SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA

(Sponsored by The Exhibition Society), Tarnaka, Secunderabad

Approved by AICTE &PCI, Affiliated to Osmania University

COURSE OUTCOMES FOR PCI SYLLABUS

BP101T. HUMAN ANATOMY AND PHYSIOLOGY- I THEORY

Upon completion of this course the student should be able to

CO1. To impart knowledge & understanding on the anatomy & physiology of various systems of human body. Describe various homeostatic mechanisms & Tissues of human body

CO2. Describe structure & functions of Integumentary system & outline divisions of skeletal system & different types of joints.

CO3. Explain composition & functions of body fluids & anatomy & physiology of Lymphatic system.

CO4. To impart knowledge & understanding on the anatomy & physiology of Peripheral nervous system & Sense organs.

CO5. Outline the structure & functions of cardiovascular system.

BP107P.HUMAN ANATOMY AND PHYSIOLOGY- I PRACTICAL:

Upon completion of this course the student should be able to

CO1. Identify the various tissues and bones of the different systems of the human body.

CO2. Perform Blood related experiments like Blood grouping, Estimation of RBC & WBC Count.

CO3.Perform the hematological tests and also record blood pressure, heart rate, pulse rate.

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BP102T PHARMACEUTICAL ANALYSIS –I THEORY

Upon completion of this course the student should be able to

CO1: To understand the fundamental concepts in pharmaceutical analysis.

CO2: To understand the principles of various volumetric analysis.

CO3: To apply the concepts of volumetric analysis in assay of selected drugs.

CO4: To understand the principle of electrochemical method of analysis.

CO5: To apply the concepts of electrochemical method of analysis.

BP108P. PHARMACEUTICAL ANALYSIS LAB -I PRACTICAL

Upon completion of this course the student should be able to

CO1: To analyze the presence of impurities qualitatively by performing limit tests.

CO2: To prepare various standard solution and express their concentration by standardization

CO3: To analyze the selected compounds qualitatively by using various volumetric methods of analysis.

CO4: To express concentration and analyze the end point graphically using electrochemical method.

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BP103T PHARMACEUTICS-1 THEORY

Upon completion of this course the student should be able to

CO1-To know about the history background and development of pharmacy profession various pharmacopoeias and types of conventional dosage forms handling of prescription and calculate the dose of a child.

CO2-To understand various pharmaceutical calculations. To know about powders liquid dosage forms, solubility enhancement techniques.

CO3-To understand various monophasic liquid dosage forms and biphasic liquid dosage forms and method of preparation and stability of emulsions.

CO4-To understand term suppository and types of suppository displacement value and various pharmaceutical Incompatibilities.

CO5-To know the definition of various semi solids method of preparation and evaluation and also use of excipients in the preparation of semi solids.

BP109T PHARMACEUTICS-1 PRACTICAL

Upon completion of this course the student should be able to

CO1-To know how to various monophasic liquid dosage forms along with neat and labelled container.

CO2-To know the manufacturing of various biphasic liquid forms along with neat and labelled container.

CO3-To know the method of preparation of various semi solid dosage forms along with neat and labelled container.

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BP104T PHARMACEUTICAL INORGANIC CHEMISTRY THEORY

Upon completion of this course the student should be able to

CO1 – To understand the sources and effects of impurities limit test history of pharmacopoeia.

CO2 – Understand the concepts of acid base and buffers explain the definitions preparations and assay procedures of and dental products

CO3-Explain the definitions preparations and assay procedures of G1 agents cathartics antimicrobials

CO4-Describe the definitions preparations and assay method of expectorants emetics hematinic antidote and astringents.

CO5-Appriciate the importance of inorganic pharmaceuticals in preventing and curing diseases Radiopharmaceuticals

BP110P PHARMACEUTICAL INORGANIC CHEMISTRY PRACTICAL

Upon completion of this course the student should be able to

CO1: Learn the principle and procedures of limit test for chlorides, sulphates, iron, heavy metals, arsenic, and modifications in limit tests.

CO2: Able to perform the identification tests.

CO3: To perform the test for purity fir given compounds.

CO4: Carryout the preparation of given inorganic pharmaceuticals

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BP105T COMMUNICATION SKILLS -THEORY

Upon completion of this course the student should be able to

CO1- Able to learn the basics of communication and different types of communication by this they will able to know how communicate better, how to present themselves in front of others.

CO2- By different elements available in communicating with people can express through language, and expressing their view by using verbal and non-verbal mode of communication.

CO3- They will learn difference between learning and listening and different methods in applying to learning and listening

CO4- Students will learn do's and don'ts during or while attending the interview. Knowing or focusing on the purpose of interview. Punctuality maintenance to interview dressing formally, eye contact are few of them. Deal up with fears while presenting presentations like having good content of knowledge gives confidence to the student, giving practice regularly gives confidence.

CO5- Group discussions will help in building up knowledge of student by sharing with others by using good communication skills it is better understood to the listener.

BP111P COMMUNICATION SKILLS PRACTICAL

Upon completion of this course the student should be able to

CO1. Learn dos & don'ts that are to be followed during communicating with each other and also learn different ways to meet greet and apologize to people.

CO2. Learn grammar and by practicing these they will be able to write sentences very effectively.

CO3. Learn different types of speeches and how to apply them in communicating with others and can use them in effective writing. Presentation skills can be improved, Techniques for delivery of speeches.

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BP 106RMT REMEDIAL MATHEMATICS

Upon completion of this course the student should be able to

CO1-This course involves the definition of logarithm and apply them to solve problems. Also discourses the basics of calculus like functions and limits and continuously also provides knowledge an partial fractions

CO2 – This course comprises of matrices definitions and their type also imparts knowledge to solve simultaneous equations using matrices

CO3-This course introduces differential calculus it requires to apply the methods to solve the problems and also to memorize them for effective solution of problems

CO4-This consists of analytical geometry to equations of straight line a d different form of them. Also includes integral calculus which has to be understood and use formulae to solve them

CO5-This course includes differential equations and Laplace transforms solving differential equations require thorough knowledge of differential calculus and Integral calculus

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BP201T HUMAN ANATOMY & PHYSIOLOGY-II (THEORY)

Upon completion of this course the student should be able to

CO1: Explain the gross morphology, structure and functions of various organs of human body.

CO2: Explain the gross morphology, structure, functions of homeostatic mechanism and imbalances of various organs of human body.

CO3: Explain the gross morphology, structure and functions of various organs of human body.

BP207P HUMAN ANATOMY AND PHYSIOLOGY-II PRACTICALS

Upon completion of this course the student should be able to

CO1: Identify the various tissues and organs of different systems of human body.

CO2: Appreciate coordinated mechanisms of different organs in the maintenance of normal functioning of human body.

CO3: Perform the hematological tests like blood cell count, tidal volume and vital capacity.

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BP202T PHARMACEUTICAL ORGANIC CHEMISTRY-I THEORY

Upon completion of this course the student should be able to

CO1: To understand the classification and nomenclature of simple organic compounds, structural isomerization.

CO2: To understand the concepts of hybridization, to understand the mechanism involved in addition and elimination reaction, appreciate, the reaction orientation rules, such as Sayetzeff's and Markovnikoff's rules.

CO3: TO understand the mechanism involved in nucleophilic substitution reaction, rearrangements reaction.

CO4: To understand the main aspects – principle, mechanism and application involved inorganic synthesis, to prepare synthesis organic compounds of medicinal interest.

BP208P PHARMACEUTICAL ORGANIC CHEMISTRY -I PRACTICALS

Upon completion of this course the student should be able to

CO1: To deal with qualitative identification of organic compounds. The chemical tests have been designed to illustrate the application of chemical means of identifying the unknown compound.

CO2: Method of preparation of various compounds.

CO3: Construction of molecular models. Understanding the stereochemistry of compounds by use of stereochemistry.

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BP203T. BIOCHEMISTRY- THEORY

Upon completion of course student shall be able to understand.

CO1: To understand the fundamental concepts bioenergetics of biomolecules.

CO2: To understand the metabolic pathways of different nutrients molecules in physiological and pathological conditions.

CO3: To understand the mechanisms involved in biological oxidation pathway (and inhibitor associated with it).

CO4: To understand the catalytic role of enzyme the role of enzyme inhibitor in design of new drug molecules with their therapeutic diagnostic applications.

CO5: To understand the genetic organization mammalian genome and functions of DNA in synthesis of RNA and proteins

BP209P. BIOCHEMISTRY PRACTICAL

Upon completion of this course the student should be able to

CO1: To perform qualitative analysis of various biomolecules in the body fluids.

CO2: To understand the various factors effecting enzyme activity.

CO3: Perform qualitative estimation of biomolecule (sugars, protein, and creatinine total cholesterol).

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BP204T. PATHOPHYSIOLOGY THEORY.

Upon completion of this course the student should be able to

CO1: To understand the principles and causes of cell injury and mechanism and mediators of inflammation.

CO2: To explain the pathogenesis and complications of disease of cardiovascular, respiratory and renal systems.

CO3: To understand and leans the. Pathophysiology of anemias endocrine and nervous system disorders

CO4: To learn and explain the pathogenesis of diseases of tones and joints, cancer, IBD, hepatitis and jaundice.

CO5: To describe the ethology pathogenesis of STD's and infection diseases.

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BP205T COMPUTER APPLICATIONS THEORY

Upon completion of this course the student should be able to

CO1-Understand the design and applications of number systems in information technology. Information systems help students to understand the steps involved in managing the operations

CO2-create Web page s using different markup languages and able to design basic databases and generate reports using queries

CO3-Understand the use and applications of computer in pharmacy and different pharmacy automation technologies

CO4-Gain knowledge on basic bio informatics and role of bio informatics in drug discovery.

CO5-Summerize the role of computers as data analysis in preclinical development

BP210P.COMPUTER APPLICATIONS PRACTICAL

Upon completion of this course the student should be able to

CO1-Appreciate the importance of MS word to gather information in the form of questionnaire and also mil merge tool in designing labels

CO2 – Retrieve drug information through different databases and online tools and able to design Web page using HTML language

CO3-Create database using MS access and information of patient database using queries and generating reports

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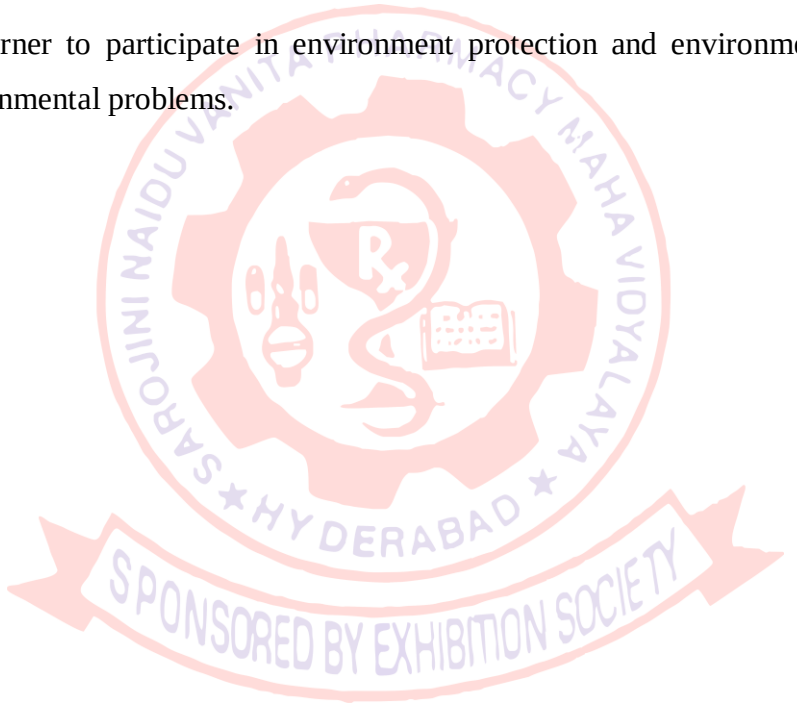
BP206T. ENVIRONMENTAL SCIENCES THEORY

Upon completion of this course the student should be able to

CO1-Create the awareness about environmental problems and role of an individual in conservation of natural resources.

CO2-Basic knowledge about the environment and its allied problems

CO3-Motivate learner to participate in environment protection and environment improvements and solving environmental problems.



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BP301T.PHARMACEUTICAL ORGANIC CHEMISTRY II THEORY

Upon completion of this course the student should be able to

CO1: To understand the aromatic substitution resulted in the development of a set of electrophilic substitution reactions. To explain the influence of electronic displacements on structure and reactivity of organic compounds.

CO2: To understand the activity of phenols and acids, basicity of amines, their nomenclature, preparations and properties.

CO3: To understand the chemistry of fats and oils, reactions and to find analytical constants.

CO4: To understand the polynuclear hydrocarbons – their classification, synthesis and properties.

CO5: To identify the general properties of cycloalkanes and stabilities.

BP305P PHARMACEUTICAL ORGANIC CHEMISTRY II PRACTICAL

CO1: Learn to know recrystallization for some organic compounds and steam distillation of solvents.

CO2: Learn the analysis of oils and fats – Acid value, Saponification value and Iodine value.

CO3: Able to synthesize selected organic compounds by different mechanism.

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BP302T PHYSICAL PHARMACEUTICS-I THEORY

Upon completion of this course the student should be able to

CO1-Understand the terms and concepts of solubility and miscibility and also factors controlling and effectors the solubility of drugs

CO2-Understand the various physicochemical properties of drug molecules in the designing the dosage forms

CO3-Understand the concept of surface and interfacial tensions, surface free energy, mechanisms of adsorption on liquid and solid interfaces.

CO4-Understand the significance of complex action protein liquid interactions in drug action

CO5-Formulate and analyze a buffer solution of desired pH and buffer capacity and uses of buffers in pharmaceutical solutions

BP306P PHYSICAL PHARMACEUTICS-I PRACTICAL

CO1-To determine various solubility parameters of drugs room temperature, pH and distribution coefficient at various solvents

CO2 – To determine HLB number of a surfactant %composition of impurities in a system and surface tension of a liquid

CO3 -To determine the stability constants and donor acceptor ratios of cupric glycine complex and PABA Caffeine complex and Freundlich and Langmuir constants using activated charcoal

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BP303T. PHARMACEUTICAL MICROBIOLOGY-THEORY

CO1-Understand Microbiology, know about its history, applied branches and its Scope., regarding the Bacterial Structure and its nutrition required for growth of Bacteria, Isolation procedures., and also Microscopy, its principles and Applications.

CO2-Enumerate the principles and procedures for staining and different methods of Sterilization, their advantages and disadvantages.

CO3-Importance and Classification of Fungus, Virus along with their morphological features and cultivation of them and also Explain the Disinfectants, Bacteriostatics and Bactericidals, their mode of action, Classification and Evaluation methods. Perform the Sterility Testing of Pharmaceutical Products according to IP, BP and USP.

CO4-Design an aseptic area having Laminar Flow equipment with all the specifications. discuss the different techniques involved in the assay of Standardization of Antibiotics, Vitamins and Amino acids along with a new antibiotic.

CO5Enumerate the different factors affecting microbiological spoilage and sources of contamination, importance of preservatives, illustrate the animal cell culture and its importance.

BP307P. PHARMACEUTICAL MICROBIOLOGY PRACTICAL

CO1- Expose to different laboratory experiments, rules and regulations, sterilization of glassware and media.

CO2-Enumerate the techniques used for the preparation of cultures and also the techniques used for isolation of pure culture by different methods.

CO3- Demonstrate the different staining methods and determine the motility of microbes along with bacteriology of water.

CO4- Explain the importance of sterility and illustrate the various methods for sterility and microbiological assay methods for pharmaceuticals.

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BP304T PHARMACEUTICAL ENGINEERING THEORY

CO1: To determine the flow of fluids using various instruments and to know the size reduction, size separation & unit operations involved in pharmaceutical industries.

CO2-To know the objectives and heat transfer mechanism and to perform evaporation and distillation unit operations involved during pharmaceutical manufacturing process.

CO3 To know and perform the drying, mixing unit operations involved during pharmaceutical manufacturing process.

CO4 To understand & perform the filtration and centrifugation unit operations, theories used for preparation of sterile pharmaceutical dosage forms.

CO5 To understand the material handling techniques & to appreciate various preventive methods used for corrosion control in pharmaceutical industries.

BP308P. PHARMACEUTICAL ENGINEERING PRACTICAL

CO1 To perform the site reduction and site separation experiments

CO2 To determine the radiation constants for different metals. Construction of drying curves estimate the efficiency of steam distillation, studying the effect of various factors on rate on evaporation

CO3 To determine the humidity of air by dew point and psychromometry

CO4 To understand the concept of various factors affecting rate filtration

CO5 To determine the effect of time on rate of crystallization.

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BP40IT PHARMACEUTICAL ORGANIC CHEMISTRY -III THEORY

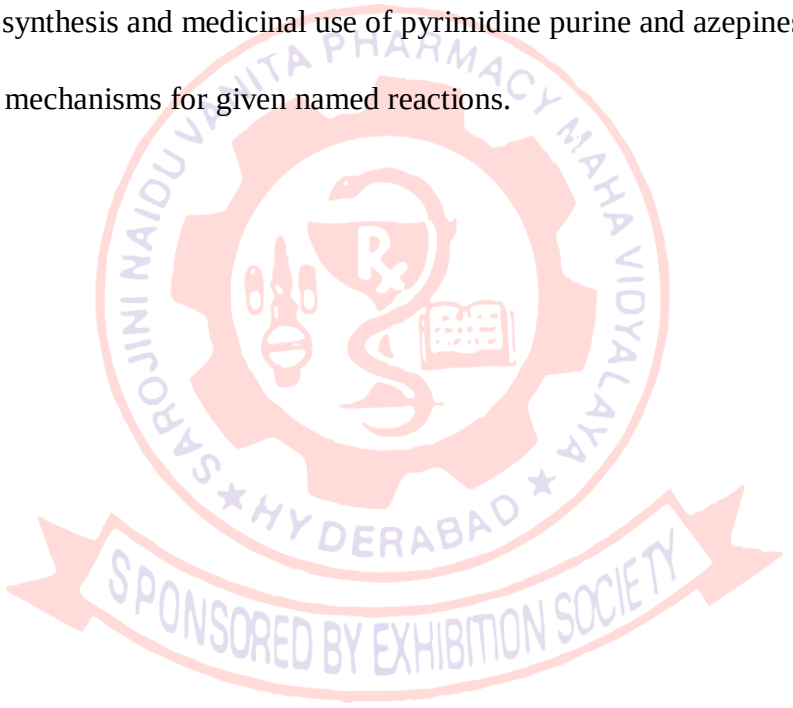
CO1-To identify a stereo isomer and distinguish it from other types of isomers

CO2-To enable the students to get a clear idea about geometrical isomerism, stereospecific and stereoselective reactions

CO3-To acquire knowledge in compounds like pyrrole, furan, and thiophane synthesis reactions and medicinal uses

CO4-To understand the chemistry of six members heterocycles and fused heterocycles, to emphasize on the synthesis and medicinal use of pyrimidine purine and azepines

CO5-To describe mechanisms for given named reactions.



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BP402T. MEDICINAL CHEMISTRY-I THEORY

CO1: To know the history and development of medicinal chemistry, learn how various physicochemical properties relates to biological activity understand the metabolic pathway of drugs and the factors affecting drug metabolism.

CO2: Learn the role of neurotransmitter. Their synthesis and catabolism of drugs acting of different class of drugs, therapeutic applications and synthesis of some drugs.

CO3: Learn the neurotransmitter acting on cholinergic receptors. Known the SAR of different class of drugs therapeutic applications and synthesis of some drugs.

CO4: Learn the physiology of central nervous system, SAR of benzodiazepines, barbiturates, antipsychotics, and anti-convulsant. Understand the therapeutic application and synthesis of some drugs.

CO5: Known the SAR of general, narcotic analgesic. Learn the therapeutic application and synthesis of some drugs

BP406P MEDICINAL CHEMISTRY –I PRACTICAL

CO1: Synthesize the drugs or intermediates by using basic organic reaction mechanisms.

CO2: Calculate the percentage purity of some drugs by using quantitative analytical methods.

CO3: Determine the partition co-efficient to know the hydrophobicity or hydrophilicity of drugs.

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BP403T PHYSICAL PHARMACEUTICS-II (THEORY)

CO1: To understand various physicochemical properties of drug molecules in the designing the dosage form.

CO2: To understand the flow characteristic properties of different liquids and determination of viscosity of liquids by using different equipment's.

CO3: To understand various physicochemical properties of drug molecules in the designing the emulsion and suspensions.

CO4: To know about various powder characteristic flow properties and derived properties and also determination of particle size.

CO5: To know the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulations.

BP407P PHYSICAL PHARMACEUTICS-II LAB

CO1: To determine various flow properties of powders & also particle size & its distribution by different methods.

CO2: To determine viscosity of a liquid & semi-solids by equipment's and also sedimentation volume of liquid

CO3: To determine first & second order rate constants & also accelerated stability studies.

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BP404T PHARMACOLOGY- I THEORY

THEORY

CO1- To understand the basic pharmacological knowledge and appreciate the correlation of pharmacology with other bio medical sciences

CO2- To analyze and understand the mechanism of drug action at macro molecular levels.

CO3- To remember and understand the pharmacological actions of different categories.

CO4- To remember and understand the pharmacology of drugs acting on central nervous system

CO5- To analyze, remember and understand the pharmacology of drugs acting on central nervous system.

BP408P PHARMACOLOGY- I PRACTICAL

CO1-To understand the basic experimental pharmacological knowledge.

CO2- To study the various activities on animals by using different instruments.

CO3- To observe the effects of drugs on animals by stimulated experiments.

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BP405T PHARMACOGNOSY AND PHYTOCHEMISTRY -I THEORY

CO1-Describe the different methods of classification of crude drugs. explain various evaluation techniques of crude drugs.

CO2-To illustrate various methods of cultivation and collection of crude drugs

CO3-To understand the plant tissue culture techniques and applications.

CO4- To impart knowledge on various systems medicines.

C05-To memorize the various systemic study of various plant metabolites.

BP409P PHARMACOGNOSY AND PHARMACHEMISTRY- I LAB

CO1-To Analyze crude drugs by performing various chemical tests.

CO2- To analyze various parameters of crude drugs by quantitative microscopic evaluation methods.

CO3- To analyze various crude drugs by physical evaluation methods.

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BP501T MEDICINAL CHEMISTRY -II THEORY

CO1-Study the Physiology of histamine its receptors and their distribution in the body. Know the theory of chemotherapy learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of antihistamines and antineoplastic agents.

CO2-Study the Physiology of diuretics and hypertension. Learn the classification, mechanism of action, SAR, therapeutic activity, and synthesis of diuretics and hypertensive agents.

CO3-Study the Physiology of arrhythmia and coagulation. Learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of anti arrhythmia, anti hyperlipidemic, anti coagulants and congestive heart failure.

CO4-Study the Physiology of endocrine system. Learn the classification, mechanism of action SAR, and therapeutic activity of drugs acting on endocrine system.

CO5 -Study the Physiology of diabetes. Learn the classification, mechanism of action, SAR, and therapeutic activity and synthesis of anti diabetic drugs.

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BP502T INDUSTRIAL PHARMACY-I THEORY

CO1- To understand various physiochemical characteristics of the drug substances and their applications in the development of different dosage forms and its impact on the stability of dosage forms

CO2-To understand and describe the formulation, manufacturing, quality control tests of tablets, tablet coating and formulation, manufacturing, evaluation of liquid oral preparations.

CO3-Understand describe the formulation, filling, quality control tests of capsules and formulations, process, manufacturing of pellets.

CO4-To learn and acquire the knowledge on formulation, manufacturing and evaluation of parenteral products and ophthalmic preparations.

CO5- To learn and acquire the knowledge on cosmetic preparations, pharmaceuticals aerosols and various packaging materials.

BP506 T INDUSTRIAL PHARMACY-I PRACTICAL

CO1-Acquire knowledge about preparation of injections.

CO2-Acquire knowledge about semisolid preparations

CO3-Prepare & evaluate the tablets, capsules, acquire knowledge on tablet coating.

CO4- acquire knowledge on preformulation studies of various drugs.

CO5-Evaluate the glass containers.

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BP503T PHARMACOLOGY- II THEORY

CO1- To understand the mechanism of drug action in relevance of treatment of different diseases.

CO2- To learn the different mechanisms of drugs of action in relation to its treatment for various diseases.

CO3- to understand the physiological role of drugs and pharmacology of drugs acting on it.

CO4- To learn how different drugs or hormones interact and understand their pharmacology.

CO5- To analyze an understand how different drugs act in the body and various principles of assay performed.

BP507 P PHARMACOLOGY- II PRACTICALS

CO1- To understand the basic knowledge in experimental pharmacology and study the effects of drugs on animals.

CO2- To learn different methods or procedures on animal activity studies.

CO3- To analyze or understand the principles of bio assay.

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BP504T PHARMACOGNOSY AND PHYTOCHEMISTRY -II THEORY

CO1-Students can be able to know the biogenesis of different secondary metabolites in plants using difficult pathways.

CO2-able to identify different classes of phytoconstituents present in plants, their uses and their sources.

CO3-Able to carry out isolation and identification of phytoconstituents useful in treatment of many disorders

CO4-Able to understand industrial production and utilization of various pure phytoconstituents used in treatment of many diseases.

CO5- Able to know all the modern methods of extraction techniques, isolation, purification and analysis of drugs by different chromatographic and spectroscopic techniques.

BP508P PHARMACOGNACY AND PHYTOCHEMISTRY II PRACTICALS

CO1-Able to understand the morphology and histological characteristics of various crude drug powders.

CO2-Able to detect various active principles present in plants like caffeine, atropine etc and isolate them.

CO3- Able to analyze different phytoconstituents by performing TLC and Paper chromatography techniques.

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BP505T PHARMACEUTICAL JURISPRUDENCE THEORY

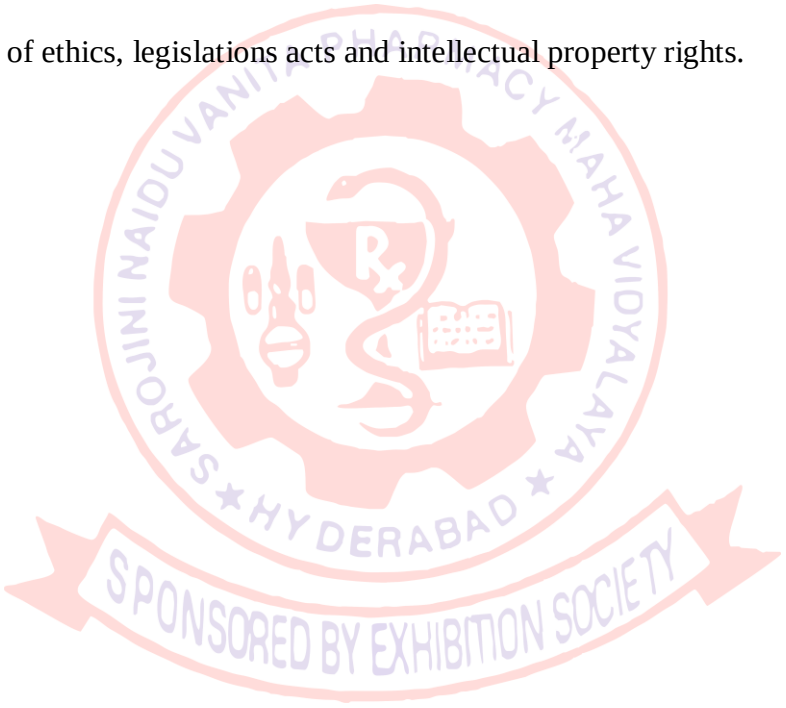
CO1- Acquire knowledge on schedule rules, import manufacture license and analysis of drugs and cosmetics.

CO2- Describe the schedules, sale, labeling, and packing of drugs and cosmetics. study of administration of the drugs and cosmetic act and rules.

CO3-Explain the pharmacy education, regulation, regulatory bodies alcoholic preparations, narcotic and psychotropic substances control.

CO4-Study of prohibition of advertisements animal ethical committee procedures, controlling price of drugs.

CO5-Explain code of ethics, legislations acts and intellectual property rights.



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BP601T MEDICINAL CHEMISTRY III THEORY

CO1-Know the history and development of beta lactam aminoglycosides and tetracyclines. Learn the classification, stereochemistry, mechanism of action, SAR, therapeutic activity and important products of lactam aminoglycosides and tetracyclines.

CO2- Know the history and development of Macrolide antibiotics and antimalarial drugs. Learn the classification, stereochemistry, mechanism of action, SAR, therapeutic activity and synthesis of Macrolide antibiotics and antimalarial drugs. Learn the basic concepts and applications of Prodrugs.

CO3-Study the pathophysiology of Tuberculosis and urinary tract infections. Learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of antitubercular, urinary tract anti-infective and antiviral agents.

CO4- Study the pathophysiology of Fungal and protozoal infections. Learn the classification, mechanism of action, SAR, therapeutic activity and synthesis of anti-Fungal and protozoal agents.

CO5-Know the development and various approaches used in Drug design. Learn the concepts and applications of combinatorial chemistry in drug synthesis.

BP607P MEDICINAL CHEMSITRY-III LAB

CO1: Synthesis of drugs and intermediates by using principles of organic reaction mechanisms.

CO2: Calculate the percentage purity of some drugs by using quantitative analytical methods

C03: To synthesize and know the importance of microwave irradiation techniques when compared to conventional methods of synthesis.

CO4: Learn the drawing structures and reactions using CHEMDRAW software.

CO5: Calculate the physicochemical parameters by using various software's used in drug design and those related to the biological activity.

SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA

(Sponsored by The Exhibition Society), Tarnaka, Secunderabad

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BP602T PHARMACOLOGY-III THEORY

CO1- To understand the mechanism of drug action and its relevance in the treatment of various diseases.

CO2- To learn the general principles of chemotherapy.

CO3- To learn and understand the mechanism of drug action in relevance in the treatment of different infectious disease.

CO4- To understand the principles of chemotherapy and immunopharmacology.

CO5- To comprehend the principles of toxicology and treatment of various poisonings and understand the basic knowledge in chemo pharmacology

BP608P PHARMACOLOGY-III PRACTICAL

CO1- To learn dose calculation and pharmaco-kinetic parameters in pharmacological experiments.

CO2- To understand various activity studies by using various animal model.

CO3- To learn various effects on animals by using simulated experiments.

CO4- To acquire the knowledge in determination of toxicity testing of a given drug.

CO5- To learn and understand the biostatistics methods in experimental pharmacology.

SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA

(Sponsored by The Exhibition Society), Tarnaka, Secunderabad

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BP603T HERBAL DRUG TECHNOLOGY

CO1- Able to understand about the raw materials which are used as a source of herbal products, about the good agricultural practices used in the cultivation of plants.

CO2- Able to understand about the nutraceuticals and their benefits in treating various diseases and also herb drug and herb food interactions.

CO3- Able to the herbs which are used as cosmetics herbal excipients and development of herbal formulations.

CO4- Able to know the WHO and ICH guidelines for evaluation of herbal drugs and also about patenting in natural products.

CO5- Able to know about the scope and future prospects of herbal industry and also good manufacturing practice of Indian systems of medicines.

BP609P HERBAL DRUG TECHNOLOGY PRACTICAL

CO1- Able to understand about the natural excipients, asavas and aristas and their evaluation.

CO2-Able to evaluate different phytoconstituents present in the plants like alkaloids, aldehydes, phenols.

CO3-Able to prepare and evaluate herbal cosmetic formulations like creams, lotions, shampoos etc.

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BP604T. BIOPHARMACEUTICS AND PHARMACEUTICS THEORY

CO1: Understand basics concepts in biopharmaceutics and pharmacokinetics and their significance. Describe mechanism of drugs absorption, determine factors influencing absorption through GIT and non-per oval extra vascular routes. Understand and determine the factors affecting distribution affecting protein and tissue binding of volume of distribution, kinetics of protein binding of drugs and their significance.

CO2: Understand metabolism and metabolic Pathway for renal and non renal routes of excretion, describe the factors affecting renal and non renal excretion of drugs, renal clearance. Understanding bioavailability and invitro dissolution models *invitro invivo* correlation, studies. Determine the methods to enhance dissolution and bioavailability of poorly soluble drugs.

CO3: Understand pharmacokinetics and various pharmacokinetics models, describe one compartments. Open model a) Iv bolus b) Infusion c) Extra vascular administration. Understand and derive various PK parameters their significance and application.

CO4: Understanding multi compartments model (Two compartments open model) Derive kinetics of multiple dosing, loading and maintenance doses, calculation of doses and their significance.

CO5: Understanding non linear pharmacokinetics describes the causing factor for non-linearity, derive Michaels – Menten method for estimation of parameter explanation with example.

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BP605T PHARMACEUTICAL BIOTECHNOLOGY THEORY

CO1-Understand biotechnology and explain the methods and applications of enzyme biotechnology, biosensors., protein engineering and in the production of enzymes.

CO2-summerize the basic principles of genetic engineering and diseases the role of recombinant DNA technology in the production of interferons vaccines hepatitis – B hormones insulin with applications.

CO3- explain types of immunity and its application during the hypersensitive reactions, immune simulations and immune suppressors. Discuss the passive immunity and immunization products blood products monoclonal antibodies with their applications.

CO4- Explain microbial biotransformation and its applications and types of mutation and mutants also discuss about the immuno diagnostic tests and genetic organization.

CO5- discuss the design, methods requirements various controls along with media composition, equipments and sterilization methods and explain production of penicillin citric acid vitamin - B12, glutamic acid, griseofulvin along with a brief note on blood products and plasma substitutes.

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BP606T QUALITY ASSURANCE THEORY

CO1. To understand and recognize the various aspects of quality control and management and the scope of quality certification applicable to pharmaceutical industries.

CO2. Understand the cGMP aspects affecting the quality of pharmaceuticals in various departments.

CO3. Understand and recognize the various Good Laboratory Practices followed and quality control tests of packing materials.

CO4. To understand and recognize the need for proper documentation in maintenance of quality.

CO5. To understand the responsibilities of quality control and quality assurance department.

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BP701T INSTRUMENTAL METHODS OF ANALYSIS THEORY

On completion of the course the student shall be able to

CO1: Understand and apply the concepts of interaction of electromagnetic radiation with matter

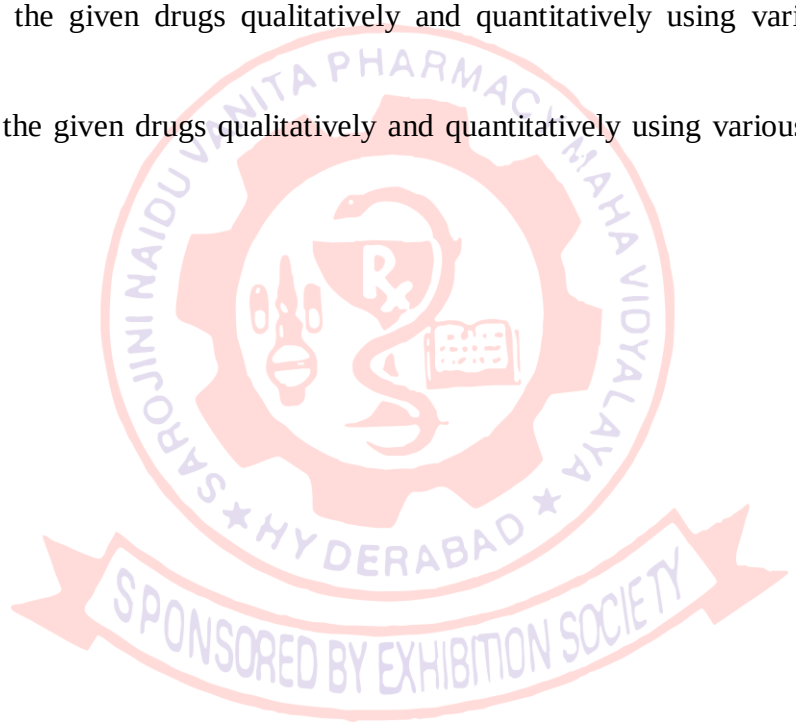
CO2: Understand and apply the principle of separation involved in various chromatographic techniques.

CO3: Understand and apply the concepts of separation using various electrophoretic techniques.

BP705P INSTRUMENTAL METHODS OF ANALYSIS PRACTICAL

CO1: To analyse the given drugs qualitatively and quantitatively using various spectroscopic techniques.

CO2: To analyse the given drugs qualitatively and quantitatively using various chromatographic techniques.



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BP702T INDUSTIAL PHARMACY II THEORY

CO1-To know the process of pilot plant and scale up of bulk pharmaceutical dosage forms

CO2-To understand the process of technology transfer from lab scale to commercial batch

CO3-To know different laws and acts, general considerations of investigational new drug (IND) application that regulate pharmaceutical industry.

CO4-To understand the concept of quality, total quality management and ISO69000 series of quality standards to industry.

CO5-To understand the approval process and regulatory requirements and approval procedures for new drugs and certificate of pharmaceutical product.

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BP703T PHARMACY PRACTICE THEORY

CO1- To understand different type of hospital and it's department staff and their functions to know the organization of hospital pharmacy and its function and managing community pharmacy. To understand the ADRS and medical related problems.

CO2- To understand the dispensing and distribution of drugs in different department of hospital. To know the importance of hospital formulary. To understand the need of therapeutic drug monitoring. Role of pharmacist in medication adherence to understand medication history interview.

CO3- To know the role of PTC in hospital, importance of DIC and PIC and pharmacist role in it. To know the step wisw process of patient counseling, to know the role pharmacist in CME and CPE.

CO4- Role of pharmacist in hospital budget preparation. importance to drug therapy monitoring, ward round and pharmaceutical care. To know the rationality of OTC drugs.

CO5- To know the different types of inventory control methods and their importance. to know the various committee in hospital .to know the normal value of laboratory report and interpretation of abnormal values.

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BP 704T NOVEL DRUG DELIVERY SYSTEMS (THEORY)

CO1-Understand controlled drug delivery systems. Describe the various approaches to design-controlled release formulations based on diffusion, dissolution ion exchange principle. Describe the physicochemical and biological properties of drug relevant to control drug delivery systems. Understand polymers, classification, properties applications in formulations

Understand microspheres/microcapsules, microparticles, method of microencapsulation and applications.

CO2-Understand mucosal drug delivery systems, their principles and concepts of bio adhesion/muco adhesion and transmucosal permeability. Understand formulation for buccal delivery systems

CO3-Understand the basic concepts and components of trans dermal drug delivery system. Describe the skin permeation of drug, factors affecting permutation, permeation enhances, various approaches in formulations of TDDS.

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BP801T. BIOSTATISTICS AND RESEARCH METHODOLOGY

CO1: This course gives introduction to biostatic. Defines mean, median and mode. It helps to understand the concept of standard deviation, with emphasis on pharmaceutical examples. This helps us to pharmaceutical examples and also method to calculate the correction between multiple variable

CO2: This course deals with the filling of data using regression lives. It also focuses on probability theory and theoretical and continuous distribution like binomial, Poisson and normal. It gives knowledge on samplings, method of sampling and basic concepts of inferential statistic. It helps us on to understand and various statistical tests like t test, anova etc.

CO3: This course comprises of non parametric tests like walcoxon rawk sum test, Mann Whitney U test etc. Also, this includes the course to know the need of research and its methodology. This also discusses the methods of graphical representation

CO4: This course gives introduction by practical statistical analysis by using online satisfied software like excel SPSS MINITAB design of experiments etc.

CO5: This course deals with designation and analysis of experiments using factorial designs to learn the principles of experimental designs.

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BP802T. SOCIAL AND PREVENTIVE PHARMACY

CO1-Understand basic concepts of health and disease and also general measures and strategies to be followed in the social and preventive pharmacy

CO2-Acquire knowledge on general principles of prevention and control of various diseases

CO3-categorize different national health programs, its objectives, functions and outcomes of various life-threatening diseases

CO4-Describe various national health intervention programs and role of WHO in Indian national program

CO5-Evalute different ways of solving problems related to health and community services