YENEPOYA

(DEEMED TO BE UNIVERSITY)
Recognized under Sec 3(A) of the UGC Act 1956
Accredited by NAAC with 'A' Grade

YENEPOYA PHARMACY COLLEGE

PROGRAM AND COURSE OUTCOMES

UNDERGRADUATE PROGRAM

BACHELOR OF PHARMACY

ATTESTED

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PROGRAM OUTCOMES

UNDERGRADUATE PROGRAM

BACHELOR OF PHARMACY

(K=Knowledge, S=Skill, A=Attitude)

PO 1	Demonstrate the knowledge of structure and relation of physiology of human body with respect to pathophysiology of various disease/disorder/ailments/injury. (K)
PO 2	Demonstrate an ability to understand mechanism of drug action, its dynamics and kinetics, visualize and work on laboratory techniques and improvements (K, S)
PO 3	Utmost knowledge to conduct, analyze, interpret the facts of pharmaceutical production, quality control and quality assurance of finished products and raw material employed in pharmaceuticals formulations. (K, S)
PO 4	Precisely sound in knowledge as well as skills relevant to design of formulation, in-process complications and control measures.(K,S)
PO 5	Experiential skill to identify and distinguish medicinally important plants and acknowledgement of phytoconstituents (K, S)
PO 6	Errorless in synthetic process and evaluation procedures of pharmaceuticals (K,S)
PO 7	Acquaint with administrative, managerial, leadership, teamwork and problem solving qualities. (K, S,A)
PO 8	Proficiency to identify, formulate and solve the industry, community and Hospital Pharmacy problems. (S, A)
PO 9	Aptitude to search for the new molecules and preventive measures to promote the human health. (K, S, A)
PO 10	Perfect in outlining reliable formats and maintenance of documents and records (K, S)
PO 11	Professionally sound in verbal and written communications (K, A)
PO 12	Technically competent to use modern Pharmaceutical tools, software and equipment to analyze & solve problems (S)
PO 13	Knowledge towards pharmaceutical profession and ethical abide by pharmaceutical legislations of India (K, A)
PO 14	Autodidact and persistent learning ability (S)
PO 15	Ability to patient counseling (S, A)
PO 16	Enthusiastic in research and development of all the discipline of pharmaceutical Sciences (A)

COURSE OUTCOME

UNDERGRADUATE PROGRAM

BACHELOR OF PHARMACY

SEMESTER I

Name of CO	HUMAN ANATOMY AND PHYSIOLOGY I
CO 1	Students would have studied about the gross morphology, structure and functions of cell, tissue, skin, bones, joints, brain, heart
CO 2	They would have understood the various homeostatic mechanisms and their imbalances.
CO 3	Students would able to identify the different types of tissues and organs of Integumentary system, skeletal system, lymphatic system, Haemopoetic system, Nervous system and cardiovascular system.

PHARMACEUTICAL ANALYSIS I

CO 1	Upon completion of the course student shall be able to
CO 2	Understand different techniques, methods of expressing concentration and preparation and standardizations of primary and secondary standards.
CO 3	Understand the principles of volumetric and electro chemical analysis.
CO 4	Develop analytical skills

PHARMACEUTICS I

CO 1	Knowledge the history of profession of pharmacy
CO 2	Knowledge in the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations and handling the prescription
CO 3	The knowledge of dispensed medication which includes methods of preparation with theoretical and practical aspects, classifications, excipients used in their preparation, stability problems how to overcome, use of appropriate containers and closures, special labeling requirement, storage conditions, uses, of powders, liquid oral dosage forms, semi-solid dosage forms preparation of various conventional dosage form.

PHARMACEUTICAL INORGANIC CHEMISTRY

CO 1	Memorize the necessity for structure and up gradation of pharmacopoeia from time to time.
CO 2	Acquainted with the various sources of impurities and capable to assess as well as evaluate the different impurities present in raw material as well as finished product.

CO 3	Accustomed with the importance and mechanism of physiological buffers in body and pharmaceutical preparations and unusual effects of isotonic and hypertonic preparations on blood.
CO 4	Explain and prepare the isotonic preparations in pharmaceutical formulation industry with the aid of calculations related to tonicity measurement.
CO 5	Ease to explain the role of each anion and cation present in the body along with associated disease or disorder.
CO 6	Assessment of the purity, quality and strength of the inorganic medicinal agents and their preparations.
CO 7	Skill in preparation and preservation of inorganic medicinal agents including incompatibility and utility to cure or relieve various disease/disorder.
CO 8	Express the importance of radioactive substances useful in the medical field with knowledge of hazardous effects and handling policies of radiopharmaceuticals.

COMMUNICATION SKILLS

CO 1	Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
CO 2	Effective in Verbal and non - verbal communication
CO 3	Acquire managerial skill in a team action
CO 4	Develop impressive interview skills
CO 5	Develop Leadership qualities and essentials

REMEDIAL BIOLOGY

CO 1	Cell biology (Basic Nature of Plant cell and Animal cell)
CO 2	Classification System of both Plants & Animals
CO 3	Various tissue system and organ system in plant and animals
CO 4	Theory of evolution
CO 5	Anatomy and Physiology of plants and animals

REMEDIAL MATHEMATICS

CO 1	Ability to apply mathematical concepts and principles to perform computations for Pharmaceutical Sciences.
CO 2	Quality to Create, use and analyze mathematical representations and mathematical relationships
CO 3	Ability to demonstrate and communicate mathematical knowledge in clinical pharmacy practices
CO 4	Ability to appreciate the important application of mathematics in Pharmacy

SEMESTER II

HUMAN ANATOMY AND PHYSIOLOGY II

CO 1 Students can able to understand the structure and functions of CNS, digestive, respiratory, urinary, endocrine, reproductive systems of the human body

CO 2 Students can able to understand the different physiological mechanisms like homeostasis, regulation of acid production in stomach, urine formation, mechanism of respiration and physiology of menstruation

CO 3 They also can identify various tissues of different systems of the body

PHARMACEUTICAL ORGANIC CHEMISTRY II

CO 1 Ability to draw the correct structure and mention accurate name of the organic compound as per the IUPAC norms and common name.

CO 2 Familiar with the different types of isomers found in organic compounds

CO 3 Ability to draw, tag the reaction, establish mechanism and orientation of organic reactions.

CO 4 Ability to justify for reactivity/stability of organic compounds

CO 5 Familiar with the concept of hybridization in organic compounds

CO 6 Theoretical knowledge of organic qualitative test employed for identification and confirmation of the unknown organic compound

CO 7 Familiar with the utility of certain organic compounds

BIOCHEMISTRY

CO 1 Upon completion of the course student shall be able to

CO 2 Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.

CO 3 Understand the metabolism of nutrient molecules in physiological and pathological conditions.

CO 4 Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

PATHOPHYSIOLOGY

CO 1 Knowledge on sign and symptoms of different disorders.

CO 2 Knowledge on pathophysiology complications of different disorders.

CO 3 Understanding the basic principles of cell injury and cell adaptation.

CO 4 Understanding the mechanism involved in the process of inflammation and repair.

CO 5 Provide an overview of disorders of cardiovascular system, renal system, nervous system, blood, endocrine system and digestive system.

CO 6 Knowledge on the relevant aspects of pathology of various conditions with reference to its pharmacological applications.

COMPUTER APPLICATIONS IN PHARMACY

CO 1 Ability to apply the knowledge of mathematics and computing fundamentals to pharmaceutical applications for any given requirement

CO 2 Design and develop solutions to analyze pharmaceutical problems using computers.

CO 3 Integrate and apply efficiently the contemporary IT tools to all Pharmaceutical related activities

CO 4 Solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to Pharmacy

ENVIRONMENTAL SCIENCES

CO 1 This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment

SEMESTER III

PHARMACEUTICAL ORGANIC CHEMISTRY

CO 1 Differentiate aromatic compounds from non-aromatic compounds and write the mechanismsandorientationofreactions.

CO 2 account for reactivity and stability of some important aromatic acidic and basic compounds

CO 3 Write the reactions of fats and oils.

CO 4 Account for importance of analytical constants and techniques to analyze those constants in fats and oils.

CO 5 Write the structure, preparation and uses of polynuclear hydrocarbons.

CO 6 Account for stability of cyclic compounds.

CO 7 Synthesize organic compounds and its derivatives

PHYSICAL PHARMACEUTICS I

CO 1 Understand various physicochemical properties of drug molecules in the designing of dosage forms.

CO 2 Demonstrate use of physicochemical properties in the formulationdevelopment and evaluation of dosage forms.

CO 3 The students will get knowledge with respect to the principles of formulation science such as complexation and protein binding, diffusion and dissolution, Distribution law: its limitations and applications.

CO 4 The students will be well versed with biopharmaceutical and pharmacokinetics aspects which will help to design a dosage form according to patient's need.

CO 5 Understand the importance of buffers and buffer system in pharmaceutical and biological system.

CO 6 Knowledge about surface and interfacial tension and its measurement, HLB Scale, solubilisation, adsorption at solid and liquid interfaces and surfactants.

PHARMACEUTICAL MICROBIOLOGY

CO 1	Understand methods of identification, cultivation and preservation of various microorganisms
CO 2	Emphasis of implementation of sterilization in pharmaceutical processing and industry
CO 3	An overview on cell culture technology and its applications in pharmaceutical industries.
CO 4	Learn sterility testing of pharmaceutical products.
CO 5	Understand the cell culture technology and its applications in pharmaceutical industries.
CO 6	Carried out the microbiological standardization of pharmaceutical products

PHARMACEUTICAL ENGINEERING

CO 1	Understand the various unit operations used in pharmaceutical industries.
CO 2	Ability to understand suitable compounds for various operation techniques and their usages.
CO 3	Ability to perform various processes involved in pharmaceutical manufacturing.
CO 4	Ability to assess the factors that contribute the pharmaceutical operations such as Size reduction, filtration, Centrifugation.
CO 5	Ability to assess the productivity of the operating equipment's
CO 6	Understand the various preventive methods used for corrosion control in pharmaceutical industries

SEMESTER IV

PHARMACEUTICAL ORGANIC CHEMISTRY

CO 1	Explainthestereochemicalaspectsof organiccompoundsandstereochemical reactions.
CO 2	Account for aromaticity, reactivity and medicinal uses of heterocyclic compounds
CO 3	Write the reactions and preparation of heterocyclic compounds of medicinal importance.
CO 4	Account for important naming reactions of synthetic importance.

MEDICINAL CHEMISTRY

CO 1	Impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs.
CO 2	Study of structure activity relationships of drugs under different categories.
CO 3	Knowledge on the importance of physicochemical properties and their role in improved biological action.
CO 4	Study of Biosynthesis and metabolism of drugs.
CO 5	Understand the chemistry of drugs with respect to their pharmacological activity.

CO 6 Study of the stepwise synthesis of different categories of drugs.

PHYSICAL PHARMACEUTICS II

CO 1 Know the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulation.

CO 2 To assess the rate of order of reaction involved in stabilization of medicinal agents against common reactions like hydrolysis and oxidation.

CO 3 Apply the concept of rheology in formulation of liquid and semisolid dosage forms.

CO 4 Knowledge of Colloids and their general properties, formulation and evaluation of coarse dispersion like suspension and emulsions.

CO 5 Apply the concept of micromeritics like evaluation of particle size, surface area and flow properties of powder in the formulation of dosage forms to manufacture dosage forms with minimum weight and content variations.

PHARMACOLOGY I

CO 1 Students will be able to understand the action of drugs on various system of the body like central nervous system and autonomic nervous system

CO 2 They can analyse the mechanism of drug action at organ system/sub cellular/macromolecular levels.

CO 3 They can apply the basic pharmacological knowledge in the prevention and treatment of various diseases.

PHARMACOGNOSY AND PHYTOCHEMISTRY I

CO 1 Knowledge on different crude drugs source, their uses and chemical nature.

CO 2 Knowledge on crude drugs classification, adulteration and it's evaluation methods

CO 3 Understanding the significance of Cultivation, Collection, Processing and storage of drugs of natural origin

CO 4 Provide an overview of alternative system of medicines and the role of Pharmacognosy in the development of traditional and allopathic system of medicine

CO 5 Knowledge on secondary metabolites including the definition, classification, properties and identification tests of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins.

CO 6 Knowledge on occurrence, chemistry, properties and estimation of primary metabolites like carbohydrates, proteins, lipids etc. with various examples

CO 7 Provide an overview on Novel medicinal agents from marine sources

SEMESTER V

MEDICINAL CHEMISTRY II

CO 1 Study of the different categories of drugs along with examples.

CO 2 Detailed knowledge on the structural activity relationship of different classes of the

drugs.

CO 3 Knowledge on the stepwise synthesis of different drugs.

CO 4 Classification of drug categories with examples.

CO 5 Study of Biosynthesis and metabolism of drugs.

CO 6 Understand the chemistry of drugs with respect to their pharmacological activity.

INDUSTRIAL PHARMACY I

CO 1 Know the various pharmaceutical dosage forms and their manufacturing techniques.

CO 2 Know various considerations in development of pharmaceutical dosage forms.

CO 3 Formulate solid, liquids and semisolid dosage forms and evaluate them for their quality.

CO 4 Course enables the students to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

CO 5 Knowledge on preformulation and study of physicochemical characteristics of drug substances and application of preformulation considerations in the development and its impact on stability of dosage forms.

CO 6 Understand formulation and evaluation of cosmetic preparation, formulation and evaluation of aerosols.

CO 7 Knowledge on materials used for packaging of pharmaceutical products and stability aspects of packaging materials.

CO 8 This course will give the students about operations in pharmaceutical industries and provide the confidence to students to take up job in industries

PHARMACOLOGY II

CO 1 Knowledge on the mechanism of drug action and its relevance in the treatment of different diseases.

CO 2 Understand the pharmacology of drugs acting on different body systems

CO 3 Emphasis on the basic concept of bioassay.

CO 4 Knowledge on various receptors action on the tissue preparation

CO 5 Appreciate correlation of pharmacology with related medical sciences.

PHARMACOGNOSY AND PHYTOCHEMISTRY II

CO 1 Emphasis of modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.

CO 2 Understand the Metabolic pathways to biosynthesis of various classes of natural products and their determination

CO 3 carryout isolation, identification and analysis of phytoconstituents

CO 4 An overview on secondary metabolites including composition, chemistry & chemical classes, bio sources, therapeutic uses and commercial applications with various examples

CO 5 Knowledge of basics of Phytochemistry

CO 6 Emphasis of Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

PHARMACEUTICAL JURISPRUDENCE

CO 1 Familiar to the Pharmaceutical legislations and their implications in the development and marketing

CO 2 Ability to update with various Indian pharmaceutical Acts, Laws and schedule from time to time.

CO 3 Familiar with the regulations abide by regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals

CO 4 Familiar with code of ethics during the pharmaceutical practice

CO 5 Ability to specify the definitions under the law prescribed by IPC in relation to pharmaceutical practices.

SEMESTER VI
MEDICINAL CHEMISTRY III

CO 1 Emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD).

CO 2 Emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.

CO 3 Knowledge on the stepwise synthesis of different drugs.

CO 4 Classification of drug categories with examples.

CO 5 Study of Biosynthesis and metabolism of drugs.

PHARMACOLOGY III

CO 1 Students would have studied elaborately on mechanism of drug action and its relevance in the treatment of different infectious diseases

CO 2 They comprehended the principles of toxicology and ability to assess the treatment of various poisonings

CO 3 They understood the significance of chemotherapeutic agents.

CO 4 They came across the methods of toxicity studies

CO 5 They studied about symptoms and treatment of several poisonings

CO 6 Students understood the toxicity profile of each drugs

CO 7 Appreciate correlation of pharmacology with related medical sciences.

HERBAL DRUG TECHNOLOGY

CO 1 Understand raw material as source of herbal drugs from cultivation to herbal drug

product

CO 2 Knowledge of herbal cosmetics, natural sweeteners, nutraceuticals

CO 3 An overview on WHO and ICH guidelines for evaluation of herbal drugs

CO 4 Understand the concept of alternative system of medicine

CO 5 Understand the status of herbal drug industry and herbal drug research in India

CO 6 Understand the Importance of Patenting and Regulatory requirements of natural products

BIOPHARMACEUTICS AND PHARMACOKINETICS

CO 1 The students will understand the basic concepts in bio-pharmaceutics and pharmacokinetics and their significance.

CO 2 Knowledge of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.

CO 3 Knowledge of bioavailability and bioequivalence of drug products and their significance.

CO 4 Knowledge about the bio-pharmaceutics and pharmakinetics data to analysis and fit in suitable model to evaluate the efficiency a drug or new drug dosage and their applications in pharmaceutical development, design ofdose and dosage regimen and in solving the problems.

PHARMACEUTICAL BIOTECHNOLOGY

CO 1 Ability to create revolution in health related research by applying the knowledge of the biological science to genetic engineering, medicine and fermentation technology.

CO 2 Ability to demonstrate and express advances of biotechnology in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic

CO 3 Ability to demonstrate the use microbes and mammalian cells for the production of pharmaceutical health products

CO 4 Demonstrate to design research strategy with step-by-step instructions to address a research problem

QUALITY ASSURANCE

CO 1 Understanding of role of QA an QC department in safety precaution of medicine and patient

CO 2 Familiar with the knowledge of factors affecting quality of pharmaceuticals

CO 3 Ability to explore the importance of with the Good manufacturing Practices and Good Laboratory Practices in pharmaceutical industry

CO 4 Ability to frame out the guidelines related to pharmaceutical production

CO 5 Perfection in maintaining documentation and records related activities.

SEMESTER VII
INSTRUMENTAL METHODS OF ANALYSIS

CO 1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
CO 2	Understand the chromatographic separation and analysis of drugs.

INDUSTRIAL PHARMACY II

CO 1	This course will give the students fundamental knowledge on pharmaceutical product development and translation from laboratory to market.
CO 2	Know the process of pilot plant and scale up of pharmaceutical dosage forms.
CO 3	Understand the process of technology transfer from lab scale to commercial batch.
CO 4	Know different Laws and Acts that regulate pharmaceutical industry.
CO 5	Understand the approval process and regulatory requirements for drug products.

PHARMACY PRACTICE

CO 1	Demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects, health policy and legal issues in the practice of pharmacy
CO 2	Demonstrate the Drug Distribution Methods in hospital and regularize in pharmacy practice
CO 3	Familiar with the principle of management of drug store and inventory control in pharmacy.
CO 4	Familiar with drug monitoring therapy of patient, medication chart review, ability to obtain medication history interviews and patient counseling, identification of drug related problems
CO 5	Ability to practice innovative activities through knowledge of clinical trial
CO 6	Exhibit professional ethics by producing safe and appropriate medication use throughout society

NOVEL DRUG DELIVERY SYSTEM

CO 1	The students are exposed to the newer system of drug delivery system which as overcome the drawbacks of convectional drug delivery system.
CO 2	Designed to impart basic knowledge on the area of novel drug delivery systems.
CO 3	Knowledge of various approaches for development of novel drug delivery systems such controlled, sustained and targeted
CO 4	Knowledge in selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

BIOSTATISTICS AND RESEARCH METHODOLOGY
SEMESTER VIII

CO 1 Acquainted with various statistical methods to solve different types of problems

CO 2 Experienced to operate various statistical software packages

CO 3 Escalate the importance of computer in hospital and community Pharmacy

CO 4 Appreciate the statistical technique in solving the pharmaceutical problems

SOCIAL AND PREVENTIVE PHARMACY

CO 1 Students would able to acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.

CO 2 Students would able to perform critical way of thinking based on current healthcare development.

CO 3 Students would able to evaluate alternative ways of solving problems related to health and pharmaceutical issues

PHARMA MARKETING MANAGEMENT

CO 1 The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry

PHARMACEUTICAL REGULATORY SCIENCE

CO 1 Know about the process of drug discovery and development

CO 2 Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals

CO 3 Know the regulatory approval process and their registration in Indian and international markets

PHARMACOVIGILANCE

CO 1 Students would learn drug safety monitoring and its important, History and development of pharmacovigilance, National and international scenario of pharmacovigilance, Dictionaries, coding and terminologies used in pharmacovigilance, Detection of new adverse drug reactions and their assessment, International standards for classification of diseases and drugs

CO 2 Students would learn Adverse drug reaction reporting systems and communication in pharmacovigilance, methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle, drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation

CO 3 Students would learn pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India, ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning, CIOMS requirements for ADR reporting

CO 4 Students would able to perform writing case narratives of adverse events and their quality.

QUALITY CONTROL AND STANDARDIZATION OF HERBALS

CO 1 Familiar with the WHO guidelines for quality control of herbal drugs

CO 2 Competency to maintain the Quality assurance in herbal drug industry

CO 3 Information skill regarding the regulatory approval process and their registration in Indian and

CO 4 International markets

CO 5 Appreciate EU and ICH guidelines for quality control of herbal drugs

COMPUTER AIDED DRUG DESIGN

CO 1 Familiar with the history of computers in Pharmaceutical Research & Development

CO 2 Ability to demonstrate the role of drug design software in development of lead molecule and pharmacophore

CO 3 Ability to share and explain the knowledge of various physicochemical properties in activity of pharmacophore and drug molecule

CO 4 Familiar with application of drug design software to compute ADME properties and pharmaceutical database

CO 5 Ability establish the mode of action and cause of toxicological, adverse or side effect of chemical entity through drug suite software

CO 6 Ability to explore drug research without harming the animals.

CELL AND MOLECULAR BIOLOGY

CO 1 Students would learn cell and molecular biology history, cellular functioning and composition, chemical foundations of cell biology, DNA properties of cell biology.

CO 2 Students would learn protein structure and function, describe cellular membrane structure and function, describe basic molecular genetic mechanisms, Cell Cycle

COSMETIC SCIENCE

CO 1 Familiar with the properties of various ingredients and excipients employed in cosmetic and cosmeceuticals

CO 2 Familiar with the cosmetic formulation technology and evaluation parameters

CO 3 Scientific knowledge to develop cosmetics with desired safety, stability and efficacy

EXPERIMENTAL PHARMACOLOGY

CO 1 Students would learn applications of various commonly used laboratory animals.

CO 2 Students would able to perform screening methods used in preclinical research.

CO 3 Students would able to perform and demonstrate the importance of biostatistics and research methodology.

CO 4 Students would learn design and execute a research hypothesis independently.

ADVANCED INSTRUMENTATION TECHNIQUES

CO 1	Familiar with basic theoretical knowledge of the instrumentation techniques and operations available for estimation and determination of samples.
CO 2	Theoretically sound to understand and demonstrate the aspects of separation for multi components in a mixture.
CO 3	Practical skills for the analysis of drugs and excipients using various instrumentation techniques.
CO 4	Acquaint in skill to make accurate analysis and report the results in well - defined formats.
CO 5	Pragmatic in documentation and expression of the observations with clarity.
CO 6	Ability to maintain the Professional and safety responsibilities for working in the analysis laboratory.

DIETARY SUPPLEMENTS AND NUTRACEUTICALS

CO 1	Familiarize with the concept behind the theoretical applications of dietary supplements to maintain the healthy nation.
CO 2	Theoretically sound to demonstrate the need of supplement by the different group of people to maintain a healthy life.
CO 3	Familiarize with natural neutraceutical occurs in plant and utility in deficiency disease.
CO 4	Ability to appreciate the regulatory and commercial aspects of dietary supplements including health claims
CO 5	Ability to maintain the quality and potential of neutraceuticals during in-process and storage

PHARMACEUTICAL PRODUCT DEVELOPMENT

CO 1	Explain the various regulations related to preformulation and formulation development
CO 2	Learn selection and application of excipients in pharmaceutical formulations
CO 3	Explain optimization by factorial designs and their applications.
CO 4	Learn the application of QbD in pharmaceutical product development.
CO 5	Explain regulatory considerations of packaging materials for pharmaceutical product development