



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



FIRST YEAR SEMESTER I

Subject with Subject code	Course Outcomes
BP101T Human Anatomy and Physiology I (Theory)	CO1: To understand the gross anatomy, structure, and functions of the human body's organs, cell, skeletal, muscular, and cardiovascular systems CO2: To understand the different homeostatic processes and their imbalances CO3: To identify the different types of bones in human body. CO4: To identify the various tissues that make up the various systems of the human body CO5: To identify the various organs of different systems of human body. CO6: To understand the structure and function of cardiovascular system.
BP107P Human Anatomy and Physiology I (Practical)	CO1: To learn about the various experimental techniques related to physiology. CO2: Understand the construction, working, care and handling of instruments, glassware's and equipment's required for practical. CO3: To understand basic knowledge of microscope. CO4: Knowledge of mechanism of Differential Blood Cell Count and Reticulocyte Count of blood sample. CO5: Demonstration of human axial and appendicular skeleton system with the help of bones. CO6: Knowledge of construction and working of Spirometer for the measurement of lung volume and capacities.
BP102T Pharmaceutical Analysis I (Theory)	CO1: To study the concept of pharmaceutical analysis, its scope and methods of expressing concentrations.



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>CO2:To understands the errors, types of errors and standards used in pharmaceutical analysis.</p> <p>CO3:To acknowledge the basic principles of acid base titration, redox titration, precipitation titration, conductmetric titration, non-aqueous titrations and gravimetry</p> <p>CO4:To understand the electrochemical methods of analysis including potentiometric and polarography.</p> <p>CO5:To acquire the knowledge of principle and theory of refractometer, refractive index and instruments used in determination of refractometry.</p> <p>CO6:To study the basic principles involved in pharmaceutical analysis including volumetric and electrochemical analysis.</p>
BP108P Pharmaceutical Analysis I(Practical)	<p>CO1:Upon completion of this course the students should able to understand the acid base titrations. And their standards solutions.</p> <p>CO2:Understands the fundamental methodology to prepare different strength of solutions and their concentrations.</p> <p>CO3:Understands the basic principle, working and instrumentations of refractometer.</p> <p>CO4:To study the basic knowledge of electrochemical analytical techniques.</p> <p>CO5:Understand the basic knowledge of electrochemical analytical techniques.</p> <p>CO6:To study the basic principle, working and instrumentation of potentiometry.</p>
BP103T Pharmaceutics I (Theory)	<p>CO1:Know the history of profession of pharmacy.</p> <p>CO2:Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO3: Understand the professional way of handling the prescription CO4: To know the Preparation of various conventional dosage forms CO5: to know and formulate biphasic liquid dosage forms such as emulsion and suspensions. CO6: To know the methods of preparation of suppositories.
BP109P Pharmaceutics I (Practical)	CO1: Explain formulation, evaluation and labelling of aromatic water, glycerides, syrups, elixirs and powder preparations CO2: Perform pharmaceutical calculations to determine evaluation parameters like density, viscosity, specific gravity, angle of repose, Carr's index, Hausner ratio of preparations. CO3: Describe use of ingredients in formulation and category of formulation. CO4: Compare various monophasic preparations depending upon their formulation. CO5: Selection of suitable packaging material (container-closure) for the preparation. CO6: Fundamental knowledge of preparing of various types of powder.
BP104T Pharmaceutical Inorganic Chemistry(Theory)	CO1: The sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals. CO2: Understand the medicinal and pharmaceutical importance of inorganic compound. CO3: To study various major intra and extra cellular fluids and electrolytes and their role. CO4: To study various aspects of radiopharmaceuticals. CO5: To understand the procedure to perform specific test and limit test of inorganic medicinal compound as per official pharmacopoeia. CO6: To understand the procedure to perform specific test and limit test of inorganic



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
BP110P Pharmaceutical Inorganic Chemistry (Practical)	medicinal compound as per official pharmacopoeia.
	CO1:Outline pharmacopoeial standards for the qualitative and quantitative estimations of inorganic pharmaceuticals
	CO2:Perform qualitative analysis of given inorganic mixtures.
	CO3:Carry out identification test of given inorganic compounds
	CO4:Perform limit test for chlorides, sulphates etc.
	CO5:Prepare inorganic compounds.
	CO6:To know the analysis of the inorganic pharmaceuticals their applications.
BP105T Communication skills (Theory)	
	CO1:Comprehend the concept of communication.
	CO2:Students will be able to understand and apply knowledge of human communication and language processes as they occur across various contexts,
	CO3:Understand the concept of teamwork, leadership, personal development skills
	CO4:Acquire the knowledge of body language and presentation skill.
	CO5:Develop Leadership qualities and essentials.
CO6:Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation.	
BP 111P Communication skills (Practical)	
	CO1:Demonstrating understanding basic communication like meeting people, asking questions, Do and Don't's etc.
CO2:Explain consonant sounds and vowel sounds	



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>CO3: Demonstrate understanding of listening comprehension, effective writing skills, interview handling skills and presentation skills.</p> <p>CO4: Effectively manage the team as a team player.</p> <p>CO5: Sharpen memory skills and other study skills that are vital for academic excellence.</p> <p>CO6: Students will be able to communicate effectively orally and in writing.</p>
BP106RBT Remedial Biology (Theory)	<p>CO1: To understand the characters of living organisms and classification of kingdoms.</p> <p>CO2: Ability to analyze international classification system for living things.</p> <p>CO3: Ability to discriminate structure of living cells and their significance.</p> <p>CO4: Students learn the basic aspects of botany and zoology and their relation with pharmaceutical sciences.</p> <p>CO5: To determine role of hormones in regulation of various organs functioning in the body and process of oogenesis and spermatogenesis.</p> <p>CO6: To elaborate the physiology, nutrient requirements for plants and to predict plant/animal tissues.</p>
BP112RBP Remedial Biology (Practical)	<p>CO1: To understand the role of mathematics in pharmacy.</p> <p>CO2: To develop basic knowledge on morphology and functions of various plant parts such as root, stem, leaf, flower, fruit and seed.</p> <p>CO3: To relate the mathematical tools in the wide professional views and solve problems of trigonometry, calculus and matrices.</p> <p>CO4: To relate the mathematical tools in the wide professional views and solve problems of trigonometry, calculus and matrices.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO5:To adopt both conventional and creative techniques to the solutions of mathematical problems.
	CO6:Apply a range of techniques effectively to solve problems including theory deduction, approximation and simulation.
BP106RMT Remedial Mathematics (Theory)	
	CO1:To understand the role of mathematics in pharmacy.
	CO2:To know about theory and their application in pharmacy.
	CO3:To relate the mathematical tools in the wide professional views and solve problems of trigonometry, calculus and matrices.
	CO4:To solve the different types of problems by applying theory.
	CO5:To adopt both conventional and creative techniques to the solutions of mathematical problems
	CO6:To adopt both conventional and creative techniques to the solutions of mathematical problems.



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



FIRST YEAR SEMESTER II

Subject with Subject code	Course Outcomes
BP201T Human Anatomy and Physiology-II (Theory)	<p>CO1: Explain the gross morphology, structure and functions of various organs of the human body.</p> <p>CO2: Describe the various homeostatic mechanisms and their imbalances.</p> <p>CO3: Identify the various tissues and organs of different systems of human body.</p> <p>CO4: Explain physiology of cardiovascular, digestive, respiratory, urinary and reproductive system.</p> <p>CO5: To categorize the anatomy of urinary system and physiology of urine formation/micturition</p> <p>CO6: To predict the physiology of male and female reproductive organs and concepts of genetics.</p>
BP207P Human Anatomy and Physiology II (Practical)	<p>CO1: Understand the construction, working, care and handling of instruments, glassware's and equipment's required for practical.</p> <p>CO2: Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.</p> <p>CO3: Explain working pattern of different organs of each system</p> <p>CO4: Describe the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.</p> <p>CO5: Determine the techniques for the identification, counting of various integral components</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>of the body.</p> <p>CO6:To study structural and microscopically aspects various organs of human body.</p>
<p>BP202T Pharmaceutical Organic Chemistry-I(Theory)</p>	<p>CO1:To study the basic mechanism and orientations of reactions.</p> <p>CO2:To understand the relevance of stereochemistry and its significance in pharmaceutical sciences.</p> <p>CO3:To acquire the knowledge and understanding of the basic principles of heterocyclic chemistry.</p> <p>CO4:To acquire the knowledge of polynuclear hydrocarbons and their synthesis.</p> <p>CO5:To describe the detailed synthesis and mechanism of common name reactions of chemistry.</p> <p>CO6:To acquire knowledge of chemistry of fats and oils.</p>
<p>BP208P Pharmaceutical Organic Chemistry I–(Practical)</p>	<p>CO1:Explain and understand the principal behind various qualitative tests and analyze the given unknown organic compound having different functional groups.</p> <p>CO2:Explain and understand the principal, reaction mechanism and illustrate application of every experiment in the pharmacy</p> <p>CO3:Understand, explain and apply various laboratory techniques for the synthesis of organic compounds, various techniques of purification of the synthesized compounds using precipitation or recrystallization.</p>
<p>BP203T Biochemistry</p>	<p>CO1:To acquire the knowledge of catalytic enzymatic reactions and pathways with its diseases.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



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	<p>CO2:To understand the metabolism of nutrient molecules in physiological and pathological conditions.</p> <p>CO3:To study the concept of genetic organization of genome and functions of DNA in synthesis of RNAs.</p> <p>CO4:To understands the lipid metabolism and disorders of lipid metabolism</p> <p>CO5:To understand the catalytic role of enzymes and importance of enzyme in biochemical process.</p> <p>CO6:To understand the metabolism and basic principles of biomolecules</p>
BP209P Biochemistry – Practical	<p>CO1:Students should able to understand the identification test for proteins,</p> <p>CO2:Students should able to understand the identification test for amino acid, and carbohydrates.</p> <p>CO3:To understand the basic principles of qualitative tests.</p> <p>CO4:To understand the qualitative analysis of urine for abnormal constituents.</p> <p>CO5:To understand the measurements of pH.</p> <p>CO6:To understand the determination of qualitative analysis of the reducing sugar using DNSA method.</p>
BP204T Pathophysiology	<p>CO1:Classify etiopathogenesis of cell injury, pain and inflammation.</p> <p>CO2:Categorize different types of cardiovascular disorders.</p> <p>CO3:Explain Pathophysiology of various neurodegenerative diseases.</p> <p>CO4:Importance of cell cycle in the pathogenesis of malignancy</p> <p>CO5:Elaborate the development of infectious and parasitic diseases.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



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BP205T Computer Applications in Pharmacy	CO1:Explain the applications of computer in Pharmacy. CO2:Explain bioinformatics and their impact in vaccine discovery. CO3:Analyse the different types of databases. CO4:Create data bases using MS Access, SQL. CO5:Identify the role of computers for data analysis in the field of preclinical development
BP210P Computer Applications in Pharmacy – Practical	CO1:Create a HTML web page to show personal information. CO2:Retrieve the information of a drug and its adverse effects using online tools CO3:Create mailing labels Using Label Wizard , generating label in MS WORD CO4:Design a form in MS Access to view, add, delete and modify the patient record in the database. CO5:Exporting Tables, Queries, Forms and Reports to web pages and XML pages.
BP206T Environmental sciences	CO1:To study awareness about environmental problem CO2:To study basic knowledge about environment and allied problem CO3:develop an attitude of concern for the environment CO4:To study motivate learner to participate in environment protection and environment problem CO5:Acquire skill to help the concerned individuals in identifying and solving environmental problems. CO6:To attain harmony with nature



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



SECOND YEAR SEMESTER III

Subject with Subject code	Course Outcomes
BP301T Pharmaceutical Organic Chemistry II (Theory)	CO1:To study general methods of preparation of some organic compounds.
	CO2:To study general reactions of some organic compounds.
	CO3:To study the isomerism of organic compounds.
	CO4:To acquire the knowledge about reactivity and stability of compounds.
	CO5:They would have develop some in hand skills to prepare small organic compounds.
	CO6:They would have learn about the fats and oils.
BP305P Pharmaceutical Organic Chemistry II(Practical)	CO1:Students would have learn about the basic laboratory techniques.
	CO2:Student would have learn about the separation techniques of binary mixtures.
	CO3:To study about the saponification value of oil samples.
	CO4:To study the general methods to synthesize some organic compounds.
	CO5:To study about the steam distillation and distillation.
	CO6:To study about different name reactions and their final products with the help of demonstrations.
BP302T Physical Pharmaceutics I (Theory)	CO1:Understand the basics of chemical and physical phenomena that govern the in vivo and in vitro actions of pharmaceutical products such as solubility, refractive index, optical rotation, dielectric constant etc.
	CO2:Articulate the interrelationships between the physiochemical properties of a drug, its



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Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



	dosage form, route of administration and bioavailability
	CO3:To know various gases laws and theories in correlation with formation of aerosols, crystallization & is parameters, colligative properties of non-electrolytic and electrolytic solutions, solubility and distribution phenomenon and apply them in the pharmaceutical practices.
	CO4:To understand the various methods for the determination of surface & i interfacial tension of liquids
	CO5:To acquire knowledge of the methods of detection of complexes and describe the properties and applications of polymers.
	CO6:To analyze the Buffer solution, buffer equations and buffer capacity, isotonicity.
BP306P Physical Pharmaceutics-I (Practical)	
	CO1:To analyze the physicochemical properties such as solubility, pH, refractive index, partition coefficient etc by experimentally.
	CO2:To study the effect of electrolyte on upper consolute temperature in phase diagram
	CO3:To demonstrate the various adsorption isotherm by experimentally.
	CO4:To determine the surface tension, critical micellar concentration, HLB value of various surfactant.
	CO5:Analyze the complex formation of drug by using various methods
	CO6:To understand the HLB scale and calculate the HLB value of surfactant.
BP303T Pharmaceutical Microbiology (Theory)	
	CO1:To study what is mean by microbiology, study of bacteria and its different parts and also study the how to isolate and preserve the pure culture and study of different type of microscope.
	CO2:To understand the importance of sterilization and different type of sterilization method



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



	<p>and to study the different type of staining technique for bacteria (to study the morphology of bacteria).</p> <p>CO3:Study the viruses and fungi also study of antiseptic and disinfectant and their evaluation test and different sterility test for solid, liquid, ophthalmic and sterile product as per IP,BP,USP.</p> <p>CO4:Designing of aseptic area and study laminar air flow, Clean are classification.</p> <p>CO5:To gain knowledge of spoilage their type and factors affecting microbial spoilage of pharmaceutical product. Know the sources & types of microbial contamination and able to identify the causes and basis of microbial spoilage.</p>
<p>BP307P Pharmaceutical Microbiology (Practical)</p>	<p>CO1:Know the principle, construction and working of various instruments and perform their operations and Skill to handle microscope for observation of microbes also to study how to prepare nutrient media and how to sterilization of the media and equipment.</p> <p>CO2:To study Morphology of bacteria by using staining technique.</p> <p>CO3:To study isolation of pure culture by using streak plate and pour plate method.</p> <p>CO4:To study motility of bacteria by using hanging drop technique.</p> <p>CO5:To study microbial assay by using antibiotics by different method.</p> <p>CO6:To study sterility test of pharmaceutical product.</p>
<p>BP304T Pharmaceutical Engineering (Theory)</p>	<p>CO1:To gain knowledge about various unit operations used in Pharmaceutical industries.</p> <p>CO2:To procure knowledge about the basics of various material handling techniques in pharmaceutical industry and the various processes involved in manufacturing of pharmaceutical dosage forms.</p> <p>CO3:To understand the significance of plant lay out design for optimum use of resources.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



	<p>CO5:To understand the various types of corrosion and the preventive methods that can be adopted for corrosion control in Pharmaceutical industries.</p> <p>CO6:To gain knowledge about the equipment's used for various unit operations in Pharmaceutical industry.</p>
BP308P Pharmaceutical Engineering(Practical)	<p>CO1:To study various pharmaceutical machines and the equipments used in pharmaceutical industries.</p> <p>CO2:To perform various processes used in pharmaceutical manufacturing process.</p> <p>CO3:To study the different methods for determination of humidity.</p> <p>CO4:To study various unit operations used in pharmaceutical industry and the effect of factors influencing them.</p> <p>CO5:To study the various pharmaceutical machineries used for production of solid dosage forms.</p> <p>CO6:To study the equipment's used for sterilization and dehumidification.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



SECOND YEAR SEMESTER IV

Subject with Subject code	Course Outcomes
BP401T Pharmaceutical Organic Chemistry III (Theory)	CO1:To study the basic mechanism and orientations of reactions.
	CO2:To understand the relevance of stereochemistry and its significance in pharmaceutical sciences.
	CO3:To acquire the knowledge and understanding of the basic principles of heterocyclic chemistry.
	CO4:To acquire the knowledge of polynuclear hydrocarbons and their synthesis.
	CO5:To describe the detailed synthesis and mechanism of common name reactions of chemistry.
	CO6:To acquire knowledge of chemistry of fats and oils.
BP402T Medicinal Chemistry I (Theory)	CO1:To understand drug metabolic pathways, adverse effects, and therapeutic uses of various drugs.
	CO2:To know the structural activity relationship of different class of drugs.
	CO3:To study about the mechanism pathways of different class of medicinal compounds.
	CO4:To understand correlation between pharmacology of a disease and its cure.
	CO5:To understand the chemistry of drugs with respect to their pharmacological activity.
	CO6:To study about drugs acting on central nervous system and autonomic nervous system.
BP406P Medicinal Chemistry I – (Practical)	CO1:To understand synthetic pathways, reaction mechanism of drugs.



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>CO2:To study different techniques used for purification of compounds.</p> <p>CO3:To study Thin layer chromatography technique for separation of mixtures and to identify unknown compound.</p> <p>CO4:To study purification of compounds by column chromatographic technique.</p> <p>CO5:To understand the basic concept of partition coefficient and ionization constant of compound.</p> <p>CO6:To understand recrystallization method for purification of organic solids.</p>
BP403T Physical Pharmaceutics II (Theory)	<p>CO1:To gain knowledge related to various physicochemical properties of drug and excipient molecules in designing the dosage form.</p> <p>CO2:To distinguish the principles of chemical kinetics and to use them for stability testing.</p> <p>CO3:To gain the knowledge of mechanism of drug and excipient in the formulation development and evaluation of dosage form.</p> <p>CO4:To study the coarse dispersion like suspension and emulsion dosage form and to study in brief this dosage form and also stability of this dosage form.</p> <p>CO5:To study colloidal dispersion and their general characters, size, shape of colloidal particles and comparative account of general properties optical, electrical and kinetic properties.</p> <p>CO6:To study rheology and deformation of solid.</p>
BP407P Physical Pharmaceutics II (Practical)	<p>CO1:To study powder bulk density, true density and porosity.</p> <p>CO2:To study viscosity of different liquid.</p> <p>CO3:Students are able to understand accelerated stability studies.</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>CO4:To study the determination of reaction rate constant by using first and second order reaction.</p> <p>CO5:To understand basic knowledge of clouds and Kraft point of given surfactant.</p> <p>CO6:To study the determination particle size and their distributions by using sieving and microscopic method and also angle of repose.</p>
BP404T Pharmacology I (Theory)	<p>CO1:Students would have understood the pharmacological actions of different categories of drugs.</p> <p>CO2:Students would have study in detailed about mechanism of action at organ system.</p> <p>CO3:They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases.</p> <p>CO4:They would have observed the effect of drugs on animals by simulated experiments.</p> <p>CO5:They would have understood the signal transduction mechanism of various receptors.</p> <p>CO6:To understand the process of new drug discovery and development of drug.</p>
BP408P Pharmacology I (Practical)	<p>CO1:Students would have understood the basic instruments used in experimental pharmacology.</p> <p>CO2:Students would have understood the maintenance of laboratory animals as per CPCSEA guidelines.</p> <p>CO3:They would have studied common laboratory animals.</p> <p>CO4:They would have studied different routes of drug administration.</p> <p>CO5:To study effect of various categories of drugs on animals.</p> <p>CO6:To study common laboratory techniques such as blood withdrawal, serum and plasma</p>



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	separation.
BP405T Pharmacognosy and Phytochemistry I	CO1:To learn about history and scope of pharmacognosy. CO2:To explain classification along with their merits & demerits. CO3:To know the techniques in the cultivation and production of crude drugs. CO4:To know the crude drugs, their uses and chemical nature. CO5:To know the evaluation techniques for the herbal drugs. CO6:To carry out the microscopic and morphological evaluation of crude drugs.
BP409P Pharmacognosy and Phytochemistry I (Practical)	CO1:To demonstrate chemical tests to identify unorganized crude drugs. CO2:To evaluate the quality and purity of crude drugs. CO3:To perform linear measurements for crude drug identification. Co4:To develop quality control methods for standardization of herbal drugs. CO5:Develop skills for the quality control of crude drugs CO6:To identify crude drugs by its microscopical characteristics



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



THIRD YEAR SEMESTER V

Subject with Subject code	Course Outcomes
BP501T Medicinal Chemistry II – Theory	1: Explain the relationship between structure and biological activity of various drug molecules.
	2: Discuss the most of various classes of drug molecules.
	3: Explain the mode of action, synthesis and therapeutic uses and side effects of drugs.
	4: Discuss the relationship between the structures of medicinal compounds and their biological activity.
	5: Discuss the pharmacological actions and adverse effects of medicinal compounds.
	6: Depict synthetic routes of important medicinal agents.
BP 502 T Industrial Pharmacy-I (Theory)	CO1: Know the various pharmaceutical dosage forms and their manufacturing techniques.
	CO2: Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.
	CO3: Formulate and manufacturing consideration of syrups and elixirs suspensions and emulsions.
	CO4: Understand formulation of hard gelatin, soft gelatin capsule and pellets.
	CO5: Define parenteral administration, and list the different parenteral methods of administration.
	CO6: Understand differentiate between drugs and cosmetics, aerosol preparations and knowledge about various pharmaceutical packaging material.



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
BP503T Pharmacology II – Theory	<p>CO1:To understand the mechanism of and its relevance in the treatment of different diseases.</p> <p>CO2:To understand Pharmacology of drugs acting on cardiovascular system</p> <p>CO3:To understand Pharmacology of drugs acting on urinary system</p> <p>CO4:The students should able to understand the autacoids and related drugs.</p> <p>CO5:To understand the Pharmacology of drugs acting on endocrine system</p> <p>CO6:To understand the correlation of pharmacology with related medical sciences</p>
BP504T Pharmacognosy and Phytochemistry II– Theory	<p>CO1:To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.</p> <p>CO2:To understand the preparation and development of herbal formulation.</p> <p>CO3:To understand the herbal drug interactions.</p> <p>CO4:To carryout isolation and identification of phytoconstituents.</p> <p>CO5:Understand classification of phytoconstituents and their chemical screening methods.</p> <p>CO6:Describe drug product development of natural products</p>
BP505T Pharmaceutical Jurisprudence – Theory	<p>CO1:Acquire knowledge in practice the Professional ethics</p> <p>CO2:Understand the various concepts of the pharmaceutical legislation in India;</p> <p>CO4:Understand the Drug policy, DPCO, Patent and design act</p> <p>CO5:Know about narcotic and psychotropic drugs, its productions and drug abuse,</p>



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>its controlling.</p> <p>CO6:Understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act</p> <p>CO7:Explain other laws as prescribed by the Pharmacy Council of India from time to time including International Laws</p>
<p>BP506P Industrial Pharmacy-I (Practical)</p>	<p>CO1:Know the various Preformulation parameters for different dosage forms.</p> <p>CO2:Formulate solid dosage forms like tablets and capsules.</p> <p>CO3:Quality control test of (as per IP) marketed tablets and capsules.</p> <p>CO4:Preparation of ophthalmic preparations like Eye drops/ and Eye ointments.</p> <p>CO5:Evaluate various packaging materials.</p> <p>CO6:Prepare different cosmetic preparations.</p>
<p>BP507P Pharmacology II – Practical</p>	<p>CO1:Students should able to understand the in-vitro pharmacology and physiological salt solution.</p> <p>CO2:To understand the effect of drug, effect of physostigmine and atropine on isolated frog heart, frog rectus respectively.</p> <p>CO3:To acknowledge the bioassay of histamine, oxytocin by matching and interpolation method using guinea pig ileum and rat uterine horn.</p> <p>CO4:To understand the analgesic activity using hotplate method.</p> <p>CO5:To study the antiallergic activity by mast cell stabilization assay.</p> <p>CO6:To study the antiallergic activity by mast cell stabilization assay.</p>
<p>BP508P Pharmacognosy and</p>	



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
Phytochemistry II – Practical	CO1:To identify crude drugs by morphological and microscopical characteristics. CO2:To isolate phytoconstituents from crude drugs. CO3:To perform Paper and Thin Layer Chromatography. CO4:To isolate and analyses volatile oils. CO5:To Carryout chemical tests for the identification of unorganized crude drugs. CO6:Analyze herbal extracts for the identification of phytoconstituents.



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



THIRD YEAR SEMESTER VI

Subject with Subject code	Course Outcomes
BP601T Medicinal Chemistry III – Theory	CO1: Understand the chemistry of drugs with respect to their pharmacological activity. CO2: Understand the chemistry of drugs with respect to their pharmacological activity. CO3: Know the Structural Activity Relationship of different class of drugs. CO4: Study the chemical synthesis of selected drugs CO5: Study, mode of action of different class of drugs. CO6: Study the history and classification of different class of drugs
BP602T Pharmacology III – Theory	CO1: To get the in-depth knowledge about pharmacology and pharmacotherapy of drugs used in Infectious diseases, Respiratory system, Gastrointestinal Tract etc. CO2: To understand the mechanism of resistance to antibiotics. CO3: To know the detail the classification, mechanism of action, pharmacological actions, pharmacokinetics, therapeutic uses, adverse effects, drug interactions, contraindications, dosages of different chemotherapeutic drugs. CO4: To get the knowledge of Immunopharmacology, CO5: To understand concept of Protein drugs, monoclonal antibodies, target drugs to antigen, bio similar in pharmacology. CO6: Comprehend the principles of toxicology and treatment of various poisonings and appreciate correlation of pharmacology with related medical sciences.
BP603T Herbal Drug Technology – Theory	CO1: Understand raw material as source of herbal drugs from cultivation to herbal drug product CO2: Analyse the quality assurance aspects of GAP, GLP and GMP involved in Indian systems



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>of medicine formulation industry</p> <p>CO3: Explain the basic principles of Indian systems of medicine.</p> <p>CO4: Discuss the concepts of traditional systems of medicine, their development and various formulations including their manufacture, quality control and safety monitoring.</p> <p>CO5: Predict herb-drug, herb-herb interactions.</p> <p>CO6: To know the Intellectual property rights and regulatory affairs for herbal products.</p>
BP604T Biopharmaceutics and Pharmacokinetics – Theory	<p>CO1: To understand the concept of ADME of drug in human body and learn various biopharmaceutical factors affecting drug bioavailability.</p> <p>CO2: To study the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug.</p> <p>CO3: To study the concept of bioavailability and bioequivalence study.</p> <p>CO4: To apply the various regulations related to developing bioavailability and bioequivalence study protocol for the new drug molecule.</p> <p>CO5: To learn various methods of dissolution testing and In vitro–in vivo correlation.</p> <p>CO6: To understand basic considerations of pharmacokinetic models, different compartment model, non-compartment model and also nonlinear Pharmacokinetics.</p>
BP605T Pharmaceutical Biotechnology – Theory	<p>CO1: To understand the importance, scope and applications of biotechnology in Pharmaceutical science and Students will understand the various techniques used in modern biotechnology</p> <p>CO2: Students can able to provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic</p>



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	<p>CO3:To know about genetic engineering and its applications in relation to production of pharmaceuticals. Students can demonstrate and Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products</p> <p>CO4:To understand the importance of immobilized enzyme in pharmaceuticals.</p> <p>CO5:To appreciate the use fermentation technology.</p> <p>CO6:To understand the recombinant DNA techniques as the tool and future perspective in field of pharmacy.</p> <p>CO7:To acknowledge about immunity, hypersensitivity, vaccinations and blood and blood related products.</p> <p>CO8:Students can explain the concept and application of monoclonal antibody technology</p> <p>CO9:Students can able to explain the general principles of generating transgenic plants, animals and microbes</p>
<p>BP606T Quality Assurance – Theory</p>	<p>CO1:Understand the responsibilities of QA & QC</p> <p>CO2:Understand the cGMP aspects in a pharmaceutical industry.</p> <p>CO3:Appreciate the importance of documentation.</p> <p>CO4:Understand the scope of quality certifications applicable to pharmaceutical industries.</p> <p>CO5:Know the benefits and elements of ISO 9000 & ISO 14000.</p> <p>CO6:Understand importance and scope of validation as well as type of validation.</p>
<p>BP607P Medicinal chemistry III – Practical</p>	<p>CO1:To study different laboratories techniques like recrystallization, distillation and safety measures in chemistry laboratory.</p> <p>CO2:To synthesize drugs and intermediates of different class of drugs.</p>



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO3:To prepare the medicinally important compound by microwave synthesis. CO4:Drawing structure and reactions using Chem draw. CO5:To determine physicochemical properties like logP, clogP, MR, Molecular weight. CO6:To study the drug design software Drug likeliness screening.(Lipinskies RO5)
BP608P Pharmacology III – Practical	CO1:Understanding the importance of isolated preparation, mechanism of action of drugs on isolated tissues, expertise in performing bioassay of drugs. CO2:Understanding the in vivo and in vitro experiments, use of software for the study of preclinical experiments. CO3:Study the calculations acute oral toxicity (LD50) of a drug from a given data CO4:Study the pyrogens test, mydriatic and miotic effects hypoglycemic effect on rabbit using software. CO5:Understanding the brief idea about statistics, its applications in experimental pharmacology. CO6:Understanding to solve problems using various statistical tests.
BP609P Herbal Drug Technology – Practical	CO1:Perform phytochemical screening of the extracts CO2:Prepare herbal formulations and herbal cosmetics using standardized extracts CO3:Evaluate excipients of natural origin CO4:Carryout monograph analysis of herbal drugs CO5:Determine alcohol content, aldehyde content, total alkaloids and phenol content



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



FINAL YEAR SEMESTER VII

Subject with Subject code	Course Outcomes
BP 701T Instrumental Methods of Analysis (Theory)	CO1:To study instrumentation, qualitative and quantitative application of UV spectroscopy and fluorimetry.
	CO2:To acquire knowledge about principle, instrumentation and application of ir spectroscopy, flame photometry.
	CO3:To understand instrumentation and application of atomic absorption spectroscopy and Nepheloturbidometry
	CO4:To understand chromatographic separation and analysis of drug by using absorption and partition column chromatography, thin layer chromatography, paper chromatography electrophoresis.
	CO5:To study instrumentation, application of gas chromatography and high performance liquid chromatography.
	CO6:To acquire knowledge about ion exchange chromatography, gel chromatography, affinity chromatography.
BP 705P Instrumental Methods of Analysis (Practical)	CO1:To study different methods are used in UV spectroscopy
	CO2:To have an idea about the estimation of colorimetry.
	CO3:To study estimation of fluorimetry.
	CO4:To study flame photometry
	CO5:To Understand the basic knowledge about thin layer chromatography and paper chromatography.



Kalyani Charitable Trust's

R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO6:To study gas chromatography and HPLC
BP702T Industrial Pharmacy -ii (Theory)	CO1:To know the process of pilot plant and scale up of pharmaceutical dosage forms CO2:To understand the process of technology transfer from lab scale to commercial batch CO3:To know different Laws and Acts that regulate pharmaceutical industry CO4:To understand the approval process and regulatory requirements for drug products CO5:To discuss the process of pilot plant scale up of pharmaceutical dosage forms. CO6:To describe the approval process and regulatory requirements of drug products.
BP703T Pharmacy Practice (Theory)	CO1:To know various drug distribution methods in a hospital CO2:To monitor drug therapy of patient through medication chart review and clinical review CO3:To identify drug related problems CO4:To detect and assess adverse drug reactions CO5:To know pharmaceutical care services CO6:To Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
BP704T Novel Drug Delivery System (Theory)	CO1:To understand the drug delivery system of pharmaceutical compound needed in body to be safer to achieve in desired therapeutic effect by Controlled DDS. CO2:To understand the approaches, formulation technologies and system for transportation a pharmaceutical compound.



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO3:To understand the concept, application, formulations, methodology of preparations and evaluations of microcapsules.
	CO4:The learner will able to understand the various systems of approaching the drug to the body with systems such as Transdermal drug delivery system, nasopulmonary DDS, ocular DDS, Intra uterine DDS, Gastro retentive DDS & its Formulation, development and evaluation.
	CO5:To understand the selection of polymer in fabrication of drugs delivery system.
	CO6:To understand the concepts of the targeted drug delivery system



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



FINAL YEAR SEMESTER VIII

Subject with Subject code	Course Outcomes
BP801T Biostatistics and Research Methodology (Theory)	<p>CO1:To Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)</p> <p>CO2:To Know the various statistical techniques to solve statistical problems</p> <p>CO3:To appreciate statistical techniques in solving the problems.</p> <p>CO4:Develop the ability to apply the methods while working on a research project work</p> <p>CO5:To describe the appropriate statistical methods required for a particular research design</p> <p>CO6:To develop a appropriate framework for research studies</p>
BP802T Social and Preventive Pharmacy (Theory)	<p>CO1:To Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.</p> <p>CO2:To Have a critical way of thinking based on current healthcare development</p> <p>CO3:To Evaluate alternative ways of solving problems related to health and pharmaceutical issues</p> <p>CO4:To Recognize the concepts and evaluation of public health.</p> <p>CO5:To Identify avoidable habits for personal hygiene and health.</p> <p>CO6:To Illustrate sociocultural factors and its relation with health.</p>
BP803ET Pharmaceutical Marketing (Theory)	<p>CO1:The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry</p>



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO2:To describe the concept of pharmaceutical marketing. CO3:To enumerate the concept of product management in pharmaceutical industry CO4:To discuss the various components of promotion of pharmaceutical products CO5:To discuss the role and responsibility of professional sales representative CO6:To explain the different pharmaceutical marketing channels
BP804ET Pharmaceutical Regulatory Science (Theory)	CO1:To Know about the process of drug discovery and development CO2:To Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals CO3:To Know the regulatory approval process and their registration in Indian and international markets CO4:To learn the basic understanding of regulations of India with other global regulated markets CO5:To Understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals CO6:To Understand the concept of pharmacovigilance and its significance
BP805ET Pharmacovigilance (Theory)	CO1:To know History and development of pharmacovigilance CO2:To understand National and international scenario of pharmacovigilance CO3:To study Dictionaries, coding and terminologies used in pharmacovigilance CO4: Detection of new adverse drug reactions and their assessment CO5:To understand international standards for classification of diseases and drugs CO6:To study Adverse drug reaction reporting systems and communication in



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Kalyani Hills, Anjaneri -Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
BP806ET Quality Control and Standardization of Herbals (Theory)	<p>pharmacovigilance</p> <p>CO1:Know WHO guidelines for quality control of herbal drugs</p> <p>CO2:Know Quality assurance in herbal drug industry</p> <p>CO3:Know the regulatory approval process and their registration in Indian and international markets</p> <p>CO4:Appreciate EU and ICH guidelines for quality control of herbal drugs Compound.</p> <p>CO5:To describe guidelines for quality control of herbal drugs and evaluation of safety and efficacy of herbal medicines.</p> <p>CO6:To describe guidelines for cGMP, GAP, GMP and GLP for quality assurance of herbal drugs in industry</p>
BP807ET Computer Aided Drug Design (Theory)	<p>CO1:To know Design and discovery of lead molecules</p> <p>CO2:To understand the role of drug design in drug discovery process</p> <p>CO3:To know The concept of QSAR and docking</p> <p>CO4:To understand Various strategies to develop new drug like molecules.</p> <p>CO5:To understand The design of new drug molecules using molecular modelling software</p> <p>CO6:To Understand the physicochemical Properties and the techniques involved in QSAR</p>
BP808ET Cell and Molecular Biology (Theory)	<p>CO1:To Summarize cell and molecular biology history.</p>



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R. G. SAPKAL INSTITUTE OF PHARMACY

Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
	CO2:To Summarize cellular functioning and composition. CO3:To Describe the chemical foundations of cell biology. CO4:To Summarize the DNA properties of cell biology. CO5:To Describe cellular membrane structure and function. CO6:To Describe basic molecular genetic mechanisms.
BP809ET Cosmetic Science (Theory))	CO1:To classify and define Cosmetics and Cosmeceuticals as per Indian and EU regulations CO2:To describe the role of cosmetic excipients and building blocks in the formulation of cosmetics CO3:To explain the structure and function of the skin, hair, teeth and gums CO4:To describe the fundamentals of sun protection and the formulation of Sunscreens, antiperspirants and deodorants CO5:To Formulate cosmetics for skin care and hair care as well as dental and oral care CO6:To design herbal cosmetics for skin care, hair care and oral care
BP810ET Experimental Pharmacology (Theory)	CO1:To design the protocol for preclinical drug discovery CO2:To expertise in routes of drug administration. CO3:To adeptness in animal dose calculations CO4:To learn proficiency in interpretation of preclinical statistical preclinical data CO5:To study blood withdrawal techniques using animals



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Kalyani Hills, Anjaneri - Wadholi, Nashik-422113



Subject with Subject code	Course Outcomes
BP811ET Advanced Instrumentation Techniques (Theory)	<p>CO6: To describe the regulatory guideline for maintenance and conduct of experiments on laboratory animals</p> <p>CO1: To learn basic instrumentation of NMR and mass spectrometer.</p> <p>CO2: To learn basic principles and instrumentation of thermal analysis</p> <p>CO3: To learn basic instrumentation and applications of hyphenated techniques.</p> <p>CO4: To describe general principles and procedures involved in extraction techniques.</p> <p>CO5: To learn basic knowledge about the calibration of analytical instruments.</p> <p>CO6: Explain theoretical principles of x-rays, instrumentation and identification of organic compounds.</p>
BP812ET Dietary Supplements and Nutraceuticals (Theory)	<p>CO1: To describe about source, chemistry and uses of several natural nutraceuticals.</p> <p>CO2: To learn about effect of nutrition to maintain healthy life of public included maternal and child health and effects of education about nutrition in community.</p> <p>CO3: To describe occurrence, chemical nature and medicinal benefits of natural nutraceuticals belong to different phytochemical categories.</p> <p>CO4: To study different free radical which generate in body and their effects and different dietary fibers and complex carbohydrate as functional food ingredients.</p> <p>CO5: To learn the role of free radicals in development of different diseases and aging</p> <p>CO6: To study role of natural and synthetic antioxidants, functional foods in prevention of chronic diseases.</p>