

NARGUND
GROUP OF INSTITUTIONS



NARGUND COLLEGE OF PHARMACY

2nd Main, Dattatreya Nagar, 100 FEET Ring Road, Banashankari 3rd Stage, Bangalore-85, Karnataka.

Phone: 09448270604

Email: nargundcop@gmail.com; office@nargund.edu.in

**Programme Outcomes, Programme Specific Outcomes
and Course Outcomes
(POs-PSOs-COs)**

Pharm D Programme



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E-mail: nargundcop@gmail.com

Website: www.nargund.edu.in

Phone: 080-26720604

Programme Outcomes (POs)

PO.1	Development of patient centered knowledge and skills: The student should understand and possess the knowledge and skills required to demonstrate the ability to provide patient centered pharmaceutical care services.
PO.2	Development of pharmaceutical care plan: The student should be able to formulate a pharmaceutical care plan by working in close relation with healthcare professionals, and patient/care taker in order to ensure the enhanced therapeutic outcome in the patient. Also, the pharmaceutical care plan includes maximization of therapeutic benefit by detecting, preventing and resolving drug related problems. The student should be able to recommend pharmaceutical care plan based on evidence, and follow-up and document the outcomes of the pharmaceutical care service.
PO.3	Hospital and community pharmacy management: The student should be able to accurately interpret prescriptions, dispense medications and manage drug distribution system adhering to patient needs, in compliance with policies and guidelines of the hospital pharmacy, good community pharmacy practice and the recommendations of regulatory agencies. Also able to prepare inventory, procure, and use appropriate methods of drug storage and adopt appropriate techniques of drug distribution to ensure correct dispensing of medicines.
PO.4	Promote public healthcare program: The student should be able to participate in various public health care programs of the nation including disease prevention initiatives to improve public health. Contribute to the development and promotion of national health policies including rational drug use program and essential drug policy.
PO.5	Ethics and professional integrity: The student should deliver the duties in accordance with legal, ethical, social, economic, and professional guidelines with integrity. Able to provide patient care services by making rational and ethical decisions that represent the best interest of



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	the patient and the society, and respect the patient, healthcare professionals, and the privacy and confidentiality of health information.
PO.6	Analytical, critical and decision making skills: The student should be able to retrieve, understand, interpret, apply, analyze, synthesize, and evaluate information. Able to apply critical thinking and interpretational skills to identify, manage, and prevent problems and make appropriate decisions.
PO.7	Communication skills: The student should be able to communicate effectively with patients/caretakers, healthcare professionals. Able to effectively counsel, provide medicines information, and educate patients, caretakers & healthcare professionals about medication therapy and other health related Effective communication includes use of both oral and written communications skills and various communication techniques
PO.8	Leadership and entrepreneurship skills: The student should be able to achieve leadership skills through team work and by involving in organizing various community outreach programs with sound decision making skills. Also the student should enhance the entrepreneurial skills by finding or creating new prospects in challenging professional environments.
PO.9	Inter-professional collaborative practice: Student should be able to identify unique opportunities for professional collaboration towards patient-centered pharmaceutical care services and demonstrate the ability to interact and work with multidisciplinary healthcare teams.
PO.10	Design and conduct of need based research: The student should be able to understand the research needs of the region/nation, and design and conduct the research that would add value to the health care requirements of the patients and community/ society.
PO.11	Digital literacy: Students should be able to use computers and gadgets to search, retrieve, analyze, store, create, present and exchange information, and interact and participate in



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	interactive networks through the Internet or through any other digital platform to enrich pharmaceutical care services.
PO.12	Life-long learning: The student should be able to recognize knowledge and skill deficits that exist in the effective delivery of health care needs of the patient/society. As a life-long learner, student should be able to identify and analyze issues emerging in the advancing healthcare delivery, and set learning goals, locate, interpret appropriate resources, and assess progress toward meeting learning goals.

Program Specific Outcomes (PSOs)

PSO.1	Achieving proficiency in pharmacy practice and positioning oneself for success across diverse sectors like Industry, Research and Development, and Hospital standards requires a strategic blend of academic pursuit, hands-on training, and practical exposure.
PSO.2	Leverage expertise in various fields of Pharmacy effectively in ensuring patient safety by performing evidence based recommendations referring to various diseased conditions, interpreting laboratory investigations, microbiological evaluations and chemical constituents.

Course Outcomes (COs)

On successful completion of course, students should be able to:

Pharm D I Year	
1.1T	Course Title: Human Anatomy & Physiology I -Theory
CO.1	Understand about the structure human body from fundamental level
CO.2	Learn the various homeostatic mechanisms and their imbalances
CO.3	Analyze the importance of Blood, Lymphatic system, and Immunity in the human body.
CO.4	Remember the gross morphology, structure and functions of cell, skeletal, muscular, and cardiovascular systems of the human body



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CO.5	Gain Knowledge about few common diseases that occur in human body
1.2T	Course Title: Pharmaceutics - Theory
CO.1	Understand the history of Pharmacy, Pharmacopoeias and their scope
CO.2	Learn the Prescription in a professional manner
CO.3	Evaluate the dose for a drug
CO.4	Analyse the incompatibility in a formulation/prescription
CO.5	Remember formulation, evaluation merits and demerits of conventional dosage forms.
1.3T	Course Title: Medicinal Biochemistry- Theory
CO.1	Define the basic concepts in medicinal biochemistry and clinical chemistry
CO.2	Apply concepts and knowledge of medicinal biochemistry to clinical scenarios
CO.3	Interpret how the biomolecules acts on the body and its mechanisms
CO.4	Understand the Link between biochemical reactions and pathways of several diseases
CO.5	Explain the common laboratory values in clinical chemistry
1.4T	Course Title: Pharmaceutical Organic Chemistry- Theory
CO.1	Apply IUPAC nomenclature for different categories of organic compounds and explain structures, physical Properties and Isomerism,
CO.2	Understand the free radical generation, reactions based on free radical mechanism. Knowledge about reactions and stability of cycloalkanes.
CO.3	Explain reactivity, mechanism, stability, stereochemistry and applications of Nucleophilic substitution reactions, Elimination reactions.
CO.4	Recall and understand various name reactions in Organic Chemistry.
CO.5	Describe aromatic substitution reactions, electrophilic and Nucleophilic addition reaction its mechanism, reactivity and examples.
CO.6	Remember the official medicinal compounds, their preparation and uses.
1.5T	Course Title: Pharmaceutical Inorganic Chemistry- Theory
CO.1	Describe principle, procedure of analysis of inorganic pharmaceuticals.
CO.2	Explain method of preparation, physical and chemical properties, assay, uses and storage of inorganic pharmaceuticals.
CO.3	Recognize the importance of inorganic pharmaceuticals in preventing and curing disease



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CO.4	Understand different methods, procedure, principle of quantitative analysis of pharmaceuticals.
CO.5	Execute preparation and identification test for inorganic pharmaceuticals.
1.6T	Course Title: Remedial Biology -Theory
CO.1	Discuss five kingdom classification of life and explain morphology of flowering plants.
CO.2	Describe about body fluids, circulation, digestion, absorption, breathing and respiration.
CO.3	Explain modes, parts of excretion, urine formation and renin angiotensin system, define and classify nervous system, discuss the structure of neuron, brain and spinal cord, enlist the functions of parts of brain, summarize endocrine glands, their secretions and functions, outline parts of male and female reproductive system.
CO.4	Enlist the function macronutrients and micronutrients essential for plants, explain nitrogen fixation and importance of nitrogen cycle, summarize photosynthesis and enlist the factors affecting photosynthesis.
CO.5	Discuss respiration, glycolysis and fermentation. Enlist plant growth regulators, outline cell and its organelles with functions, Explain tissue and its types.
1.6T	Course Title: Remedial Mathematics -Theory
CO.1	Know Trigonometry, Analytical geometry, Matrices, determinants, Integration, Differential equation, Laplace transform and their application.
CO.2	Solve the problems of different types by applying theory.
CO.3	Appreciate the important applications of mathematics in pharmacy.
1.1P	Course Title: Human Anatomy and Physiology – Practical
CO.1	Use effectively the microscope for microscopic study of various tissues.
CO.2	Remember and identify axial and appendicular bones of human skeleton.
CO.3	Analyses the various tissues of different systems of human body.
CO.4	Learn various techniques like blood group determination, blood pressure measurement, blood cell counting.
CO.5	Perform the hematological test like blood cell count, hemoglobin estimation, bleeding/clotting time, etc
1.2P	Course Title: Pharmaceutics– Practical
CO.1	Calculate the working formula for the given official formula



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CO.2	Analyse the role of ingredients in a formulation.
CO.3	Formulate different conventional formulations.
CO.4	Select suitable container for packing the dosage forms.
CO.5	Make an appropriate label for the preparation.
1.3P	Course Title: Medicinal Biochemistry – Practical
CO.1	Identify the carbohydrates samples by qualitative analysis
CO.2	Identify the proteins and amino acids samples by qualitative analysis.
CO.3	Identify the lipids samples by qualitative analysis.
CO.4	Analyze, determine and estimate normal and abnormal constituents of urine sample
CO.5	Analyze, determine and estimate normal and abnormal constituents of blood sample.
CO.6	Study of the enzymatic hydrolysis and factors affecting enzyme activity.
1.4P	Course Title: Pharmaceutical Inorganic Chemistry – Practical
CO.1	Distinguish identification test for inorganic pharmaceuticals.
CO.2	Execute preparation of inorganic pharmaceuticals.
CO.3	Evaluate various techniques for performing assay of inorganic pharmaceuticals.
1.5P	Course Title: Pharmaceutical Organic Chemistry – Practical
CO.1	Determine the melting point and boiling point of organic compounds.
CO.2	Describe and perform different laboratory techniques such as Acetylation, Benzoylation, Nitration, Diazotization, Hydrolysis for the preparation of different organic compounds.
CO.3	Evaluate different organic compounds by systematic qualitative analysis
CO.4	Analyze sample of carbohydrates, ketones, aldehydes by systematic qualitative analysis
CO.5	Perform the systematic qualitative analysis of amides, amines, carboxylic acids, and ester
CO.6	Apply systematic qualitative analysis for the identification of unknown sample of different organic compounds.
1.6P	Course Title: Remedial Biology – Practical
CO.1	Illustrate microscope, section cutting, mounting and staining techniques.
CO.2	Explain About Cell and its inclusions.
CO.3	Evaluate the Flowering plant parts by their morphology and microscopical characters.



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CO.4	Explain the frog by using computer models. CO5-Identify bones, determine blood group, blood pressure and tidal volume.
CO.5	Identify bones, determine blood group, blood pressure and tidal volume.
Pharm D II Year	
2.1T	Course Title: Pathophysiology-Theory
CO.1	Discuss the etiology of the selected diseases states. Understand the pathology of various conditions with reference to its pharmacological applications.
CO.2	Describe the Pathogenesis of the selected diseased states.
CO.3	Name the signs and symptoms of the diseases.
CO.4	Mention the complications of the diseases.
2.2T	Course Title: Pharmaceutical Microbiology-Theory
CO.1	Learn structure and function of microbial cell, the basic microbial structure and functions of various physiological groups of prokaryotes and eukaryotes.
CO.2	Understand different strains of microbes and its isolation, identification, preservation and culturing.
CO.3	Know different microscope and microscopically techniques and apply for the identification of bacteria using different staining method.
CO.4	Recall the importance of different sterilization procedures including sterility testing and validation procedures.
CO.5	Understand mechanism of action, applications and evaluation of chemical disinfectants.
CO.6	Gain knowledge of signs and symptoms of infectious diseases, their diagnosis and treatment.
2.3T	Course Title: Pharmacognosy & Phytopharmaceuticals -Theory
CO.1	Describe the concept, background, history and development and scope of Pharmacognosy and classification of crude drugs
CO.2	Explain the Cultivation, Collection, Processing, Storage and Conservation of medicinal Plants
CO.3	Describe the various cell wall constituents and cell inclusions
CO.4	Identify the important crude drugs by morphological, microscopical and powder microscopical characters



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CO.5	Describe the source, chemistry, types, method of extraction and analysis of carbohydrates, lipids, proteins and related products
CO.6	Explain about natural pesticides and their sources and various plant fibers used in surgical dressings and related products and different methods of adulteration of crude drugs
2.4T	Course Title: Pharmacology-I – Theory
CO.1	Remember and understand the pharmacological actions of different categories of drugs
CO.2	Describe the detailed mechanism of drug action at organ system/sub cellular/macromolecular levels
CO.3	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases
CO.4	Describe the preclinical and clinical study designs and apply its knowledge
CO.5	Identify adverse drug reactions, drug interactions and drug toxicity of various drug classes
CO.6	Explain the rational drug treatment, dosage for geriatric, pediatric, pregnancy and lactating patients
2.5T	Course Title: Community Pharmacy – Theory
CO.1	Understand roles and responsibilities of community pharmacist. And also they can understand how to a community pharmacy with the use of computers and software's.
CO.2	Learn how to deal with various prescriptions and various methods of inventory control like ABC, VED, EOQ.
CO.3	Recall Principles of pharmaceutical care and patient counseling in various stages with patient information leaflet matters and also role of pharmacist in patient medication adherence.
CO.4	Gain knowledge about various services of health screening and OTC medication information and patient counseling and also code of ethics for community pharmacist.
CO.5	Understand commonly occurring communicable diseases and prevention of it and balance diet of patients, roles of pharmacist in family planning. Knowledge about symptoms of minor ailments. Learn rational drug therapy.
2.6T	Course Title: Pharmacotherapeutics-I– Theory
CO.1	Assess the subjective and objective parameters of patients in command is ease



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	conditions
CO.2	Assist other healthcare providers to analyse drug related problems and provide therapeutic interventions
CO.3	Participate in planning the rational medicine therapy for common diseases.
CO.4	Design and deliver discharge counseling for patients.
2.2P	Course Title: Pharmaceutical Microbiology–Practical
CO.1	Study the apparatus used in microbiology.
CO.2	Perform preparation and sterilization of culture media, glassware's .
CO.3	Learn different techniques of staining, motility characters and enumeration of microorganism.
CO.4	Understand methods of isolation of pure culture and biochemical testing for identification of microorganism.
CO.5	Perform culture sensitivity testing, sterility testing for certain pharmaceutical products and determination of MIC.
CO.6	Apply knowledge for biochemical testing, assay of antibiotics, vitamins and determination of RWC, Widal, Malaria Parasite.
2.3P	Course Title: Pharmacognosy & Phytopharmaceuticals– Practical
CO.1	Use compound microscope and describe the various cell wall constituents and cell inclusions
CO.2	Identify the crude drugs by morphological study and carryout the T S and Powder microscopy of important crude drugs
CO.3	Determine Iodine value, Acid value and saponification value for given oil
CO.4	Analyze important unorganized drugs by Chemical tests
2.6P	Course Title: Pharmacotherapeutics I– Practical
CO.1	Prepare SOAP (Subjective, Objective, Assessment and Plan) notes for the given clinical cases of selected common diseases.
CO.2	To Counsel the patients about the disease conditions, uses of drugs, methods of handling and administration of drugs, life-style modifications, and monitoring parameters.
Pharm D III Year	
3.1T	Course Title: Pharmacology-II – Theory
CO 1	Understand the pharmacological aspects of drugs acting on blood and blood forming



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	agents and pharmacology of drugs acting on renal system.
CO.2	Remember the pharmacology of chemotherapeutic agents, vitamins and essential minerals.
CO.3	Apply pharmacology and therapeutics to provide better pharmaceutical care.
CO.4	Describe the cell, macromolecules, cell signaling, DNA replication and cell cycle.
CO.5	Appreciate the importance of gene and its structure, genome, gene expression, recombinant and DNA technology.
3.2T	Course Title: Pharmaceutical Analysis– Theory
CO.1	Understand the concepts of QC/QA, GLP, ICH Guidelines and their importance in pharmaceutical industry
CO.2	Develop the practical skills using instrumental techniques and gain knowledge on instrumental techniques for analysis of pharmaceuticals.
CO.3	Acquire knowledge on basic principles of electrochemical analytical techniques
CO.4	Gain knowledge on the basic principles of spectroscopy, develop the practical skills using instrumental techniques, understand the knowledge about assay of pharmaceutical substances
3.3T	Course Title: Pharmacotherapeutics-II– Theory
CO.1	Understand the pathophysiology of selected disease states and rationale for drug therapy
CO.2	Remember the therapeutic approach for managing the disease.
CO.3	Apply pharmacology and therapeutics to provide better pharmaceutical care.
CO.4	Identify the patient specific parameters relevant in initiating drug therapy and monitoring therapy
CO.5	AnalyseTo know the importance of preparation of individualized therapeutic plans based on diagnosis
3.4T	Course Title: Pharmaceutical Jurisprudence– Theory
CO.1	Understand the basic knowledge of legislations related to the profession of pharmacy in India.
CO.2	Remember the legal definitions to D&C act 1940 and its rules and their implication to the development and marketing of pharmaceuticals and excise duty act.
CO.3	Understand the code of ethics during pharmaceutical practice, Bonded and Non-Bonded Laboratory. Patent and its design along with cruelty to animals act.



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CO.4	Learn details about administration of various act and rules, study about various parameters of different schedules and labeling and packaging guidelines. Prescription and Non-Prescription products.
CO.5	Gain knowledge about NDPS, DPCO, NLEM, NFCDA their committees and its functions.
CO.6	Understand regulatory authorities and agencies governing the manufacture, analysis, tests, sales and licensee required for the drugs.
3.5T	Course Title: Medicinal Chemistry– Theory
CO.1	Explain modern concept of rational drug design such as quantitative structure activity relationship, prodrug, combinational chemistry, computer aided drug design and concept of antisense molecule
CO.2	Describe chemical nomenclature, brand name and side effect of different classes of drugs.
CO.3	Understand SAR, mechanism of action, synthesis, medicinal uses and dose of different classes of drugs.
CO.4	Know the effect of partition coefficient, dissociation constant and molar refractivity of compounds for QSAR analysis.
CO.5	Discuss various techniques for performing assay of drugs.
3.6T	Course Title: Pharmaceutical Formulations – Theory
CO.1	Acquire knowledge about various formulation considerations in development and evaluation of pharmaceutical dosage forms like tablets, capsules, etc
CO.2	Describe formulation and evaluation of parenterals. Details on parenterals, selection of excipients, environmental and stringent procedures in the preparation and its evaluation.
CO.3	Understand about various semisolid dosage forms and ophthalmic preparations
CO.4	Formulate and evaluate various liquid oral preparations
CO.5	Explain the various controlled and novel drug delivery systems
3.1P	Course Title: Pharmacology-II–Practical
CO.1	Evaluate Pharmacological effect of drugs on tissue preparations.
CO.2	Recognize the role, classify, applications and functions of different types of bioassay. Screening principles, methodology and pharmacological features of different class



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	drugs with their general and selective agonist and antagonist used in different types of bioassay.
CO.3	Report the Essential pharmacotherapy and pharmacological features of general and selective agonist and antagonist used in analgesic activity by central and peripheral methods(Eddy's hot plate method and tail flick method) by using rats and mice.
CO.4	Demonstrate the Essential pharmacotherapy and pharmacological features of common and important drugs with their general and selective agonist and antagonist used in anti-inflammatory activity by carrageenan induced paw model by using rats and mice.
CO.5	Remember the composition of physiological salt solutions and basic instruments used in experimental pharmacology.
3.2P	Course Title: Pharmaceutical Analysis– Practical
CO.1	Gain knowledge on the basic principles of spectroscopy, develop the practical skills using instrumental techniques, understand the knowledge about assay of pharmaceutical substances
CO.2	Handle different instruments like spectrophotometers, flame photometer, HPLC and GC to analyse the pharmaceutical compounds
CO.3	Have ability to develop basic practical skills using instrumental techniques
CO.4	Ascertain the knowledge about assay of pharmaceutical substances.
3.3P	Course Title: Pharmacotherapeutics-II- Practical
CO.1	Evaluate the Plan and conduct the therapeutic drug monitoring for the patients
CO.2	Recognize specific class of antibiotics for treating diseasecondition
CO.3	Report the adverse drug reactions based on severity.
CO.4	Create leaflets on patient counselling points based on the condition
CO.5	Remember the safe and effective therapeutic approach for various disease condition.
3.5P	Course Title: Medicinal Chemistry- Practical
CO.1	Perform assays of important drugs from the course content.
CO.2	Synthesis medicinally important compounds.
CO.3	Analyze important drugs according to their monograph.
CO.4	Determine partition coefficient, dissociation constant and molar refractivity of the compound for QSAR analysis.
3.6P	Course Title: Pharmaceutical Formulations- Practical



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CO.1	Apply knowledge of Manufacturing and quality control tests of Tablets
CO.2	Understand the strict formulation considerations in parenteral and ophthalmic manufacturing.
CO.3	Formulate and evaluate liquid oral preparations
CO.4	Design of liquid semisolid preparations
CO.5	Analyse the various formulation of various cosmetics
Pharm D IV Year	
4.1T	Course Title: Pharmacotherapeutics-III- Theory
CO.1	Understand the pathophysiology and pharmacotherapy of several common disease states
CO.2	Apply knowledge and clinical skills to problem solving in unfamiliar situations.
CO.3	Obtain and interpret information from literature and apply this information in a clinical situation
CO.4	Present information on the therapeutic use of drugs to fellow students and staff in a clear and professional manner.
CO.5	Undertake medication reviews
4.2T	Course Title: Hospital Pharmacy – Theory
CO.1	Understand Hospital and its function and also organization and management of hospital pharmacy.
CO.2	Prepare budget and its implementation in hospital pharmacy. Hospital drug policy- PTC, Hospital formulary, Hospital committees, developing therapeutic guidelines, newsletter.
CO.3	Learn Hospital pharmacy services like procurements, warehousing of drugs, inventory control, drug distribution in hospital; including Narcotic and other controlled substances. CSSS -role of pharmacist,
CO.4	Recall details of various sterile formulations, manufacturing of topical agents, tablets, granules, capsules and also total parenteral nutrition.
CO.5	Learn to handle of radiopharmaceuticals with caution and disposal of it. Also understand the continuing education programs and there importance, professional relations and practices of hospital pharmacist.
4.3T	Course Title: Clinical Pharmacy – Theory
CO.1	Know about the development and scope of clinical pharmacy



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CO.2	Understand and participate in daily activities of a clinical pharmacist like Drug therapy monitoring, Ward round participation, ADR management, Drugs and poison information, Patient counseling and Medication history
CO.3	Interpret different clinical laboratory test values in the evaluation of disease
CO.4	Understand the importance of Pharmacovigilance, development and aims
CO.5	Learn about critical evaluation of biomedical literature
CO.6	Recall pharmaceutical care concept, medication errors and patient data analysis
4.4T	Course Title: Biostatistics & Research Methodology- Theory
CO.1	Explain research methodology, clinical study designs, sample size determination, report writing and presentation of data.
CO.2	Apply the various statistical techniques to solve biostatistical problems.
CO.3	Discuss the different design of experiments and their applications.
CO.4	Explain the construction and labelling of graphs
CO.5	Explain Null hypothesis, parametric & non-parametric tests, statistical estimation of confidence intervals and linear regression & correlation coefficient.
CO.6	CO6-Explain operation of SPSS, Epi Info. and SAS
4.5T	Course Title: Biopharmaceutics & Pharmacokinetics – Theory
CO.1	Discuss the Biopharmaceutical aspects viz factors affecting and mechanisms of drug absorption, distribution, metabolism and excretion.
CO.2	Explain Pharmacokinetic of one and multi compartment models of oral and IV (bolus and infusion) administration of drug.
CO.3	Describe the Pharmacokinetics of Multiple – Dosage Regimens of One and multi Compartment Open Model of IV and Extravascular dosing.
CO.4	Identify the factors causing Nonlinear Pharmacokinetics. Michaelis-Menton method of estimating parameters
CO.5	Recognise Noncompartmental Pharmacokinetics: Statistical Moment Theory, MRT for various compartment models and Physiological Pharmacokinetic model. Define Bioavailability and Bioequivalence. Report Bioavailability study protocol, factors affecting and methods of assessment of Bioavailability
4.6T	Course Title: Clinical Toxicology – Theory
CO.1	Understand the general principles involved in management of poisoning



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CO.2	Remember the therapeutic approach for managing the poisoning .
CO.3	Apply toxicokinetics and therapeutics to provide better pharmaceutical care.
CO.4	Identify the specific antidote parameters relevant in initiating drug therapy and management of poisoning.
CO.5	Analyse the substance that causes specific toxicity leading to diseased state in human.
4.1P	Course Title: Pharmacotherapeutics-III- Practical
CO.1	Students able to assess drug interactions and rationalize the prescription
CO.2	Discuss the therapeutic approach to the management of selected diseases
CO.3	Prepare and analyze individualized therapeutic plans based on diagnosis
CO.4	Perform patient counseling
CO.5	Conduct and prepare laboratory reports in a standard form
4.2P	Course Title: Hospital Pharmacy- Practical
CO.1	Manufacture of parenteral formulations (LVP & SVP), powders (Dusting powder, ORS, Snuffs)
CO.2	Assess of drug interactions in the given prescriptions.
CO.3	Handle the different types of queries.
CO.4	Control the inventory by using various methods (ABC, VED, EOQ).
CO.5	Analyze different phases of clinical trials with various drug information and systematic approach to provide unbiased drug information.
4.3P	Course Title: Clinical Pharmacy – Practical
CO.1	Answer drug information queries.
CO.2	Perform patient medication counseling.
CO.3	Explain case studies related to laboratory investigations.
CO.4	Conduct patient medication history interview.
4.5P	Course Title: Biopharmaceutics & Pharmacokinetics - Practical
CO.1	Construct calibration curve of various drugs in different solvents by UV- Visible Spectrophotometric technique
CO.2	Compare of dissolution of different marketed brands of paracetamol.
CO.3	Formulate solid dispersion (SD) of various drugs by melting method and solvent evaporation method and interpret the dissolution profiles of prepared SD
CO.4	Examine the Influence of polymorphism on dissolution of various drugs



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CO.5	Solving Problems to determine the AUC, half-life, volume of distribution and clearance.
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5.1T	Course Title: Clinical Research– Theory
CO.1	Appreciate and conduct the clinical trials activities
CO.2	Know safety monitoring and reporting in clinical trials
CO.3	Manage the trial coordination process
5.2T	Course Title: Pharmacoepidemiology and Pharmacoeconomics– Theory
CO.1	Identify the applications of pharmacoepidemiology and Pharmacoeconomics in clinical settings
CO.2	Discuss the various pharmacoepidemiologic outcome measures
CO.3	Describe the concept of risk in pharmacoepidemiology and different methods of measuring risk
5.3T	Course Title: Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring-Theory
CO.1	Design the dosage regimen for individual patients based on their age, weight and disease.
CO.2	Interpret and predict the pharmacokinetic drug - drug interaction in the pharmacotherapeutic regimens.
CO.3	Plan and conduct the therapeutic drug monitoring for the patients and study participants.
CO.4	Perform the population pharmacokinetic data analysis using multiple methods.
CO.5	Illuminate the genetic variations important for therapeutic success.
5.4 P	Course Title: Clerkship
CO.1	Manage and provide the Pharmaceutical care to diseased patients in any clinical setup.
CO.2	Function effectively through proper communication, teamwork and professional ethics.
CO.3	Work collaboratively in diverse settings and follow the Standard operating procedures to provide better care to the patients.
CO.4	Bridge the gap between theoretical knowledge acquired in the classroom and its



NARGUND COLLEGE OF PHARMACY

Affiliated to Rajiv Gandhi University of Health Sciences, Approved by PCI and Recognized by Government of Karnataka

E-mail: nargundcop@gmail.com

Website: www.nargund.edu.in

Phone: 080-26720604

	application in clinical settings
CO.5	Take career decisions and facilitate future employment opportunities.
5.5P	Course Title: Project work
CO.1	Demonstrate a comprehensive understanding of the research topic, including its significance and relevance to the field.
CO.2	Design various types of clinical study design, informed consent and follow good clinical practice guidelines.
CO.3	Communicate effectively the research objectives, methodology, and expected outcomes.
CO.4	Engage in critical thinking and problem-solving to address potential challenges and limitations of the proposed research.
CO.5	Publish their research project to get additional benefit to their careers.
Pharm D VI Year	
6.1P	Course Title: Internship
CO.1	Assess individual case management, identify and resolve drug related problems.
CO.2	Perform critical evaluation of prescriptions by participating in daily ward rounds and discussions by maintaining liaison with health care professionals.
CO.3	Interpret prescriptions and provide rationalized therapy by being proactive and conversational engagement and perform activities which include: Provide drug information services, assessment of drug-drug & drug food interactions, other drug related problems (DRPs) and dose adjustments.
CO.4	Record and report Adverse events in the PvPi and MvPi databases pertaining to medications, transfusions and medical Equipments to quality department of hospital.
CO.5	Collaborate as a team with health care professionals, clinical pharmacist and provide a robust pharmaceutical care for the better patient outcome.