

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

POONA COLLEGE OF PHARMACY, PUNE

Course Outcomes for Pharm D (Program Code: 914)

Year: First Year Pharm. D.
Subject Name: Human Anatomy & Physiology
Course: 2009 syllabus
Course Code: 5724 T
Course Outcomes:
CO1: Explain the terminologies related to human anatomy and physiology.
CO2: Describe the structures, functions, and synchronous working of various systems of human body.
CO3: Outline various technologies for evaluating physiological functions.
CO4: Summarize the impact of social and environmental factors on body system
CO5: Interpret the imbalance of homeostasis responsible for various diseases
CO6: Discuss the common disorders prevalent in the society
Year: First Year Pharm. D.
Subject Name: Human Anatomy & Physiology
Course: 2009 syllabus
Course Code: 5724 P
Course Outcomes:
CO1: Describe the histology of various tissues.
CO2: Analyze blood samples for hematological parameters and correlate with clinical conditions.
CO3: Discuss the anatomy and physiology of various human systems with charts and models.
CO4: Identify bones and explain their anatomy and physiology.
CO5: Interpret the physiological feedback mechanisms.
CO6: Explain the importance of hematological parameters, health and family planning devices to the society.
Year: First Year Pharm. D.
Subject Name: Pharmaceutics
Course: 2009 syllabus

Course Code: 5725 T
Course Outcomes:
CO1: Evaluate the prescription for rational drug therapy
CO2: Explain principles of modern dispensing practices
CO3: Recommend patients about pharmaceutical dosage forms
CO4: Compound and dispense dosage forms
CO5: Practice ethics in community pharmacy
CO6: Apply basic principles and calculations in formulation development
Year: First Year Pharm. D.
Subject Name: Pharmaceutics
Course: 2009 syllabus
Course Code: 5725 P
Course Outcomes:
CO1: Understanding the basic knowledge in the formulation aspects of different dosage forms.
CO2: Formulate the different dosage forms such as solid and liquid orals
CO3: Recommend patients about pharmaceutical dosage forms and Create patient counselling aids
CO4: Apply knowledge in formulating various pharmaceutical dosage forms.
CO5: Practice ethics in community pharmacy
CO6: Use of practical knowledge in the field of incompatibility and method to overcome
Year: First Year Pharm. D.
Subject Name: Medicinal Biochemistry
Course: 2009 syllabus
Course Code: 5726 T
Course Outcomes:
CO1: Gain insights into the catalytic functions of enzymes and recognize the significance of isoenzymes in the diagnosis of various diseases.
CO2: Comprehend the metabolic processes of biomolecules in both normal physiological states and during the manifestation of metabolic disorders.
CO3: Gain a comprehensive understanding of the organization of the mammalian genome, protein synthesis, DNA replication, mutation processes, and mechanisms for DNA repair.

CO4: Know the biochemical principles of organ function tests of kidney, liver and endocrine gland
CO5: Perform qualitative analysis and determine the presence of biomolecules in body fluids.
CO6: Understand the principle for performing various biochemical assays
Year: First Year Pharm. D.
Subject Name: Medicinal Biochemistry
Course: 2009 syllabus
Course Code: 5726 P
Course Outcomes:
CO1: Identification of Urinary constituents and Abnormalities for clinical diagnostics
CO2: Application of Quantitative Techniques in laboratory tests.
CO3: Conduct Serum Biochemical Analysis.
CO4: Explore Enzyme Activity and the factors affecting it.
CO5: Precision in the preparation of Solutions and reagents useful in clinical testing.
CO6: Utilize Specialized Diagnostic Techniques in diagnostics.
Year: First Year Pharm. D.
Subject Name: Pharmaceutical Organic Chemistry
Course: 2009 syllabus
Course Code: 5727 T
Course Outcomes:
CO1: Understand the principles and procedures of synthesis of drugs
CO2: Explain need and basic principle and applications of different chemical synthesis and methods thereof.
CO3: Have knowledge of the chemistry of the organic pharmaceuticals
CO4: Appreciate the importance of organic pharmaceuticals in preventing and curing the disease.
CO5: To highlight the nature of the organic compounds used in Pharmaceuticals as drugs
CO6: Critical understanding of key reactions used in synthesis of therapeutics.
Year: First Year Pharm. D.
Subject Name: Pharmaceutical Organic Chemistry
Course: 2009 syllabus
Course Code: 5727 P

Course Outcomes:
CO1: Learn about the many functional groups of organic medicines, the properties of these compounds, and the techniques for synthesizing these compounds.
CO2: Recognize the identification of pharmaceutical organic chemicals and their role in medicine.
CO3: Acquire knowledge and skills on Organic functional group detection of medicine and drugs
CO4: Identify/confirm the unknown organic compounds.
CO5: Familiarize with the fundamentals of synthesis of organic chemicals that are vital to the pharmaceutical industry.
CO6: Application of different type of organic reactions
Year: First Year Pharm. D.
Subject Name: Pharmaceutical Inorganic Chemistry
Course: 2009 syllabus
Course Code: 5728 T
Course Outcomes:
CO1: Understand the principles and procedures of analysis of drugs
CO2: Explain need and basic principle and applications of different titrations.
CO3: Have knowledge of the analysis of the inorganic pharmaceuticals
CO4: Appreciate the importance of inorganic pharmaceuticals in preventing and curing the disease.
CO5: To highlight the limit of the inorganic impurities in Pharmaceuticals
CO6: Critical analysis of radiopharmaceutical as therapeutics.
Year: First Year Pharm. D.
Subject Name: Pharmaceutical Inorganic Chemistry
Course: 2009 syllabus
Course Code: 5728 P
Course Outcomes:
CO1: Learn about the many groups of inorganic medicines, the sources of impurities, and the techniques for identifying impurities in pharmaceuticals.
CO2: Recognize the analysis of pharmaceutical inorganic chemicals and their role in medicine.
CO3: Acquire knowledge and skills on volumetric analytical methodologies.
CO4: Identify/confirm the unknown inorganic anions and cations.
CO5: Familiarize with the fundamentals of synthesis of inorganic chemicals that are vital to the pharmaceutical industry.

CO6: Application of different type of titration
Year: Second Year Pharm. D.
Subject Name: Pathophysiology
Course: 2009 syllabus
Course Code: 5731 T
Course Outcomes:
CO1: Summarize the concepts of cell injury and adaptation.
CO2: Comprehend the etiology and pathogenesis of diseases.
CO3: Interpret the disease course and predict the complications of the disease.
CO4: Corelate the pathological changes with clinical course and identify the therapeutic targets.
CO5: Describe the factors influencing transplantation of organs.
CO6: Communicate effectively the disease prevention measures to the society.
Year: Second Year Pharm. D.
Subject Name: Pharmaceutical Microbiology
Course: 2009 syllabus
Course Code: 5732 T
Course Outcomes:
CO1: Illustrate the basic knowledge of microbiology with pharmaceutical sciences.
CO2: Apply techniques for identification and isolation of microorganisms.
CO3: Understand process of sterilization and disinfection
CO4: Conceptualize the significance of immunological reactions.
CO5: Implement of diagnostic testing methods for infectious disease
CO6: Justify the use of microorganisms considering the ecological and ethical issues.
Year: Second Year Pharm. D.
Subject Name: Pharmaceutical Microbiology
Course: 2009 syllabus
Course Code: 5732 P
Course Outcomes:
CO1: Implement good laboratory practices in pharmaceutical microbiology.

CO2: Prepare, isolate, and identify the culture media for various microorganisms.
CO3: Assess aseptic conditions in pharmaceutical laboratories as per GLP
CO4: Apply sterilization and disinfection techniques in pharmacy.
CO5: Determine the microbial count using modern analytical tools
CO6: Compute, analyze and record data.
Year: Second Year Pharm. D.
Subject Name: Pharmacognosy & Phytopharmaceuticals
Course: 2009 syllabus
Course Code: 5733 T
Course Outcomes:
CO1: Understand the concept and scope of Pharmacognosy with various systems.
CO2: Explain the concept of classification of crude drugs including primary and secondary metabolites and natural fibers.
CO3: Comprehend the concepts of cultivation and collection of crude drugs for organized and unorganized drugs.
CO4: Discover the concepts of processing production, storage, and adulteration of crude drugs.
CO5: Describe the various extraction and evaluation techniques for the herbal drugs along with uses and chemical nature.
CO6: Carry out the microscopic and morphological evaluation of crude drugs with respect to cellular contents.
Year: Second Year Pharm. D.
Subject Name: Pharmacognosy & Phytopharmaceuticals
Course: 2009 syllabus
Course Code: 5733 P
Course Outcomes:
CO1: Evaluate crude drugs based on chemical tests
CO2: Identify the various leaves on the basis of quantitative microscopy (with camera lucida) like stomatal index, palisade ratio etc.
CO3: Explain the crude drugs based on microscopical characters
CO4: Explore different types of methods for standardization of crude drugs, i.e. ash value, foaming index, extractive values etc. along with morphology.
CO5: Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
CO6: Study of various types values as iodine value, saponification value, ester value, acid value.
Year: Second Year Pharm. D.

Subject Name: Pharmacology-I
Course: 2009 syllabus
Course Code: 5734 T & 18060 T
Course Outcomes:
CO1: Describe the fundamental concepts of pharmacology.
CO2: Relate the molecular basis of drug action with clinical uses.
CO3: Comprehend the adverse effects and drug interactions.
CO4: Justify correlation of pharmacology with other bio medical sciences.
CO5: Apply the pharmacological knowledge in the prevention and treatment of various diseases.
CO6: Recommend measures to minimize adverse drug effects and drug interactions to the society.
Year: Second Year Pharm. D.
Subject Name: Pharmacology-I
Course: 2009 syllabus
Course Code: 5734 P & 18060 P
Course Outcomes:
CO1: Understand the importance of use of animals in drug discovery and development.
CO2: Apply ethical principles in animal experimentation.
CO3: Demonstrate the use of common experimental pharmacology instruments.
CO4: Outline the principles and applications of dose response curve using isolated tissue preparation.
CO5: Evaluate the effect of drugs using various techniques in experimental pharmacology.
CO6: Appreciate correlation of pharmacology with related medical sciences.
Year: Second Year Pharm. D.
Subject Name: Community Pharmacy
Course: 2009 syllabus
Course Code: 5735 T
Course Outcomes:
CO1: Understand the role, responsibility establishment procedure and management of community pharmacy
CO2: Handle and interpret prescriptions to avoid drug-drug and drug-food interaction
CO3: Implement inventory control and drug management system in community pharmacy

CO4: Apply ethical practices for rational drug therapy, essential drug and patient counseling
CO5: Counsel the patients and provide health screening services in the management of minor and chronic diseases
CO6: Promote the role of community pharmacist in the society to develop professional image
Year: Second Year Pharm. D.
Subject Name: Pharmacotherapeutics-I
Course: 2009 syllabus
Course Code: 5736 T
Course Outcomes:
CO1: Describe the etiopathogenesis of diseases and the rationale of drug therapy.
CO2: Relate the patient specific parameters before initiating drug therapy.
CO3: Illustrate the drug therapy controversies.
CO4: Sketch individualized therapeutic plan based on diagnosis of patient.
CO5: Devise the pharmacotherapeutic care plan in various disease conditions.
CO6: Summarize the therapeutic approach to the management of diseases and their monitoring parameters.
Year: Second Year Pharm. D.
Subject Name: Pharmacotherapeutics-I
Course: 2009 syllabus
Course Code: 5736 P
Course Outcomes:
CO1: List the subjective-objective parameters.
CO2: Review the clinical presentation and diagnosis of disease state.
CO3: Apply the pharmacotherapeutic principles in disease management.
CO4: Prepare pharmaceutical care plan.
CO5: Revise the pharmaceutical care plan as per pharmacotherapy problems.
CO6: Recommend the monitoring parameters and outcome measures.
Year: Third Year Pharm. D.
Subject Name: Pharmacology-II
Course: 2009 syllabus
Course Code: 5737 T

Course Outcomes:
CO1: Relate the molecular basis of drug action with clinical uses.
CO2: Comprehend the adverse effects and drug interactions.
CO3: Understand gene therapy and targeting.
CO4: Justify correlation of pharmacology with other biomedical sciences.
CO5: Apply the pharmacological knowledge in the prevention and treatment of various diseases.
CO6: Recommend measures to minimize adverse drug effects and drug interactions to the society .
Year: Third Year Pharm. D.
Subject Name: Pharmacology-II
Course: 2009 syllabus
Course Code: 5737 P
Course Outcomes:
CO1: Understand the importance of use of animals in drug discovery and development.
CO2: Apply ethical principles in animal experimentation.
CO3: Demonstrate the use of common experimental pharmacology instruments.
CO4: Outline the principles and applications of bioassay
CO5: Evaluate the effect of drugs using various techniques in experimental pharmacology.
CO6: Appreciate correlation of pharmacology with related medical sciences.
Year: Third Year Pharm. D.
Subject Name: Pharmaceutical Analysis
Course: 2009 syllabus
Course Code: 5738 T
Course Outcomes:
CO1: Understand the concept of QA, SQC, TQM and ICH guidelines
CO2: Integrate physicochemical and electrochemical properties of drugs with analytical methods
CO3: Comprehend the importance of instrumentation of various analytical techniques
CO4: Remember the principle, advantages, challenges, and applications of electrochemical analysis
CO5: Remember the principle, advantages, challenges, and applications of spectroscopic analysis
CO6: Study of X Ray/ Thermal methods of analysis

Year: Third Year Pharm. D.
Subject Name: Pharmaceutical Analysis
Course: 2009 syllabus
Course Code: 5738 P
Course Outcomes:
CO1: Understand the significance of analysis in analytical chemistry by UV spectroscopy
CO2: Estimation of drugs using Fluorimetric methods for drug analysis
CO3: Analyze the drugs using colourimetry, Nepheloturbidimetry and Flame photometry
CO4: Demonstrate analytical skills for evaluation of drugs by HPLC, GC and DSC
CO5: Observe, record, and communicate experimental data
CO6: To develop the interpretation skills
Year: Third Year Pharm. D.
Subject Name: Pharmacotherapeutics-II
Course: 2009 syllabus
Course Code: 5739 T
Course Outcomes:
CO1: Describe the etiopathogenesis of diseases and the rationale of drug therapy.
CO2: Relate the patient specific parameters before initiating drug therapy.
CO3: Illustrate the drug therapy controversies.
CO4: Sketch individualized therapeutic plan based on diagnosis of patient.
CO5: Devise the pharmacotherapeutic care plan in various disease conditions.
CO6: Summarize the therapeutic approach to the management of diseases and their monitoring parameters.
Year: Third Year Pharm. D.
Subject Name: Pharmacotherapeutics-II
Course: 2009 syllabus
Course Code: 5739 P
Course Outcomes:
CO1: List the subjective-objective parameters.
CO2: Review the clinical presentation and diagnosis of disease state.
CO3: Apply the pharmacotherapeutic principles in disease management.

CO4: Prepare pharmaceutical care plan.
CO5: Revise the pharmaceutical care plan as per pharmacotherapy problems.
CO6: Recommend the monitoring parameters and outcome measures.
Year: Third Year Pharm. D.
Subject Name: Pharmaceutical Jurisprudence
Course: 2009 syllabus
Course Code: 5740 T
Course Outcomes:
CO1: Apply practice the Professional ethics; Comprehend various Indian Pharmaceutical Acts and Laws
CO2: Understand the various concepts of the pharmaceutical legislation in India and their implications in the development and marketing of pharmaceuticals
CO3: Know the various parameters in the Drug and Cosmetic Act and rules and Prioritize other laws as prescribed by the Pharmacy Council of India from time to time including International Laws.
CO4: Remember the Drug policy, DPCO, Patent and design act
CO5: Understand the labeling requirements and packaging guidelines for drugs and cosmetics;
CO6: Be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act
Year: Third Year Pharm. D.
Subject Name: Medicinal Chemistry
Course: 2009 syllabus
Course Code: 5741 T
Course Outcomes:
CO1: To understand the chemistry of drugs with respect to their biological activity
CO2: To know the metabolism, adverse effect, and therapeutic activity of drugs.
CO3: To understand the different modern techniques of drug design & describe the mechanism actions of categories of drugs
CO4: To relate influence of substituents on the physico-chemical properties and biological activity of drugs SAR of all classes of drugs.
CO5: Explain the therapeutic uses and adverse reactions of drugs belonging to different classes for the benefit of society
CO6: Write the routes of synthesis of drugs & sketch the Structures.
Year: Third Year Pharm. D.

Subject Name: Medicinal Chemistry
Course: 2009 syllabus
Course Code: 5741 P
Course Outcomes:
CO1: To understand Nomenclature of simple organic compounds in different classes, make 3D S tereomodels & to apply principles of organic chemistry for synthesis of drugs with emphasis on environment and safety
CO2: Determination of some important physical properties like melting point, boiling point, solubility, & to learn demonstrate TLC techniques for monitoring reactions and checking purity of synthesized compounds.
CO3: Use principles of Purification of Organic compounds & qualitative analysis for identification and structural confirmation of synthesized compounds.
CO4: Able to understand the Synthesis of organic compounds and study about principles, named reactions and mechanisms involved.
CO5: Compute, analyze and record the observations
CO6: Evaluate the need of advancements in the therapy of diseases
Year: Third Year Pharm. D.
Subject Name: Pharmaceutical Formulations
Course: 2009 syllabus
Course Code: 5742 T
Course Outcomes:
CO1: Understand the principle involved in formulation of various pharmaceutical dosage forms.
CO2: Prepare various pharmaceutical formulation.
CO3: Justify the composition, containers, labels, expiry period, economy, acceptance drug Products.
CO4: Perform evaluation of pharmaceutical dosage forms.
CO5: Understand and appreciate the concept of bioavailability and bioequivalence, their role in clinical situations.
CO6: Adapt Good Laboratory Practices.
Year: Third Year Pharm. D.
Subject Name: Pharmaceutical Formulations
Course: 2009 syllabus
Course Code: 5742 P
Course Outcomes:
CO1: Review of marketed drug products of various dosage forms.

CO2: Justify the composition, containers, labels, expiry period, economy, acceptance drug Products.
CO3: Formulate solid, liquid, semisolid, parenteral pharmaceuticals and cosmetics.
CO4: Select appropriate manufacturing equipment's.
CO5: Evaluate quality of pharmaceuticals and cosmetics.
CO6: Adapt Good Laboratory Practices.
Year: Fourth Year Pharm. D.
Subject Name: Pharmacotherapeutics -III
Course: 2009 syllabus
Course Code: 5743 T
Course Outcomes:
CO1: Describe the pathophysiology of diseases and the rationale for drug therapy.
CO2: Illustrate the therapeutic approach to management of the diseases.
CO3: Demonstrate the controversies in drug therapy.
CO4: Sketch the individualized therapeutic plan based on diagnosis of patient.
CO5: Design patient's specific parameters relevant in initiating drug therapy and monitoring drug therapy.
CO6: Summarize the therapeutic approach to management of the diseases with reference to latest available evidences.
Year: Fourth Year Pharm. D.
Subject Name: Pharmacotherapeutics -III
Course: 2009 syllabus
Course Code: 5743 P
Course Outcomes:
CO1: List the subjective-objective parameters.
CO2: Review the clinical presentation and diagnosis of disease state.
CO3: Apply the pharmacotherapeutic principles in disease management.
CO4: Prepare pharmaceutical care plan.
CO5: Revise the pharmaceutical care plan as per pharmacotherapy problems.
CO6: Recommend the monitoring parameters and outcome measures.
Year: Fourth Year Pharm. D.
Subject Name: Hospital Pharmacy

Course: 2009 syllabus
Course Code: 5744 T
Course Outcomes:
CO1: Describe the stores management and inventory control.
CO2: Recognise and explain roles and responsibilities of hospital pharmacist.
CO3: Prepare and practice therapeutic guidelines and hospital formulary.
CO4: Illustrate and employ various drug distribution methods in hospital.
CO5: Design and develop central sterile supply services.
CO6: Describe distribution of Narcotic and other controlled substances.
Year: Fourth Year Pharm. D.
Subject Name: Hospital Pharmacy
Course: 2009 syllabus
Course Code: 5744 P
Course Outcomes:
CO1: Describe inventory control.
CO2: Review and summarise unbiased drug information.
CO3: Solve drug information queries using various tools.
CO4: Categorise various drug interactions.
CO5: Design and develop hospital formulary.
CO6: Evaluate the prescription for various drug interactions.
Year: Fourth Year Pharm. D.
Subject Name: Clinical Pharmacy
Course: 2009 syllabus
Course Code: 5745 T
Course Outcomes:
CO1: Identify drug related problems in patient therapy through monitoring of drug therapy, medication chart review and clinical review.
CO2: Interpret laboratory results (as monitoring parameters in therapeutics) of diseases.
CO3: Prepare relevant drug or medicine information and counsel the patients.
CO4: Solve and manage Adverse Drug Reactions.

CO5: Formulate evidence-based drug information for better practices to be followed by physicians.
CO6: Justify and appraise quality assurance of clinical pharmacy services.
Year: Fourth Year Pharm. D.
Subject Name: Clinical Pharmacy
Course: 2009 syllabus
Course Code: 5745 P
Course Outcomes:
CO1: Identify clinically significant data from the medical case files.
CO2: Relate the clinically significant data with patients medical condition.
CO3: Compare the patient's subjective and objective data to interpret diagnosis.
CO4: Practice drug and poison information services.
CO5: Assess adverse drug reactions, and medication errors.
CO6: Recommend suitable drug therapy changes for best possible patient outcomes.
Year: Fourth Year Pharm. D.
Subject Name: Biostatistics & Research Methodology
Course: 2009 syllabus
Course Code: 5746 T
Course Outcomes:
CO1: Define the clinical study design.
CO2: Describe suitable research methodology.
CO3: Compute sample size for research study.
CO4: Categorise the data for variable correlation.
CO5: Analyse the data for statistical means.
CO6: Conclude the study results.
Year: Fourth Year Pharm. D.
Subject Name: Biopharmaceutics & Pharmacokinetics
Course: 2009 syllabus
Course Code: 5747 T
Course Outcomes:

CO1: Understand the concept of absorption, distribution, metabolism and excretion of drug.
CO2: Calculate pharmacokinetic parameters of drugs.
CO3: Implement effective compartmental modelling in pharmacokinetic studies
CO4: Define multiple dosage regimen for effective therapeutic action
CO5: Design bioavailability-bioequivalence study protocol to establish the quality of generic drugs.
CO6: Explore application of linear and non-linear pharmacokinetic principles
Year: Fourth Year Pharm. D.
Subject Name: Biopharmaceutics & Pharmacokinetics
Course: 2009 syllabus
Course Code: 5747 P
Course Outcomes:
CO1: Improve dissolution and solubility characteristics of slightly soluble drugs
CO2: Understand the effect of time and concentration of drug on plasma-protein binding
CO3: Determine elimination half-life, pharmacokinetic parameters using given urinary excretion data
CO4: Execute absorption studies in animal intestine
CO5: Design bioavailability-bioequivalence study protocol to establish the quality of generic drugs.
CO6: Compute, analyze various pharmacokinetic parameters using blood plasma data
Year: Fourth Year Pharm. D.
Subject Name: Clinical Toxicology
Course: 2009 syllabus
Course Code: 5748 T
Course Outcomes:
CO1: Describe general principles involved in the management of poisoning.
CO2: Identify and locate clinical symptoms of acute poisoning.
CO3: Relate the type of poisoning and practice various antidotes.
CO4: Categorise the venomous snake bites and type of toxins based upon clinical symptoms.
CO5: Explain treatment of substance abuse and dependence.
CO6: Evaluate and explain toxicokinetics.
Year: Fifth Year Pharm. D.

Subject Name: Clinical Research
Course: 2009 syllabus
Course Code: 5749 T
Course Outcomes:
CO1: Define various approaches to drug discovery.
CO2: Describe good clinical practices.
CO3: Practice ethical considerations in clinical research.
CO4: Compare regulatory environments in USA, Europe, and India.
CO5: Design clinical study documents.
CO6: Evaluate safety monitoring in clinical trials.
Year: Fifth Year Pharm. D.
Subject Name: Pharmacoepidemiology & Pharmacoeconomics
Course: 2009 syllabus
Course Code: 5750 T
Course Outcomes:
CO1: Understand and summaries origin and evaluation of pharmacoepidemiology need for pharmacoepidemiology, aims and applications.
CO2: Recognize, interpret, and analyze the measurements of outcomes in pharmacoepidemiology.
CO3: Compare and contrast typical pharmacoepidemiologic study designs and explain their strengths and weaknesses.
CO4: Explain, compare, and analyze the features of Ad Hoc data sources and automated data systems for pharmacoepidemiology and pharmacovigilance purposes.
CO5: Explain and analyze the problems in the special applications of pharmacoepidemiological studies.
CO6: Identify, classify, compare, analyze, and evaluate the various methods of pharmacoeconomic studies.
Year: Fifth Year Pharm. D.
Subject Name: Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring
Course: 2009 syllabus
Course Code: 5751 T
Course Outcomes:
CO1: Identify dose and dosing intervals in all age group patients.
CO2: Convert intravenous drug administration to oral drug administration.

CO3: Demonstrate the pharmacokinetics and pharmacodynamics of various drugs.
CO4: Practice dose adjustments in renal and hepatic impaired patients.
CO5: Summarize population pharmacokinetic data.
CO6: Interpret pharmacogenetic and PK-PD relation.

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

POONA COLLEGE OF PHARMACY, PUNE

Course Outcomes for Pharm D (Program Code: 915)

Year: Fourth Year Pharm. D.
Subject Name: Pharmacotherapeutics -III
Course: 2009 syllabus
Course Code: 5889 T
Course Outcomes:
CO1: Describe the pathophysiology of diseases and the rationale for drug therapy.
CO2: Illustrate the therapeutic approach to management of the diseases.
CO3: Demonstrate the controversies in drug therapy.
CO4: Sketch the individualized therapeutic plan based on diagnosis of patient.
CO5: Design patient's specific parameters relevant in initiating drug therapy and monitoring drug therapy.
CO6: Summarize the therapeutic approach to management of the diseases with reference to latest available evidences.
Year: Fourth Year Pharm. D.
Subject Name: Pharmacotherapeutics -III
Course: 2009 syllabus
Course Code: 5889 P
Course Outcomes:
CO1: List the subjective-objective parameters.
CO2: Review the clinical presentation and diagnosis of disease state.
CO3: Apply the pharmacotherapeutic principles in disease management.
CO4: Prepare pharmaceutical care plan.
CO5: Revise the pharmaceutical care plan as per pharmacotherapy problems.
CO6: Recommend the monitoring parameters and outcome measures.

Year: Fourth Year Pharm. D.
Subject Name: Hospital Pharmacy
Course: 2009 syllabus
Course Code: 5890 T
Course Outcomes:
CO1: Describe the stores management and inventory control.
CO2: Recognise and explain roles and responsibilities of hospital pharmacist.
CO3: Prepare and practice therapeutic guidelines and hospital formulary.
CO4: Illustrate and employ various drug distribution methods in hospital.
CO5: Design and develop central sterile supply services.
CO6: Describe distribution of Narcotic and other controlled substances.
Year: Fourth Year Pharm. D.
Subject Name: Hospital Pharmacy
Course: 2009 syllabus
Course Code: 5890 P
Course Outcomes:
CO1: Describe inventory control.
CO2: Review and summarise unbiased drug information.
CO3: Solve drug information queries using various tools.
CO4: Categorise various drug interactions.
CO5: Design and develop hospital formulary.
CO6: Evaluate the prescription for various drug interactions.
Year: Fourth Year Pharm. D.
Subject Name: Clinical Pharmacy
Course: 2009 syllabus
Course Code: 5891 T
Course Outcomes:
CO1: Identify drug related problems in patient therapy through monitoring of drug therapy, medication chart review and clinical review.

CO2: Interpret laboratory results (as monitoring parameters in therapeutics) of diseases.
CO3: Prepare relevant drug or medicine information and counsel the patients.
CO4: Solve and manage Adverse Drug Reactions.
CO5: Formulate evidence-based drug information for better practices to be followed by physicians.
CO6: Justify and appraise quality assurance of clinical pharmacy services.
Year: Fourth Year Pharm. D.
Subject Name: Clinical Pharmacy
Course: 2009 syllabus
Course Code: 5891 P
Course Outcomes:
CO1: Identify clinically significant data from the medical case files.
CO2: Relate the clinically significant data with patients medical condition.
CO3: Compare the patient's subjective and objective data to interpret diagnosis.
CO4: Practice drug and poison information services.
CO5: Assess adverse drug reactions, and medication errors.
CO6: Recommend suitable drug therapy changes for best possible patient outcomes.
Year: Fourth Year Pharm. D.
Subject Name: Biostatistics & Research Methodology
Course: 2009 syllabus
Course Code: 5892 T
Course Outcomes:
CO1: Define the clinical study design.
CO2: Describe suitable research methodology.
CO3: Compute sample size for research study.
CO4: Categorise the data for variable correlation.
CO5: Analyse the data for statistical means.
CO6: Conclude the study results.
Year: Fourth Year Pharm. D.
Subject Name: Biopharmaceutics & Pharmacokinetics

Course: 2009 syllabus
Course Code: 5893 T
Course Outcomes:
CO1: Understand the concept of absorption, distribution, metabolism and excretion of drug.
CO2: Calculate pharmacokinetic parameters of drugs.
CO3: Implement effective compartmental modelling in pharmacokinetic studies
CO4: Define multiple dosage regimen for effective therapeutic action
CO5: Design bioavailability-bioequivalence study protocol to establish the quality of generic drugs.
CO6: Explore application of linear and non-linear pharmacokinetic principles
Year: Fourth Year Pharm. D.
Subject Name: Biopharmaceutics & Pharmacokinetics
Course: 2009 syllabus
Course Code: 5893 P
Course Outcomes:
CO1: Improve dissolution and solubility characteristics of slightly soluble drugs
CO2: Understand the effect of time and concentration of drug on plasma-protein binding
CO3: Determine elimination half-life, pharmacokinetic parameters using given urinary excretion data
CO4: Execute absorption studies in animal intestine
CO5: Design bioavailability-bioequivalence study protocol to establish the quality of generic drugs.
CO6: Compute, analyze various pharmacokinetic parameters using blood plasma data
Year: Fourth Year Pharm. D.
Subject Name: Clinical Toxicology
Course: 2009 syllabus
Course Code: 5894 T
Course Outcomes:
CO1: Describe general principles involved in the management of poisoning.
CO2: Identify and locate clinical symptoms of acute poisoning.
CO3: Relate the type of poisoning and practice various antidotes.
CO4: Categorise the venomous snake bites and type of toxins based upon clinical symptoms.
CO5: Explain treatment of substance abuse and dependence.

CO6: Evaluate and explain toxicokinetics.
Year: Fifth Year Pharm. D.
Subject Name: Clinical Research
Course: 2009 syllabus
Course Code: 5895 T
Course Outcomes:
CO1: Define various approaches to drug discovery.
CO2: Describe good clinical practices.
CO3: Practice ethical considerations in clinical research.
CO4: Compare regulatory environments in USA, Europe, and India.
CO5: Design clinical study documents.
CO6: Evaluate safety monitoring in clinical trials.
Year: Fifth Year Pharm. D.
Subject Name: Pharmacoepidemiology & Pharmacoeconomics
Course: 2009 syllabus
Course Code: 5896 T
Course Outcomes:
CO1: Understand and summaries origin and evaluation of pharmacoepidemiology need for pharmacoepidemiology, aims and applications.
CO2: Recognize, interpret, and analyze the measurements of outcomes in pharmacoepidemiology.
CO3: Compare and contrast typical pharmacoepidemiologic study designs and explain their strengths and weaknesses.
CO4: Explain, compare, and analyze the features of Ad Hoc data sources and automated data systems for pharmacoepidemiology and pharmacovigilance purposes.
CO5: Explain and analyze the problems in the special applications of pharmacoepidemiological studies.
CO6: Identify, classify, compare, analyze, and evaluate the various methods of pharmacoeconomic studies.
Year: Fifth Year Pharm. D.
Subject Name: Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring
Course: 2009 syllabus
Course Code: 5897 T

Course Outcomes:

CO1: Identify dose and dosing intervals in all age group patients.
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CO2: Convert intravenous drug administration to oral drug administration.

CO3: Demonstrate the pharmacokinetics and pharmacodynamics of various drugs.
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CO4: Practice dose adjustments in renal and hepatic impaired patients.
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CO5: Summarize population pharmacokinetic data.

CO6: Interpret pharmacogenetic and PK-PD relation.
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