Subject Code	Subject Name	COs	Description of CO's
BP101T	Human Anatomy and Physiology – I	C101.1	Define [L1: Remember] the various basic anatomical and physiological terms, cell, tissues, bones, joints, movements, blood, lymph, spinal and cranial nerves, pulse, cardiac output, blood pressure and cardiac cycle.
		C101.2	Explain [L2: Understand] homeostasis, cell junction, cell signaling, homeostasis and the gross anatomy and physiology of cell, cell division, tissues, skin, bones, muscles, lymphatic organs, sympathetic and parasympathetic nervous system, spinal nerves, cranial nerves, eye, ear, nose, tongue and cardiovascular system.
		C101.3	Demonstrate [L3: Application] feedback mechanisms, various joints, articulation and their movements, blood coagulation, blood grouping and its transfusion.
		C101.4	Analyze [L4: Analysis] different types of tissue, bones, body fluids, conduction system of heart, blood pressure, electrocardiogram and its regulation by autonomic nervous system.
		C101.5	Evaluate [L5: Evaluation] the functions and disorders of blood, eye, ear, nose, tongue and heart.
BP102T	Pharmaceutical Analysis – I	C102.1	Remember (L-1):Define the basic concepts, scope, and objectives of pharmaceutical analysis. Recall various analytical techniques, types of errors, methods of expressing concentration, standardization procedures, and sources of impurities and limit tests as per pharmacopoeial standards.
		C102.2	Understand (L-2) :Explain the principles of acid–base, non-aqueous, precipitation, complexometric, diazotization, and redox titrations. Describe theories of indicators, neutralization curves, and concepts of oxidation–reduction, electrochemical methods, and gravimetric analysis.

		C102.3	Apply (L-3): Perform standardization of primary and secondary standard solutions, execute various titrimetric estimations such as sodium benzoate, magnesium sulphate, and barium sulphate, and apply potentiometric and conductometric techniques to determine end points and analyte concentrations.
		C102.4	Analyze (L-4): Compare different titration methods based on chemical reactions and analytical precision. Analyse` sources and types of errors, interpret titration curves, evaluate purity of precipitates, and identify appropriate analytical techniques for specific pharmaceutical substances.
		C102.5	Evaluate (L-5):Assess analytical data for accuracy, precision, and reliability. Evaluate the suitability of titrimetric and electrochemical methods for quantitative analysis and justify the selection of methods based on quality standards and pharmacopoeial specifications.
BP103T	Pharmaceutics-I	C103.1	Define /State/Find (L1-Remember) Define the history of profession of pharmacy, pharmacopoeias, posology, pharmaceutical calculations, prescription, pharmaceutical incompatibilities and dosage forms like powders, liquid dosage forms, monophasic and biphasic liquids, suspensions, emulsions and semisolid dosage forms.
		C103.2	Discuss/Explain/Compute/Show(L2-Understand) Explain the basics of pharmaceutical incompatibilities, posology, pharmaceutical calculations and dosage forms like powders, liquid dosage forms, monophasic and biphasic liquids, suspensions, emulsions and semisolid dosage forms.

		C103.3	Apply/Use (L3-Apply) Demonstrate posology, history of pharmacy, pharmaceutical incompatibility, development of pharmaceutical dosage forms like powders, liquid dosage forms, monophasic and biphasic liquids, suspensions, emulsions and semisolid dosage forms, pharmacopoeias and handling of prescription.
		C103.4	Examine/Test/Solve(L4-Analyze) Analyze and L5-Evaluate)Analyze posology, history of pharmacy, pharmaceutical incompatibility, development of pharmaceutical dosage forms like powders, liquid dosage forms, monophasic and biphasic liquids, suspensions, emulsions and semisolid dosage forms, pharmacopoeias and handling of prescription.
		C103.5	To Deduce and Verify(L5-Evaluate) Analyze and L5-Evaluate)Evaluate posology, history of pharmacy, pharmaceutical incompatibility, development of pharmaceutical dosage forms like powders, liquid dosage forms, monophasic and biphasic liquids, suspensions, emulsions and semisolid dosage
BP104T	Pharmaceutical Inorganic Chemistry	C104.1	Describe the history of pharmacopoeia, sources and types of impurities, and the principles involved in limit tests for chloride, sulphate, iron, arsenic, lead, and heavy metals. Recall the general methods of preparation, assay, properties, and medicinal uses of inorganic compounds.
		C104.2	Explain the principles of buffer equations, buffer capacity, and their applications in pharmaceutical systems. Discuss the functions of major physiological ions, electrolyte replacement therapy, and the physiological acid-base balance. Interpret the role of fluoride in dental care and the mechanisms of desensitizing agents.

		C104.3	Apply the principles of isotonicity calculations, preparation of buffered isotonic solutions, and methods for adjusting isotonicity. Demonstrate the ideal properties and combinations of antacids. Use the knowledge of physiological ions for electrolyte replacement therapy in clinical contexts.
		C104.4	Analyze the mechanisms of antimicrobial agents and their classifications. Compare the properties of different gastrointestinal agents, including acidifiers, antacids, and cathartics. Examine the use of radiopharmaceuticals, their properties, and pharmaceutical applications.
		C104.5	Evaluate the use of radioisotopes like Sodium iodide I131 in pharmaceutical applications, considering safety, storage, and precautions. Justify the selection of appropriate poisons and antidotes in clinical settings. Critique the role of astringents, emetics, and hematinics based on their pharmaceutical properties and uses.

BP106RBT	Remedial Biology	C106.1	[L1: Knowledge] Define living organisms, including their classification, plant morphology and anatomy, human organ systems, plant physiology, and the structure and function of cells.
		C106.2	[L2: Understanding] Understand the structure-function relationship of cells, tissues, plant and human organs, and interpret key physiological processes like respiration, digestion, reproduction, coordination, excretion, and blood circulation
		C106.3	[L3: Application] Apply concepts of anatomy, physiology, and classification to solve problems related to plant nutrition, human functions, and cell division
		C106.4	[L4: Analysis] Analyze the coordination between plant and human systems by breaking down processes like respiration, circulation, growth regulation, and reproduction to understand how structural features contribute to their functions
		C106.5	[L5: Evaluate] Evaluate the biological processes and regulatory mechanisms such as the cardiac cycle, nitrogen fixation, hormone functions, photosynthesis and cell division across plants and animals through flowcharts, diagrams, or experimental frameworks.

BP107P	Human Anatomy and Physiology – I	C108.1	Remember (L-1) the handling of compound microscope.
		C108.2	Understand (L-2) the microscopical structure of various human tissues.
		C108.3	Demonstrate (L-3) the characteristics of different bones of human skeletal system.
		C108.4	Analyze (L-4) the bleeding time, clotting time, blood group, hemoglobin content and blood cells.
		C108.5	Evaluate (L-5) the blood pressure, heart rate/ pulse rate and erythrocyte sedimentation rate of human blood.
BP108P	Pharmaceutical Analysis – I	C109.1	Remember [L1: Remember] the study of laboratory glasswares, analytical balances and the procedure for calibration of volumetric glasswares.
		C109.2	Understand [L2 : Understand] the preparation and standardization processes of primary and secondary standards.
		C109.3	Demonstrate: [L3: Demonstrate] the limit test of inorganic compounds
		C109.4	Analyze [L4: Analysis] the techniques involved in the assay of pharmaceutical substances.
		C109.5	Evaluate [L5:Evaluate] the normality of solutions using various electro-analytical techniques.
BP109P	Pharmaceutics - I	C110.1	[L1: Remember] Define and recall the basic concepts, components, and official standards related to the formulation and development of various pharmaceutical dosage forms.
		C110.2	[L2: Understand] Explain the principles, methods, and purposes of preparing dosage forms, and discuss the roles of excipients, vehicles, and factors affecting formulation stability.
		C110.3	[L3: Apply] Apply appropriate techniques to compound and prepare dosage forms according to official standards, ensuring accurate procedures and proper handling of pharmaceutical equipment.
		C110.4	[L4: Analyze] Analyze prepared formulations for uniformity, appearance, and quantity, identify formulation or process-related problems, and recommend appropriate corrective measures.
		C110.5	NA

BP110P	Pharmaceutical Inorganic Chemistry	C111.1	[L1: Remember] Identify and describe the apparatus and chemicals used in inorganic pharmaceutical chemistry.
		C111.2	[L2: Understand]To Understand the importance of Inorganic Pharmaceutical drugs
		C111.3	[L3: Apply]To demonstrate the test for purity as per pharmacopeial standards.
		C111.4	[L4: Analyze] To compare the level of specific impurities in the given inorganic compounds by performing different limit tests.
		C111.5	[L5:Evaluate] Evaluate the precision and accuracy of your experimental results by comparing them with known standards.
BP111P	Communication Skills	C112.1	Demonstrate basic communication skills including greeting, meeting people, asking questions, social interaction, and expressing past events
		C112.2	Apply correct pronunciation of consonant and vowel sounds using phonetics for clear communication.
		C112.3	Develop listening comprehension skills and convert direct and indirect speech accurately.
		C112.4	NA
		C112.5	NA
BP112RBP	Remedial Biology	C113.1	Recall [L1: Remember] basic biological tools, microscope use, slide techniques, tissues, bones, blood group, and plant organ structures.
		C113.2	Explain [L2: Understand] cell inclusions, plant organ modifications, and interpret microscopic and computer-based frog anatomical observations..
		C113.3	Apply [L3: Application] biological lab techniques for slide preparation, tissue identification, bone detection, blood group, BP, and tidal volume tests
		C113.4	Analyse [L4: Analysis] plant and animal tissues, interpret frog anatomical systems, and compare physiological parameters like BP and tidal volume.
		C113.5	Evaluate [L5: Evaluate] accuracy of tissue identification, slide preparation, evaluate frog systems blood group, BP, and tidal volume measurements.

BP201T	Human Anatomy and Physiology – II	C114.1	Define [L1: Remember] the terms related to the anatomy and physiology of the nervous, digestive, respiratory, urinary, endocrine, and reproductive systems, as well as genetics.
		C114.2	Explain [L2: Understand] the structure and functions of the nervous, digestive, respiratory, urinary, endocrine, and reproductive systems, as well as the genetic processes.
		C114.3	Demonstrate [L3: Application] concepts of neurophysiology, digestive energetics, respiratory mechanics, and endocrine regulation to explain common physiological processes, disorders, and clinical interventions.
		C114.4	Analyze [L4: Analysis] the interrelationships among body systems (nervous, digestive, respiratory, urinary, endocrine, and reproductive), evaluating how their functions contribute to homeostasis and the maintenance of life.
		C114.5	Evaluate [L5: Evaluation] the mechanisms of action potentials, hormonal regulation, gas exchange, kidney function, and genetic inheritance patterns to interpret how disruptions can lead to diseases.
BP202T	Pharmaceutical Organic Chemistry – I	C115.1	Define and recall the classification, nomenclature, and structural isomerism of organic compounds. Identify key reactions, mechanisms, structures, and uses of alkanes, alkenes, alkyl halides, alcohols, carbonyl compounds, carboxylic acids, and amines as described in all units.
		C115.2	Explain the principles of hybridization, reaction mechanisms such as E1, E2, SN1, SN2, and nucleophilic addition. Discuss the influence of electronic effects, substituents, and reaction conditions on the reactivity, stability, and orientation of organic compounds across all classes.
		C115.3	Apply IUPAC rules to name organic compounds and predict products of substitution, elimination, and addition reactions. Perform qualitative identification tests and correlate the structures of various organic compounds with their physical and chemical properties.

		C115.4	Compare mechanisms of different organic reactions such as E1 vs. E2 and SN1 vs. SN2. Analyze the effect of inductive, electromeric, and resonance effects on acidity, basicity, and reactivity. Evaluate reaction intermediates, rearrangements, and the stability of organic molecules.
		C115.5	Assess the purity and structural integrity of organic compounds based on qualitative reactions. Evaluate the suitability of synthetic methods and reaction pathways in achieving desired products, adhering to chemical reasoning and professional standards in organic synthesis.
BP203T	Biochemistry	C116.1	Remember (L-1): To recall the classification, structure, biological roles, and significance of biomolecules including carbohydrates, lipids, nucleic acids, amino acids, and proteins.
		C116.2	Understand (L-2):To outline the principles of bioenergetics and describe the metabolic pathways of carbohydrates and lipids, along with their physiological significance.
		C116.3	Apply [L-3]:To apply the knowledge of enzyme kinetics, inhibition, and regulation to understand their therapeutic, diagnostic, and industrial applications.
		C116.4	Analyze (L-4): To analyze the molecular mechanisms of DNA replication, transcription, and translation, and examine their role in the regulation of genetic information.
		C116.5	Evaluate (L-5): To evaluate the biochemical basis, clinical manifestations, and diagnostic approaches for metabolic and genetic disorders.

BP205T	Computer Applications in Pharmacy	C118.1	To Remember [L-1] the number systems, binary arithmetic operations, and basic concepts of information systems and software development life cycles.
		C118.2	To understand [L-2] the structure and functionality of web technologies, programming languages, databases (MySQL, MS Access), and pharmacy-related drug databases
		C118.3	To apply [L-3] computer applications in various pharmacy domains, including drug information storage, pharmacokinetics, clinical pharmacy, e-prescribing, and diagnostic systems
		C118.4	To Analyse [L-4] the role and components of bioinformatics tools, databases, and their impact on processes like vaccine discovery.
		C118.5	To Evaluate [L-5]the significance of computer-based data analysis systems such as CDS, LIMS, and TIMS in preclinical
BP206T	Environmental Sciences	C119.1	(L1:Recall) Recall fundamental concepts of environment, ecology, natural resources, and environmental pollution along with their basic terminologies.
		C119.2	(L2: Comprehension)To understand renewable and non-renewable resources , to explain structure and functions of ecosystems ,Explain renewable and non-renewable resources, describe the structure and functions of ecosystems, and outline major types of ecosystems
		C119.3	(L3: Application)To implement use of natural resources and minimize the associated problems ,to know importance of forest, grassland, desert and aquatic system, Apply environmental principles to identify causes of pollution and suggest suitable control measures for air, water, soil, noise and solid waste pollution.
		C119.4	
		C119.5	

BP207P	Human Anatomy and Physiology – II	C220.1	Remember (L-1): Recall the structure and function of various human organ systems using models, charts, and specimens.
		C220.2	Understand (L-2): Explain basic physiological principles underlying sensory and neurological functions.
		C220.3	Demonstrate (L-3): Demonstrate common clinical and laboratory procedures used in physiology.
		C220.4	Analyze (L-4): Identify and interpret normal and abnormal features using diagnostic tools and histological slides.
		C220.5	
BP208P	Pharmaceutical Organic Chemistry – I	C221.1	Recall and recognize basic physical properties, preliminary tests, solubility, and laboratory safety procedures for unknown organic compounds.
		C221.2	Explain the underlying principles and chemical reactions involved in Lassaigne's test and functional group tests.
		C221.3	Apply standard laboratory techniques to perform Lassaigne's test, solubility tests, functional group tests, and melting/boiling point determination on unknown compounds.
		C221.4	Analyse and interpret experimental observations, including element detection, functional group identification, and solubility behaviour to identify unknown compounds.
		C221.5	Evaluate unknown organic compounds by comparing experimental data (physical constants, derivatives, functional group tests) with literature to confirm identity.
BP209P	Biochemistry	C222.1	To perform qualitative analysis of carbohydrates and Protein by processed and natural sources.
		C222.2	Preparation of acidic and basic buffer solution and compute its pH, by-pH meter.
		C222.3	To Perform Qualitative analysis of urine for abnormal constituents and quantitative estimation of total cholesterol level in human serum using semi auto analyser.

BP210P	Computer Applications in Pharmacy	C223.1	(Level 1: Remember) Recall the use of different computer applications and software used in pharmacy practice.
		C223.2	(Level 2: Understand) Explain word processing and HTML tools to design questionnaires, labels, and simple web pages for pharmaceutical data presentation.
		C223.3	(Level 3: Application) retrieve drug-related information, including adverse effects, using online tools and databases
		C223.4	(Level 4: Analysis)Analyze and manage a patient or drug database using MS Access by designing tables, forms, queries, and reports.
		C223.5	(Level 5: Evaluation) Evaluate and export pharmaceutical data to various formats (web/XML) to ensure efficient data sharing and reporting.
BP301T	Pharmaceutical Organic Chemistry – II	C201.1	Define [L1: Remember] the structure, aromatic character, and reactions of benzene and its derivatives. Recall acidity/basicity of phenols, amines, and aromatic acids, and list analytical constants of fats, oils, and cycloalkanes.
		C201.2	Explain [L2: Understand] aromaticity, substituent effects, and mechanisms of electrophilic substitution reactions. Discuss acidity/basicity variations, analytical values of oils, and theories related to cycloalkane stability.
		C201.3	Demonstrate [L3: Application] aromatic principles to predict products and reactivity of substituted benzenes. Use analytical constants and strain theories to solve practical problems related to oils and cyclic compounds.
		C201.4	Analyze [L4: Analysis] electronic effects influencing reactivity and orientation in aromatic compounds. Differentiate structural and reactivity trends in phenols, amines, acids, and polynuclear hydrocarbons.
		C201.5	Evaluate [L5: Evaluation] stability, synthetic pathways, and aromatic behavior of organic compounds. Assess quality parameters of oils and theoretical models explaining cycloalkane stability.

BP302T	Physical Pharmaceutics – I	C202.1	Define [L1: Knowledge] the concept of solubility,states of matter, surface tension, interfacial tension complexes ,adsorption buffers, and isotonicity etc.
		C202.2	Explain [L2: Comprehension] the principles and theories for solubilzation buffer mechanism,complex formation surface free energy and spreading coeffecient.
		C202.3	Demonstrate [L3: Application] the preparation of different concentration of solutions, refractive index, adsorption phenomenon, complex formation etc.
		C202.4	Analyze [L4: Analysis] the solubility of different drugs, adsorption parameters, surface tension
		C202.5	Justify [L5: Evaluate] distribution coeffecient optical rotation, solubility at different temperature, critical solution temperature
BP303T	Pharmaceutical Microbiology	C203.1	Recall [L1: Remember] the history, branches, and Prokaryotes and Eukaryotes, importance of microbiology, as well as the classification, structure, and growth requirements of microorganisms
		C203.2	Explain [L2: Understand] staining techniques, sterilization methods, microbial assays, aseptic area and the principles of cell culture and microbial spoilage, , isolation and preservation methods for pure cultures, cultivation of anaerobes, fungus and virus.
		C203.3	Apply [L3: Application] microbiological techniques for bacterial identification, sterilization, microbial testing, and preservation of pharmaceutical products. Study of different types of phase contrast microscopy, dark field microscopy and electron
		C203.4	Analyze [L4: Analysis] factors affecting microbial growth, contamination, disinfection, spoilage, and microbial stability of pharmaceutical formulations
		C203.5	Evaluation [L5: Evaluate] of sterilization methods, antimicrobial preservation, microbial stability, and the application of cell cultures in pharmaceutical research and production, Evaluation of bactericidal & Bacteriostatic, Sterility testing of products
BP304T	Pharmaceutical Engineering	C204.1	Recall (L1, Remember) fundamental principles, construction, working, and terminology related to unit operations such as fluid flow, size reduction and separation, heat transfer, drying, mixing, filtration, centrifugation, distillation, evaporation, and materials used in pharmaceutical plant construction.

		C204.2	Explain (L2, Understand) the mechanisms, objectives, and applications of various pharmaceutical engineering processes including fluid dynamics, thermal processes, mass transfer, and equipment used in solid and liquid dosage form manufacturing, along with materials selection and corrosion control in plant construction.
		C204.3	Apply (L3, Apply) basic engineering laws (e.g., Bernoulli's theorem, Fourier's law), equipment principles, and process knowledge to analyze the operational functionality of pharmaceutical unit operations such as milling, drying, filtration, evaporation, distillation, and material handling.
		C204.4	Analyze (L4, Analyze) process parameters and influencing factors affecting unit operations including size reduction, heat and mass transfer, mixing, centrifugation, and drying, and determine appropriate equipment selection based on process requirements and plant material compatibility.
		C204.5	Evaluate (L5, Evaluate) the suitability, efficiency, and performance merits/demerits of pharmaceutical process equipment and materials of construction with respect to process economy, product quality, equipment design, corrosion resistance, and safety compliance in pharmaceutical manufacturing.
BP305P	Pharmaceutical Organic Chemistry – II	C205.1	Recall the basic principles involved in the synthesis of organic compounds and the names/functions of common laboratory instruments (melting point apparatus, oven, etc.).
		C205.2	Explain the methods of preparation of various organic compounds along with their reactions and mechanisms.
		C205.3	Apply the knowledge of medicinal chemistry to illustrate and relate the medicinal uses of synthesized organic compounds.
		C205.4	Analyze different purification techniques such as recrystallization and steam distillation for isolating synthesized organic compounds.
		C205.5	Evaluate the quality of fats and oils by determining acid value, saponification value, and iodine value as per pharmacopeial standards.

BP306P	Physical Pharmaceutics – I	C206.1	Remember [L1: Knowledge]the concepts of solubility, physiochemical properties like refractive index, surface tension
		C206.2	Explain [L2: Comprehension]the concepts of critical solution temperature ,distribution coefficient
		C206.3	Application [L3: Application] of Handerson Hasselbalch equation for pKa value measurement, pH measurement
		C206.4	Analyze[L4: Analysis] the surfactant ability of surfactants, effect of temperature on solubility
		C206.5	Evaluate[L5: Evaluate] the CST of solution, surface tension, distribution coefficient
BP307P	Pharmaceutical Microbiology	C207.1	(L1: Remember) Recall the principles of microbiological equipment, culture media preparation, staining techniques, sterility testing, and microbial identification methods.
		C207.2	(L2: Understand) Explain the aseptic techniques, staining procedures, water quality analysis, sterility assessment, and antibiotic assay methods used in microbiology
		C207.3	(L3: Apply) Perform sterilization, bacterial staining, aseptic transfer, microbial motility observation, and biochemical identification of microbes in laboratory settings
		C207.4	(L4: Analyze) Examine the microbial contamination of pharmaceutical products, sterility of medical materials, and water quality through experimental analysis.
		C207.5	(L5: Evaluate) Assess the effectiveness of sterilization techniques, microbial assay procedures, and the impact of ultraviolet radiation on microorganisms for pharmaceutical applications
BP308P	Pharmaceutical Engineering	C208.1	[L1: Remeber] Recall and describe the fundamental concepts of drying, filtration, crystallization, evaporation, and size reduction involved in pharmaceutical unit operations.
		C208.2	[L2: Understand]Explain the construction, working, and applications of key pharmaceutical equipment such as rotary tablet machine and ball mill.

		C208.3	[L3: Apply] Apply theoretical knowledge to perform practical experiments for determining moisture content, particle size distribution, and humidity using standard methods.
		C208.4	[L4: Analyze] Analyze the influence of process parameters such as time, temperature, and surface area on the rates of evaporation, filtration, and crystallization.
		C208.5	[L5: Evaluate] Evaluate coefficient of venturi meter and orifice meter using flow rate method.
KVE401	Universal Human Values and Professional Ethics	C209.1	Define [L1: Knowledge] Recall the need, guidelines, content, and process of value education. Define concepts like self-exploration, natural acceptance, happiness, prosperity, right understanding, and harmony at various levels. Identify the foundational concepts related to human aspirations and priorities.
		C209.2	Explain [L2: Comprehension] Explain the harmony in the human being as a coexistence of the sentient 'I' and the material 'Body.' Describe the needs of the 'Self' and 'Body' and the characteristics of 'I.' Discuss concepts such as Sanyam, Swasthya, and their programs for harmony in the human being. Interpret the values of trust and respect in human relationships and their significance in achieving harmony in the family and society.
		C209.3	Demonstrate [L3: Application] Apply the principles of harmony to real-life scenarios in the family, society, and nature through practice exercises and case studies. Demonstrate the interconnectedness among the four orders of nature and implement programs to ensure harmony in personal and professional contexts.
		C209.4	Analyze [L4: Analysis] Analyze the relationships between human values, ethical conduct, and professional competence. Compare various societal goals like Samadhan, Samridhi, Abhay, and Sah-astitva, and evaluate their relevance in achieving a universal harmonious order. Examine case studies of holistic technologies and management models for their alignment with human values.

		C209.5	Justify [L5: Evaluate] evaluate the implications of holistic harmony on professional ethics. Assess strategies for transitioning from the current state to a universal human order. Justify the role of humanistic education, humanistic constitution, and eco-friendly technologies in professional and societal contexts.
BP401T	Pharmaceutical Organic Chemistry – III	C210.1	Recall the fundamental concepts of stereoisomerism, including optical, geometrical, and conformational isomerism, along with related nomenclature systems (DL, RS, cis–trans, E–Z). They will also remember the classification, basic structures, synthesis routes, and medicinal relevance of major heterocyclic compounds, as well as key named reactions and reductions/oxidations of synthetic importance.
		C210.2	explain the principles of chirality, symmetry, aromaticity, and reactivity patterns in stereoisomers and heterocycles.discuss the chemical behavior, medicinal significance, and stereochemical outcomes of heterocyclic systems and various named organic reactions.
		C210.3	Apply stereochemical rules, sequence rules, and configuration determination methods to solve structural problems. They will demonstrate the ability to apply appropriate synthetic methods for constructing heterocyclic molecules and perform reaction pathway analysis for reductions, oxidations, rearrangements, and condensations.
		C210.4	analyze stereochemical relationships, compare reactivity trends among heterocycles (pyrrole, furan, thiophene, pyridine, etc.), and evaluate reaction mechanisms. They will also identify issues related to stereoselectivity, aromaticity, and reaction feasibility across the various synthetic methodologies described in the syllabus.
		C210.5	assess stereochemical outcomes, evaluate synthetic strategies for constructing heterocyclic systems, and judge the suitability of reduction, oxidation, and rearrangement reactions for specific synthetic goals. They will also appraise the medicinal relevance and structural advantages of diverse heterocyclic frameworks.

BP402T	Medicinal Chemistry – I	C211.1	Remember (L1: Remember) the concept of history and development of medicinal chemistry, physicochemical properties in relation to biological action, Drug metabolism, Different ANS and CNS classes of drugs.
		C211.2	Understand (L2: Understand) Drug metabolism Phase I and Phase II, Factors affecting drug metabolism, Bioisosterism, Receptors, Biosynthesis and catabolism of catecholamine, Acetyl choline, Classification and mode of action of ANS and CNS drugs.
		C211.3	Application (L3: Application) Applications/uses of different drug molecules.
		C211.4	Analyze (L4: Analyze) the Structure activity relationship of selective classe of drugs.
		C211.5	Evaluate (L5: Evaluate) the synthesis of the different ANS and CNS drugs.
BP403T	Physical Pharmaceutics – II	C212.1	Define [L1: Knowledge] Define the fundamental concepts, classifications, and key terminology of colloidal dispersions, rheological systems, coarse dispersions (suspension and emulsion), micromeritic, and chemical kinetics governing pharmaceutical stability.
		C212.2	Explain [L2: Comprehension] Explain the interrelationships and principles linking the stability of colloidal and coarse dispersions, the rheological behavior of formulations, the influence of particle properties, deformationof solids, stablization of reactions, and the kinetics of drug degradation. Stability studies of formulations
		C212.3	Demonstrate [L3: Application] Demonstrate the application of principles and procedures to determine key parameters, including viscosity using various viscometers, particle size and surface area, emulsion stability via the HLB method, and the order of degradation reactions.

		C212.4	Analyze [L4: Analysis] Analyze the stability and performance of pharmaceutical formulations by interpreting data on particle characteristics, rheological flow properties, interfacial phenomena in dispersions, micromeritics properties, and factors influencing chemical degradation.
		C212.5	Justify [L5: Evaluate] Evaluate and justify the selection of excipients, formulation techniques, and packaging strategies to achieve optimal physical and chemical stability in complex pharmaceutical systems like suspensions, emulsions, and solid dosages.
BP404T	Pharmacology – I	C213.1	(L1: Knowledge) about fundamental concepts of pharmacology including drug sources, routes of administration, drug-receptor interactions, pharmacokinetics, and pharmacodynamics, enabling explanation of mechanisms of drug action and factors affecting drug response.
		C213.2	(L2: Understanding) the therapeutic applications and adverse effects of drugs, including drug interactions, idiosyncrasy, tolerance, dependence, allergy, and tachyphylaxis, facilitating safe and rational drug use.
		C213.3	(L3: Application) describe the organization and function of the peripheral nervous system and central nervous system, including neurotransmission and neurotransmitters, and explain the pharmacology, mechanism of action, therapeutic uses, and adverse effects of drugs acting on autonomic and neuromuscular systems
		C213.4	(L4: Analysis) the pharmacology of drugs acting on the central nervous system, including general and local anesthetics, sedatives, hypnotics, anticonvulsants, psychopharmacological agents, and drugs used in neurological disorders, to enable rational therapeutic decision-making.
		C213.5	(L5: Evaluate) drug discovery, clinical evaluation, pharmacovigilance, and mechanisms of drug addiction to assess new drugs and formulate strategies for effective and safe clinical use in various diseases.

BP405T	Pharmacognosy and Phytochemistry – I	C214.1	Recall [L1: Remember] the history, scope and development of Pharmacognosy and learn about different sources of crude drugs and also classify them accordingly.
		C214.2	Plan [L2: Understand] the systematic pharmacognostic study of primary and secondary metabolites including ayurvedic drugs, marine drugs, hallucinogens and teratogens etc.
		C214.3	Application [L3: Apply] of advance techniques like plant tissue culture polyploidy and hybridization in the cultivation of medicinal plants, identification, evaluation, and estimation of phytochemicals.
		C214.4	Analyze [L4: Analysis] the novel medicinal agents from marine sources by chemical and physical methods and role of these active phytoconstituents in allopathy and traditional system of medicine.
		C214.5	Evaluation [L5: Evaluate] of crude drugs from natural origin qualitatively and quantitively by organoleptic, microscopic, physical, chemical and biological methods including lycopodium spore method.
BP406P	Medicinal Chemistry – I	C215.1	Recall the basic principles of medicinal chemistry and the laboratory techniques used to synthesize
		C215.2	Explain the chemical reactions, synthesis pathways, and functional group transformations commonly used in the preparation of medicinal compounds.
		C215.3	Apply laboratory techniques to synthesize pharmaceutical intermediates and test their purity through different methods (e.g., melting point
		C215.4	NA
		C215.5	Evaluate the effectiveness of synthetic routes in medicinal chemistry experiments based on factors like yield, purity, and the safety of reagents and reactions.
BP407P	Physical Pharmaceutics – II	C216.1	(L1: Remember) Recall fundamental principles related to particle size analysis, viscosity measurement, density, porosity, and chemical kinetics.
		C216.2	(L2: Understand) Explain the significance and application of various physicochemical properties such as sedimentation volume, angle of repose, and reaction rate constants in pharmaceutical formulations

		C216.3	(L3: Apply) Perform experimental procedures to determine particle size (sieving and microscopy), bulk/true density, porosity, viscosity (liquids and semisolids), and rate constants (first and second order).
		C216.4	(L4: Analyze) Compare the influence of different suspending agents and their concentrations on sedimentation volume, and assess the impact of lubricants on angle of repose and flow properties.
		C216.5	(L5: Evaluate) Critically evaluate the stability profile of pharmaceutical formulations using accelerated stability studies and interpret experimental results to ensure formulation quality and performance.
BP408P	Pharmacology – I	C217.1	Understand the principles of experimental pharmacology and demonstrate proficiency in handling laboratory animals ethically as per CPCSEA guidelines.
		C217.2	Identify and operate key instruments used in pharmacological experiments such as Actophotometer, rota-rod, and Electroconvulsiometer for evaluating drug effects.
		C217.3	Demonstrate various routes of drug administration in laboratory animals and assess drug actions on specific organs such as rabbit eye and frog oesophagus.
		C217.4	Analyze the pharmacological effects of drugs on the central nervous system, including locomotor activity, anticonvulsant, anxiolytic, and muscle relaxant properties using appropriate animal models.
		C217.5	Evaluate drug effects on peripheral systems, including local anesthetic action and enzyme induction, through relevant experimental methods.

BP409P	Pharmacognosy and Phytochemistry – I	C218.1	Recall [L1: Remember] and recognize different morphological and microscopical characteristic features of crude drugs
		C218.2	Discuss [L2: Understand] and illustrate the cellular structures and anatomical features of crude drugs.
		C218.3	Apply [L3: Application] quantitative microscopic evaluation methods to analyze crude drugs.
		C218.4	Analyse [L4: Analysis] crude drugs using various physical evaluation parameters and interpret the outcomes.
		C218.5	Evaluate [L5: Evaluate] crude drugs effectively using suitable chemical evaluation methods.
BP501T	Medicinal Chemistry – II	C301.1	Remember [L1: Knowledge] Recall the development and classification of various drug classes such as antihistaminic, antineoplastic, cardiovascular, endocrine, and antidiabetic agents. Memorize their mechanism of action, therapeutic uses, and the synthesis of drugs.
		C301.2	Understand [L2: Comprehension] Explain the mechanism of action, classification, and pharmacological significance of drugs belonging to antihistaminic, antineoplastic, antianginal, diuretic, antihypertensive, endocrine, and antidiabetic categories. Describe the structure activity relationship (SAR) of different classes of drugs and interpret how structural modifications influence pharmacological activity.
		C301.3	Apply [L3: Application] Apply the knowledge of mechanism of action, SAR, and synthetic strategies to predict the biological activity and therapeutic role of drugs. Utilize chemical and pharmacological concepts to design and outline the synthesis of representative compounds.
		C301.4	Analyze [L4: Analysis] Analyze and compare the structure, mechanism, and pharmacological activity of drugs within and across different therapeutic classes. Evaluate how variations in chemical structure, stereochemistry, or substituents affect drug action, selectivity, and potency.
		C301.5	Create/ Develop [L5: Development] Evaluate the synthesis pathways, structure activity relationships, and mechanisms of action of various drugs to assess their chemical feasibility, pharmacological effectiveness, and therapeutic potential. Judge the suitability of synthetic routes and structural modifications for developing safer and more active drug candidates.

BP502T	Industrial Pharmacy – I	C302.1	Define/ Memorize/ Outline/[L1 -Remember] key concepts in preformulation studies, formulations aspects of dosages forms (tablets, capsules, liquid orals, parenterials) memorize cosmetics and pharmaceutical aerosols.
		C302.2	Explain/Describe/Summarize [L2 Comprehension] formulation and evaluation of tablets, liquid orals, gelatin capsules, pellet formation, parenteral and ophthalmic products, and explain aspects and packaging of cosmetics and aerosols.
		C302.3	Apply/ Implement/Execute [L3 -Application] the preformulation principles to demonstrate pharmaceutical dosage forms, tablets, liquid orals, gelatin capsules and pellet formation, implement parenteral and ophthalmic formulations , and execute cosmetics preparations.
		C302.4	Analyze/ examine [L4 - Analyze] tablets, liquid orals, gelatin capsules and pellets, to formulate parenteral and ophthalmic products, and design packaging for cosmetics and aerosols
		C302.5	Evaluate/ Asess/Compare [L5 -Evaluation] tablets, capsules , pellets, parenterals and opthalmic preparations and critique their in -process and quality control tests
BP503T	Pharmacology – II	C303.1	Define [L1: Knowledge] the basic hemodynamics and electrophysiology of the heart, classification and mechanisms of drugs acting on the cardiovascular, urinary, endocrine systems, and autacoids, along with the principles of bioassay.
		C303.2	Explain [L2: Comprehension] the pharmacological actions, therapeutic uses, and adverse effects of cardiovascular drugs (anti-anginal, antihypertensive, anti-arrhythmic, diuretics), autacoids, endocrine agents, and correlate their role with physiological and biochemical mechanisms.
		C303.3	Demonstrate [L3: Application] the knowledge of pharmacological principles in selecting appropriate drugs for the management of cardiovascular disorders, endocrine imbalances, inflammatory conditions, and fluid–electrolyte disturbances, and demonstrate the concept of biological standardization through bioassay.
		C303.4	Analyze [L4: Analysis] the interrelationship between various systems affected by pharmacological agents such as autacoids, hormones, and cardiovascular drugs; differentiate their mechanisms, drug interactions, and clinical implications based on therapeutic and adverse effects.

		C303.5	Justify [L5: Evaluate] rational drug therapy by integrating knowledge of cardiovascular, renal, endocrine, and inflammatory pharmacology; and appraise the relevance of bioassay in assessing potency and efficacy of biological agents.
BP504T	Pharmacognosy and Phytochemistry – II	C304.1	Recall [L1: Remember] the basic metabolic pathways for biosynthesis of various secondary metabolites, and utilization of radioactive isotopes in the investigation of biogenetic studies.
		C304.2	Discuss [L2: Understand] about primary & secondary metabolites and explain the source, chemistry, therapeutic uses & commercial applications of various secondary metabolites containing drugs.
		C304.3	Application [L3: Application] of advance methods of extraction and various steps involved in isolation, identification and analysis of Phytoconstituents like terpenoids, glycosides, alkaloids and resins etc.
		C304.4	Analyse [L4: Analysis] the crude drugs by using basic techniques like spectroscopy, chromatography & electrophoresis for the isolation, purification, & identification of phytoconstituents.
		C304.5	Estimation [L5: Evaluate] of crude drugs from various groups of phytoconstituents like Flavonoids, Steroids, Triterpenoids, Iridoids & Naphthoquinones etc. by using modern analytical techniques for its industrial production and commercialization.
BP505T	Pharmaceutical Jurisprudence	C305.1	[L1: Remember] Define the objectives, scope, and key terminologies of major pharmaceutical legislations and regulations including all listed Acts, Rules, Intellectual Property Rights, and related Schedules.
		C305.2	[L2: Understand] Explain the objectives, provisions, and regulatory framework for drug and cosmetic control, and describe roles and relationships of national regulatory bodies and committees in legislation.
		C305.3	[L3: Application] Apply pharmaceutical legislation in professional practice covering drug import, manufacture, sale, labeling, licensing, records, pharmacist registration, narcotics control, ethics, and pricing compliance.

		C305.4	[L4: Analysis]Analyze the organization, constitution, and functions of statutory bodies, councils, and committees like the Pharmacy Council of India, State Pharmacy Councils, NPPA, and national health committees.
		C305.5	[L5: Evaluate] Evaluate the Code of Pharmaceutical Ethics, pharmacist's duties, and impact of ethical conduct, legislations, and intellectual property rights on professional practice and public health.
BP506P	Industrial Pharmacy – I	C306.1	(L1:Remember) Recall the various preformulation studies that are performed before formulation of any dosage forms , recall different components of aerosols , recall different techniques to prepare , perform preformulation of granules
		C306.2	(L2:Understand) Classify different dosage forms ,to illustrate formulation and evaluation of capsule and tablets , perform formulation and evaluation of capsules and tablets
		C306.3	(L3:Application) Develop dosage forms , illustrate about tablet coating in detail , stdy about different types of coatings , perform tablet coating in laboratory and visualise the coating defects , preparation and evaluations of parenterals
		C306.4	(L4:Analysis) Compare the preparation and evaluation of cold cream, vanishing cream, ointment base , analyse the possible defects in their preparation and perform evaluation
		C306.5	(L5:Evaluation) Evaluate glass containers as per pharmacopoeial specifications, evaluation of ampoules , topical preparations
BP507P	Pharmacology – II	C307.1	Recall [L1: Remember] Recall and explain the principles of physiological salt solutions and isolated tissue preparations such as frog heart, frog rectus abdominis, rat ileum, and guinea pig ileum.
		C307.2	Discuss [L2: Understand] Describe and comprehend the effect of drugs on isolated frog heart, on blood pressure and heart rate of dog, and the diuretic activity of drugs using rats/mice.
		C307.3	Apply [L3: Application] Apply experimental techniques to study dose–response curves (DRC) of acetylcholine, effects of physostigmine and atropine, and conduct bioassays of histamine, oxytocin, serotonin, and acetylcholine.

		C307.4	Analyse [L4: Analysis] Analyze and interpret experimental data from pA_2, pD_2, and spasmogenic/spasmolytic studies using guinea pig ileum, rat anococcygeus, and rabbit jejunum to assess drug potency and efficacy.
		C307.5	Evaluate [L5: Evaluate] Evaluate and design experimental protocols for anti-inflammatory studies, CNS activity assessment, and toxicity testing as per OECD guidelines.
BP508P	Pharmacognosy and Phytochemistry – II	C308.1	Recall [L1: Remember] Recall the wide variety of crude drugs and their sources based on morphological and microscopical characteristics.
		C308.2	Discuss [L2: Understand] the powder characteristics and report the types of adulterants and substituents present in crude drugs.
		C308.3	Apply [L3: Application] Apply various extraction, separation, and chromatographic techniques to detect phytochemicals from crude drug samples.
		C308.4	Analyse [L4: Analysis] the active constituents isolated from crude drugs through suitable chemical methods.
		C308.5	Evaluate [L5: Evaluate] crude drugs using various chromatographic techniques to determine purity and composition.
BP509P	Report on Hospital Training – I	C309.1	Define (L1: Knowledge) the organizational structure, standard operating procedures, and drug distribution systems within a hospital pharmacy department.
		C309.2	Explain (L2: Comprehension) the principles of hospital formulary management, drug procurement, inventory control, and the roles and responsibilities of a hospital pharmacist.
		C309.3	Demonstrate (L3: Application) the practical skills required for dispensing medications and preparing sterile formulations following safety and quality protocols.
		C309.4	Analyze (L4: Analysis) medication orders and patient records to identify and prevent potential medication errors and ensure patient safety.
		C309.5	Justify (L5: Evaluate) pharmacological knowledge with clinical practice by providing drug information and assisting in patient counseling under supervision.

BP601T	Medicinal Chemistry – III	C310.1	Remember [L1: Knowledge]: Define and recall the historical background, nomenclature, stereochemistry, classification, and mechanism of action of different classes of antibiotics, antimalarials, antituberculars, antifungals, antivirals, antiprotazoal, and anthelmintic agents. Memorize the structure activity relationship (SAR) and synthesis of drugs and the basic concepts of drug design and QSAR.
		C310.2	Understand [L2: Comprehension]: Explain the structure–activity relationship, mechanism of action, and therapeutic applications of various classes of antimicrobial and antiparasitic agents, including β-lactams, aminoglycosides, macrolides, quinolines, azoles, and sulfonamides. Interpret the principles of prodrug design, physicochemical parameters, and approaches involved in modern drug design and pharmacophore modelling.
		C310.3	Apply [L3: Application]: Apply knowledge of chemical structure, SAR, and synthetic routes to predict the biological activity and therapeutic use of antibiotics, antimalarial, antitubercular, and antiviral agents. Use the concepts of QSAR, pharmacophore modelling, and combinatorial chemistry to illustrate how molecular properties influence drug action.
		C310.4	Analyze [L4: Analysis]: Analyze and compare the chemical structures, SAR, and mechanisms of different antimicrobial and antiparasitic agents to identify correlations between structure and potency, selectivity, or resistance. Evaluate the influence of physicochemical and electronic parameters on biological activity and drug-receptor interactions.
		C310.5	Create/ Develop [L5: Development]: Evaluate the synthesis pathways, SAR, and mechanisms of action of antibiotics, antimalarials, antituberculars, antifungals, and other chemotherapeutic agents to assess their therapeutic significance. Critically appraise modern drug design strategies, including QSAR, docking, and combinatorial chemistry, for the development of new and more effective drugs.

BP602T	Pharmacology – III	C311.1	Define [L1: Knowledge] and Identify the classification and mechanism of action of drugs used to treat various infectious, respiratory, immune, and gastrointestinal diseases, as well as understand the fundamental concepts of poisoning and chronotherapy.
		C311.2	Explain [L2: Comprehension] the mechanism of drug action and discuss an understanding of the importance of pharmacological, toxicological, and chronopharmacological knowledge in the treatment of various infectious, respiratory, and gastrointestinal diseases etc.
		C311.3	Demonstrate [L3: Application] the pharmacological, toxicological and chronopharmacological knowledge in the prevention and treatment of various diseases.
		C311.4	Analyze [L4: Analysis] the principles of pharmacology, toxicology, chronopharmacology, and the management of various types of poisoning.
		C311.5	Investigate [L5: Create] Correlation of pharmacology with related medical sciences.
BP603T	Herbal Drug Technology	C312.1	Summarize [L1: Remember] the fundamental concepts of herbal raw materials as herbal excipients for the preparation and standardization of herbal cosmetics and various formulations of Ayurvedic system of medicine.
		C312.2	Discuss [L2: Understand] about nutraceuticals for the management of CVS, IBS and cancer diseases and types of products and health benefits along with herb-food and herb-drug interaction of various plant drugs.
		C312.3	Application [L3: Application] of Biodynamic agriculture techniques, good agricultural and manufacturing practices for the cultivation and production of medicinal plants including Organic farming, Pest and Pest management.
		C312.4	Analysis [L4: Analysis] of various herbal formulation as per the regulatory guidelines like WHO & ICH and issues for the assessment and stability testing of herbal drugs and patenting regulation in India.

		C312.5	Evaluation [L5: Evaluate] and standardization conventional herbal formulations and novel dosage forms like phytosomes as per GMPs of Ayurveda, Siddha and Unani medicines by following the SOPs of industries as per schedule -T.
BP604T	Biopharmaceutics and Pharmacokinetics	C313.1	Define [L1: Knowledge] the concept of absorption, bioavailability, drug distribution pharmacokinetics and biopharmaceutics
		C313.2	Explain [L2: Comprehension] the principles and theories for mechanism of absorption, dissolution invitro in invivo correlation.
		C313.3	Application [L3: Application] of the bioavailability ,the compartment model non compartment model drug distribution
		C313.4	Analyze [L4: Analysis] the bioavailability of different dosage form, pharmacokinetic parameters
		C313.5	NA
BP605T	Pharmaceutical Biotechnology	C314.1	Recall (L-1, Remember) key concepts of pharmaceutical biotechnology including enzyme and protein engineering, genetic engineering tools, immunity types, blotting techniques, microbial genetics, fermentation methods, and the production of pharmaceuticals such as vaccines, hormones, antibiotics, and blood products.
		C314.2	Explain (L-2, Understand) the role of enzymes, biosensors, and microbes in pharmaceutical applications; the principles of genetic engineering and recombinant DNA technology; immunological mechanisms and vaccine preparation; blotting and microbial transformation techniques; and the design and application of fermentation processes and blood product handling.
		C314.3	Apply (L-3, Apply) the principles of enzyme technology, biosensor design, genetic engineering, immunology, microbial genetics, and fermentation to develop pharmaceutical products including therapeutic proteins, vaccines, antibiotics, vitamins, and blood-derived components.
		C314.4	Analyze (L-4, Analyze) the interrelationship among enzyme immobilization, microbial fermentation, cloning vectors, immune response, hybridoma and blotting techniques, microbial gene transfer methods, and fermentation control strategies in the production and quality assurance of pharmaceutical and biotechnological products.

		C314.5	Evaluate (L-5, Evaluate) the effectiveness and limitations of biotechnological methods such as enzyme production, biosensor applications, recombinant DNA technology, immunological preparations, microbial transformation, and fermentation scale-up in the industrial and clinical production of drugs, vaccines, hormones, and blood derivatives.
BP606T	Quality Assurance	C315.1	Define /State/Find (L1-Remember) Define quality assurance and quality management concepts, Organization and personnel, quality control and Good laboratory practice, Complaints, document maintenance in pharmaceutical industry, calibration and validation.
		C315.2	Discuss/Explain/Compute/Show(L2-Understand) Discuss quality assurance and quality management concepts, Organization, personnel, quality control and Good laboratory practice, Complaints, document maintenance in pharmaceutical industry, calibration and validation
		C315.3	Apply/Use (L3-Apply)Demonstrate quality assurance and quality management concepts, Organization and personnel, quality control and Good laboratory practice, Complaints, document maintenance in pharmaceutical industry, calibration and validation.
		C315.4	Examine/Test/Solve(L4-Analyze) Analyze and L5-Evaluate) Analyze quality assurance and quality management concepts, organization and personnel, quality control and Good laboratory practice, Complaints, document maintenance in pharmaceutical industry, calibration and validation
		C315.5	To Deduce and Verify(L5-Evaluate) Analyze and L5-Evaluate) Evaluate quality assurance and quality management concepts, organization and personnel, quality control and Good laboratory practice, Complaints, document maintenance in pharmaceutical industry, calibration and validation
BP607P	Medicinal Chemistry – III	C316.1	Recall fundamental laboratory techniques used in medicinal chemistry, including synthesis, and purification.
		C316.2	Understand the principles behind drug synthesis, including organic reactions, purification methods, and characterization techniques.
		C316.3	Apply laboratory techniques such as melting and boiling points to identify and purify drug compounds.
		C316.4	Analyze the results from various drug assay methods.
		C316.5	Evaluate the success of the drug synthesis process based on yield, and purity.

BP609P	Herbal Drug Technology	C318.1	Remember [L1: Knowledge] different preliminary phytochemical screening methods of crude drugs.
		C318.2	Understand [L2: Comprehension] about the various herbal formulations and standardisation Parameters.
		C318.3	Apply [L3: Application] monographic analysis of herbal drugs as per pharmacopoeias.
		C318.4	Analyse [L4: Analysis] various parameters such as aldehyde and phenol contents.
		C318.5	Evaluate [L5: Evaluate] the herbal drugs in reference to the total alkaloid & Phenolic content in given samples of drugs.
BP610P	Report on Industrial Training	C319.1	Define (L1: Knowledge) Define the basic structure, functions, and regulatory requirements of a pharmaceutical industry or research laboratory based on industrial training observations.
		C319.2	Explain (L2: Comprehension) Explain the roles of various departments such as Production, Quality Control, Quality Assurance, Packaging, and R&D in the functioning of a pharmaceutical industry.
		C319.3	Demonstrate (L3: Application) Demonstrate the ability to prepare a structured industrial training report by applying knowledge of industry operations, documentation standards, and regulatory practices.
		C319.4	Analyze (L4: Analysis) Analyze the workflow, interdepartmental coordination, and compliance systems of the industry to understand how products move from raw materials to finished goods.
		C319.5	Justify (L5: Evaluate) Justify the importance of industrial training in developing professional competence by evaluating the learning outcomes, challenges faced, and improvements observed during the training period.
BP701T	Instrumental Methods of Analysis	C401.1	Remember: [L1: Remember] Recall the fundamental concepts, definitions, and basic principles of UV-Visible, IR, Fluorescence, Flame Photometry, Atomic Absorption Spectroscopy, and various chromatographic techniques

		C401.2	Understand [L2: Understand] Explain the theoretical aspects, mechanisms, and working principles of spectroscopic and chromatographic methods, including electronic transitions, vibrational modes, detector operations, and chromatographic separations with their pharmaceutical applications.
		C401.3	Apply [L3: Application] Apply spectroscopic and chromatographic techniques for qualitative and quantitative analysis of pharmaceutical substances; perform estimation, separation, and identification of compounds using suitable analytical methodologies.
		C401.4	Analyze [L4: Analysis] Analyze spectral and chromatographic data to interpret compound identity and purity; evaluate the influence of instrumental parameters and operational variables on analytical performance and separation efficiency.
		C401.5	Evaluate [L5: Evaluate] Evaluate the instrumentation design, operational performance, and structure determination capabilities of different analytical techniques such as UV-Visible, IR, Fluorimetry, AAS, and chromatographic methods for comprehensive pharmaceutical analysis.
BP702T	Industrial Pharmacy – II	C402.1	Define /State/Find (L1-Remember) Understand and Remember Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems and Indian regulatory requirements.
		C402.2	Discuss/Explain/Compute/Show(L2-Understand) Explain Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems and Indian regulatory requirements.
		C402.3	Apply/Use (L3-Apply) Demonstrate Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems and Indian regulatory requirements.
		C402.4	Examine/Test/Solve(L4-Analyze) Analyze Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems and Indian regulatory requirements.

		C402.5	To Deduce and Verify(L5-Evaluate) Evaluate Create Pilot plant scale up techniques, Technology development and transfer, Regulatory affairs, Regulatory requirements for drug approval, Quality management systems and Indian regulatory requirements.
BP703T	Pharmacy Practice	C403.1	Define [L1: Knowledge] the key concepts related to hospital, hospital pharmacy, community pharmacy, and drug store management.
		C403.2	Explain [L2: Understanding] the organization structure of hospitals and pharmacies, the functions and responsibilities of pharmacists, types of drug distribution systems, and the role of the pharmacy and therapeutic committee.
		C403.3	Demonstrate [L3: Apply] to prepare hospital formularies, conduct therapeutic drug monitoring, and dispense drugs to inpatients and ambulatory patients while adhering to legal requirements and Interpretation of Clinical Laboratory Tests.
		C403.4	Analyze [L4: Analyze] the adverse drug reactions, drug interactions, medication adherence, and patient medication history to improve patient care and optimize therapeutic outcomes.
		C403.5	Justify [L5: Evaluate] the efficiency of drug distribution systems, the management of drug stores, and the appropriateness of prescribed medication orders in clinical, community pharmacy settings and Investigational Use of Drugs.
BP704T	Novel Drug Delivery Systems	C404.1	Recall (L1, Remember) fundamental concepts, terminologies, and classifications related to controlled, microencapsulated, mucosal, transdermal, gastroretentive, naso-pulmonary, targeted, ocular, and intrauterine drug delivery systems.
		C404.2	Explain (L2, Understand) the principles, advantages, disadvantages, and formulation considerations of various drug delivery systems including controlled release, implantable, mucosal, transdermal, gastroretentive, naso-pulmonary, targeted, ocular, and intrauterine routes.
		C404.3	Apply (L3 – Apply) design principles and formulation strategies for developing polymer-based controlled release systems, microspheres, mucoadhesive devices, transdermal patches, gastroretentive tablets, inhalers, liposomes, and ocular/intrauterine devices.

		C404.4	Analyze (L4 – Analyze) the selection criteria of drugs and polymers, methods of delivery, physiological barriers, and technological challenges involved in different advanced drug delivery systems, including targeted and implantable systems.
		C404.5	Evaluate (L5, Evaluate) the suitability and effectiveness of various advanced drug delivery systems in terms of drug release, patient compliance, delivery route, and clinical application for specific therapeutic needs.
BP705P	Instrumental Methods of Analysis / NDDS	C405.1	Remember [L1: Remember] Recall the fundamental principles, basic definitions and essential concepts of UV spectroscopy, colorimetry, flame photometry and
		C405.2	Understand [L2 : Understand] Explain the influence of factors such as solvent, pH and wavelength on absorption maxima and analytical measurement using UV and colorimetric methods.
		C405.3	Apply: [L3:Apply] Apply UV spectroscopy, colorimetry and flame photometry to determine drug content, prepare calibration curves and estimate ionic concentrations in pharmaceutical samples.
		C405.4	Analyze [L4: Analysis] Analyze pharmaceutical samples using chromatographic techniques such as paper chromatography and HPLC to identify, separate and interpret analytes.
		C405.5	Evaluate [L5:Evaluate] Design, formulate and evaluate innovative drug delivery systems such as solid-lipid nanoparticles and transdermal patches using suitable analytical methods.
BP706PS	Practice School	C406.1	Recall [L1: Remember] basic concepts and procedures of the selected practice school domain.
		C406.2	Explain [L2: Understand] the principles and standard practices followed in the chosen domain.

		C406.3	Apply [L3: Application] domain-specific skills and techniques during practical training.
		C406.4	Analyse [L4: Analysis] observations, data, and challenges encountered during practice school.
		C406.5	Prepare and evaluate [L5: Evaluate] a structured practice school report based on experiential learning.
BP707P	Report on Hospital Training – II	C407.1	Recall (L1: Remember) and describe the basics of first aid techniques such as wound dressing and artificial respiration.
		C407.2	Explain (L2: Understand) the different routes of administration of injections and their significance in patient care.
		C407.3	Apply (L3:Apply) knowledge to interpret patient observation charts, prescriptions, and simple diagnostic reports during hospital trainingtions from various sections and processes.
		C407.4	Analyze (L4: Analyze) and evaluate the appropriateness of prescriptions and dispensing practices in a clinical setup.
		C407.5	Assess (L5: Evaluate) and justify clinical decisions and professional responsibilities in real patient-care scenarios in alignment with ethical and safety considerations.
BP801T	Biostatistics and Research Methodology	C408.1	(L1: Knowledge) Recall and define basic statistical concepts such as frequency distribution, measures of central tendency (mean, median, mode), and measures of dispersion, with pharmaceutical examples.
		C408.2	(L2: Comprehension) Explain and interpret statistical methods including correlation, regression (linear and multiple), probability distributions (binomial, normal, Poisson), and the essence of sampling techniques with pharmaceutical applications.
		C408.3	(L3: Application) Apply statistical tools such as t-tests, ANOVA, and non-parametric tests (e.g., Mann-Whitney U test, Wilcoxon Rank Sum Test) to solve pharmaceutical problems and analyze data sets.

BP802T	Social and Preventive Pharmacy	C409.1	Define [L1: Knowledge] Define the terminologies, basic concepts of health, disease, nutrition, hygiene, Preventive medicine and disease names, National health programs and schemes & Community health functions and roles.
		C409.2	Explain [L2: Comprehension] Explain the concepts and relationships in health, disease, hygiene, nutrition, principles and methods of preventive medicine and disease control, objectives and operations of national and international health programs & community health systems and education methods.
		C409.3	Demonstrate [L3: Application] Demonstrate health and hygiene practices for disease prevention and well-being, apply balanced diet and nutrition knowledge to prevent deficiencies, implement national health and immunization programs, promote community awareness on communicable and lifestyle diseases, support public health initiatives, and develop teamwork in community health services.
		C409.4	Analyze [L4: Analysis] Analyze health–disease relationships, social and nutritional factors, disease trends, and program effectiveness. Analyze the effectiveness of national health programs, intervention impacts, PHC performance, and community health data to improve disease prevention, awareness, and public health outcomes.
		C409.5	Justify [L5: Evaluate] Evaluate the health promotion strategies and national programs in improving public health. Evaluate disease prevention policies, community interventions, and pharmacist roles. Assess outcomes of sanitation, nutrition, and awareness programs to recommend evidence-based improvements in healthcare delivery.
BP806ET	Quality Control and Standardization of Herbals	C413.1	Define [L1: Knowledge] Recall and describe the basic tests for drugs, medicinal plant materials, and herbal dosage forms, and list WHO, EU, and ICH guidelines including cGMP, GAP, GACP, and GLP for maintaining quality and purity of herbal medicines.

		C413.2	Explain [L2: Comprehension] Explain and summarize the principles of quality assurance and regulatory practices (cGMP, GAP, GLP, and GACP), illustrate WHO and ICH quality control procedures, and interpret chromatographic and stability data for herbal formulations.
		C413.3	Demonstrate [L3: Application] Apply international quality assurance and research guidelines to evaluate the safety, efficacy, and stability of herbal drugs; utilize pharmacovigilance systems and correlate the role of markers and regulatory standards in herbal standardization.
		C413.4	Analyze [L4: Analysis] Analyze and compare national and international regulations, pharmacopoeial standards, and documentation requirements; integrate chromatographic, stability, and regulatory data to develop comprehensive quality control and standardization strategies for herbal medicines.
		C413.5	
BP812ET	Dietary Supplements and Nutraceuticals	C419.1	Define [L1: Knowledge] Recall the definitions, sources, marker compounds, phytochemicals, free radicals, antioxidants, dietary fibres, processing effects, and regulatory bodies related to nutraceuticals.
		C419.2	Explain [L2: Comprehension] Explain the classification of nutraceuticals, their health benefits, roles in public health nutrition, chemical nature of phytochemicals, mechanisms of free radical damage, antioxidant defense, and food safety regulations.
		C419.3	Demonstrate [L3: Application] Apply knowledge of functional foods, phytochemicals, dietary fibres, antioxidants, and regulatory guidelines to understand disease prevention and community nutrition practices.
		C419.4	Analyze [L4: Analysis] Analyze the relationship between nutraceutical components, free radical involvement in diseases, antioxidant mechanisms, effects of processing/storage, and variations in regulatory/ pharmacopeial requirements.
		C419.5	Evaluate [L4: Evaluation] Evaluate the therapeutic potential of nutraceuticals, effectiveness of antioxidants in chronic diseases, quality and safety standards, and the overall impact of environmental and processing factors on nutraceutical efficacy.

BP814PW	Project Work (On Elective)	C422.1	Identify [L1: Remember] and finalize the problem statement by surveying a variety of domains.
		C422.2	Understand [L2: Comprehension] the requirements and select suitable pharmaceutical methodologies considering social and environmental aspects.
		C422.3	Apply [L3: Apply] suitable pharmaceutical tools and techniques ethically and as per regulatory standards.
		C422.4	Test and Defend [L4: Analysis] their work along with their team members through reports and presentations.
		C422.5	NA
BP815P	Report on Industrial Tour	C423.1	Recall (L1: Remember) the basic structure, sections, and functional workflow of an industrial establishment or research laboratory during the visit.
		C423.2	Explain (L2: Understand) the significance of different departments, product range, and regulatory approvals related to industrial or research operations.
		C423.3	Apply (L3: Apply) the knowledge gained from the visit to prepare a structured report containing key observations from various sections and processes.
		C423.4	Analyze (L4: Analyze) departmental coordination, interdisciplinary functioning, and industrial/research contributions to society based on observations.
		C423.5	NA