Course Outcomes : B. Pharmacy (2024-25)

Human anatomy & Physiology-I (17YBH101)

Course Outcome (CO)	Statement
CO1	Explain the relevance and significance of Human Anatomy and Physiology to Pharmaceutical sciences
CO2	Explain basic terminologies used in anatomy and physiology as well as prefixes & suffixes used to identify body parts and directional terms
CO3	Explain the gross morphology, structure and functions of various organs of the human body
CO4	Clarify the progression of structural levels (cells, tissues, organs, and systems) contributes to the body's order, there function and stability
CO5	Clarify various tissues and organs of different systems of human body

Phamaceutical Analysis-I (17YBH102)

Course Outcome (CO)	Statement
CO1	Understand the basic principles, instrumentation and applications of various analytical techniques which are used in pharmaceutical industry for quality control of chemicals, drug intermediates, excipients.
CO2	Understand the fundamentals of analytical chemistry.
CO3	Develop analytical skills
CO4	To study fundamentals of pharmaceutical analysis and pharmacopoeia
CO5	Clarify need and basic principles of Acid Base titration, non-aqueous titration, complexometric titration, precipitation titrations, gravimetric analysis etc

Pharmaceutics-I (17YBH103)

Course Outcome (CO)	Statement
CO1	Know the history of profession of pharmacy
CO2	Understand the basics of different dosage forms's
CO3	Understand the professional way of handling

	the prescription
CO4	Understand Impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms
CO5	Study Preparation of various conventional dosage forms

Pharmaceutical Inorganic Chemistry (17YBH104)

Course Outcome (CO)	Statement
CO1	Know the sources of impurities
CO2	Study monographs of inorganic drugs and pharmaceuticals
CO3	Understand the medicinal and pharmaceutical importance of inorganic compounds
CO4	Understand the basic concepts of acidity /basicity, buffers and tonicity applicable in pharmaceuticals
CO5	Understand concepts and principles of radiopharmaceuticals

Communication skills -Theory (17YBH105)

Course Outcome (CO)	Statement
CO1	Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
CO2	Communicate effectively (Verbal and Non-Verbal)
CO3	Effectively manage the team as a team player
CO4	Develop interview skills
CO5	Develop Leadership qualities and essentials

Remedial Biology (17YBH106)

Course Outcome (CO)	Statement
CO1	Know the classification and salient features of five kingdoms of life
CO2	Understand the basic components of anatomy & physiology of plant
CO3	Know understand the basic components of anatomy & physiology animal with special reference to human
CO4	Study the concepts about Breathing and respiration ,Digestion and Absorption, Human reproduction

Remedial Mathematics (17YBH107)

Course Outcome (CO)	Statement
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	Application of differential Equations in solving Pharmacokinetic equations
CO5	Matrices and Determinant Partial fraction , Logarithms , Functions, Limits and continuity

Human anatomy & physiology-I (17YBH111)

Course Outcome (CO)	Statement
CO1	Explain correct use and handling of various materials, instruments and equipments
CO2	Clarify structural and microscopical aspects of various organs of human system
CO3	Demonstrate and aware related various parameters used to check and regulate the normal functions of Human body
CO4	Demonstrate with the techniques for identification of various integral components of the body
CO5	Study different hematological testing

Pharmaceutical Analysis-I (17YBH112)

Course Outcome (CO)	Statement
CO1	Clarify and understand the correct use of laboratory equipments used in Analytical Chemistry laboratory.
CO2	Develop practical hand in titrimetric analysis by estimation of analyte concentration in pure form and in formulation with thorough understanding of principle and procedure used in different titration methods such as aqueous, non-aqueous, precipitation, complexometric, redox titration method
CO3	Carryout various volumetric and electrochemical titrations to determine normality.
CO4	Determine of Normality by electro-analytical method
CO5	Assay of the different compounds along with Standardization of Titrant

Pharmaceutics I (17YBH113)

Course Outcome (CO)	Statement
CO1	State the correct use of various equipments in Pharmaceutics laboratory relevant to practical
CO2	Describe use of ingredients in formulation and category of formulation
CO3	Explain formulation, evaluation and labeling of powders, granules, emulsion, suspension,
CO4	Define and describe the physical characteristics and role of formulation aids in preparation of
CO5	Perform pharmaceutical calculations

Pharmaceutical Inorganic Chemistry (17YBH114)

Course Outcome (CO)	Statement
CO1	Explain method of manufacturing, physical/chemical properties, assay, storage of important inorganic substances used for pharmaceutical purpose.
CO2	Prepare and calculate theoretical, practical and percentage yield of inorganic pharmaceutical
CO3	Identify impurities from pharmaceutical substances by performing limit tests
CO4	Predict swelling power, acid neutralizing capacity of various inorganic compounds
CO5	Perform Identification test for different pharmaceutical inorganic compounds

Communication Skills (17YBH115)

Course Outcome (CO)	Statement
CO1	Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
CO2	Communicate effectively (Verbal and Non-Verbal)
CO3	Effectively manage the team as a team player
CO4	Develop interview skills
CO5	Develop Leadership qualities and essentials

Remedial Biology – Practical (17YBH116)

Course Outcome (CO)	Statement
CO1	Prepare permanent slides & explain the significance of reference material such as herbarium specimen, permanent slides etc. In

	plant authentication
CO2	Demonstrate skill of plant material sectioning, staining, mounting & focusing
CO3	Decide on staining reagents required for specific part of plant
CO4	Understand the basic components of anatomy & physiology of animal with special reference to
CO5	Understand the basic components of anatomy & physiology of plant.

Human Anatomy and Physiology II (17YBH201)

Course Outcome (CO)	Statement
CO1	Explain the gross morphology, structure 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	Appreciate coordinated working pattern of different organs of each system
CO5	Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Pharmaceutical Organic Chemistry I (17YBH202)

Course Outcome (CO)	Statement
CO1	Explain basic functional groups
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	Classify different organic compounds

Biochemistry (17YBH203)

Course Outcome (CO)	Statement
CO1	Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
CO2	Understand the metabolism of nutrient molecules in physiological and pathological conditions
CO3	Understand the genetic organization of mammalian genome

CO4	Understand chemistry, function, classification, biological importance, qualitative tests & applications of various bio-molecules. e.g. proteins, carbohydrates, lipids, nucleic acids and vitamins
CO5	Establish the correlation of metabolism, process, steps involved in metabolism of carbohydrates, lipids, protein and nucleic acid

Pathophysiology (17YBH204)

Course Outcome (CO)	Statement
CO1	Describe definition, epidemiology, etiology, clinical manifestations pathophysiology for various diseases and disorders
CO2	Name the signs and symptoms of the diseases
CO3	Understand the complications, diagnosis for various diseases and disorders
CO4	Know Pathogenesis for various diseases and disorders
CO5	Study diagnostic tools for various diseases and disorders

Computer Applications in Pharmacy (17YBH205)

Course Outcome (CO)	Statement
CO1	Know the various types of application of computers in pharmacy
CO2	Know the various types of databases
CO3	Know the various applications of databases in pharmacy
CO4	Study Computers as data analysis in Preclinical development
CO5	Study Web technologies

Environmental sciences (17YBH206)

Course Outcome (CO)	Statement
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	Acquire skills to help the concerned individuals in identifying and solving environmental problems

Human Anatomy & Physiology-II (17YBH211)

Course Outcome (CO)	Statement
CO1	Explain correct use and handling of various materials, instruments and equipment's.
CO2	Demonstrate with the techniques for identification, counting, determination of various integral components of the body
CO3	Clarify structural and microscopical aspects of various organs of human system
CO4	Demonstrate and aware the students related various parameters use to check and regulate the normal functions of human body
CO5	Demonstrate positive and negative feedback mechanism

Pharmaceutical Organic Chemistry I (17YBH212)

Course Outcome (CO)	Statement
CO1	Explain correct use of various equipment's & safety measures in pharmaceutical chemistry laboratory.
CO2	Explain and understand the principal behind various qualitative tests and analyze the given unknown organic compounds having different functional groups.
CO3	Explain significance of qualitative analysis of organic compounds & synthesis of derivatives.
CO4	Understand the molecular model of organic compounds
CO5	Prepare suitable solid derivatives from organic compounds

Biochemistry (17YBH213)

Course Outcome (CO)	Statement
CO1	Identify proteins, amino acids and carbohydrates by various qualitative as well as quantitative chemical tests
CO2	Separate, identify and characterize proteins from various samples like egg, milk, etc and understand principle behind the technique
CO3	Estimate different components of blood & urine
CO4	Study effect of various parameters on activity of salivary amylase
CO5	Determine blood creatinine

Computer Applications in Pharmacy – Practical (17YBH214)

Course Outcome (CO)	Statement
CO1	Design a questionnaire using a word processing package to gather information about a particular disease
CO2	Create a HTML web page to show personal information
CO3	Know the various types of application of computers in pharmacy
CO4	Know the various types of databases
CO5	Design a form in MS Access to view, add, delete and modify the patient record in the database

Pharmaceutical Organic Chemistry II – Theory (17YBH301)

Course Outcome (CO)	Statement
CO1	Understand chemistry & aromatic character of benzene.
CO2	Know effect of Substituent & Chemical Reactions of Benzene, Phenols, Aromatic Amines.
CO3	Understand reactivity/stability of compounds,
CO4	Writing the reaction, name the reaction and orientation of reactions of polynuclear hydrocarbons & cycloalkanes
CO5	Memorize different reactions & analytical constants related to fats & oils

Physical Pharmaceutics I – Theory (17YBH302)

Course Outcome (CO)	Statement
CO1	Understand various physicochemical properties of drug molecules in the designing the
CO2	Know the principles of chemical kinetics & to use them in assigning expiry date for
CO3	Demonstrate use of physicochemical properties in evaluation of dosage forms.
CO4	Know importance of physicochemical properties of drug molecules in formulation research and development.
CO5	Know factors affecting on solubility of drug.

Pharmaceutical Microbiology – Theory (17YBH303)

Course Outcome (CO)	Statement
CO 1	Understand methods of identification,

	cultivation and preservation of various microorganisms
CO 2	Importance of sterilization in microbiology. and pharmaceutical industry
CO 3	Learn sterility testing of pharmaceutical products.
CO 4	Microbiological standardization of Pharmaceuticals.
CO 5	Understand the cell culture technology and its applications in pharmaceutical industries.

Pharmaceutical Engineering – Theory (17YBH304)

Course Outcome (CO)	Statement
CO 1	Know various unit operations used in Pharmaceutical industries.
CO 2	Understand the material handling techniques.
CO 3	Understand various processes involved in pharmaceutical manufacturing process.
CO 4	Know various test to prevent environmental pollution.
CO 5	Know significance of plant layout design for optimum use of resources.

Pharmaceutical Organic Chemistry –II (Practical) (17YBH311)

Course Outcome (CO)	Statement
CO 1	Explain correct use of various equipments & safety measures in pharmaceutical chemistry laboratory.
CO 2	Know various laboratory techniques for the synthesis of organic compounds.
CO 3	Explain and understand principal, procedure and illustrate applications of every experiment.
CO 4	Understand methods determination of oil values.
CO 5	To know various techniques of purification of the synthesized compound using steam distillation or recrystallization

Physical Pharmaceutics I – Practical (17YBH312)

Course Outcome (CO)	Statement
CO 1	Operate different pharmaceutical laboratory instruments used in determining various physical properties such as surface tension, viscosity, adsorption and solubility.
CO 2	Calculate critical solution temperature &

	effect of addition of electrolyte on CST of phenol water system.
CO 3	Predict solubility & pKa of given compound.
CO 4	Determine partition co- efficient of given compound
CO 5	Evaluate procedure of bulk density, angle of repose, particle size distribution & derived properties of any

Pharmaceutical Microbiology – Practical (17YBH313)

Course Outcome (CO)	Statement
CO 1	Understand principle, construction and working of various instruments and perform their operations.
CO 2	Know handling procedure of microscope for observation of microbes.
CO 3	Know preparation and sterilization nutrient broth, nutrient agar, slants, stabs and plates.
CO 4	Understand skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure
CO 5	Understand various techniques of purification for synthesized compound using steam distillation or recrystallization

Pharmaceutical Engineering (Practical) (17YBH314)

Course Outcome (CO)	Statement
CO 1	Know different materials used in the pharmaceutical plant constructions.
CO 2	Study the principle, theory, mechanism, working and construction of equipments of different unit operations. (filtration, centrifugation, drying, heat transfer.)
CO 3	Study the graphical representation of various equipment for unit operations.
CO 4	Know principles, mechanisms and theories of different unit operations.
CO 5	Describe types of distillation, their mechanisms with appropriate diagrams.

Pharmaceutical Organic Chemistry- III Theory (17YBH401)

Course Outcome (CO)	Statement
CO 1	Explain stereo chemical aspects of organic compounds and stereo chemical reactions.
CO 2	Clarify isomerism & apply that knowledge in

	understanding the structure property relationship.
CO 3	Know the medicinal uses and other applications of organic compounds.
CO 4	Explain nomenclature aromaticity, reactivity synthesis, reactions and basicity of heterocyclic compounds.
CO 5	Understand the reactions of synthetic importance

Medicinal Chemistry-I(Theory) (17YBH402)

Course Outcome (CO)	Statement
CO 1	Understand the chemistry of drugs with respect to their pharmacological activity.
CO 2	Understand the metabolic pathways of drugs.
CO 3	Know the Structural Activity Relationship (SAR) of different class of drugs.
CO 4	Write the chemical synthesis of some drugs.
CO 5	Know the adverse effect and therapeutic value of drugs.

Physical Pharmaceutics II – Theory (17YBH403)

Course Outcome (CO)	Statement
CO 1	Understand various physicochemical properties of drug molecules in the designing the dosage forms.
CO 2	Describe the degradation and stabilization of medicinal agents as well as accelerated stability testing. Know the principles of chemical kinetics & to use them in assigning expiry date for formulation.
CO 3	Know the pharmaceutical applications of rheology & Understand the different types of flow in order to identify and choose suitable flow characteristics for the
CO 4	Acquire sufficient knowledge of surface and interfacial tension between the surfaces.
CO 5	Acquire skills and understanding of the principles, concepts of surface tension and its measurement.

Pharmacology-I(Theory) (17YBH404)

Course Outcome (CO)	Statement
CO 1	Know the pharmacology including pharmacokinetics & pharmacodynamics
CO 2	Explain the 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	Understand the pharmacological actions of different categories of drugs
CO 5	Appreciate correlation of pharmacology with other bio medical sciences

Pharmacognosy and Phytochemistry –I Theory (17YBH405)

Course Outcome (CO)	Statement
CO 1	Explain the term "Pharmacognosy" and quality control test of natural products.
CO 2	Know the techniques in the cultivation and production of crude drugs
CO 3	Know the plant tissue culture .
CO 4	Know the different secondary metabolites
CO 5	Know biological source, chemical nature and uses of drugs of natural origin

Medicinal Chemistry I – Practical (17YBH411)

Course Outcome (CO)	Statement
CO 1	Know correct use of various equipments & safety measures while working in medicinal chemistry laboratory.
CO 2	Synthesize and recrystallize medicinally important organic compounds.
CO 3	Determine the purity of drug samples by performing assay as per IP
CO 4	Determine the partition co-efficient of compounds
CO 5	Understand reaction mechanisms involved in synthesis of medicinally important organic compounds.

Physical Pharmaceutics II – Practical (17YBH412)

Course Outcome (CO)	Statement
CO 1	Operate different pharmaceutical laboratory instruments used in determining various physical properties such as surface tension & viscosity.
CO 2	Predict surface tension of given liquid.
CO 3	Calculate critical micelle concentration and HLB value of given surfactant.
CO 4	Understand working of Ostwald &

	Brookfield viscometer.
CO 5	Know effect of suspending agent on sedimentation volume.

Pharmacology-I(Practical) (17YBH413)

Course Outcome (CO)	Statement
CO 1	Know the commonly used instruments in experimental pharmacology.
CO 2	Care and handling of common laboratory animals, animal welfare and introduction of CPCSEA and its guidelines, OECD guidelines.
CO 3	Know the various routes of drug administration.
CO 4	Study different pharmacological activities of drug on animals.
CO 5	Know the techniques of Euthenesia.

Pharmacognosy and Phytochemistry-I (Practical) (17YBH414)

Course Outcome (CO)	Statement
CO 1	Explain and demonstrate handling of inflammable solvents & corrosive chemicals.
CO 2	Analyze crude drugs by chemical tests
CO 3	Generate micrometric data & identify the crude drugs
CO 4	Undertake various estimations/determinations; infer from results obtained & report evaluation
CO 5	Apply theoretical knowledge for extraction of phytochemicals, set extraction assembly,

Medicinal Chemistry – II (17YBH501)

Course Outcome (CO)	Statement
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 of different class of drugs
CO4	Study the chemical synthesis of selected drugs
CO5	Importance of physicochemical properties and metabolism of drugs

Industrial Pharmacy I (17YBH502)

Course Outcome (CO)	Statement
CO1	Know the process of pilot plant and scale up of pharmaceutical dosage forms
CO2	Understand the process of technology transfer from lab scale to commercial batch
CO3	Know different laws and acts that regulate pharmaceutical industry in India and US
CO4	Understand the approval process and regulatory requirements for drug products
CO5	Know the process of pilot plant and scale up of pharmaceutical dosage forms

Pharmacology II (17YBH503)

Course Outcome (CO)	Statement
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	Study preventive measures for the diseases

Pharmacognosy & Phytochemistry II (17YBH504)

Course Outcome (CO)	Statement
CO1	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
CO2	To understand the herbal drug interactions
CO3	To understand the preparation and development of herbal formulation
CO4	To carryout isolation and identification of phytoconstituents
CO5	Study metabolic pathways in higher plants

Pharmaceutical Jurisprudence (17YBH505)

Course Outcome (CO)	Statement
CO1	Understand the basic knowledge on important legislations related to the profession of pharmacy in India
CO2	Understand the objectives of acts and laws

CO3	Know the importance of indian pharmaceutical laws and acts
CO4	Understand the introduction to the intellectual property rights
CO5	Know the importance of regulatory authorities and agencies governing the manufacture and sale of Pharmaceuticals

Industrial Pharmacy –I (17YBH511)

Course Outcome (CO)	Statement
CO1	Understand the concepts of solid dosage form design & formulation strategies & evaluation
CO2	Preparation and evaluation of different dosage forms
CO3	Study evaluation of Glass containers (as per IP)
CO4	Study quality control test of (as per IP) marketed tablets and capsules
CO5	Perform coating of tablets- film coating of tables/granules

Pharmacology II (17YBH512)

Course Outcome (CO)	Statement
CO1	Understand the importance of isolated preparation, mechanism of action of drugs on isolated tissues, expertise in performing bioassay of drugs.
CO2	Introduce commonly used instruments in experimental pharmacology
CO3	Care and handling of common laboratory animals, animal welfare and introduction of CPCSEA and its guidelines, OECD guidelines
CO4	Study effect of drug on various parameters
CO5	Study various anesthetics employed to anesthetize laboratory animals

Pharmacognosy and Phytochemistry II (17YBH513)

Course Outcome (CO)	Statement
CO1	Extract & subsequently conduct experiments to derive various physical constants required in characterization of natural products
CO2	Study different isolation techniques for active principle from crude drugs
CO3	Study the principle & applications of distillation, TLC & paper chromatography.
CO4	Handle various equipments as per SOPs &

	learn various demonstrations (of experiments)
CO5	Study Morphology, histology and powder characteristics of natural drugs

Medicinal Chemistry III (17YBH601)

Course Outcome (CO)	Statement
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	Give uses of different drug classes

Pharmacology III (17YBH602)

Course Outcome (CO)	Statement
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	Appreciate correlation of pharmacology with related medical sciences
CO4	Study general principles of chemotherapy along with treatments.
CO5	Give aspect of immunopharmacology

Herbal Drug Technology (17YBH603)

Course Outcome (CO)	Statement
CO1	Understand raw material as source of herbal drugs from cultivation to herbal drug product
CO2	Know the WHO and ICH guidelines for evaluation of herbal drugs
CO3	Know the herbal cosmetics, natural sweeteners, nutraceuticals
CO4	Appreciate patenting of herbal drugs, GMP
CO5	Role of neutraceuticals

Biopharmaceutics and Pharmacokinetics (17YBH604)

Course Outcome (CO)	Statement
CO1	Understand the basic concepts in biopharmaceutics and pharmacokinetics
CO2	Use plasma data and derive the

	pharmacokinetic parameters to describe the process of drug
CO3	Critically evaluate biopharmaceutic studies involving drug product equivalency
CO4	Design and evaluate dosage regimens of the drugs using pharmacokinetic and
CO5	Detect potential clinical pharmacokinetic problems and apply basic pharmacokinetic

Pharmaceutical Biotechnology (17YBH605)

Course Outcome (CO)	Statement
CO1	Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
CO2	Genetic engineering applications in relation to production of pharmaceuticals
CO3	Importance of Monoclonal antibodies in Industries
CO4	Appreciate the use of microorganisms in fermentation technology
CO5	Study collection, Processing and Storage of whole human blood, dried human plasma, plasma Substitutes

Quality Assurance (17YBH606)

Course Outcome (CO)	Statement
CO1	Understand the interaction of matter with electromagnetic radiations and its applications in
CO2	Understand the chromatographic separation and analysis of drugs.
CO3	Perform quantitative & qualitative analysis of drugs using various analytical instruments
CO4	Know ICH Guidelines
CO5	Study Good Laboratory Practices

Medicinal chemistry III (17YBH611)

Course Outcome (CO)	Statement
CO1	Make correct use of various equipments & take safety measures while working in medicinal
CO2	Understand and develop skills in various technology such as chemdraw
CO3	Prepare medicinally important compounds or intermediates by Microwave irradiation
CO4	Determine physicochemical properties using drug design software

CO5	Understand the principle of performing assay of drug and to check the purity profile.

Pharmacology III (17YBH612)

Course Outcome (CO)	Statement
CO1	Understand the importance of isolated preparation, mechanism of action of drugs on isolated
CO2	Analyze the rational and irrational fixed dose combinations based on various parameters.
CO3	Understand the in vivo and in vitro experiments.
CO4	Have Brief idea about statistics, its applications and how to solve problems using various statistical
CO5	Calculate pharmacokinetic parameters from a given data

Herbal Drug Technology (17YBH613)

Course Outcome (CO)	Statement
CO1	Apply theoretical knowledge obtained for extraction of phytochemicals, set extraction
CO2	Explain significance use of various chemicals/solvents/conditions; undertake various estimations/determinations; infer from results obtained & report evaluation results
CO3	Conduct various analytical parameters of volatile oils & judge the quality of volatile oils.
CO4	Able to identify unorganized crude drugs & samples of powders of organized & unorganized
CO5	Verify extracted material by qualitative tests & report yield

Instrumental Methods of Analysis (17YBH701)

Course Outcome (CO)	Statement
CO1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
CO2	Understand the chromatographic separation and analysis of drugs.
CO3	Perform quantitative & qualitative analysis of drugs using various analytical instruments
CO4	Know advantages and disadvantages of different analysis techniques

CO5	Applications of pharmaceutical analysis

Industrial Pharmacy-II (17YBH702)

Course Outcome (CO)	Statement
CO1	Know the process of pilot plant and scale up of pharmaceutical dosage forms
CO2	Understand the process of technology transfer from lab scale to commercial batch
CO3	Know different Laws and Acts that regulate pharmaceutical industry
CO4	Understand the approval process and regulatory requirements for drug products
CO5	Know WHO guidelines for technology and transfer

Pharmacy Practice (17YBH703)

Course Outcome (CO)	Statement
CO1	Obtain medication history interview and counsel the patients
CO2	Detect and assess adverse drug reactions
CO3	Do patient counseling in community pharmacy
CO4	Appreciate the concept of Rational drug therapy
CO5	Interpret selected laboratory results of specific disease states

Novel Drug Delivery System (17YBH704)

Course Outcome (CO)	Statement
CO1	Understand various approaches for development of novel drug delivery systems.
CO2	Understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation
CO3	Study different approaches in mucosal drug delivery system
CO4	Learn different approaches in nanotechnology
CO5	Know advantages and disadvantages of different novel drug delivery system

Instrumental Methods of Analysis-Practical (17YBH711)

Course Outcome (CO)	Statement
CO1	Operate and calibrate various analytical

	instruments for the separation/isolation and assay of various APIs and formulations as per Pharmacopoeial standards
CO2	Process, interpret the data obtained through experimentation and report the result as per regulatory requirements.
CO3	Take appropriate safety measures while handling instruments, chemicals and apparatus.
CO4	Perform assay of compound to know the amount of the same by UV-Spectrophotometry
CO5	Perform different chromatographic techniques for separation of components

Biostatistics and Research Methodology (17YBH801)

Course Outcome (CO)	Statement
CO1	Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
CO2	Know the various statistical techniques to solve statistical problems
CO3	Appreciate statistical techniques in solving the problems.
CO4	Understand need for research
CO5	Study Factorial Design

Social and Preventive Pharmacy (17YBH802)

Course Outcome (CO)	Statement
CO1	Acquire high consciousness/realization of current issues related to health and pharmaceutical Problems within the country and worldwide.
CO2	Have a critical way of thinking based on current healthcare development
CO3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues
CO4	Study general principles of prevention and control of diseases such as cholera, SARS, Ebola virus,
CO5	Study role of WHO in Indian national program

Pharmaceutical Marketing Management (17YBH803ET)

Course Outcome (CO)	Statement
CO1	To acquire basic concepts of pharmaceutical

	marketing
CO2	Understand marketing concepts and techniques and the application of the same in the pharmaceutical industry
CO3	Know different pricing authorities like DPCO & NPPA
CO4	Know different promotion modes
CO5	Know emerging concepts in marketing

Pharmaceutical Regulatory Science (17YBH804ET)

Course Outcome (CO)	Statement
CO1	Know about the process of drug discovery and development
CO2	Know the regulatory authorities and agencies governing the manufacture and sale of Pharmaceuticals
CO3	Know the regulatory approval process and their registration in Indian and international Markets
CO4	Know about different phases of Clinical trials
CO5	Know about procedure for export of pharmaceutical products and technical documentation

Pharmacovigilance (17YBH805ET)

Course Outcome (CO)	Statement
CO1	Know Why drug safety monitoring is important?
CO2	History and development of pharmacovigilance
CO3	Adverse drug reaction reporting systems and communication in pharmacovigilance
CO4	National and international scenario of pharmacovigilance
CO5	Detection of new adverse drug reactions and their assessment

Quality Control and Standardizations of Herbals (17YBH806ET)

Course Outcome (CO)	Statement
CO1	Know who guidelines for quality control of herbal drugs
CO2	Know quality assurance in herbal drug industry
CO3	Know the regulatory approval process and their registration in Indian and international
CO4	Appreciate EU and ICH guidelines for quality

	control of herbal drugs
CO5	Know about WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines

Computer Aided Drug Design (17YBH807ET)

Course Outcome (CO)	Statement
CO1	Design and discovery of lead molecules
CO2	Know the role of drug design in drug discovery process
CO3	Know the concept of QSAR and docking
CO4	Know various strategies to develop new drug like molecules
CO5	Know rational approaches to lead discovery based on traditional medicine

Cell and Molecular Biology (17YBH808ET)

Course Outcome (CO)	Statement
CO1	Design and discovery of lead molecules
CO2	Know the role of drug design in drug discovery process
CO3	Know the concept of QSAR and docking
CO4	Know various strategies to develop new drug like molecules
CO5	Know rational approaches to lead discovery based on traditional medicine

Cosmetic Science (17YBH809ET)

Course Outcome (CO)	Statement
CO1	Study Principles of formulation and building blocks of Hair care products
CO2	Understand role of herbs in cosmetics
CO3	Know Definition of cosmetics as per Indian and EU regulations
CO4	Know Cosmetic problems associated with Hair and scalp
CO5	Study antiperspirants and deodorants

Experimental Pharmacology (17YBH810ET)

Course Outcome (CO)	Statement
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 research methodology
CO4	Design and execute a research hypothesis independently
CO5	Know research methodology and Bio-statistics

Advanced Instrumentation Techniques (17YBH811ET)

Course Outcome (CO)	Statement
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	Study hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.

Dietary Supplements and Nutraceuticals (17YBH812ET)

Course Outcome (CO)	Statement
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	Study Phytochemicals as nutraceuticals