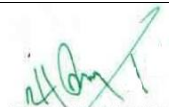



KIET GROUP OF INSTITUTIONS
KIET SCHOOL OF PHARMACY
Course Outcomes
Session 2019-20

Subject Name	Subject Code	CO Statement - 1	CO Statement - 2	CO Statement - 3	CO Statement - 4	CO Statement - 5
B.PHARM-I YEAR; I SEMESTER						
Human Anatomy & Physiology-I	BP101T	To summarize the basic concepts of human body, structure of cell, cell signalling and various tissues types, its structure and function.	To identify the concepts of the structure and functions of skin, bones and muscles of the human body.	To examine the composition and functions of body fluids like blood and lymph.	To prioritize the anatomy and physiology of peripheral nervous system and sense organs.	To demonstrate the anatomy and physiology of heart and its disorders to create the concepts of interpretation of ECG.
Pharmaceutical Analysis-I	BP102T	Understand the concepts of pharmaceutical analysis including accuracy and precision, primary and secondary standards.	Apply the principles and theories involved in acid base titrations, mechanism of indicators, titration curves and non-aqueous titrations.	Analyze the various aspects of volumetric techniques like precipitation titrations, gravimetric titrations, diazotization titrations and complexometric titrations.	Illustrate the working principles of redox reactions, redox indicators, titrations curves for redox titrations, iodimetric and iodometric methods	Describe the components of special techniques of analysis like Conductometry, Potentiometry and Polarography.
Pharmaceutics-I	BP103T	To describe the Pharmacy profession and to analyze the prescription & posology.	To understand the pharmaceutical calculations and explanation of powders dosage forms & liquid dosage forms.	To classify and develop monophasic and biphasic dosage forms.	To describe and outline the suppositories formulation and To understand the pharmaceutical incompatibilities	To illustrate and understand semisolid dosage forms.
Pharmaceutical Inorganic Chemistry	BP104T	Students should understand the sources of impurities and their control, Limit test.	Students must understand the various inorganic gastrointestinal agents and antimicrobials.	Students must understand the various inorganic gastrointestinal agents and antimicrobials.	Students must be well enough to understand expectorants, emetics, haematinics and antidotes	Students should thoroughly understand the radiopharmaceuticals, their handling and precautions.
Communication Skills	BP105T	Ability to perform better in their academic and professional scenario with the help of mechanism of communication process.	Demonstrate personality of students with a grip over advanced techniques of language	Ability to build the self-confidence with improved command over the dimension of English language	Recognize learning technical aspects of communication for better performance in recruitment process and prospective jobs.	Assess comprehend, converse, interact and participate at multinational levels in day to day events and situation.
Remedial Biology	BP106RBT	To understand the basics of living world and learn the morphology and anatomy of roots, stems, flower, leaf, fruit and seed.	To analyze the basic anatomical and physiological aspects associated with human circulatory, digestive and respiratory systems.	To apply the concepts of CNS, endocrine excretory and reproductive system to understand human physiology.	To illustrate the nutrition in plants, nitrogen metabolism and photosynthesis.	To describe about the concepts of Plant respiration, Plant growth and create the basic knowledge about Cell and Tissues.


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Human Anatomy and Physiology-I Lab	BP107P	To understand the basic practical aspects of skeleton system.	To analyze the practical aspects of hematology and its importance.	To demonstrate the blood pressure, pulse rate measurement and its applications.		
PHARMACEUTICAL ANALYSIS-I PRACTICAL	BP108P	To understand and perform acid base titrations and assays.	To understand and perform precipitation titrations and assays.	To understand and perform redox titrations and assays.	To illustrate complexometric titrations and assays.	To understand and perform gravimetric titrations .
Pharmaceutics -I Practical	BP109P	Students will be able to understand the preparation and dispensing of liquid dosage forms	Students will be able to understand the preparation and dispensing of semisolid dosage forms	Students will be able to understand the preparation and dispensing of powders		
PHARMACEUTICAL INORGANIC CHEMISTRY PRACTICAL	BP110P	Demonstrate the limit test for chloride, iron, sulphate of the given test sample	Design the preparation of calcium carbonate, boric acid	Outline the preparation of potash alum, magnesium sulphate, zinc sulphate	Analyze the swelling power of bentonite	Describe the identification test for copper sulphate
Communication Skills	BP111P	An ability to express and to show interest in the person and participating in a collaborative work with the help of good interpersonal skills.	Ability to build the self-confidence with improved command over the mechanism of English language	To develop and participate in the variety of opportunities in verbal and non-verbal communication.		
Remedial Biology Practical	BP112RBP	Student will understand and learn the microscopic techniques	Students will analyze and apply the techniques of microscopy to identify various morphological characteristics of plant and animal tissue	Students will analyze and apply the techniques of blood count, hemoglobin, blood pressure, clotting time to learn human biology and physiology		


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B.PHARM-I YEAR; II SEMESTER

Human Anatomy & Physiology-II	BP201T	To understand the concepts of anatomy and physiology of Nervous system.	To apply the concepts of various organs of Digestive system and understanding energetics.	To analyze the various aspects of Respiratory system and Urinary system	To illustrate the various glands of Endocrine system and understand their roles in the body.	To describe the various aspects of male and female Reproductive systems and analyze genetics.
ORGANIC CHEMISTRY-I	BP202T	Understand about Classification, nomenclature and isomerism of Organic Compounds.	Understand about definition, types, classification, principles/mechanisms, applications, General methods of preparation and reactions of Alkanes*, Alkenes* and Conjugated dienes.	Illustrate the definition, types, classification, principles/mechanisms, applications, General methods of preparation and reactions of Alkyl halides and Alcohols.	Illustrate the definition, types, classification, principles/mechanisms, applications, General methods of preparation and reactions of carbonyl Compounds.	Describe the definition, types, classification, principles/mechanisms, applications, General methods of preparation and reactions of Carboxylic acids and Amines.
Biochemistry	BP203T	To understand and identify the concept of Biomolecules and Bioenergetics	The students shall learn carbohydrate metabolism and biological oxidation and apply the learned knowledge in understanding diseases	To understand and analyze the concepts lipid and amino acids metabolism and their role in various diseases. The students shall be exposed to knowledge about nucleic acid metabolism and genetic information transfer	To illustrate the concept of nucleic acid metabolism and transfer of genetic information.	To describe the classification and types of enzymes and their role as diagnostic and therapeutic applications.
Pathophysiology	BP204T	To describe the basic mechanisms involved in the process of cell injury and inflammation	To explain the pathological mechanisms involved in the development of cardiovascular, renal and respiratory systems	To outline the mechanisms of development of diseases associated with blood, endocrine, nervous and gastrointestinal system	To illustrate the development and progression of inflammatory diseases along with cancer.	To summarize the etiology and pathogenesis of infectious and sexually transmitted diseases
Computer Applications in Pharmacy	BP205T	To understand the concept of number system and information systems.	To summarize the about various web technologies and databases.	To classify and apply the concepts of the various types of application of computers in pharmacy.	To assess the objective, concept and impact of Bioinformatics.	To understand and formulate application of computers in data analysis in Preclinical development .
ENVIRONMENTAL SCIENCES	BP206T	Remember and understand the concept of the multidisciplinary nature of environmental studies and natural resources with its conservation.	To remember and understand the concept of an ecosystem, structural and functional components of ecosystem and its various types.	To remember the concept of environmental pollution and understand the various types of environmental pollution with its types, sources, impact on man and its environment and control of environmental pollution.		

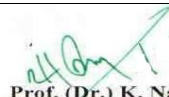

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HUMAN ANATOMY AND PHYSIOLOGY-II (PRACTICAL)	BP207P	To understand and remember anatomy and physiology of CNS, Digestive system, Respiratory system, urinary system, endocrine system and reproductive system using models and charts.	To apply and analyze the practical aspects of related to reflex activity, body temperature recording, lung capacities, BMI etc and their importance.	To examine and evaluate different mechanisms of responses related to sense organs and nervous system.		
PHARMACEUTICAL ORGANIC CHEMISTRY-I PRACTICAL	BP208P	Outline the Preliminary test for organic compounds	Analyze the Detection of elements	Experiment the Solubility test and functional group test	Identify the Melting point/Boiling point of organic compounds	Demonstrate the Preparation and Identification of the unknown compound
Biochemistry (Practical)	BP209P	To understand qualitative and quantitative analysis of biomolecules like carbohydrates	To understand qualitative and quantitative analysis of biomolecules like amino acids	To understand qualitative and quantitative analysis of biomolecules like proteins and lipids.		

B.PHARM-II YEAR; III SEMESTER

PHARMACEUTICAL ORGANIC CHEMISTRY-II	BP301T	Understand the structure, properties, chemical reactions and uses of benzene and its derivatives	Illustrate the structure, properties, chemical reactions and uses of phenols, aromatic amines and aromatic acids	Summarize the structure, chemical reactions and analytical constants and significance of oil and fats	Outline the structure, synthesis, chemical reactions and medicinal uses of polynuclear hydrocarbons	Describe the structure, properties, chemical reactions and uses cycloalkanes
PHYSICAL PHARMACEUTICS-I	BP302T	To understand Solubility of drugs.	To understand States of Matter and properties of matter and Physicochemical properties of drug molecules.	To understand Surface and interfacial phenomenon.	To understand Complexation and protein binding.	To understand pH, buffers and Isotonic solutions.
PHARMACEUTICAL MICROBIOLOGY	BP303T	To understand the history, scope, importance of microbiology and morphological classification of bacteria, physical growth parameters and various isolation and maintenance techniques.	To provide basic information to understand the various staining procedures and sterilization technique (thermal, chemical, radiation etc).	To understand the morphology, classification, reproduction/replication and cultivation of fungi and virus. Also MOA of disinfectant and antiseptic.	To understand the designing of aseptic area, laminar air flow and various sources of contamination in aseptic area and methods of prevention.	To understand the factors affecting microbial spoilage of pharmaceutical products, types of microbial contaminants and its assessments.
Pharmaceutical Engineering	BP304T	Description, listing and outline and applications of unit operations, flow of fluids, size reduction and size separation in pharmaceutical industry	Description, listing and outline and applications of unit operations, heat transfer process, evaporation and distillation in pharmaceutical industry	Description, listing and outline and applications of unit operations, drying and mixing	Description, listing and outline and applications of unit operations, filtration and centrifugation	Outline of corrosion and listing and applications of different material used for construction of plant
PHARMACEUTICAL ORGANIC CHEMISTRY-II PRACTICAL	BP305P	Demonstration of Recrystallization and Steam Distillation	Determination of oil values	Demonstrate the Preparation and Identification of the unknown compound		



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PHYSICAL PHARMACEUTICS - I PRACTICAL	BP306P	Student shall be able to understand solubility and interfacial tension	Student shall be able to understand physio-chemical properties	Student shall be able to understand states of matter		
PHARMACEUTICAL MICROBIOLOGY	BP307P	Student shall be able to understand about various techniques and instrument used in microbiology lab	student shall be able to apply their theoretical knowledge for the preparation of different type of culture media	Student shall be able to analyze different staining methods for bacteria morphology study	student shall be able to illustrate the methods for bacterial count and effect of different conditions on bacterial growth.	student shall be able to determine sterility testing of different pharmaceutical products
Pharmaceutical Engineering -Practical	BP308P	Students will be able to compare and analyze the process & factors affecting drying, evaporation, filtration and centrifugation.	Students will be able to classify and explain the working and uses of various pharmaceutical equipments like FBD, fluid energy mill, Ball mill, Colloidal mill, planetary mixer & Freeze dryer.	Students will be able to memorize and calculate the Dew Point, Wet bulb Temp, Dry Bulb Temp and %RH.		
Medical Coding	KASP-301	To understand the basics of medical coding.	To analyse the coding in ICD-10 codes	To illustrate the CPT codes	To demonstrate the HCPCS codes	To apply the knowledge of various codes used in medical coding for successful career.

B.PHARM-II YEAR; IV SEMESTER

PHARMACEUTICAL ORGANIC CHEMISTRY- III	BP401T	Illustrate about Stereo isomerism, Optical isomerism	Describe about Geometrical isomerism	Outline the nomenclature, classification, synthesis and reaction of some heterocyclic compounds	Summarize the Synthesis, reactions and medicinal uses of some heterocyclic compounds	Discuss about some reactions of synthetic importance
MEDICINAL CHEMISTRY-I	BP402T	To understand basics of medicinal chemistry, physicochemical and stereochemical properties in relation to drug design and drug metabolism.	To understand chemistry of drugs acting on ANS such as sympathomimetics and adrenergic drugs.	To understand chemistry of parasympathomimetics, cholinesterase inhibitors and cholinergic blocking agents.	To understand chemistry of drugs acting on CNS such as sedative, hypnotics, antipsychotics and anticonvulsants.	To understand chemistry of drugs acting on CNS such as General anesthetics, narcotic & non-narcotic analgesics and anti-inflammatory agents.
PHYSICAL PHARMACEUTICS-II	BP403T	To understand colloidal dispersions.	To understand rheology and the deformation of solids.	To understand coarse dispersion.	To understand micromeretics.	To understand drug stability.
Pharmacology-I	BP404T	Understand the basic concepts of pharmacology along with pharmacokinetics mechanism	Describe the basic concepts of pharmacodynamics and various receptors theories and drug discovery process.	Analyze and apply the pharmacological concepts and modulators related to the autonomic nervous system.	Illustrate the concept of Neurohumoral transmission in the C.N.S. along with mechanism related to muscle relaxants.	Understand and analyze the CNS-related disorders and the mechanism of action of drugs used for CNS disorders.
PHARMACOGNOSY-I	BP405T	To understand the sources of drugs, classification of crude drugs and justify the quality control of herbal drugs.	To describe the techniques used for cultivation and production of crude drugs and outline conservation of medicinal plants.	To understand the concepts of Plant Tissue Culture and to describe properties of edible vaccines.	To understand working of various systems of medicine and to summarize properties of various secondary metabolites.	To understand the properties and applications of plant fibers, hallucinogens, carbohydrates, lipids, proteins, enzymes and marine products.
MEDICINAL CHEMISTRY-I PRACTICAL	BP406P	To understand and perform the synthesis of new molecules.	To perform identification tests for drugs.	N/A		



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PHYSICAL PHARMACEUTICS-II PRACTICAL	BP407P	Students will be able to understand colloidal dispersion's, its properties, method of preparation and application in field of pharmacy	Students will be able to apply the concept of rheology characteristics of pharmaceutical ingredients in the preparation of pharmaceuticals	Students will be able to analyze the role of coarse dispersion such as suspension and emulsions in pharmaceutical dosage form preparation	Students will be able to illustrate the effect of different fundamental and derived properties of particles in dosage form preparation and stability	Students will be able to determine the effect of reaction parameters such as temperature, order, molecularity etc on drug stability
PHARMACOLOGY-I (Practical)	BP408P	To understand and articulate basics of Experimental Pharmacology.	To understand and learn common laboratory techniques of Pharmacology.	To observe the effect of drugs on animals by simulated experiments.		
Pharmacognosy and Phytochemistry I Practical	BP409P	To Analyze and evaluate the various crude drugs	To Understand, analyze and evaluate various microscopical standards.	To Apply, analyze and evaluate various parameters of standardization of herbal drugs.		
Biomedical Waste	BP-412	Students will understand and define General, Biomedical and Hazardous health care waste.	The students will Illustrate Health Impacts of Biochemical waste.	Students will understand and explain the legislation and policies on Health care waste management.	Students will recall and explain Basic steps in Health Care Waste Management.	Students will illustrate and design the treatment of General/Non-infectious wastes and its Disposal Technologies.

B.PHARM-III YEAR; V SEMESTER

MEDICINAL CHEMISTRY-II	BP501T	Understand the approach of development, classification, structure activity relationship and synthesis of antihistaminic, H1 antagonists, H2 antagonists, Gastric proton pump inhibitors and antineoplastic agents.	Apply the concept of development, classification, structure activity relationship and synthesis of antianginals, vasodilators, Calcium channel blockers, Diuretics, antihypertensive agents.	Analyze the various aspects of development, classification, structure activity relationship and synthesis of antiarrhythmic drugs, antihyperlipidemics agents, coagulants and anticoagulants, drugs used in congestive heart failure.	Illustrate the core principles of development, classification, structure activity relationship and synthesis of drugs acting on endocrine system, Sex hormones, drugs for erectile dysfunction, oral contraceptives, corticosteroids, thyroid and antithyroid drugs.	Describe thoroughly the idea of development, classification, structure activity relationship and synthesis of Antidiabetic agents, local anesthetics, benzoic acid derivatives, amino benzoic acid derivatives, lidocaine and anilide derivatives.
Industrial Pharmacy-I	BP502T	To understand various preformulation parameters and their application in development of safe, efficacious and stable dosage forms.	To demonstrate formulation and evaluation of tablets and liquid dosage forms.	To illustrate formulation and evaluation of capsules and pellets dosage forms	To determine formulation and evaluation of parenteral and ophthalmic dosage forms.	To formulate and to evaluate cosmetics and aerosols and packaging material science.
Pharmacology II	BP503T	To understand and describe the fact behind cardiac disorder and related targets of drug to treat the cardiovascular diseases	To define and Illustrate pathological disorders which lead to multiple complications of blood related disorders as well as the mechanism lies behind various urinary disorders and related clinical treatments	To identify and explain biogenic amines, various inflammatory mediators and their pharmacological and pathological roles along with antagonists for gout and rheumatism	To outline and explain the role of endocrine hormones & their related disorders	To know and describe about various drugs acting upon physiological endocrine system of human body and principle & types of bioassays
PHARMACOGNOSY & PHYTOCHEMISTRY-II	BP504T	To understand the concepts of metabolic pathways in higher plants and to describe the utilization of radioactive isotopes in the investigation of biogenetic studies.	To describe the chemistry, source, therapeutic uses and commercial applications of various crude drugs.	To understand the isolation, identification and analysis of various phytoconstituents.	The analyse the aspects of industrial production, estimation and utilization of various phytoconstituents.	To understand the concepts of modern methods of extraction and evaluate utilization of spectroscopy, chromatography and electrophoresis in Pharmacognosy.



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PHARMACEUTICAL JURISPRUDENCE	BP505T	To understand about pharmaceutical legislations with special emphasis to drugs and cosmetics act 1940, and rules 1945	To learn about different schedules and the administrative bodies of act and rule	To understand and categorise The Pharmacy Act 1948, The Medicinal and Toilet Preparation Act-1955 and Narcotic Drugs and Psychotropic substances Act-1985 and Rules	To summarize various Indian Pharmaceutical Acts and Laws	To understand about the code of ethics during the pharmaceutical practice Indian Regulatory requirements
INDUSTRIAL PHARMACY PRACTICAL	BP506P	To understand preformulation studies	Preparation, evaluation and coating of tablets	Preparation and evaluation of capsules	Preparation and evaluation of injection	Preparation and evaluation of creams and ointments
Pharmacology-II	BP507P	To understand the concepts of dose response curves .	To analyse PD2 and PA2 Values.	To demonstrate the practical aspects of various types of bioassays and its importance.		
PHARMACOGNOSY -II	BP508P	To Understand the morphological characteristics of crude drugs	To Analyze the microscopical features of crude drugs	To Apply the concepts of extraction for extracting the phytoconstituents	To Analyze the crude drugs for the presence of secondary metabolites	To Illustrate the separation of phytoconstituents through chromatography
Clinical Research	KASP-501	Student will understand the basics of clinical research	Students will understand and illustrate the concepts of clinical trials	Students will learn and analyze the regulations of clinical trials and Guidelines of GCP and CDSCO	Students will apply the concepts of clinical research and explore the use of Vigi-flow software	Students will understand, learn and describe the statistical methods used in clinical trials


B.PHARM-III YEAR; VI SEMESTER

MEDICINAL CHEMISTRY- III	BP601T	Understand the approach of classification, nomenclature, synthesis, stereochemistry, structure activity relationship and uses of antibiotics.	Apply the concept of nomenclature, stereochemistry, structure activity relationship, chemical degradation, classification of important products of Macrolide, Antimalarials, and apply basic approach of Prodrugs	Analyze the various aspects of chemotherapy of Anti-tubercular Agents, Urinary tract anti-infective agents and Antiviral agents.	Illustrate the core principles of Chemotherapy of Antifungal agents, Anti-protozoal Agents, Sulphonamides and Sulfones, Folate reductase inhibitors and Anthelmintics.	Describe thoroughly the idea of Drug Design, and Combinatorial Chemistry.
PHARMACOLOGY III	BP602T	The students should be able to understand the pharmacology of the drugs used in respiratory and GIT disorders	CO 2- The students should gain knowledge about pathological mechanisms involved in microbial infections and the pharmacology of the agents used for their management	The students should gain knowledge about pathological mechanisms involved in fungal, protozoal and amoebic infections and the pharmacology of the agents used for their management	The students should understand the development and progression of cancer and its management by chemotherapeutic agents. They should also understand the pharmacology of immunomodulators	The students should be able to understand the principles of toxicology and chronopharmacology
Herbal Drug Technology	BP603T	To understand and remember the raw material as source of herbal drugs from cultivation to herbal drug products	To demonstrate the demand and need of nutraceuticals in current scenario and their possible interaction with other drugs and food.	To apply the knowledge of the herbal cosmetics, natural excipients, their characteristics and usage	The Understand the WHO and ICH guidelines for evaluation of herbal drugs, appreciate patenting of herbal drugs, GMP	To outline the scope, development and maintenance of herbal drug industry as per schedule T


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Biopharmaceutics and Pharmacokinetics – Theory	BP604T	Understand biopharmaceutics and pharmacokinetics principles of drug absorption and distribution.	Apply the concept of drug elimination, in-vitro in vivo correlation and to measure, evaluate, apply, enhance bioavailability and bioequivalence of drugs.	Analyse compartment, noncompartment, and kinetics of one compartmental pharmacokinetic models and related pharmacokinetic parameters.	Illustrate concepts and kinetics of multicompartmental pharmacokinetic models.	Describe the basic concepts and kinetics of non-linear pharmacokinetic models.
PHARMACEUTICAL BIOTECHNOLOGY	BP605T	student shall be able to understand the biotechnology and its importance in pharmaceuticals with applicable methodologies	student will be able to memorize the recombinant DNA technology and its application in pharmaceuticals production	student will be able to demonstrate immunity and various immunological products and their production methods	student shall be able to analyze various immune assay techniques for determination of immunological products	student will be able to apply different fermentation techniques in production of various fermentation products
Pharmaceutical Quality Assurance	BP606T	List and outline of various important basic concepts of Quality Assurance, Quality Control, GMP, TQM, ICH guidelines, QbD, ISO and NABL accreditation process	Description and application of guidelines related to organization, personnel, premises, equipment and raw materials in pharmaceutical industry	Description, recommendation and listing and application of various quality control test of packaging material and concepts related to GLP	Description, recommendation, designing and listing of complaints and maintenance of documents in pharmaceutical industry	Description, outline and applications of various measures for calibration and validation of different important equipments and concepts of Good Warehousing Practices
MEDICINAL CHEMISTRY PRACTICAL	BP607P	Understand the synthesis different molecules.	Analyze the concept of assay of different drugs.	Apply and understand the aspects of Chem Draw and use different online softwares to study ADME activity.		
PHARMACOLOGY-III (Practical)	BP608P	To understand and perform dose calculations for pharmacological experiments	To understand the effect of drugs on various organ systems via simulation experiments	To understand and perform the significance of biochemical parameters.	To learn about the calculations for dose related toxicities (OECD guidelines)	To learn and perform the various statistical methods for analysis of scientific data.
Herbal Drug Technology	BP609P	To Analyze the phytocomposition of crude drugs.	To Evaluate the marketed Ayurvedic/Herbal formulations	To Apply their knowledge to develop the herbal formulations	To perform the Analysis and evaluation of crude drugs	
Biomedical Waste Management	BP610P	Student will able to understand General, Biomedical and Hazardous health care waste.	Student will able to understand Health Impacts of Biochemical waste.	Student will able to understand Legislation and policies on Health care waste management.	Student will able to understand Basic steps in Health Care Waste Management.	Student will able to understand Treatment of General/Non-infectious wastes and its Disposal Technologies.
Pharmaceutical Chemistry VII	RPH627P	Students should understand the practical concept of drug synthesis belonging to different therapeutic category with its applications	Students must be well versed in performing the identification tests for the synthesized drugs along with its physico-chemical characterization by spectral and chromatographic techniques	Students should understand the core concepts of rational drug design involving QSAR, molecular modeling and docking with their recent advancement		



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Pharmacology II	RPH629	Students will understand and explain Pharmacology of various cardiac disorders and learn their therapeutic approaches.	Students will learn and describe multiple complications associated with blood and their components and study about the therapies for various respiratory disorders.	Students will identify and illustrate physiological and pathological role of autacoids and their relevance with therapeutics of various disease conditions.	Students will understand and describe the pharmacology of analgesics, antipyretics and anti-inflammatory agents, immunomodulators, diuretics and the pathological changes in cancerous cells and various drug targets to mitigate proliferation of cancerous cell	Students will examine and design pathophysiology with GIT complications and their therapeutic approaches.
Industrial Training	RPH632P	To understand the recent industrial need and become competent pharmacy professional.	NA	NA		

B.PHARM-IV YEAR; VII SEMESTER

MEDICINAL CHEMISTRY-III	RPH733	Understand the classification, nomenclature, synthesis, stereochemistry, structure activity relationship and uses of steroidal drugs.	Illustrate the Chemotherapy of microbial infections specially antibiotics, antifungal and Antiseptics & disinfectants.	Illustrate the Chemotherapy of microbial infections specially Synthetic antibacterials and Synthetic antibacterials agents.	Understand and grasp the core concepts of Chemotherapy of parasitic infections mainly Antimalarials, Antimalarials and Anthelmintics.	Understand the concepts of Cancer chemotherapy and Antiviral/Anti-HIV agents
Biopharmaceutics and Pharmacokinetics	RPH734	Understand the applications of bio pharmaceutics and pharmacokinetics and basic concept of drug absorption and disposition.	Apply the basics of pharmacokinetics compartmental and non compartmental pharmacokinetic modelling.	Analyze, interpret , classify the kinetics of compartmental pharmacokinetic models.	illustrate the principles of pharmacokinetics in optimizing drug therapy.	Describe basic concept and assess, evaluate , apply , design bioavailability and bioequivalence and IVIVC of drugs.
PHARMACEUTICS-IX (BIOPHARMACEUTICS AND PHARMACOKINETICS PRACTICAL)	RPH734P	Students will be able to understand the principle and working of various instruments.	Students will be able to apply the method and importance of calibration curves.	Students will be able to analyze the use of semilog graph papers for calculation of pharmacokinetic parameters.	Students will be able to evaluate the dissolution studies of dosage forms.	Students will be able to evaluate release of drugs from semisolid dosage forms.
Pharmacology-III. (Pharmacology & Pharmacovigilance)	RPH735	Understand and apply the detailed pharmacology of hormones and their modulators.	Illustrate the pharmacology of antibiotics used for chronic infectious diseases.	Understand and analyze the mechanism underlying naturopathy and their applications for disease mitigation.	Analyze the importance of pharmacovigilance with special emphasis to adverse reactions reporting	Understand the epidemiological studies data and the basics of conduction of the studies.
PHARMACOLOGY-III (PHARMACOLOGY & PHARMACOVIGILANCE) PRACTICAL	RPH-735P	Students will be able to understand the concept of antagonism	Students will be able to understand the concept of Bioassay	Students will be able to perform bioassay		

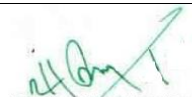

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Pharmacognosy-IV	RPH736	To understand the pharmacognostic profile of some Alkaloidal drugs	To explain the plant profile of miscellaneous Alkaloidal drugs	To understand the production and utilization of phytoconstituents	To identify the requirements of Plant Tissue Culture	To learn the designing of HPTLC technique, herb drug interactions and bioenhancers
Pharmacognosy-IV Practical	RPH736P	To apply the knowledge of microscopic profile of various indigenous drugs.	To formulate extraction protocols for various phytopharmaceuticals	To design standardization protocols for herbal drugs and formulations		
PHARMACEUTICAL ANALYSIS-III (PHARMACEUTICAL ANALYSIS & QUALITY ASSURANCE)	RPH737	Understand the approach of UV-visible spectroscopy and Infra red spectroscopy and applications in various drugs.	Apply the concept in well versed manner in theoretical skills and applications of behind NMR spectroscopy.	Analyze the various aspects of Mass spectrometry and their applications in drug analysis.	Illustrate the core principles of Atomic spectroscopy, Fluorimetry, Gel electrophoresis, electron microscopy with its applications in analysis of various drugs.	Describe thoroughly the idea of quality assurance concept and prepare & maintain all relevant documents with proper planning and validating the process in drug analysis.
Pharmaceutical Analysis-III practical	RPH-737P	Students should apply the knowledge gained with applications of various drugs in UV-visible spectroscopy and Infra red spectroscopy.	Students must understand the concepts behind NMR spectroscopy.	Students should make use of the basic concepts of Mass spectrometry and their applications in drug analysis.	Students must be well enough to extend the role of Atomic spectroscopy, Fluorimetry, Gel electrophoresis, electron microscopy in analysis of various drugs.	Students may compare the Basic quality assurance concept and able to prepare & maintain all relevant documents with proper planning and validating the process in drug analysis.


B.PHARM-IV YEAR; VIII SEMESTER

Pharmaceutical Chemistry-IX (Chemistry of Natural Products)	RPH839	Understand the concepts of isolation and structure elucidation of plant constituents, and basic metabolic pathways of secondary metabolites.	Apply the principles and techniques of extraction, isolation and structure elucidation of alkaloid containing drugs.	Analyze the various aspects of the extraction, isolation and structure elucidation of Glycosides, Flavonoids, Lignans and Purines.	Illustrate the concept of the extraction, isolation and structure elucidation of Terpenoids, Carotenoids, Vitamins and Quassinoids.	Describe the components of natural allergens, photosensitizing agents, fungal toxins, should be aware of role of natural products in drug discovery and recent developments of natural products.
PHARMACEUTICAL CHEMISTRY-IX (CHEMISTRY OF NATURAL PRODUCTS)	RPH839P	Understand the extraction of chemical constituents from crude drug.	2. Apply the concept to standardize crude drugs and formulations	Analyze the various aspects of chromatography for isolation of phytoconstituents		
PHARMACEUTICAL BIOTECHNOLOGY	RPH840	To understand immunology and learn about immunological preparations.	To understand the recombinant DNA technology.	To understand the Screening of soil for antibiotic producing organisms and the fermentation, fermentor and mutation (Isolation of mutants and factors affecting mutation).	To understand microbial transformation and its application.	To understand and implement different methods of enzyme and cell immobilization.
PHARMACEUTICAL BIOTECHNOLOGY PRACTICAL	RPH840P	To understand experiments related to immunological reactions	To understand practicals related to the recombinant DNA technology	To understand experiments related to the screening of soil for antibiotic producing organisms	To understand experiments related to isolation of enzymes from natural sources	To understand experiments related to drug, enzyme and cell immobilization


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Pharmaceutical Marketing & Management	RPH841	To understand the basic concepts of administrative management, operative management and entrepreneurship development.	To analyze the importance and roles of coordination, communication, motivation, decision making, leadership skills and other aspects of production management.	To apply the concepts of pharmaceutical marketing, various channels of distribution, e-commerce and start-up business in pharmacy	To illustrate the sales process, merchandising, process of recruitment and training in pharmaceutical business.	To describe market research, market segmentation, market targeting and geo-demographic analysis.
FOOD & NEURACEUTICALS	RPH842	Students will be able to explain, demonstrate and develop freezing and drying as food processing methods.	Students will be able to describe, categorize and design food packaging for preservation.	Students will be able to classify, formulate and evaluate different neutraceutical products	Students will be able to identify and describe the development & marketing stages of neutraceutical products	Students will be able to assess and analyze the use of various food related acts and laws
Pharmaceutics-XII (Food & Neutraceuticals) Practical	RPH-842P	Students will be able to develop & uses of health products like Gulk and andAmla syrup.	Students will be able to explain and modify the health drinks.	Students will be able to describe and evaluate the Food products and Neutraceuticals.		
CLINICAL PHARMACY	RPH843C	To summarize the basic concepts clinical pharmacy, drug handling, use of drugs in elderly, infants, children, pregnancy, breast feeding & in patients with renal or hepatic disease and concept of pharmacogenetics & Pharmacoepidemiology	To identify the concepts of patient's case history, medical writing, literature review & Meta analysis, Pharmacovigilance programme of India & Pharmacoeconomics.	To summarize the concept of therapeutic drug monitoring, ward round participation, and drug utilization evaluation/review & quality assurance of clinical pharmacy services.	To prioritize the clear understanding of Schedule Y, GLP, GCP & ICH guidelines, various phases of clinical trials, and categories of Phase IV studies, statistical analysis plan & its importance in clinical research. bioavailability & bioequivalence studies.	To demonstrate the statistical principles underlying clinical trials viz. sample size calculation, type of variables, Type I & Type II error, application of parametric & non parametric tests, confidence intervals, outliers and data analysis.
CLINICAL PHARMACY	RPH843CP	To identify the concepts of various epidemiological survey and its utility in medical field.	To summarize and compare various prescribed therapeutic agents/diagnostic reports on different diseases such as- Cardiovascular disorders, central nervous system disorders, gastro intestinal tract disorders, hormonal disorders, pathogenic diseases.	Student should analyze various fields of clinical Pharmacy & its applications.		


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