



MOTHER TERESA

COLLEGE OF PHARMACY

COURSE OUTCOMES OF B.PHARMACY

Course Name: HUMAN ANATOMY AND PHYSIOLOGY – I (Theory)	
Course code: BP101T, Year of Study: 1 st B.Pharmacy 1 st Semester	
C101.1	To recognize the various Homeostasis mechanisms, basic anatomical terms and cellular level organization. To summarize the characteristics of different types of tissues and their location in various organs.
C101.2	To organize the structure and functions Skin, bones and joints of human body.
C101.3	To analyze the importance of blood, lymphatic System and immunity in human body.
C101.4	To relate the Physiology of sympathetic parasympathetic, spinal/cranial nerves and organization of special senses.
C101.5	To adapt the Anatomy and Physiology of heart and blood vessels.

CourseName: Pharmaceutical analysis–I(Theory)	
Coursecode: BP102T, YearofStudy: 1 st B.Pharmacy1 st Semester	
C102.1	To study fundamentals of pharmaceutical analysis and pharmacopoeia. Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.
C102.2	clarify need and basic principle of acid base titration, non-aqueous titrations
C102.3	Clarify need and basic principles of complexometric titration, precipitation titrations, gravimetric analysis etc
C102.4	Clarify need and basic principles of redox titrations.
C102.5	Illustrate principle, types of electrode, instrumentation and applications of Potentiometry, Conductometry and Polarography

Course Name: Pharmaceutics – I (Theory)	
Course code: BP103T, Year of Study: 1 st B.Pharmacy 1 st Semester	
C103.1	To know the historical background and profession of pharmacy and basics of pharmaceutical dosage forms.
C103.2	To understand the importance of prescription and posology.

C103.3	To solve pharmaceutical calculations and understand the formulation of powders and liquid dosage forms.
C103.4	To develop monophasic and biphasic liquid dosage forms.
C103.5	To explain the concepts of suppositories and pharmaceutical incompatibilities. To formulate and evaluate semi solid dosage forms.

Course Name: Pharmaceutical Inorganic chemistry (Theory); Course code: BP104T, Year of Study: 1 st B.Pharmacy 1 st Semester	
C104.1	To understand the history of pharmacopoeia & editions and the sources, types of impurities, general methods of preparation of pharmaceutical inorganic compounds.
C104.2	To know the major extra & intracellular electrolytes, acids, bases, buffers, And dental products.
C104.3	To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.
C104.4	To understand the medicinal importance of expectorants, astringents, Emetics, haematinics, poison and antidote.
C104.5	To discuss the handling and applications of radiopharmaceuticals.

Course Name: Communication skills (Theory); Course code: BP105T, Year of Study: 1 st B.Pharmacy 1 st Semester	
C105.1	To understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.
C105.2	To communicate effectively (Verbal and Non Verbal).
C105.3	To effectively manage the team as a team player.
C105.4	To understand Do's and Don'ts of an interview.
C105.5	To analyze and apply communication skills and other interpersonal skills. To develop Leadership qualities and essentials

CourseName: Remedial Biology (theory) Coursecode: BP106RBT, Year of Study: 1 st B.Pharmacy 1 st Semester	
C106.1	Understand the diversity and five kingdoms of life in living world. Morphology of flowering plants.
C106.2	Understand the anatomy & physiology of circulatory system, digestive system & respiratory system in human body and animals.
C106.3	Understand the anatomy & physiology of excretory system, nervous system, endocrine system & reproductive system in human body and animals.
C106.4	Understand importance of nutrition from plants & minerals, photosynthesis in plants.
C106.5	Understand cell, respiration, growth & tissues in plants.

CourseName: REMEDIAL MATHEMATICS	
Coursecode: BP106RMT, Year of Study: 1ST B.Pharmacy 1 ^t Semester	
C106.1	To understand the role of mathematics in pharmacy. Able to solve problems using partial fraction, logarithms, function, limits and continuity
C106.2	Able to solve problems related to matrices & determinants
C106.3	Able to solve calculus & differentiation problems.
C106.4	Understand the concepts of analytical geometry in problem solving.
C106.5	Understand differential equation, Laplace transform and apply in solving chemical kinetics & pharmacokinetics problems.

Course Name: Human Anatomy and Physiology- 1(Practical);	
Course code: BP 107P, Year of Study: 1 st B.Pharmacy 1 st Semester	
C107.1	To recall handling of compound microscope and to memorize various animal tissues.
C107.2	To summarize the characteristics of different bones(Skeletal System).
C107.3	To identify the bleeding/clotting time and blood group. To analyze the blood cells using heamocytometry.
C107.4	To estimate the hemoglobin concentration of human blood and blood pressure .
C107.5	To predict the erythrocyte sedimentation rate of human blood and heart rate/pulse rate.

CourseName: Pharmaceutical analysis–I (Practical);	
Coursecode: BP108P, Year of Study: 1 st B.Pharmacy 1 st Semester	
C108.1	To understand the importance of calibration,calibration of weights, Pipette and burette.
C108.2	To demonstrate standardization of solutions with different strengths.
C108.3	To experiment with volumetric analysis such as acidimetry and alkalimetry,oxidation and reduction reactions,iodometry, complexometry,precipitation and non-aqueous titration.
C108.4	To evaluate pharmaceuticals by cerimetry.
C108.5	To analyze pharmaceuticals by electro-analytical methods

Course Name: Pharmaceutics – I (Practical); Course code: BP 109 P, Year of Study: 1 st B.Pharmacy 1 st Semester	
C109.1	To recall the principles used in the preparation of solid, liquid and semi solid dosage forms.
C109.2	To experiment with monophasic liquid dosage forms for internal and external administration.
C109.3	To prepare biphasic liquid dosage forms.
C109.4	To design powders and granules.
C109.5	To develop semi solid dosage forms and to formulate suppositories.

Course Name: Pharmaceutical inorganic chemistry (Practical) ; Course code: BP110P, Year of Study: 1 st B.Pharmacy 1 st Semester	
C110.1	To recall the sources of limit tests, preparation and identification of compounds.
C110.2	To apply knowledge to perform modified limit tests.
C110.3	To demonstrate the identification test of inorganic pharmaceuticals.
C110.4	To assess the test for purity of inorganic pharmaceuticals.
C110.5	To select suitable method for the preparation of inorganic Pharmaceuticals.

Course Name: Communication Skills (Practical) ; Course code: BP111P, Year of Study: 1 st B.Pharmacy 1 st Semester	
C111.1	To understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.
C111.2	To apply the practical skills for effective communication (Verbal and Non verbal).
C111.3	To distinguish pronunciation of vowel and consonant sounds.
C111.4	To take part in advanced learning on comprehension/direct and indirect speech.
C111.5	To develop the interview handling skills & to improve in email etiquette.

Course Name: Remedial Biology (practical) Course code: BP112RBP, Year of Study: 1 st B.Pharmacy 1 st Semester	
C112.1	Study and explain about microscope its parts and working. Perform section cutting and permanent slide preparation.
C112.2	Perform microscopic study and identification of various plant tissues and cell organelles.

C112.3	Experiment with computer model of frog for detailed study.
C112.4	Apply knowledge for identification of bones
C112.5	Measure blood pressure and trial volume and determine blood group.

Course Name: Human Anatomy and physiology- II(Theory) ; Course code: BP201T, Year of Study: 1st B.Pharmacy 2nd Semester	
C201.1	To relate the basic knowledge about central nervous system including nervous tissue brain and spinal cord.
C201.2	To illustrate the structure and functions of gastrointestinal tract and to learn about ATP/CTP/BMR.
C201.3	To learn about structure and functions of respiratory System and various mechanisms involved in regulation of respiration.
C201.4	To categorize the Anatomy of urinary System and physiology of urine formation/micturition. To appraise the essentiality of endocrine glands and their hormones.
C201.5	To predict the Physiology of male and female reproductive organs and concepts of genetics.

Course Name: Pharmaceutical organic chemistry -1 (Theory) Course code: BP202T, Year of Study: 1st B.Pharmacy 2nd Semester	
C202.1	To explain the nomenclature, classification and isomerism of organic compounds
C202.2	Alkanes alkenes preparation method, reactions, markownikoff's rule, anti markownikoff,s rule, and about conjugated dienes
C202.3	Knowing about alkyl halides, sn1 and sn2 reactions, stereo chemistry, structure and uses of compound, alcohols (qualitative tests, structure and uses)
C202.4	To explain about aldehydes and ketones (structures and uses) and named reactions
C202.5	To explain about carboxylic acids(acidity, Structure and uses) and amines (basicity,structure and uses)

CourseName: Biochemisty (Theory); Coursecode: BP203T,Year of Study:1stB.Pharmacy 2ndSemester	
C203.1	Understand classification, chemical nature, biological role and metabolism of biomolecules
C203.2	To understand the metabolism of carbohydrates and process of Electrontransport and ATP formation
C203.3	To discuss the metabolism of lipids and amino acids

C203.4	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins
C203.5	Understand the catalytic role of enzymes and importance of enzyme in biochemical process.

Course Name: Pathophysiology (Theory); Course code: BP204T, Year of Study: 1 st B.Pharmacy 2 nd Semester	
C204.1	To understand the process of cell injury, morphology of cell injury and cellular adaptations, the principles of inflammation and wound healing.
C204.2	To understand the etiopathogenesis of cardiovascular, respiratory and renal diseases mentioned.
C204.3	To explain the etiopathogenesis of hematologic, endocrine, nervous, gastrointestinal systems.
C204.4	To know about musculo skeletal diseases, principle of cancer inflammatory bowel disease.
C204.5	To adapt in understanding symptoms, signs and complications of various infectious diseases and sexually transmitted diseases.

CourseName: Computer applications Coursecode: BP205T, Year of Study: 1 st B.Pharmacy 1 st Semester	
C205.1	To understand the number systems and information systems and soft wares
C205.2	Introduction to HTML, XML, CCS and Databases and Pharmaceutical databases Electronic Prescription, barcode medicine identification and automated dispensing of drugs.
C205.3	Understand the Diagnostic System, Lab-diagnostic System, Patient Monitoring System and Pharma Information System.
C205.4	Objective of Bioinformatics, Bioinformatics Databases, Impact of Bioinformatics in Vaccine Discovery and CDS
C205.5	To Understand the data analysis in preclinical development of CDS, LIMS, TIMS.

CourseName: Environmental sciences (theory) Coursecode: BP206T, Year of Study: 1 st B.Pharmacy 2 nd Semester	
C206.1	Knowledge of the natural resources present in the environment
C206.2	Knowledge of the ecosystems present in the environment
C206.3	Knowledge of sources of pollution

Course Name: Human Anatomy and physiology-II(Practical) ; Course code: BP207P, Year of Study: 1 st B.Pharmacy 2 nd Semester	
C207.1	To recall the physiology of special senses with the help of models,charts and specimens.
C207.2	To develop the knowledge on coordinating working of organs of various systems with the help of models charts and specimens.
C207.3	To analyze the functions of cranial nerves by various sensory and motor functions.
C207.4	To evaluate body temperature and body mass index.To determine tidal volume and vital capacity.
C207.5	To assess the knowledge of family planning devices, pregnancy diagnostic tests ,tissues of vital organs and gonads.

Course Name: pharmaceutical organic chemistry- 1 (Practical); Course code: BP 208 P, Year of Study: 1 st B.Pharmacy 2 nd Semester	
C208.1	To explain the qualitative analysis and preparation of pharmaceutical organic compounds.
C208.2	To identify the extra elements present in the pharmaceutical organic compounds.
C208.3	To find the presence of several functional groups in pharmaceutical compounds.
C208.4	To appraise the rules concerned with reactivity and orientation of organic compounds.
C208.5	To analyze unknown pharmaceutical organic compounds by determining their melting point/boiling point.

Course Name: Biochemistry (Practical); Course code: BP209P, Year of Study: 1 st B.Pharmacy 2 nd Semester	
C209.1	To remember the qualitative analysis of carbohydrates and proteins
C209.2	To understand the principle and clinical significance of blood glucose
C209.3	To identify the amount of reducing sugars by DNSA method
C209.4	To examine the constituents present in Urine and their clinical significance
C209.5	To determine the effect of temperature and substrate concentration On salivary amylase activity To elaborate the clinical significance of creatinine, proteins and cholesterol in blood

CourseName: Computer applications (PRATICAL)	
Coursecode: BP210P, Year of Study: 1ST B.Pharmacy 1 ^t Semester	
C210.1	To create a HTML web page .
C210.2	To create a database in MS assess.
C210.3	To design a form in MS assess to view.
C210.4	Generting report and printing the report from patient database.
C210.5	Exporting tables, Queries , forms and reports to web pages and XMLpages.

Course Name: Pharmaceutical organic chemistry-II (Theory) ;	
Course code: BP301T, Year of Study: 2 nd B.Pharmacy 1 st Semester	
C301.1	To understand about aromaticity, chemistry and reactions of benzene.
C301.2	To gain knowledge on chemistry of phenols, aromatic amines and aromatic acids
C301.3	To understand the concept of hydrolysis, hydrogenation, saponification and rancidity of oils. To estimate the analytical constants of fats and oils
C301.4	To know about polynuclear hydrocarbons (naphthalene and anthracene)
C301.5	To understand the concept of Baeyer's theory and Sachse Mohr's theory.

Course Name: Physical Pharmaceutics – I (Theory);	
Course code: BP302T, Year of Study: 2 nd B.Pharmacy 3 rd Semester	
C302.1	To elaborate the significance of physical properties of drug molecules in design and stability of dosage forms & to describe the solubility principles of diffusion in biological systems..
C302.2	To recollect the states of matter and understand the applications of various physiochemical properties to design dosage forms.
C302.3	To understand the principle of interfacial tension and the applications of surface active agents in drug solubilization.
C302.4	To perceive and apply the concepts of complexation and protein binding in pharmacy
C302.5	To gain knowledge of pH and buffers and their use in the stabilization of pharmaceutical formulations

Course Name: MICROBIOLOGY (Theory)	
Course code: BP303T, Year of Study: 2nd B.Pharmacy 1 ^t Semester	

C303.1	to understand methods of identification, cultivation and preservation of various microorganisms
C303.2	To understand the importance and implementation of sterilization in pharmaceutical processing and industry
C303.3	To learn importance of disinfectants, bactericides in controlling MOs and their evaluation methods according to IP, BP and USP
C303.4	To understand the importance and implementation of aseptic conditions in pharmaceutical industries and to carry out microbiological standardization of pharmaceutical products
C303.5	To gain knowledge in cell culture technology and its applications in pharmaceutical industries

Course Name: Pharmaceutical Engineering.

Course code: BP304T, **Year of Study:** 2ST B Pharmacy 1^t Semester

C304.1	Understand the types of manometers, Reynolds number, Bernoulli's theorem, various flow meters, principles, mechanisms, working and applications of various instruments used in size reduction, size separation
C304.2	Understand the objectives, applications & Heat transfer mechanisms. Fourier's law, principles, mechanisms, working and applications of various instruments used in evaporation, distillation
C304.3	Understand the objectives, applications & mechanism of drying process, equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of various drying and mixing instruments
C304.4	Understand the objectives, applications and mechanism of filtration & centrifugation, Construction, Working, Uses, Merits and demerits of filters and centrifuges
C304.5	Gain knowledge on materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention and material handling systems.

Course Name: Pharmaceutical organic Chemistry –II (Practical) ;

Course code: BP305P, **Year of Study:** 2nd B.Pharmacy 1st Semester

C305.1	To gain the knowledge on different recrystallization and steam distillation techniques.
C305.2	To test the knowledge on different electrophilic aromatic substitutions reactions like bromination, nitration In monosubstituted aromatic compounds.
C305.3	To identify the purity of fats and oils by acid value, saponification value and iodine value.
C305.4	To perform various reaction like diazotization, oxidation reactions.
C305.5	To analyze named reactions like perkin and claisen schmidt reactions by using carbonyl compounds.

Course Name: Physical Pharmaceutics – I (Practical);

Course code: BP306P, **Year of Study:** 2nd B.Pharmacy 3rd Semester

C306.1	To understand the significance of physical properties such as solubility, surface tension, partition coefficient and pK_a in the design of dosage forms.
C306.2	To explain adsorption isotherms and determine Freundlich -Langmuir constant using activated charcoal.
C306.3	To apply Henderson – Hasselbalch equation for interpretation of pK_a value of drugs.
C306.4	To determine the surface tension of sample liquids by drop count and drop weight methods
C306.5	To deduce the HLB value and critical micellar concentration of a Surfactant & to estimate the stability constants of complexes by solubility and pH titration methods

Course Name: MICROBIOLOGY (PRACTICAL)	
Course code: BP307P, Year of Study: 2nd B.Pharmacy 1 st Semester	
C307.1	To recall different techniques of sterilization.
C307.2	To demonstrate various staining methods – simple, gram staining and acid fast staining
C307.3	To interpret the results of microbial testing.
C307.4	To test for possible microbial contaminants To estimate the amount of biomass in the given sample
C307.5	To choose the correct method to evaluate the microbes to be tested.

Course Name: Pharmaceutical Engineering (practical)	
Course code: BP308P, Year of Study: 2 nd B.Pharmacy 1 st Semester	
C308.1	Construction of drying curves (for calcium carbonate and starch), Determination of moisture content and loss on drying.
C308.2	Determination of humidity of air - i) From wet and dry bulb temperatures -use of Dew point method, and critical speed of Ball Mill
C308.3	To describe Construction, working and application of any two Pharmaceutical Machinery such as Rotary tablet Machine, capsule filling machine, tablet coating machine, autoclave, oven and dehumidifier. Demonstration of any two equipments such as colloid mill, planetary mixer, fluidized bed dryer, Spray dryer Laminar Air Flow, Ball Mill and such other major equipments
C308.4	To study Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity)
C308.5	To evaluate Size analysis by sieving -To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic and logarithmic probability plots.

Course Name: Pharmaceutical organic chemistry-III (Theory);	
Course code: BP401T, Year of Study: 2 nd B.Pharmacy 2 nd Semester	

C401.1	To understand the fundamentals of stereo chemical aspects , nomenclature (RS) and asymmetric synthesis
C401.2	To explain stereo isomerism in biphenyl compounds (atropisomerism) and conditions for optical activity
C401.3	To understand the nomenclature, properties and methods of preparation of heterocyclic compounds.
C401.4	To identify medicinal uses and other applications of organic compounds
C401.5	To elaborate the reactions and synthetic importance of metal hydride reduction (NaBH ₄ & LiAlH ₄), Clemmensen reduction, Oppenauer oxidation and Beckmann rearrangement.

Course Name: Medicinal chemistry -I (Theory);

Course code: BP402T, **Year of Study:** 2nd B.Pharmacy 2nd Semester

C402.1	To explain the physicochemical properties , steric aspects of drugs and their metabolic pathways. Principles of drug metabolism
C402.2	To explain about drugs acting on ANS, sympathomimetic agents, adrenergic antagonists
C402.3	To know about cholinergic neurotransmitters, parasympathomimetic agents cholinergic blocking agents and solanaceous alkaloids .
C402.4	To know about the drugs acting on CNS, antipsychotics and anti convulsants
C402.5	To know about general anaesthetics, narcotic and non narcotic analgesics, and anti inflammatory agents.

Course Name: Physical Pharmaceutics – II (Theory);

Course code: BP403T, **Year of Study:** 2nd B.Pharmacy 4th Semester

C403.1	To introduce and categorize the dispersed systems and understand the properties and applications of colloidal dispersions.
C403.2	To interpret the rheological behavior of fluids and illustrate the physics of tablet compression.
C403.3	To formulate and evaluate coarse dispersions making use of rheological and electrical properties.
C403.4	To determine the properties of powders and apply them in formulation development.
C403.5	To discuss the importance of zeta potential in the stabilization of dispersed systems & to make the use of principles of kinetics in the stabilization of dosage forms

Course Name: Pharmacology – I (Theory)

Course code: BP 404 T., **Year of Study:** II B. Pharmacy IV Semester

C404.1	The students will be capable of explaining the basics of pharmacology like drug, agonists, & antagonist, tolerance & dependance, idiosyncrasy and allergy and
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	pharmacokinetics of drug.
C404.2	The students will understand the pharmacodynamics of drug including receptor theories, types & signal transduction mechanism of various receptors, adverse drug reaction, drug discovery & clinical evaluation of new drugs.
C404.3	The students will be capable of explaining organization & function of ANS various neurotransmitters, sympathetic & parasympathetic drugs, local anesthetics, drugs used for myasthenia gravis and glaucoma.
C404.4	The students will understand the neurohumoral transmission in the CNS & importance of various neurotransmitters and the pharmacology of drugs acting on central nervous system like sedatives & hypnotics, anticonvulsants, general anesthetics, and alcohol disulfuram
C404.5	The students will understand the CNS diseases and drugs used to treat them including antipsychotics, anti-depressants, anti-anxiety agents, anti-manic hallucinogens drugs used to treat Parkinson's disease & Alzheimer's disease, CNS stimulants and opioid drugs.

Course Name: Pharmacognosy and phytochemistry-I (theory)	
Course code: BP405T, Year of Study: 3 rd B.Pharmacy 1 st Semester	
C405.1	Learn the definitions, scope, history, classification and evaluation of crude drugs
C405.2	Understand the cultivation techniques and post harvesting techniques.
C405.3	Learn the types of culture and applications.
C405.4	Learn the basic principles and concepts of various systems of AYUSH. Earn the definition and chemical test for secondary metabolites.
C405.5	Learn the sources, chemical nature and uses of plant fibers, primary metabolites and marine products

Course Name: Medicinal chemistry –I (Practical);	
Course code: BP406P, Year of Study: 2 nd B.Pharmacy 2 nd Semester	
C406.1	To recall the basic requirements for synthesis and assay of drugs
C406.2	To explain the techniques involved in isolation and purification of drugs and intermediates
C406.3	To synthesize, characterize and purify medicinal compounds and intermediates

C406.4	To analyze the selected drugs present in dosage forms and to determine the percentage purity
C406.5	To determine the physicochemical property of drugs and draw its importance

Course Name: Physical Pharmaceutics – II (Practical); Course code: BP407P, Year of Study: 2 nd B.Pharmacy 4 th Semester	
C407.1	To choose a good suspending agent to formulate a stable suspension.
C407.2	To determine the viscosity using Ostwald's and Brookfield's viscometer.
C407.3	To make use of derived and flow properties of powders to ensure a stable solid formulation.
C407.4	To distinguish the rate constants as per the chemical reaction.
C407.5	To interpret the shelf life of a given formulation by accelerated stability studies.

Course Name: Pharmacology– I (Practical); Course code: BP 408 P., Year of Study: II B. Pharmacy IV Semester	
C408.1	Proficient in handling common laboratory animals used in pharmacological testing.
C408.2	Capable of performing common methods of euthanasia and anesthesia.
C408.3	Proficient in withdrawing blood and administration of drugs via different routes.
C408.4	Study of different routes drug administration in mice and rats
C408.5	Study of effect of drugs on ciliary motility of frog esophagus.

Course Name: Pharmacognosy and phytochemistry-I (practical) Course code: BP409P, Year of Study: 2 nd B.Pharmacy 2 nd Semester	
C409.1	To remember different morphological and microscopical characteristic features of crude drugs.
C409.2	To understand the cellular structure of crude drugs
C409.3	To evaluate the crude drugs by quantitative evaluation methods.
C409.4	To evaluate the crude drugs by physical methods of evaluation.
C409.5	To evaluate the crude drugs by chemical methods of evaluation.

Course Name: Medicinal chemistry – II (Theory); Course code: BP501T, Year of Study: 3 rd B.Pharmacy 1 st Semester	
C501.1	To recall about anti histaminic agents, gastric proton pump inhibitors and antineoplastic agents
C501.2	To know about anti anginal drugs diuretics and antihypertensive agents
C501.3	To know about anti arrhythmic agents antihyperlipidemic agents, coagulants and anti coagulants
C501.4	To discuss about drugs acting on endocrine system , corticosteroids, thyroid and anti thyroid drugs.
C501.5	To know about anti diabetic agents and local anaesthetics

CourseName: Industrial pharmacy-I (theory) Coursecode: BP502T, Year of Study: 3 rd B.Pharmacy 1 st Semester	
C502.1	To Study the Physical Properties of Drug, Powder characteristics and Chemical characteristics of drugs
C502.2	able to understand the formulation, manufacturing techniques and quality control of uncoated, coated tablets, liquid orals & to understand types of coating, tableting and coating problems
C502.3	Able to understand the role and significance of excipients in formulations. formulation and quality control of both hard and soft gelatin capsules, pellets
C502.4	Gain the knowledge about manufacturing, evaluation of injectables and ophthalmics, sterilization procedures, packaging
C502.5	Able to understand the preparation, filling and evaluation of aerosols, types of packaging materials and their influence on dosage forms

Course Name: Pharmacology-II (Theory) ; Course code: BP 503.T., Year of Study: III B.Pharmacy V Semester	
C503.1	The students will be capable of explaining electrophysiology of heart ,various heart diseases and its pharmacological management
C503.2	The students will understand the hemostasis, coagulation cascade and drugs used to treat blood disorders & the fluid electrolytes balance by understanding the pharmacology of diuretics.
C503.3	The students will understand the different autacoids and theiier physiological and pathological roles, pharmacology of drugs acting on their receptors
C503.4	The students will be capable of explaining the role of endocrine system in the body hemostasis, various hormonal disorders and its pharmacological management.

C503.5	The students will be capable of explaining the pharmacology of natural and synthetic sex steroids and principles and applications of bioassay
Course Name: pharmacognosy and phytochemistry – II(Theory); Course code: BP504T, Year of Study: 3 rd B.Pharmacy 5 th Semester	
C504.1	To outline the metabolic pathway in higher plants and their biogenetic studies
C504.2	To the pharmacognostic Study of secondary metabolites like alkaloids, Glycosides, tannins,volatile oils etc,
C504.3	To demonstrate the different types and steps involved in isolation identification and analysis of phtoconstituents like terpenoids,glycosides,alkaloids and resins.
C504.4	To plan the industrial production estimation and utilization of phytoconstituents.
C504.5	To assess the crude drug by modern methods of extraction ,spectroscopy,chromatography, isolation and purification.

Course Name: Pharmaceutical jurisprudence (Theory); Course code: BP505T, Year of Study: 3 rd B.Pharmacy 1 st Semester	
C505.1	Fundamentals of legislation to regulate import manufacture, distribution of drug and cosmetics
C505.2	Fundamentals of legislation to regulate sales, labelling ad packing and administration of act and rules
C505.3	To appraise the importance of medicinal and toilet preparations act And narcotic drugs and psychotropic substances act and rules
C505.4	To discuss the salient features of drugs and magic remedies act, Prevention of cruelty to animals act and drugs price control order
C505.5	To recall the pharmaceutical legislations, ethics, right to information medical termination of pregnancy and intellectual property rights

Course Name: INDUSTRIAL PHARMACY-I (practical) Course code: BP506P, Year of Study: 3 rd B.Pharmacy 2 nd Semester	
C506.1	Produce formulations of different dosage forms by using various excipients
C506.2	Select suitable packaging container and closing and labeling requirements for the prepared dosage forms.
C506.3	Demonstrate different equipment's used in preparation of solid and other dosage forms.
C506.4	Apply the physicochemical properties of drugs to dosage form characteristics.
C506.5	Summarize to evaluate different dosage forms by performing quality control tests with the range of limits to pass the test.

Course Name: Pharmacology-II (Practical) ;	
Course code: BP 507 P., Year of Study: III B. Pharmacy V Semester	
C507.1	Students were able to design and perform pharmacological experiment using isolated tissue preparation and setting up in-vitro experiment.
C507.2	Quantitative estimation of biological samples using isolated tissue preparations their interpretations and efficacy assessment.
C507.3	Students were able to understand receptor mediated responses and to determine EC50 of agonist and antagonist through graphical representation
C507.4	Students were able to screen the drugs for CNS mediated actions and diuretic properties and able to apply proper methods to calculate effective dose.
C507.5	Students were able to design and perform pharmacological experiment using isolated tissue preparation and setting up in-vitro experiment.

Course Name: pharmacognosy and phytochemistry – II(Practical);	
Course code: BP508P, Year of Study: 3 rd B.Pharmacy 5 th Semester	
C508.1	To remember the wide variety of the crude drugs and their sources by morphological characteristics.
C508.2	To identify the powder mixtures and to report the types of adulterants and substituents present.
C508.3	To analyze and evaluate the powdered crude drug samples by morphological and microscopical characteristics.
C508.4	To isolate the drug from the given crude sample.
C508.5	To predict the crude drug by performing chromatography techniques.

Course Name: Medicinal chemistry – III (Theory);	
Course code: BP601T, Year of Study: 3 rd B.Pharmacy 2 nd Semester	
C601.1	classify the medicinal agents(antibiotics) on the basis of chemical nature of drug
C601.2	To explain the concept of prodrugs and their importance and explain about anti malarials SAR
C601.3	relate the knowledge of chemistry of a drug of some specified categories as listed in syllabus with respect to their pharmacological activity, mode of action & adverse effect. explain the Structural Activity Relationship (SAR) of various classes of drug

C601.4	To explain about anti fungal agents, anti protozoal agent anthelmintics
C601.5	describe the physicochemical and steric properties of various classes of drug. Describe the importance of drug design and various techniques of drug design like CADD, QSAR & Molecular modeling

Course Name: Pharmacology-III(Theory);	
Course code: BP 602 T., Year of Study: III B. Pharmacy VI Semester	
C602.1	The students will be capable of explaining various respiratory tract diseases and GI tract diseases and pharmacology drugs used to treat them.
C602.2	The students will understand the basics and the principles of chemotherapy and the pharmacology of antibiotics such as B-lactams, macrolides, quinolones, aminoglycosides etc
C602.3	The students will understand chemotherapy of tuberculosis, leprosy, fungal, viral, and amoebic infections, malaria etc.
C602.4	The students will understand the chemotherapy of UTI &STD, malignancy and basics and drugs, acting in immune systems such as immunostimulants and immunosuppressants.
C602.5	The students will be capable of explaining the basic principles of toxicology , poisoning treatment (symptoms &managements) and biological clock, and its significance & rhythms and cycles.

CourseName: Herbal Drug technology (theory)	
Coursecode: BP603T, Year of Study: 3rd B.Pharmacy 2 ¹ Semester	
C603.1	Students will understand the agricultural practices. Learn the principles and concepts of traditional systems of medicine like Ayurveda, Unani and Sidha etc.,
C603.2	Learn the advantages of Nutraceuticals in management of chronic diseases and applications of nutraceuticals. Understand the Interaction of Herbs on drugs and foods.
C603.3	Understand the process of manufacturing of formulations and cosmetics and role of excipients and their applications in manufacturing process of drugs.
C603.4	Learn the regulatory aspects of AYUSH drugs manufacturing. Understand the importance and precepts of patent system and standardization of natural drugs.
C603.5	Understand the scope and prospects of Herbal Industry. Regulatory aspects of Herbal Industry and GMP of Herbal Industry

Course Name : Biopharmaceutics and Pharmacokinetics (Theory)	
Course Code : BP604T, Year of study : 3 rd B.Pharmacy 6 th Semester	
C604.1	To recall and understand basic concepts of absorption, distribution, metabolism and excretion of drugs.
C604.2	To understand the mechanisms, interpret various factors affecting drug absorption, distribution, metabolism and excretion of drugs & to analyze the bioavailability of a drug and to compare the bioequivalence between drug products.
C604.3	To utilize the pharmacokinetic models for the determination of pharmacokinetic parameters.
C604.4	To design multiple dosage regimens based on pharmacokinetic parameters for maximizing patient compliance and therapeutic effectiveness
C604.5	To evaluate various pharmacokinetic parameters for the drugs exhibiting saturation kinetics.

CourseName: Pharmaceutical Biotechnology (theory)	
Coursecode: BP605T, Year of Study: 3 rd B.Pharmacy 2 nd Semester	
C605.1	Introduction of various fields of Biotechnology like Immobilization, Protein Engineering, Biosensors and Enzyme Biotechnology.
C605.2	To Understand the basics of Genetic engineering in the field of Biotechnology
C605.3	To Understand the application of Genetic engineering in the field of Vaccine production and basics of Human Immunology
C605.4	To Learn the principles and Procedures of various Diagnostic tests and Microbial Biotransformation and their Pharmaceutical applications.
C605.5	To Study the methods and applications of Fermentation Technology in the production of various Pharmaceutical products

CourseName: Quality Assurance (Theory);	
Coursecode: BP606T, Year of Study: 3 rd B.Pharmacy 2 nd Semester	
C606.1	To remember the concepts of quality assurance quality management And ICH guidelines. To explain the ISO, NABL and QBD concepts in pharmaceutical industry.
C606.2	To identify the organization and personnel responsibilities.
C606.3	To analyze equality control parameters and good laboratory practices in Pharmaceutical industry.
C606.4	To evaluate the complaints and documents maintenance in industry With required regulatory guidelines.
C606.5	To elaborate the calibration, validation procedures and good Warehouseing practices.

Course Name: Medicinal chemistry – III (Practical);	
Course code: BP607P, Year of Study: 3 rd B.Pharmacy 2 nd Semester	

C607.1	To define and select the method for preparation of drugs and intermediates
C60.2	To explain principle underlying the preparation of drugs
C607.3	To choose the method for assay of drugs by quantitative analysis
C607.4	To compare the advantages of microwave technique over conventional synthesis of drugs
C607.5	To select the tools needed for drawing structures and reactions To predict the relation between physicochemical properties and biological activity

Course Name: Pharmacology – III (Practical);	
Course code: BP 608 P., Year of Study: III B.Pharmacy VI Semester	
C608.1	Students were able to calculate the dose for pharmacological experiments and translate to human dose using standard calculation methods
C608.2	Screening the drugs for gastrointestinal efficacy, hypoglycemic effects & anti-allergic effects and able to correlate clinical, bio-chemical parameters with diseases.
C608.3	Able to understand OECD guidelines and interpret the acute toxicity and other related acute studies for safety evaluation and able to interpret the pharmacokinetic profile of the given drug
C608.4	Able to apply proper biostatistical method for data interpretation and calculations.
C608.5	Students were able to estimate the serum biochemical parameters.

Course Name: Herbal Drug Technology (practical)	
Course code: BP609P, Year of Study: 3rd B.Pharmacy 2 nd Semester	
C609.1	To evaluate TSM formulation
C609.2	Evaluation of excipients of natural origin
C609.3	To develop cosmetic and herbal formulation using standardized extract
C609.4	To perform Monograph analysis of herbal drugs from recent Pharmacopoeias
C609.5	To determine various secondary metabolites using analytical method

CourseName: Instrumental Methods of Analysis (Theory); Coursecode: BP701T, Year of Study: 4 th B.Pharmacy 1 ^t Semester	
C701.1	To understand selected instrumental analytical techniques(uv spectroscopy and fluorimetry)
C701.2	To understand selected instrumental analytical techniques (IR spectroscopy, flame photometry, atomic absorption spectroscopy, Nephelo turbidometry).
C701.3	To understand chromatography and electrophoresis (adsorption and partition chromatography, TLC, paper chromatography)
C701.4	To understand the techniques of gas chromatography and HPLC
C701.5	To discuss the processes of ion exchange chromatography, gel and affinity chromatographies

Course Name : Industrial Pharmacy -II (Theory) Course Code : BP 702T, Year of study : 4 th B.Pharmacy 7 th Semester	
C702.1	To explains pilot plant scale up techniques and SUPAC guidelines.
C702.2	To outline various aspects of technology transfer involved from R & D to productions.
C702.3	To choose and to apply various responsibilities and regulatory requirements for drug approval.
C702.4	To analyze and study various quality management systems in pharmacy field.
C702.5	To determine the requirements and approval procedures for new drugs by Indian Regulatory & to discuss about approval process and regulatory requirements for drug products.

CourseName: Pharmacy practice (theory) Coursecode: BP703T, Year of Study: 4 th B.Pharmacy 1 ^t Semester	
C703.1	To learn hospital, hospital pharmacy and its organization. To understand ADR , drug interactions and working of community pharmacy
C703.2	To understand drug distribution and hospital formulary system. To understand the need of medication history interview ,TDM and medication adherence
C703.3	To understand the policies of drug information center, DTC and provision of patient counseling. To learn role of pharmacist in the education and training program & need for communication skills
C703.4	To understand the role of clinical pharmacy program, hospital budget preparation and importance of learning OTC medication counseling
C703.5	To learn the concepts of inventory management, investigational drugs and interpretation of laboratory tests

CourseName: Novel drug delivery system.(theory) Coursecode: BP704T, Year of Study: 4 th B.Pharmacy 1 ^t Semester	
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C704.1	Introduction Controlled drug delivery systems; Physicochemical and biological properties of drugs relevant to controlled release formulations; Application of polymers in formulation of controlled release drug delivery systems.
C704.2	Microencapsulation, Mucosal Drug delivery systems, Implantable Drug Delivery Systems- advantages and disadvantages
C704.3	Transdermal Drug Delivery Systems, Gastroretentive drug delivery systems, Nasopulmonary drug delivery system- formulation approaches
C704.4	Targeted drug Delivery: Concepts and approaches advantages and disadvantages of liposomes, niosomes, nanoparticles, monoclonal antibodies and their applications
C704.5	Ocular Drug Delivery Systems- ocular formulations and Intrauterine Drug Delivery Systems- development and applications

CourseName: Instrumental Methods of Analysis–II (Practical); Coursecode: BP705P, Year of Study: 4 th B.Pharmacy 1 st Semester	
C705.1	To recall the principle involved in spectroscopy and importance of Absorption maximum in the estimation of organic compounds.
C705.2	To experiment with selected drugs by UV,Visible spectroscopy and flourimetry.
C705.3	To estimate the amount of sodium and potassium ions by flame photometry
C705.4	To characterize and quantify the organic compounds/aminoacids/plant pigments by using various chromatographic and Spectroscopical techniques.
C705.5	To analyze the various organic compounds using Nephelo turbidimetry.To maximize the knowledge on integration and interpretation of chromatograms and spectra.

CourseName: Practice school. Coursecode: BP706PS, Year of Study: 4th B.Pharmacy 1 ^t Semester	
C706	Able to apply the knowledge gained in isolation, identification, standardization, formulation, manufacturing & evaluation of pharmaceuticals.
CourseName: Biostatistics and Research methodology (theory) Coursecode: BP801T, Year of Study: 4th B.Pharmacy 2 ^t Semester	
C801.1	know the basic concepts of statistics like frequency distribution, measures of dispersion and central tendency, correlation and their application statistical analysis of data
C801.2	Understand the application of probability, regression and use of parametric tests in statistical interpretation of data
C801.3	Understand the application of non-parametric tests in statistical interpretation of data. Know graphical representation of data. Also learn need and designs used in research.
C801.4	Understand the regression modeling. Learn various statistical tools and software's
C801.5	Learn about design and analysis of experiments

CourseName: Social and Preventive Pharmacy	
Coursecode: BP802T, Year of Study: 4th B.Pharmacy 2 ^t Semester	
C802.1	understand the concept of health, social health, socio cultural factors, personal hygiene and prevention of disease
C802.2	Gain knowledge on prevention and control of specific diseases
C802.3	understand national health programs, its objectives, functioning and outcomes with regard to specific diseases
C802.4	understand national programmes for family welfare, tobacco control etc and WHO role in national program
C802.5	Gain knowledge on community services, functions of primary health centres, education in school.

CourseName: Pharma Marketing Management	
Coursecode: BP803ET, Year of Study: 4th B.Pharmacy 2 ^t Semester	
C803.1	Distinguish between marketing and selling. Analyse consumer buying behavior and industrial buying behavior, qualitative and quantitative aspects of market.
C803.2	Able to analyze product portfolio, take decisions on product branding, packing, and labeling.
C803.3	Plan promotion techniques for OTC drugs.
C803.4	Design and select appropriate marketing channels. Summarize the duties of personal sales representative, their selection, training, supervising, motivating, evaluating etc.,
C803.5	Explain the concepts of pricing, Vertical and horizontal marketing, rural marketing, Industrial and global marketing.

CourseName: Cosmetic science	
Coursecode: BP809ET, Year of Study: 4th B.Pharmacy 2 nd Semester	
C809.1	Knowledge of skin structure, regulatory provisions and raw materials used in cosmetic preparations.
C809.2	Knowledge of cosmetic preparations used for face, skin, tooth & hair. Their formulation, preparation and evaluation.
C809.3	Knowledge of herbs for skin, hair & oral care. analytical cosmetics
C809.4	Knowledge of cosmetic evaluation principles.
C809.5	Knowledge of cosmetic problems of skin, hair and body.