




NARAYANA PHARMACY COLLEGE

(Approved by PCI & AICTE, New Delhi) (Affiliated to JNTUA Ananthapuramu)
 Recognized u/s 2(f) & 12(B) of the UGC Act, 1956, New Delhi,
 ISO 9001:2015 Certified Institution
 Chinthareddypalem, Nellore-524003, A.P. India.
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Sem.	SUBJECT NAME	SUBJECT CODE	CO - NUMBER	COURSE OUTCOMES
I - I	Human Anatomy Physiology I	BP101T	C101.1	This subject describes the fundamental knowledge on the structure and functions of the various systems of the human body.
			C101.2	It also helps in defining & understanding both homeostatic mechanisms & their imbalances
			C101.3	The subject explains the basic knowledge that is required to understand the various disciplines of pharmacy
			C101.4	It enlists about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.
			C101.5	Students would able to describe about identify the different types of bones in human body.
			C101.6	Students would be able to identify the various tissues of different systems of human body.
	Pharmaceutical Analysis I	BP102T	C102.1	Describe the fundamental ideas behind both qualitative and quantitative analysis.
			C102.2	Explain the fundamentals and uses of aqueous and non-aqueous titrimetric drug purity evaluation techniques.
			C102.3	Explain the fundamentals and uses of volumetric and electrochemical analytical techniques for determining a drug's purity.
			C102.4	Describe the fundamentals and uses of redox titrations as they relate to the quantitative evaluation of medications.
			C102.5	Explain the fundamentals and uses of complexometric and precipitation titrations to assess the purity of medications
			C102.6	Demonstrate analytical abilities
	Pharmaceutics I	BP103T	C103.1	Describe the history of profession of pharmacy
			C103.2	Explain the basics of different dosage forms
			C103.3	Discuss the basics on incompatibilities
			C103.4	Explain in brief professional way of handling prescription



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		C103.5	Explain about pharmaceutical calculations
		C103.6	What do you understand about various conventional dosage forms
Pharmaceutical Inorganic Chemistry	BP104T	C104.1	Memorize a comprehensive understanding of basic concepts in inorganic chemistry, including atomic structure, periodic table trends, and chemical bonding.
		C104.2	Explain the role and importance of inorganic compounds in pharmaceutical sciences, including their therapeutic applications and toxicological aspects.
		C104.3	Explain about chemical equations relevant to inorganic compounds used in pharmaceuticals, and predict the products of these reactions
		C104.4	Describe the preparation methods and properties of key inorganic compounds used in pharmaceuticals, such as metal salts and complexes.
		C104.5	Discuss about Dental products and other related dental hygiene products
		C104.6	Explain the pharmaceutical applications of inorganic compounds, such as antacids, electrolytes, and radiopharmaceuticals.
Communication Skills	BP105T	C105.1	To prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers.
		C105.2	To develop the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.
		C105.3	To understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.
		C105.4	To communicate effectively (Verbal and Non-Verbal).
		C105.5	To effectively manage the team as a team player.
		C105.6	To develop interview skills.
Remedial Mathematics	BP106RMT	C106.1	To know the theory and their application in Pharmacy
		C106.2	To solve the different types of problems by


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			applying theory
		C106.3	To appreciate the important application of mathematics in Pharmacy
		C106.4	Apply mathematical concepts and principles to perform computations for Pharmaceutical Sciences.
		C106.5	Create, use and analyze mathematical representations and mathematical relationships
		C106.6	Communicate mathematical knowledge and understanding to help in the field of Clinical Pharmacy
Remedial Biology	BP106RBT	C106.1	Understand the basic components, both anatomy and physiology of plants.
		C106.2	Identify and understand the Physiology and reproduction in plants.
		C106.3	Understand the taxonomy in plants.
		C106.4	Identify and understand the various tissue systems and cell organization in animals.
		C106.5	Describe the detail study of frog.
		C106.6	Classify and study about different animal classes especially reptiles, aves, pisces and mammals.
Human Anatomy and Physiology I Lab	BP107P	C107.1	Perform various experiments related to identification of the tissues indifferent systems of human body.
		C107.2	Examine various techniques like blood group,determination, blood pressure determination, blood cell counting.
		C107.3	Evaluate various experiments related to special senses and nervous system.
Pharmaceutical Analysis I -Lab	BP108P	C108.1	Able to apply volumetric and electrochemical analytical techniques for analysis of chemical compounds.
		C108.2	Able to identify and locate the impurities through a different technique.
		C108.3	The students will be able to apply the use of different fundamental techniques of analysis
Pharmaceutics I-Lab	BP109P	C109.1	Explain the calculations onformulating dose as per pediatric and patient requirements
		C109.2	Discuss the formulating skills of making powdered dosage forms

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			C109.3	Explain formulation of suppositories
Pharmaceutical Inorganic Chemistry-Lab	BP110P		C110.1	Determine the level of specific impurities in the given inorganic compounds by performing different limit tests.
			C110.2	Apply different chemical methods to prepare inorganic pharmaceuticals.
			C110.3	Perform identification tests as per Indian Pharmacopoeia.
Communication Skills -Lab	BP111P		C111.1	Understand the different aspects of the English language proficiency with emphasis on LSRW skills.
			C111.2	Apply communication skills through various language learning activities.
			C111.3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
Remedial Biology-Lab	BP112RBP		C112.1	Identify various systems of frog using computer model.
			C112.2	Calculate the blood pressure and tidal volumes.
			C112.3	Differentiate the various blood groups.
I II	Human Anatomy Physiology II		C201.1	To describe about the gross morphology, structure, and functions of the human body's nervous, digestive, respiratory, urinary, endocrine & reproductive systems that would have been covered in class.
			C201.2	They would have thoroughly examined metabolism and energy.
			C201.3	Students would be able to name the numerous organs that make up the various bodily systems.
			C201.4	They would have conducted and studied experiments such as body temperature monitoring and neurological reactivity.
			C201.5	They would have researched and elaborated on the interconnected mechanisms that maintain the body's proper functioning.
			C201.6	They would have studied and carried out tests related to smell, taste, and vision.
	Pharmaceutical Organic Chemistry I	BP202T		C202.1
			C202.2	List the IUPAC nomenclature rules for

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				naming organic compounds and to draw structure of organic compounds.
			C202.3	Discuss the preparation methods of Alkanes, Alkenes and Conjugated dienes , List the reactions and uses of Alkanes, Alkenes and Conjugated dienes.
			C202.4	Explain the preparation methods, reactions, qualitative tests and uses of Alkyl halide and Alcohol compounds.
			C202.5	Explain the preparation methods, reactions, qualitative tests and uses of Carbonyl compound.
			C202.6	Explain the preparation methods, reactions, qualitative tests for carboxylic acid and amines
	Biochemistry	BP203T	C203.1	Memorize fundamental biochemistry concepts, including the structure and function of biomolecules such as proteins, lipids, carbohydrates, and nucleic acids
			C203.2	Explain enzyme structure, function, and mechanisms, and apply this knowledge to understand enzyme kinetics, regulation, and the role of enzymes in pharmaceutical processes.
			C203.3	Describe key metabolic pathways, including glycolysis, the citric acid cycle, and oxidative phosphorylation, and their relevance to drug metabolism and energy production.
			C203.4	Discuss about Nucleic acid metabolism and catabolism ,their related disorders.
			C203.5	Understand the principles of genetic information flow, including DNA replication, transcription, and translation, and their implications for drug development and gene therapy.
			C203.6	Discuss about enzyme action,classification and their inhibitors.
	Pathophysiology	BP204T	C204.1	Study the various etiological factors for the development of diseases.
			C204.2	Understand the concepts of pathophysiological basis of selected diseases.

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		C204.3	Learn the basics of signs and symptoms of diseases.
		C204.4	Study of common complications of the diseases.
		C204.5	Evaluate the basic Path physiological mechanisms in various diseases
		C204.6	Study the various etiological factors for the development of diseases.
Computer Applications in Pharmacy	BP205T	C205.1	Describe the ideas behind information systems and number systems.
		C205.2	Describe the databases (MS Access, MySQL) and web technologies (HTML, XML).
		C205.3	List the various ways that computers are used in community and dispensing pharmacies.
		C205.4	Describe the ideas behind bioinformatics and cheminformatics.
		C205.5	Describe the function of data analysis in preclinical research and be aware of the several ways that computers are used in pharmacy.
		C205.6	Understand the many kinds of databases and the range of uses for them in the pharmacy
Environmental Sciences	BP206T	C206.1	Discuss awareness about environmental problems
		C206.2	Explain about environment and its allied problems
		C206.3	Describe to develop an attitude of concern for the environment
		C206.4	Explain to motivate learners to participate in environment protection and environment improvement
		C206.5	Explain in acquiring skills in individuals in identifying and solving environmental problems
		C206.6	Discuss the strive to attain harmony with nature
Human Anatomy Physiology II-Lab	BP207P	C207.1	Identify the various organs of different systems of human body.
		C207.2	Practice the experiments like neurological reflex, body temperature measurement

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			C207.3	Study of basic physiological parameters like blood pressure, heart rate, pulse and respiratory volumes.
	Pharmaceutical Organic Chemistry I - Lab	BP208P	C208.1	Describe safety precautions in an organic chemistry lab and different laboratory methods.
			C208.2	Hands on experience in assessment of the procedures used to identify unidentified organic chemicals.
			C208.3	Trained to produce appropriate solid derivatives from organic molecules.
	Biochemistry -Lab	BP209P	C209.1	Analyse the quality of carbohydrates and proteins
			C209.2	Demonstrate blood sugar and blood creatinine test
			C209.3	Determine the action of enzyme activity on saliva
	Computer Applications in Pharmacy -Lab	BP210P	C210.1	To demonstrate and make use of MS Office, MS Word, MS Excel, MS Access and MS Power point.
			C210.2	To summarize the report and printing the report from patient database
			C210.3	To design a questionnaire using a word processing package to gather information about a particular disease.
II I	Pharmaceutical Organic Chemistry II	BP301T	C301.1	Understand and explain the differential behavior of Organic compounds based on fundamental concepts learnt.
			C301.2	Formulate the mechanism of organic reactions by Recalling and correlating the fundamental properties of the reactants involved.
			C301.3	Learn and identify many organic reaction mechanisms including Free Radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution.
			C301.4	Correlate and describe the stereochemical properties of organic compounds and reactions.
			C301.5	Explain the difference between a saturated and an unsaturated hydrocarbon.
			C301.6	Discuss the significance of chirality in



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			biomolecules
Physical Pharmaceutics I	BP302T	C302.1	Analyze and apply various physicochemical properties of drug molecules in the formulation design of dosage forms.
		C302.2	Interpret how these properties influence the selection of excipients and formulation techniques.
		C302.3	Apply principles of chemical kinetics in stability testing and determination of the expiry date of pharmaceutical formulations.
		C302.4	Demonstrate proficiency in conducting stability studies and interpreting kinetic data to ensure product quality and safety.
		C302.5	Utilize physicochemical properties to optimize formulation development processes.
		C302.6	Evaluate and compare different formulation approaches based on physicochemical characteristics for the development and evaluation of dosage forms.
Pharmaceutical Microbiology	BP303T	C303.1	This course states identification techniques of microbes present in air, soil, water.
		C303.2	Study of cultivation of industrially demanded bacteria & viruses which are having wide application in preparation of vaccines.
		C303.3	Explains Sterility testing of pharmaceutical preparations intended for intravenous administration.
		C303.4	Describes applications of cell culturing technology in advancement of pharmaceutical research.
		C303.5	Demonstrate Disinfectants and their mode of action as Bactericidal or Bacteriostatic.
		C303.6	Understanding microbiological assay to determine potency of medical products.
Pharmaceutical Engineering	BP304T	C304.1	Understand basic concept of fluid flow in pharmaceutical industries.
		C304.2	Perform various operational processes involved in size reduction and size separation in pharmaceutical industries.
		C304.3	Comprehend various unit operation which involves heat transfer such as evaporation,

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			distillation and drying.
		C304.4	Understand mixing process used in pharmaceutical industries.
		C304.5	Interpret various unit operations used in separation process such as filtration and centrifugation in pharmaceutical industries.
		C304.6	Appreciate and comprehend significance of material selection and corrosion control in pharmaceutical industries.
Pharmaceutical Organic Chemistry II - Lab	BP305P	C305.1	Students should be able to evaluate the quality of fats and oils by determining acid value, saponification value, and iodine value as per pharmacopeia.
		C305.2	Students should be able to synthesize the various organic compounds and understands the reaction mechanism involved in the synthesis.
		C305.3	Calculate the percentage yields of the products obtained by synthesis.
Physical Pharmaceutics I - Lab	BP306P	C306.1	evaluate the solubility of drugs and partition coefficients in various solvents, applying these techniques to understand drug distribution and behavior in different media.
		C306.2	evaluate surface tension of liquids and the critical micellar concentration (CMC) of surfactants, and calculate the hydrophilic-lipophilic balance (HLB) number to evaluate surfactant properties and their applications in formulations.
		C306.3	evaluate stability constants and donor-acceptor ratios of drug complexes using solubility and pH titration methods, and apply adsorption isotherms to understand adsorption behavior in pharmaceutical contexts.
Pharmaceutical Microbiology -Lab	BP307P	C307.1	Student can able to identify and differentiate various microbes by Gram staining & acid staining.
		C307.2	Hands on experience in preparing nutrient media for cultivation of useful microbes.
		C307.3	Understand various sterilization strategies & gain experience to handle sterilization

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				apparatus.
	Pharmaceutical Engineering -Lab	BP308P	C308.1	Design various experiments related to unit operations.
			C308.2	Instruct to operate equipment's used in the manufacture of pharmaceutical products.
			C308.3	Demonstrate the material and energy requirements for optimizing the pharmaceutical unit processes
II II	Pharmaceutical Organic Chemistry III	BP401T	C401.1	Discuss the reactions of chiral molecules, racemic mixture modification and asymmetric synthesis.
			C401.2	Explain the mechanism of stereochemical reactions.
			C401.3	Understand and List the IUPAC rules to heterocyclic compounds.
			C401.4	Discuss the medicinal uses ,synthesis ,chemistry of heterocyclic compounds and their derivatives.
			C401.5	List the synthetic name reactions in synthesis.
			C401.6	Discuss about the conformational analysis.
	Medicinal Chemistry I	BP402T	C402.1	Helps in correlating between pharmacology of a disease and its mitigation or cure.
			C402.2	To understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
			C402.3	To know the structural activity relationship of different class of drugs.
			C402.4	Well acquainted with the synthesis of some important class of drugs.
			C402.5	Knowledge about the mechanism pathways of different class of medicinal compounds.
			C402.6	To understand the chemistry of drugs with respect to their pharmacological activity.
	Physical Pharmaceutics II	BP403T	C403.1	To understand various physicochemical properties of drug molecules in designing of dosage forms
			C403.2	To apply the principles of chemical kinetics
			C403.3	To apply the kinetic principles for stability testing and determination of expiry period
			C403.4	To understand the use of physicochemical properties in the formulation



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Pharmacology I	BP404T	C403.5	To evaluate the dosage forms
		C403.6	To create or design the dosage forms
		C404.1	Describe the pharmacological actions of different classes of drugs.
		C404.2	Recognize molecular mechanisms of drug action in the human body.
		C404.3	Read the Basic pharmacological knowledge of drugs in the prevention and treatment of various diseases.
		C404.4	Understand the signal transduction, mechanism of various receptors.
		C404.5	Define the concepts of different types of drug receptors and their signaling mechanisms.
Pharmacognosy and Phytochemistry I	BP405T	C404.6	Enumerate the basic knowledge of drug addiction, abuse, drug interactions, and Pharmacovigilance.
		C405.1	Describe and define in detail about the history, present status, future, scope, development of pharmacognosy and various systems of medicines.
		C405.2	Explain the methods of cultivation, collection, processing, storage and crude drugs classification, marine drugs and plant fibres.
		C405.3	Apply the suitable methods to detect different types of adulteration.
		C405.4	Compare and contrast different types of plant tissue culture, primary metabolites.
		C405.5	Describe the principles of Indian Systems of Medicine and knowledge of secondary metabolites.
Medicinal Chemistry I - Lab	BP406P	C405.6	Assess the quality control of crude drugs by various methods of evaluation.
		C406.1	Make correct use of various equipment and take safety measures while working in Medicinal Chemistry Laboratory.
		C406.2	Demonstrate the understanding of general aspects of the design of the drugs by drawing the chemical structure of drugs.
		C406.3	Characterize the synthetic compounds using melting point and Boiling point.

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	Physical Pharmaceutics II - Lab	BP407P	C407.1	Evaluate particle size and particle size distribution using sieving and microscopic methods, and measure bulk density, true density, and porosity to evaluate material properties for pharmaceutical formulations.
			C407.2	Evaluate the angle of repose and assess the impact of lubricants on flow properties, and determine the viscosity of liquids using Ostwald's viscometer and semisolids using a Brookfield viscometer to understand material behavior and processing conditions
			C407.3	Evaluate sedimentation volume with varying suspending agents and concentrations, and determine reaction rate constants for first and second-order reactions, along with conducting accelerated stability studies to evaluate the stability and effectiveness of pharmaceutical products.
	Pharmacology I - Lab	BP408P	C408.1	Summarize basic Concept of Pharmacology.
			C408.2	Demonstrate the effect of drugs on animals by using simulated experiments.
			C408.3	Adapt knowledge about recent development in pharmacology.
	Pharmacognosy and Phytochemistry I - Lab	BP409P	C409.1	Understand the chemical nature of crude drug by chemical tests
			C409.2	Perform stomatal number, stomatal index, vein islet number, vein islet termination and palisade ratio of leaf drug.
			C409.3	Able to perform Ash value, Extractive values, moisture content, swelling and foaming index for the evaluation of crude drug.
III I	Medicinal Chemistry II	BP501T	C501.1	Helps in correlating between pharmacology of a disease and its mitigation or cure.
			C501.2	To write the chemical synthesis of some drugs.
			C501.3	To know the structural activity relationship of different class of drugs.
			C501.4	Knowledge about the mechanism pathways of different class of medicinal compounds.
			C501.5	To acquire knowledge about the

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				chemotherapy for cancer.
			C501.6	To understand the chemistry of drugs with respect to their pharmacological activity.
Industrial Pharmacy I	BP502T		C502.1	After successful completion of the course student will be able to understand the various Preformulation Studies
			C502.2	Students will learn advanced drug delivery system early stage in solid and liquid dosage forms
			C502.3	Students will learn advanced drug delivery system early stage in solid(CAPSULES) dosage forms
			C502.4	They know very well about orally administered drugs, injectables, parenteral preparations with standard protocol
			C502.5	Students know very well about orally administered drugs, cosmetics,aerosol and semisolid preparations with standard protocols
			C502.6	Students know very well about basics of formulation development and industrial method development of formulations.
		Pharmacology II	BP503T	
	C503.2			Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
	C503.3			Explain about Autacoids and their Pharmacology.
	C503.4			Able to understand the mechanism of drug action and its relevance in the treating Renal disorders
	C503.5			Describe about pharmacology of drugs acting on endocrine system
	C503.6			Discuss about principles and applications of bioassays
Pharmacognosy and Phaytochemistry II	BP504T		C504.1	Elucidate the basic biogenetic pathways involved in the synthesis of primary and secondary metabolites and biogenetic studies
			C504.2	Should be able to systemic pharmacognostical study of secondary



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			metabolites like alkaloids, glycosides, tannins, volatile oils, flavonoids etc.
		C504.3	3. Should be able to isolation and identification of different types of phytoconstituents like terpenoids, alkaloids, glycosides etc.
		C504.4	4. Describe the Industrial production, analysis and utilization of phytoconstituents.
		C504.5	Explain the modern extraction techniques and perform the identification of the identification of the herbal drugs and characterization of active constituents
		C504.6	6. Describe the plant tissue culture, drug interactions and basic principles of traditional system of medicine.
Pharmaceutical Jurisprudence	BP505T	C505.1	Understand the meaning of the jurisprudence and legal theory
		C505.2	Explain the genesis of the law through various jurisprudential schools of law
		C505.3	Analyse various jurisprudential concepts, their interrelation and application of laws
		C505.4	Analyse the application of the jurisprudential rules to the modern contemporary society
		C505.5	Analyse the emergence of modern trends in jurisprudence
		C505.6	Demonstrate an advanced and integrated understanding of the political, social, historical, philosophical, and economic context of law.
Industrial Pharmacy I - Lab	BP506P	C506.1	To develop skill regarding formulation development of different dosage forms.
		C506.2	Students know very well about basics of formulation development and industrial method development of formulations.
		C506.3	To acquire knowledge about the administered drugs, cosmetics, aerosol and semisolid preparations with standard protocols
Pharmacology II - Lab	BP507P	C507.1	Understanding the mechanism of drug action and its relevance in the treatment of different diseases

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		C507.2	Explaining isolation of different organs /tissues from the laboratory animals by simulated experiments	
		C507.3	Demonstrating the various receptor actions using isolated tissue preparations	
		C508.1	Macroscopy and microscopy diagnostic characters of secondary metabolites	
	Pharmacognosy and Phytochemistry II - Lab	BP508P	C508.2	Isolation, Extraction, Identification and analysis of selected phytoconstituents
			C508.3	Detection of phytoconstituents by chromatographic techniques
III II	Medicinal Chemistry III	BP601T	C601.1	To develop an understanding of the physico-chemical properties of drugs.
			C601.2	To interpret how current drugs were developed by using pharmacophore modeling and docking technique.
			C601.3	To apply knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents.
			C601.4	To acquire knowledge about the mechanism pathways of different class of medicinal compounds.
			C601.5	To explain to a variety of drug classes and some pharmacological properties.
			C601.6	To generate knowledge on thrust areas for further research.
	Pharmacology III	BP602T	C602.1	1. Explain the Mechanism of action, Clinical uses, Adverse drug reactions and contraindications of different categories of drugs acting on GIT, Respiratory system.
			C602.2	2. Discuss the principles of toxicology, clinical symptoms and management strategies of some poisonous compounds.
			C602.3	3. List the different drugs (Chemotherapy) in the treatment of different infectious diseases and explain their pharmacological actions.
			C602.4	4. Describe the basics of Toxicity studies.
			C602.5	5. Explain the mechanism of resistance towards antibiotics and their interactions, contraindications.
			C602.6	6. Describe the concept named



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			chronopharmacology and its applications in the treatment of various diseases.
Herbal Drug Technology	BP603T	C603.1	Explain role of herbs as raw materials, biodynamic agriculture techniques, basic principles of indian systems of medicine
		C603.2	Discuss the the general aspects & role of nutraceuticals in treatment of various disorders and to understand the herbal drug interactions.
		C603.3	Explain the methods of preparation and application of various herbal cosmetics, excipients and herbal formulations
		C603.4	Explain the the regulatory guidelines for the evaluation of herbal drugs and patenting of natural products.
		C603.5	Discuss the current scenario of herbal drug industry and Schedule T.
		C603.6	Explain the present scope and future prospects of herbal drug technology.
Biopharmaceutics and Pharmacokinetics	BP604T	C604.1	Understand different mechanism and factors affecting AD processes.
		C604.2	Able to understand drug metabolism, excretion understand the concepts of bioavailability and bioequivalence of drug products and their significance.
		C604.3	Understand the concepts of bioavailability and bioequivalence of drug products and their significance.
		C604.4	Understand various pharmacokinetic models and their significance in interpreting various pharmacokinetic parameters
		C604.5	Describe about multicompartment models
		C604.6	Able to to explain about nonlinearity
Pharmaceutical Biotechnology	BP605T	C605.1	After successful completion of the course student will be able to understand Brief introduction to Biotechnology, Basic principles of genetic engineering
		C605.2	Students will learn Study of cloning vectors, restriction endonucleases and DNA ligase.
		C605.3	Students will learn Types of immunity- humoral immunity, cellular immunity

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		C605.4	They know very well about Immuno blotting techniques, Mutations
		C605.5	Students know very well about Fermentation methods and general requirements.
		C605.6	Students get knowledge about basics of biotechnology and its principles
Quality Assurance	BP606T	C606.1	Describes roles and responsibilities of QA and QC departments in Pharma industry.
		C606.2	States various philosophies of Total Quality Management to produce Quality products.
		C606.3	Explain Quality control tests for Packaging materials and Acceptance limits of results.
		C606.4	Understanding significance of documentation in industry knowing contents of BFR, MFR.
		C606.5	Knowing the recalls of defective pharmaceutical goods & handling of return goods in ware housing.
		C606.6	Gaining knowledge regarding cGMP, ICH, GLP Regulations for Pharmaceutical manufacturing industries.
Medicinal Chemistry III -Lab	BP607P	C607.1	Understand how to make correct use of various equipment & take safety measures while working in a medicinal chemistry laboratory.
		C607.2	Synthesize, recrystallize and understand reaction mechanisms involved in the synthesis of medicinally important compounds and perform the Assay of drugs.
		C607.3	To study the interpretation of UV spectra of unknown drugs.
Pharmacology III-Lab	BP608P	C608.1	Students should learn the effects of various drugs on animal models and understand the calculation of LD50.
		C608.2	Students should be able to handle basic software's like ADMET lab, Swiss ADME
		C608.3	Students shall be also able to understand the Biostatistics in Experimental Pharmacology
Herbal Drug Technology -Lab	BP609P	C609.1	To perform the preliminary qualitative screening of crude drugs excipients of

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				natural source
			C609.2	Preparation and standardization of herbal extracts and their formulation development for external application as per regulatory guide lines
			C609.3	mograph analysis from recent pharmacopeia
IV I	Instrumental Methods of Analysis	BP701T	C701.1	Understand the fundamental principles and concepts underlying various instrumental techniques used in pharmaceutical analysis.
			C701.2	Explain the principles and applications of spectroscopic methods, such as UV-Vis, IR, and NMR spectroscopy, in the analysis of pharmaceutical compounds.
			C701.3	Apply chromatographic methods, including HPLC, TLC, and GC, for the separation, identification, and quantification of pharmaceutical substances.
			C701.4	Describe the principles and applications of electrochemical techniques, such as potentiometry and voltammetry, in pharmaceutical analysis.
			C701.5	Understand the principles of mass spectrometry and its role in the identification and quantification of drugs and their metabolites.
			C701.6	Impliment qualitative and quantitative analyses using various instrumental methods, and interpret the results for pharmaceutical applications.
	Industrial Pharmacy II	BP702T	C702.1	The student shall be able to know the process of pilot plant and scale up of pharmaceutical dosage forms
			C702.2	Able to understand the process of technology transfer from lab scale to commercial batch
			C702.3	Able to explain different laws and acts that regulate pharmaceutical industry
			C702.4	Able to discuss the approval process and regulatory requirements for drug products
			C702.5	Able to have the knowledge about total quality management in industry
			C702.6	Able to gain knowledge about central and

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			state licensing authority
Pharmacy Practice	BP703T	C703.1	Discuss various drug distribution methods in a hospital
		C703.2	Explain the pharmacy stores management and inventory control
		C703.3	Describe drug therapy monitoring of patient through medication chart review and clinical review
		C703.4	Find out drug related problems and assess adverse drug reactions
		C703.5	Explain the interpretation of selected laboratory results of specific disease states
		C703.6	Explain the pharmaceutical care services
Novel Drug Delivery System	BP704T	C704.1	Explain the basic concepts and various approaches for development of controlled drug delivery systems and understand the criteria for selection of drugs and polymers for the development of Novel drug delivery system
		C704.2	Discuss the various multiparticulate systems for targeted drug delivery.
		C704.3	Discuss the different NDDS strategies for various routes-oral, gastroretentive transdermal, ocular, transmucosal, pulmonary and implantable devices.
		C704.4	Describe the targeted drug delivery which is designed to deliver medication in the target tissues while reducing the relative concentration of the medication in the remaining tissues.
		C704.5	Discuss the development of transdermal drug delivery systems for the improvement of systemic bioavailability, as a result of bypassing the first pass metabolism.
		C704.6	Explain the methods involved in development of ocular inserts which improves bioavailability and patient compliance which is lacking in traditional eye drops.
Industrial Methods Of Analysis -Lab	BP705P	C705.1	Develop practical skills in operating and calibrating instruments like UV-Vis spectrophotometers, HPLC, GC, and


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				electrochemical cells.
			C705.2	Analyzing data from instrumental methods, including plotting graphs, calculating concentrations, and understanding the significance of the data in the context of pharmaceutical analysis.
			C705.3	Understanding various instrumental techniques, such as spectroscopy, chromatography, and electrochemical analysis.
	Practice School	BP706PS	C706.1	Apply gained theoretical knowledge into practical setting
			C706.2	Understanding the importance and applications of different subjects and their correlation with practice of Pharmacy
			C706.3	Development of skills in the handling of modern tools for research experience.
IV II	Biostatistics and Research Methodology	BP801T	C801.1	Know the various statistical methods to solve different types of problems
			C801.2	Operate various statistical software packages
			C801.3	Appreciate the importance of Computer in hospital and Community Pharmacy
			C801.4	Appreciate the statistical technique in solving the pharmaceutical problems
			C801.5	5.To deal with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non - parametric tests. ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational .
			C801.6	To know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
	Social and Preventive Pharmacy	BP802T	C802.1	Explain the concepts and evaluation of public health
			C802.2	Describe the aspects of Balanced Diet, Malnutrition and its preventive strategies
			C802.3	Describe the principles of prevention and control of various communicable and non-communicable diseases


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		C802.4	Describe the various socio-cultural factors and their relevancy in health and disease
		C802.5	Discuss the National Health programs, its objectives, functioning and outcomes
		C802.6	Explain about various National intervention programs and discuss about the role of WHO in National health programs
Pharmacovigilance	BP805ET	C805.1	Able to know why drug safety monitoring is important
		C805.2	Discuss history and development of pharmacovigilance
		C805.3	Appreciate national and international scenario of pharmacovigilance
		C805.4	Describe ICH guide lines for ICSR, PSUR, Pharmacovigilance planning
		C805.5	Explain CIOMS requirements for ADR reporting
		C805.6	Able to write case narratives of adverse events and their quality
Cosmetic Science	BP809ET	C809.1	Explain the basic concepts and various approaches for development of cosmetics.
		C809.2	Formulate and evaluate various cosmeceutical products
		C809.3	Know the key components used in different cosmeceutical products
		C809.4	Recognize the role of ingredients and herbs used in cosmeceutical products
		C809.5	Know the advanced current technology used for manufacturing the cosmetics at lab scale and industry scale
		C809.6	Employable skills and high technical competence for Pharmaceutical industry
Project Work	BP813PW	C813.1	Identify the research problem by thorough literature survey.
		C813.2	Apply efficient tools for designing project
		C813.3	Demonstrate the completed project work and compile the project report.

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