knowledge on manufacturing techniques, formulation and evaluation methods of Parenteral and Ophthalmic preparations.
CO306.5	Understand the manufacturing techniques, formulation and evaluation methods of Capsules, Semisolids.
CO306.6	Understand formulation, design and evaluation of various types of controlled drug delivery systems.
Year: III	Course: Pharmacology-II (T3107)
CO307.1	Learn the importance of physiological salt solutions and to identify the effect of various drugs on isolated frog heart, blood pressure and heart rate of dog. Illustrate the diuretic activity of drugs in mice/rats.
CO307.2	Identify the dose response relationship, effect of drugs on DRC and to construct the drug concentrations by various bioassay methods using animal simulator software.
CO307.3	Categorize the PA ₂ and PD ₂ value of drugs using rat anococcygeus muscle and guinea pig ileum.
CO307.4	Interpret the effect of spasmogens and spasmolytics using rabbit jejunum. Predict various screening models for analgesic and anti-inflammatory.
Year: III	Course: Pharmaceutical Analysis (T3108)
CO308.1	Recall the separation and identification of compounds by chromatographic techniques.



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CO308.2	Explain the qualitative and quantitative analysis of drugs by spectroscopic techniques.
CO308.3	Summarize instrumental analysis of selected drugs as per Pharmacopoeia.
CO308.4	Compare and characterize compounds by using analytical Techniques.
CO308.5	Determine concentration of ions by electrometric analysis, to discuss the instrumentation, applications of advanced analytical techniques and to interpret spectral data.
Year: III Course Pharmacotherapeutics-II (T3109)	
CO309.1	Remember and recall the pathophysiology and management of cardiovascular, respiratory, endocrine diseases and viral infections.
CO309.2	Identify various drug interactions and rationalize the prescription.
CO309.3	Plan the quality use of medicines surrounding the therapeutic agents in the treatment of selected diseases.
CO309.4	Analyse the clinical skills in the therapeutic management of selected disease conditions.
CO309.5	Prioritize the treatment strategies for better patient outcome and discuss the controversies in treatment.
Year: III Course: Medicinal Chemistry (T3110)	
CO310.1	Synthesize, characterize and purify various medicinal compounds and intermediates.
CO310.2	Analyze the selected drugs present in dosage forms and to determine the assay by using various analytical techniques.
CO310.3	Prepare drugs and determine melting point or boiling point for prepared drugs.
CO310.4	Determine the partition coefficient of drugs.
Year: III Course: Pharmaceutical Formulations (T3111)	
CO311.1	Assess the preformulation studies of drugs and interpret the characteristics of drugs.
CO311.2	Gain the knowledge on formulation and evaluation of tablets, capsules, containers.
CO311.3	Gain the knowledge on formulation and evaluation of injections and ophthalmics.
CO311.4	Prepare and evaluate cosmetics such as lipstick, cold cream and shampoo.
Year: IV Course: Pharmacotherapeutics-III (T4101)	
CO401.1	Understand etiopathogenesis and pharmacotherapy of GIT.
CO401.2	Understand etiopathogenesis and pharmacotherapy of hematological diseases.
CO401.3	Understand etiopathogenesis and pharmacotherapy of nervous system diseases / disorders.
CO401.4	Understand etiopathogenesis and pharmacotherapy of psychiatric diseases.



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CO401.5	Know the pain pathways and manage the pain condition in patients.
CO41.6	Acquire knowledge on evidence-based medicine.
Year: IV Course: Hospital Pharmacy (T4102)	
CO402.1	Understand basic organization, functions, budget preparation and implementation of hospital pharmacy.
CO402.2	Acquire the hospital drug policy and implement in hospital pharmacy services.
CO402.3	Understand and implement the hospital pharmacy services for patient care.
CO402.4	Acquire knowledge on compounding and dispensing pharmaceutical preparations.
CO402.5	Continue education and training in professional developmental programs.
CO402.6	Understand the professional relations and practices of hospital pharmacy.
Year: IV Course: Clinical Pharmacy (T4103)	
CO403.1	Monitor and review the daily activities of clinical pharmacist and remain better services to patients.
CO403.2	Interpret the patient data, case history, and give suggestions to patients for better care.
CO403.3	Interpret the clinical laboratory tests for evaluation /diagnosis of diseases.
CO403.4	Obtain drug and poison information form resources and establish DIC.
CO403.5	Conduct pharmacovigilance studies for ADR monitoring.
CO403.6	Evaluate critical medical errors.
Year: IV Course: Biostatistics and Research Methodology (T4104)	
CO404.1	Explain the need of research, research designs and their applications and to explain methodological designs. Apply the clinical research methods in clinical development of drugs.
CO404.2	Understand the basic aspects of statistics such as central tendency, dispersion, correlation and regression.
CO404.3	Know the statistical techniques and to apply those to solve the statistical problems.
CO404.4	Operate statistical tools like M.S. Excel, SPSS, R and MINITAB.
CO404.5	Apply statistical principles in epidemiology.
CO404.6	Analyze and apply the computers applications in pharmacy.
Year: IV Course: Biopharmaceutics And Pharmacokinetics (T4105)	
CO405.1	Understand basic concepts of absorption, distribution of drugs in body.
CO405.2	Understand basic concepts of elimination of drugs in body. Define and explain the principles and importance of drug products as they are bioavailable and bioequivalent as well as to outline the results byusing the hyphenated tools to interpret the results.



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CO405.3	Utilize the pharmacokinetic models for the determination of pharmacokinetic parameters.
CO405.4	Understand the application of pharmacokinetic models in design of dosage form.
CO405.5	Able to design multiple dosage regimens based on pharmacokinetic parameters for maximizing patient compliance and therapeutic effectiveness.
CO405.6	Interpret the data and to understand the basic principles of multi-compartmental & nonlinear Pharmacokinetic models.
Year: IV Course: Clinical Toxicology (T4106)	
CO406.1	Understand general principles in management of poisoning and its antidotes.
CO406.2	Study toxicokinetic and know measures taken in supporting clinical toxicology.
CO406.3	Understand clinical symptoms and management of acute poisoning.
CO406.4	Analyse clinical symptoms and management of metal poisoning.
CO406.5	Gain knowledge on first aid for snake bite and plant food poisoning.
CO406.6	Understand the envenomations effects and substance abuse.
Year: IV Course: Pharmacotherapeutics-III (4107)	
CO4071	Remember and recall the pathophysiology of selected diseases and rationale for drug therapy.
CO407.2	Identify various therapeutic approaches for the management of selected diseases.
CO407.3	Apply the concepts of various drug therapies and identify the controversies in drug therapy.
CO407.4	Assess the drug therapy by preparing individual therapeutic plan based on diagnosis.
CO407.5	Evaluate the patient specific parameters relevant in initiating drug therapy and monitoring therapy. To create a pharmaceutical care plan, design a list of patient counselling points on the specific illness.
Year: IV Course: Hospital Pharmacy (T4108)	
CO408.1	Assess the drug interaction in given prescription.
CO408.2	Design the formulations and dispense it.
CO408.3	Suggest the solutions related to drug information queries.
CO408.4	Acquire knowledge to prepare inventory control in hospital pharmacy.
Year: IV Course : Clinical Pharmacy (T4109)	
CO409.1	Analyze drug information queries.
CO409.2	Conduct patient medication counseling and suggest necessary precautions.
CO409.3	Perform case studies related to lab reports.



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CO409.4	Conduct interview with patients regarded premedication history.
Year: IV	Course : Biopharmaceutics & Pharmacokinetics (T4110)
CO410.1	Compare dissolution profiles of 2/more marketed drugs and analyse its efficacy.
CO410.2	Improve dissolution rate of poorly water-soluble drugs.
CO410.3	Conduct BA studies according to BA protocol.
CO410.4	Calculate different PK parameters by using PK models.
Year: V	Course: Clinical Research (T5101)
CO501.1	Explain various approaches in drug development process.
CO501.2	Outline various phases of clinical trails.
CO501.3	Abbreviate the drug approval process in India and USA.
CO501.4	Understand OECD guidelines in clinical research and ICH guidelines.
CO501.5	Understand roles and responsibilities of clinical trial personnel according to GCP.
CO501.6	Dosing clinical research protocols.
Year: V	Course: Pharmacoepidemiology and Pharmacoeconomics (T5102)
CO502.1	Understand the scope, measurement of outcomes and risk in pharmacoepidemiology.
CO502.2	Elaborate the methods used in pharmacoepidemiology.
CO502.3	Understand source of data and application of pharmaco epidemiology.
CO502.4	Understand history needs of pharmacoeconomic evaluation.
CO502.5	Know types and outcome assessment of PE evaluation.
CO502.6	Apply software to solve Pharmacoeconomics.
Year: V	Course: Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring (T5103)
CO503.1	Elaborate the need and method of designing dosage regimens.
CO503.2	Evaluate pk of drug interactions of drugs.
CO503.3	Evaluate TDM in detail.
CO503.4	Apply PK models and parameters to adjust the drug dose in renal and hepatic diseases treatment.
CO503.5	Gain knowledge on population PK.
CO503.6	Understand pharmacogenetics and its PK considerations.



AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

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Year : V	Clerkship (T5104)
CO504.1	Discuss the role of the pharmacist in clinical pharmacy services.
CO504.2	Enlist the various therapeutic alternatives for the management of disease and disorders.
CO504.3	Create a drug treatment strategy for a specific situation.
CO504.4	Recognize, understand and report drug interactions and medication errors.
CO504.5	Exhibit the abilities of a clinical pharmacist.
CO504.6	Analyze the medical records and report the treatment.
Year : V	Project Work (T5105)
CO505.1	Define the fundamentals, carry out the literature review on the proposed research work and identify the problem.
CO505.2	Develop the research hypothesis.
CO505.3	Summarise the requirements in the proposed research.
CO505.4	Take part in research experiments and documented.
CO505.5	Evaluate the work done by applying statistic tools.
CO505.6	Appraise societal application and appreciation.