

Arya College of Pharmacy

Course Outcome

D.PHARMA I YEAR		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
Course Code: ER20-11T PHARMACEUTICS	CO1	Describe about the different dosage forms and their formulation aspects
	CO2	appreciate Formulation, dispensing and labelling of the dosage form
	CO3	describe Calculation of working formula from the official master formula
	CO4	Perform the basic quality control tests for the common dosage forms
	CO5	Explain the importance, advantages, disadvantages of quality assurance and good manufacturing practices for different dosage forms
Course Code: ER20-12T PHARMACEUTICAL CHEMISTRY	CO1	Explain chemical class, structure and chemical name of the commonly used drugs and pharmaceuticals (organic and inorganic nature)
	CO2	Discuss the pharmacological uses, dosage regimen, stability issues and storage conditions of all such chemical substances commonly used as drugs
	CO3	Describe the quantitative and qualitative analysis, impurity testing of the chemical substances given in the official monographs
	CO4	Identify the dosage form & the brand names of the drugs and pharmaceuticals popular in the marketplace
	CO5	know mechanism of action and uses of drugs under various clinical categories
Course Code: ER20-13T PHARMACOGNOSY	CO1	Identify the important/common crude drugs of natural origin
	CO2	Describe the uses of herbs in nutraceuticals and cosmeceuticals
	CO3	Discuss the principles of alternative system of medicines
	CO4	Describe the importance of quality control of drugs of natural origin
	CO5	know Applications of herbs in health foods and cosmetics
Course Code: ER20-14T HUMAN ANATOMY AND PHYSIOLOGY	CO1	Describe Structure and functions of the various organ systems and organs of the human body
	CO2	Discuss the anatomical features of the important human organs and tissues
	CO3	Explain the homeostatic mechanisms regulating the normal physiology in the human system
	CO4	Discuss the significance of various vital physiological parameters of the human body
	CO5	Discuss the significance of various anatomical and physiological characteristics of the human body
Course Code: ER20-15T SOCIAL PHARMACY	CO1	Discuss about roles of pharmacists in the various national health programs
	CO2	Describe various sources of health hazards and disease preventive measures
	CO3	Discuss the healthcare issues associated with food and nutritional substances

CO4	Describe the general roles and responsibilities of pharmacists in public health
CO5	educate public and health care professionals in Health education and health promotion

D.PHARMA II YEAR

COURSE CODE/COURSE TITLE	COURSE OUTCOME
Course Code: ER20-21T PHARMACOLOGY	CO1 Describe General concepts of pharmacology including pharmacokinetics, pharmacodynamics, routes of administration, etc.
	CO2 know Pharmacological classification and indications of drugs
	CO3 know Dosage regimen, mechanisms of action, contraindications of drugs
	CO4 report Common adverse effects of drugs
	CO5 know Definition, types, and indications of biological agents
Course Code: ER20-22T COMMUNITY PHARMACY AND MANAGEMENT	CO1 Describe the establishment, legal requirements, and effective administration of a community pharmacy
	CO2 Professionally handle prescriptions and dispense medications
	CO3 Design and prepare patient information leaflets
	CO4 Counsel patients about the disease, prescription and or non-prescription medicines
	CO5 Perform basic health screening on patients and interpret the reports in the community pharmacy settings
Course Code: ER20-23T BIOCHEMISTRY & CLINICAL PATHOLOGY	CO1 Describe the functions of biomolecules
	CO2 Discuss the various functions of enzymes in the human system
	CO3 Explain the metabolic pathways of biomolecules in both physiological and pathological conditions
	CO4 Describe the principles of organ function tests and their clinical significances
	CO5 Determine the biomolecules / metabolites in the given biological samples, both qualitatively and quantitatively
Course Code: ER20-24T PHARMACOTHERAPEUTICS	CO1 Help assessing the subjective and objective parameters of patients in common disease conditions
	CO2 Assist other healthcare providers to analyse drug related problems and provide therapeutic interventions
	CO3 Participate in planning the rational medicine therapy for common diseases
	CO4 Design and deliver discharge counselling for patients
	CO5 know Basic methods for assessing the clinical outcomes of drug therapy
Course Code: ER20-25T HOSPITAL AND CLINICAL PHARMACY	CO1 Explain about the basic concepts of hospital pharmacy administration
	CO2 Manage the supply chain and distribution of medicines within the hospital settings
	CO3 Assist the other healthcare providers in monitoring drug therapy and address drug related problems
	CO4 Interpret common lab investigation reports for optimizing drug therapy
	CO5 know Basics of clinical pharmacy including introduction to comprehensive pharmaceutical care services

Course Code: ER20-26T PHARMACY LAW AND ETHICS	CO1	Describe the history and evolution of pharmacy law in India
	CO2	Interpret the act and rules regulating the profession and practice of pharmacy in India
	CO3	Discuss the various codes of ethics related to practice standards in pharmacy
	CO4	Interpret the fundamentals of patent laws from the perspectives of pharmacy
	CO5	appreciate Good Regulatory practices in Community Pharmacy, BCS system of classification, CEAR, BWMRetc.

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Course Outcome

B.PHARMA I Semester

B.PHARMA I Semester		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I	CO1	Explain the gross morphology, structure and functions of various organs of the human Body
	CO2	Describe the various homeostatic mechanisms and their imbalances.
	CO3	Identify the various tissues and organs of different systems of human body.
	CO4	4. Perform the various haematological experiments like CT,BT,CBC,TLC etc.
	CO5	Appreciate coordinated working pattern of different organs of each system
BP102T. PHARMACEUTICAL ANALYSIS	CO1	understand the principles of volumetric and electro chemical analysis
	CO2	carryout various volumetric and electrochemical titrations
	CO3	develop analytical skills
	CO4	Explain definitions, preparation and assay method of acid and base
BP103T. PHARMACEUTICS- I	CO1	Know the history of profession of pharmacy
	CO2	Understand the basics of different dosage forms
	CO3	Understand pharmaceutical incompatibilities and pharmaceutical calculations
	CO4	Understand the professional way of handling the prescription
	CO5	Preparation of various conventional dosage forms
BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY	CO1	Know the sources of impurities and methods to determine the impurities in API's
	CO2	Understand the medicinal and pharmaceutical importance of inorganic compounds
	CO3	Describe the definitions, preparations of buffers and adjustments of isotonicity
	CO4	know the sources, Properties and uses of Gastrointestinal agents
	CO5	Acquire knowledge on different types of medical gases, anesthetics and respiratory stimulants
BP105T.COMMUNICATION SKILLS	CO1	Understand the behavioral needs for a Pharmacist to function effectively in the Pharmaceutical field
	CO2	Communicate effectively (Verbal and Non Verbal)
	CO3	Effectivelymanage the team as a team player
	CO4	Develop interview skills
	CO5	Develop Leadership qualities and essentials

BP 106RBT.REMEDIAL BIOLOGY	CO1	know the classification and salient features of five kingdoms of life
	CO2	understand the basic components of anatomy & physiology of plant
	CO3	know the basic components of anatomy & physiology of animals Specially Human
	CO4	understand the basics of plant growth and development
	CO5	understand Morphological basics of plant Parts
BP 106RMT.REMEDIAL MATHEMATICS	CO1	Know the theory and their application in Pharmacy
	CO2	Solve the different types of problems by applying theory
	CO3	Appreciate the important application of mathematics in Pharmacy
	CO4	Understand meaning of statistics, uses and limitation and Testing of Hypothesis.
	CO5	Apply both conventional and creative techniques to the solutions of mathematical problems
B.PHARMA II Semester		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II	CO1	Explain the gross morphology, structure and functions of various organs of the Human body
	CO2	Describe interlinked mechanism in the maintenance of homeostatic mechanisms and their imbalances
	CO3	Identify the organs of different systems of human body.
	CO4	Perform the various experiments related to special senses and nervous system
	CO5	Appreciate coordinated working pattern of different organs of each system
BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I	CO1	write the structure, name and the type of isomerism of the organic compound
	CO2	write the reaction, name the reaction and orientation of reactions
	CO3	account for reactivity/stability of compounds
	CO4	identify/confirm the identification of organic compound
	CO5	write the examples and differences of reactions
BP203 T. BIOCHEMISTRY	CO1	understand the molecular levels of the chemical process associated with living cells.
	CO2	Understand the metabolism of nutrient molecules in physiological and pathological conditions
	CO3	Understand the genetic organization of mammalian genome and functions of DNA in RNA and protein synthesis
	CO4	Understand the catalytic role, importance and applications of enzyme in drug design
	CO5	understand Concept of free energy, endergonic and exergonic reaction with significance of Energy molecules
	CO1	understand thorough knowledge of the relevant aspects of pathology of various conditions
	CO2	Describe the etiology and pathogenesis of the selected disease states;

BP 204T.PATHOPHYSIOLOGY	CO3	Name the signs and symptoms of the diseases
	CO4	Mention the complications of the diseases.
	CO5	practice medicine safely, confidently, rationally and effectively.
BP205 T. COMPUTER APPLICATIONS IN PHARMACY	CO1	deals with the introduction Database, Database Management system
	CO2	know the various types of application of computers in pharmacy
	CO3	know the various types of databases
	CO4	know the various applications of databases in pharmacy
	CO5	know use of database and computer in clinical studies
BP 206 T. ENVIRONMENTAL SCIENCES	CO1	Create the awareness about environmental problems among learners.
	CO2	Impart basic knowledge about the environment and its allied problems.
	CO3	Develop an attitude of concern for the environment
	CO4	Motivate learner to participate in environment protection and environment improvement.
	CO5	Strive to attain harmony with Nature.
B.PHARMA III Semester		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II	CO1	deals with general methods of preparation and reactions and Reactivity of organic compounds
	CO2	write the structure, name and the type of isomerism of the organic compound
	CO3	write the reaction, name the reaction and orientation of reactions
	CO4	account for reactivity/stability of compounds
	CO5	prepare organic compounds
BP302T. PHYSICAL PHARMACEUTICS-I	CO1	know solubility principles and patterns of drug molecules
	CO2	know various physicochemical properties, and principles involved in dosage forms/formulations.
	CO3	Know the principles of chemical kinetics & to use them for stability testing
	CO4	know classification and application of complexation with special reference to protein binding
	CO5	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP 303 T. PHARMACEUTICAL MICROBIOLOGY	CO1	Understand methods of identification, cultivation and preservation of various microorganisms
	CO2	To understand the importance and implementation of sterilization in pharmaceutical processing and industry
	CO3	Learn sterility testing of pharmaceutical products.
	CO4	Carried out microbiological standardization of Pharmaceuticals.
	CO5	Understand the cell culture technology and its applications in pharmaceutical industries
BP 304 T. PHARMACEUTICAL	CO1	To know various unit operations used in Pharmaceutical industries.
	CO2	To understand the material handling techniques.

BP 304 T. PHARMACEUTICAL ENGINEERING	CO3	To perform various processes involved in pharmaceutical manufacturing process.
	CO4	To carry out various test to prevent environmental pollution.
	CO5	To appreciate and comprehend significance of plant lay out design for optimum use of resources.
B.PHARMA IV Semester		
BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III	CO1	understand stereo-chemical aspects of organic compounds and stereo chemical reactions
	CO2	understand the methods of preparation and properties of organic compounds
	CO3	know the medicinal uses and other applications of organic compounds
	CO4	know the chemistry, medicinal uses of important hetero cyclic compounds
	CO5	understand stereo-chemical aspects of important named reactions
BP402T. MEDICINAL CHEMISTRY – I	CO1	understand the chemistry of drugs with respect to their pharmacological activity
	CO2	understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
	CO3	know the Structural Activity Relationship (SAR) of different class of drugs
	CO4	write the chemical synthesis of some drugs
	CO5	design fundamental structure and explain chemistry and therapeutic value of drugs.
BP 403 T. PHYSICAL PHARMACEUTICS II	CO1	Understand various physicochemical properties of drug molecules in the designing the dosage forms
	CO2	Know the principles involved and used for stability testing for determination of expiry date of formulations
	CO3	know use of physicochemical properties in the formulation development and evaluation of dosage forms
	CO4	Know how physicochemical properties of drug molecules affect stability testing
	CO5	Get a better insight into various areas of formulation research and development,
BP 404 T. PHARMACOLOGY-I	CO1	Understand the pharmacological actions of different categories of drugs
	CO2	Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
	CO3	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases
	CO4	Observe the effect of drugs on animals by simulated experiments
	CO5	Appreciate correlation of pharmacology with other bio medical sciences
BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I	CO1	know the techniques in the cultivation and production of crude drugs
	CO2	know the crude drugs, their uses and chemical nature
	CO3	know the evaluation techniques for the herbal drugs
	CO4	carry out the microscopic and morphological evaluation of crude drugs
	CO5	know chemical nature and uses of drugs of natural origin like plant metabolites, enzymes etc.
B.PHARMA V Semester		
BP501T. MEDICINAL CHEMISTRY – II	CO1	Understand the chemistry of drugs with respect to their pharmacological activity
	CO2	Understand the drug metabolism and metabolic pathways of drugs
	CO3	Know the Structural Activity Relationship of different class of drugs
	CO4	Study the chemical synthesis of selected drugs
	CO5	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
BP 502 T. Industrial PharmacyI	CO1	Know the various pharmaceutical dosage forms and their manufacturing techniques.
	CO2	Know various considerations in development of pharmaceutical dosage forms
	CO3	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
	CO4	know the influence of pharmaceutical additives on the performance of the drug product.

	CO5	manufacturing techniques, development and evaluation of cosmetics
BP503.T. PHARMACOLOGY-II	CO1	Understand the mechanism of drug action and its relevance in the treatment of different diseases
	CO2	Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
	CO3	Demonstrate the various receptor actions using isolated tissue preparation
	CO4	Appreciate correlation of pharmacology with related medical sciences
	CO5	understand the basic concepts and methods of bioassay of various drugs
BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II	CO1	know production, isolation, identification and uses of secondary metabolites
	CO2	understand the herbal drug interactions
	CO3	know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
	CO4	carryout isolation and identification of phytoconstituents through plant tissue culture
	CO5	basic principles of traditional system of medicine
BP 505 T. PHARMACEUTICAL JURISPRUDENCE	CO1	The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals
	CO2	Various Indian pharmaceutical Acts and Laws
	CO3	The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
	CO4	The code of ethics during the pharmaceutical practice
	CO5	Know various other legislative laws acting and regulating pharmaceutical industry
B.PHARMA VI Semester		
BP601T. MEDICINAL CHEMISTRY – III	CO1	Understand the importance of drug design and different techniques of drug design.
	CO2	Understand the chemistry of drugs with respect to their biological activity.
	CO3	Know the metabolism, adverse effects and therapeutic value of drugs.
	CO4	Know the importance of SAR of drugs.
	CO5	know Various approaches used in drug design, Pharmacophore modeling and docking techniques, combinatorial chemistry
BP602 T. PHARMACOLOGY-III	CO1	understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
	CO2	comprehend the principles of toxicology and treatment of various poisonings
	CO3	understand various aspects of Chemotherapy
	CO4	know basic clinical oncepts and significance leading to chronotherapy
	CO5	appreciate correlation of pharmacology with related medical sciences
BP 603 T. HERBAL DRUG TECHNOLOGY	CO1	understand herbal drugs and Herbal drug industry
	CO2	understand raw material as source of herbal drugs from cultivation to herbal drug product
	CO3	know the WHO and ICH guidelines for evaluation of herbal drugs
	CO4	know the herbal cosmetics, natural sweeteners, nutraceuticals
	CO5	appreciate patenting of herbal drugs, GMP
BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS	CO1	Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance
	CO2	Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters
	CO3	to describe the kinetics of drug absorption, distribution,metabolism, excretion, elimination
	CO4	To understand the concepts of bioavailability and bioequivalence of drug products and their significance
	CO5	Understand various pharmacokinetic parameters, their significance & applications.

BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY	CO1	understand Biotechnology with reference to Pharmaceutical Sciences
	CO2	Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
	CO3	Genetic engineering applications in relation to production of pharmaceuticals
	CO4	Importance of Monoclonal antibodies in Industries
	CO5	Appreciate the use of microorganisms in fermentation technology
BP606TPHARMACEUTICAL QUALITY ASSURANCE	CO1	know various aspects of quality control and quality assurance aspects of pharmaceutical industries
	CO2	understand the cGMP aspects in a pharmaceutical industry
	CO3	appreciate the importance of documentation
	CO4	understand the scope of quality certifications applicable to pharmaceutical industries
	CO5	understand the responsibilities of QA & QC departments
B.PHARMA VII Semester		
BP701T. INSTRUMENTAL METHODS OF ANALYSIS	CO1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
	CO2	know the application of instrumental methods in qualitative and quantitative analysis of drugs
	CO3	Understand the principles and instrumentation of chromatographic separation and analysis of drugs.
	CO4	Understand the principles and instrumentation of spectroscopic separation and analysis of drugs.
	CO5	Perform quantitative & qualitative analysis of drugs using various analytical instruments
BP 702 T. INDUSTRIAL PHARMACYII	CO1	know fundamental knowledge on pharmaceutical product development and translation from laboratory to market
	CO2	Know the process of pilot plant and scale up of pharmaceutical dosage forms
	CO3	Understand the process of technology transfer from lab scale to commercial batch
	CO4	Know different Laws and Acts that regulate pharmaceutical industry
	CO5	Understand the approval process and regulatory requirements for drug products
BP 703T. PHARMACY PRACTICE	CO1	know various drug distribution methods in a hospital
	CO2	appreciate the pharmacy stores management and inventory control
	CO3	monitor drug therapy of patient through medication chart review
	CO4	detect and assess adverse drug reactions
	CO5	know pharmaceutical care services and appreciate the concept of Rational drug therapy
BP 704T: NOVEL DRUG DELIVERY SYSTEMS	CO1	know basic knowledge in the area of novel drug delivery systems.
	CO2	To understand various approaches for development of novel drug delivery systems
	CO3	To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems,
	CO4	know formulation and evaluation of Novel drug delivery systems
	CO5	know advantages and disadvantages of Novel drug delivery systems
B.PHARMA VIII Semester		
BP801T. BIOSTATISTICS AND RESEARCH METHODOLOGY	CO1	understand applications of Biostatistics in Pharmacy
	CO2	Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
	CO3	Know the various statistical techniques to solve statistical problems
	CO4	Appreciate statistical techniques in solving the problems.
	CO5	Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies.
BP 802T SOCIAL AND PREVENTIVE	CO1	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems.
	CO2	Have a critical way of thinking based on current healthcare development

BP 802I SOCIAL AND PREVENTIVE PHARMACY	CO3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues
	CO4	know National programme for the health care for the elderly and Social health programme
	CO5	know Community services in rural and Health promotion and education in school.
BP803ET. PHARMA MARKETING MANAGEMENT	CO1	understand marketing concepts and techniques and their applications in the pharmaceutical industry.
	CO2	know Definition, general concepts and scope of Product management in pharmaceutical industry.
	CO3	understand Methods, determinants of promotional mix and various online promotional techniques
	CO4	know appropriate marketing channel and physical distribution management
	CO5	know emerging concepts of marketing
BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE	CO1	fundamental knowledge on the regulatory requirements for approval of new drugs
	CO2	fundamental knowledge on the regulatory requirements for approval of drug products in regulated markets of India
	CO3	Know about the process of drug discovery and development
	CO4	Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
	CO5	Know the regulatory approval process and their registration in Indian and international markets
BP 805T: PHARMACOVIGILANCE	CO1	know History and development of pharmacovigilance with national and international scenario
	CO2	know Dictionaries, coding and terminologies used in pharmacovigilance
	CO3	understand Detection of new adverse drug reactions and their assessment with Adverse drug reaction reporting systems
	CO4	know Methods to generate safety data during pre clinical, clinical and post approval phases of drugs and Drug safety evaluation
	CO5	know Pharmacovigilance Program of India, ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS	CO1	various methods and guidelines for evaluation and standardization of herbs and herbal drugs
	CO2	know WHO guidelines for quality control of herbal drugs
	CO3	know Quality assurance in herbal drug industry
	CO4	know the regulatory approval process and their registration in Indian and international markets
	CO5	appreciate EU and ICH guidelines for quality control of herbal drugs
BP 807 ET. COMPUTER AIDED DRUG DESIGN	CO1	understand Design and discovery of lead molecules
	CO2	understand The role of drug design in drug discovery process
	CO3	understand The concept of QSAR and docking
	CO4	understand Various strategies to develop new drug like molecules.
	CO5	understand The design of new drug molecules using molecular modeling software
BP808ET: CELL AND MOLECULAR BIOLOGY	CO1	Summarize cell and molecular biology with their functioning and composition
	CO2	Describe the chemical foundations of cell biology with nucleic acid properties and protein structure and function in cell biology
	CO3	Describe cellular membrane structure and function
	CO4	Describe basic of cell genetics and molecular genetic mechanisms and genetic analysis
	CO5	Summarize the Cell signaling and regulation of signaling pathway
BP809ET. COSMETIC SCIENCE	CO1	understand concept and evolution of cosmetics as per Indian and EU regulations
	CO2	appreciate principles of formulation and evolution of skin and hair care products
	CO3	know Analytical techniques for cosmetics and role of herbs

	CO4	Principles of various instruments used for Cosmetic Evaluation
	CO5	know Basic understanding of Cosmetic problems associated with Hair and scalp and skin
BP810 ET. PHARMACOLOGICAL SCREENINGMETHODS	CO1	Appreciate the applications of various commonly used laboratory animals
	CO2	Appreciate and demonstrate the various screening methods used in preclinical research
	CO3	Appreciate and demonstrate the importance of biostatistics and researchmethodology
	CO4	Design and execute a research hypothesis independently
	CO5	research methodology and biostatistics for data analysis and interpretation with their Graphical representation
BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES	CO1	understand the advanced instruments used and its applications in drug analysis
	CO2	understand the chromatographic separation and analysis of drugs
	CO3	understand the calibration of various analytical instruments
	CO4	know analysis of drugs using various analytical instruments
	CO5	know basic understanding of Hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.
BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS	CO1	Understand the need of supplements by the different group of people to maintain healthy life.
	CO2	Understand the outcome of deficiencies in dietary supplements
	CO3	Appreciate the components in dietary supplements and the application.
	CO4	Appreciate the regulatory and commercial aspects of dietary supplements including health claims.
	CO5	Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods

Arya College of Pharmacy

Course Outcome

M.PHARMA I Semester (PHARMACEUTICS)		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
(MPH 101T) MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	CO1	Know advanced analytical instrumental techniques for identification, characterization and quantification of drugs.
	CO2	know Chemicals and Excipients for various analytical techniques
	CO3	know the analysis of various drugs in single and combination dosage forms
	CO4	Theoretical and practical skills of the instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.
	CO5	theoretical and practical aspects of Immunological assays
(MPH 102T) DRUG DELIVERY SYSTEMS	CO1	understand advances in novel drug delivery systems.
	CO2	know various approaches for development of novel drug delivery systems.
	CO3	The criteria for selection of drugs and polymers for the development of delivering system
	CO4	The formulation and evaluation of Novel drug delivery systems.
(MPH 103T) MODERN PHARMACEUTICS	CO1	know the elements of preformulation studies
	CO2	understand the Active Pharmaceutical Ingredients and Generic drug Product development
	CO3	appreciate Industrial Management and GMP Considerations
	CO4	know Optimization Techniques & Pilot Plant Scale Up Techniques
	CO5	perform Stability Testing, sterilization process & packaging of dosage forms.
(MPH 104T) REGULATORY AFFAIRS	CO1	The Concepts of innovator and generic drugs, drug development process
	CO2	The Regulatory guidance's and guidelines for filing and approval process
	CO3	Preparation of Dossiers and their submission to regulatory agencies in different countries
	CO4	Post approval regulatory requirements for actives and drug products
	CO5	requirements for approvals for conducting and monitoring of clinical trials, Pharmacovigilance Program
M.PHARMA II Semester (PHARMACEUTICS)		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
(MPH 201T) MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY &	CO1	impart knowledge on the area of advances in novel drug delivery systems.
	CO2	know various approaches for development of novel drug delivery systems.
	CO3	design criteria for selection of drugs and polymers for the development of NTDS

TARGETED DDS) (NTDS)	C04	know mutation and evaluation of novel drug delivery systems
	C05	design Nucleic acid based therapeutic delivery system, antisense molecules and aptamers as drugs of future
(MPH 202T) ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS	C01	know the basic concepts in biopharmaceutics and pharmacokinetics
	C02	know use of raw data and derive the pharmacokinetic models and parameters to describe the process of drug ADME
	C03	understand critical evaluation of biopharmaceutic studies involving drug product equivalency.
	C04	design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
	C05	know potentialof clinical pharmacokinetic problems and application of basics of pharmacokinetic
(MPH 203T) COMPUTER AIDED DRUG DEVELOPMENT	C01	know History of Computers in Pharmaceutical Research and Development
	C02	understand Computational Modeling of Drug Disposition and application of Computers in Preclinical Development
	C03	describe Optimization Techniques in Pharmaceutical Formulation
	C04	explain Computers in Market Analysis and Clinical Development
	C05	explain Computers in Artificial Intelligence (AI) and Robotics, Computational fluid dynamics(CFD)
(MPH 204T) COSMETICS AND COSMECEUTICALS	C01	Key ingredients used in cosmetics and cosmeceuticals.
	C02	Key building blocks for various formulations.
	C03	Current technologies in the cosmetics and cosmeceuticals market
	C04	Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.
	C05	Regulatory provisions relating to manufacture of cosmetics
M.PHARMA I Semester (PHARMACOLOGY)		
COURSE CODE/COURSE TITLE		COURSE OUTCOME
(MPL 101T) MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	C01	Know advanced analytical instrumental techniques for identification, characterization and quantification of drugs
	C02	know Chemicals and Excipients for various analytical techniques
	C03	know the analysis of various drugs in single and combination dosage forms
	C04	Theoretical and practical skills of the instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.
	C05	theoretical and practical aspects of Immunological assays
(MPL 102T) ADVANCED PHARMACOLOGY - I	C01	General aspects and steps involved in neurotransmission and Neurohumoral transmission
	C02	Discuss the pathophysiology and pharmacotherapy of certain diseases
	C03	Explain the mechanism of drug actions at cellular and molecular level
	C04	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases
	C05	know recent advances in the drugs used for the treatment of various diseases
(MDI 103T)	C01	Appraise the regulations and ethical requirement for the usage of experimental animals.

(MPL 103T) PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS - I	CO2	Describe the various animals used in the drug discovery process and GLP in maintenance and handling of experimental animals
	CO3	Describe the various newer screening methods involved in the drug discovery process
	CO4	Appreciate and correlate the preclinical data to humans
	CO5	know basic knowledge of various in-vitro and in-vivo preclinical evaluation processes
(MPL 104T) CELLULAR AND MOLECULAR PHARMACOLOGY	CO1	the structure and functions of cellular components and help to understand the interaction of these components with drugs.
	CO2	Explain the receptor signal transduction processes
	CO3	Explain the molecular pathways affected by drugs
	CO4	Appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.
	CO5	Demonstrate molecular biology techniques as applicable for pharmacology
M.PHARMA II Semester (PHARMACOLOGY)		
(MPL 201T) ADVANCED PHARMACOLOGY - II	CO1	recent advances in the drugs used for the treatment of various diseases.
	CO2	Explain the mechanism of drug actions at cellular and molecular level
	CO3	Discuss the Pathophysiology and pharmacotherapy of certain diseases
	CO4	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases
	CO5	tell Generation of free radicals, role of free radicals in etiopathology of various diseases
(MPL 202T) PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II	CO1	preclinical safety and toxicological evaluation of drug & new chemical entity
	CO2	Explain the various types of toxicity studies.
	CO3	Appreciate the importance of ethical and regulatory requirements for toxicity studies.
	CO4	Demonstrate the practical skills required to conduct the preclinical toxicity studies.
	CO5	Toxicokinetic evaluation in preclinical studies Importance and applications of toxicokinetic studies.
(MPL 203T) PRINCIPLES OF DRUG DISCOVERY	CO1	Explain the various stages of drug discovery
	CO2	Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery
	CO3	Explain various targets for drug discovery
	CO4	Explain various lead seeking method and lead optimization
	CO5	Appreciate the importance of the role of computer aided drug design in drug discovery
(MPL 204T) CLINICAL RESEARCH AND PHARMACOVIGILANCE	CO1	Explain the regulatory requirements for conducting clinical trial
	CO2	Explain the responsibilities of key players involved in clinical trials
	CO3	Execute safety monitoring, reporting and close-out activities
	CO4	Explain the principles of Pharmacovigilance
	CO5	Detect new ADRs and their assessment, adverse drug reaction reporting systems and communication in Pharmacovigilance