



## **K. K. WAGH COLLEGE OF PHARMACY**

**(B. Pharmacy & D. Pharmacy)**

Hirabai Haridas Vidyanagari, Amrutdham, Panchavati, Nashik - 422 003. (Maharashtra) India.

☎ : 0253 - 2221121, 2517003, 2510262 Web : [www.pharmacy.kkwagh.edu.in](http://www.pharmacy.kkwagh.edu.in)

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### **2.6.1**

**Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website**



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<b>Sr. No</b>	<b>Content</b>	<b>Year</b>
A	Process for establishing the Cos and POs	2017-18 to 2020-21
B	Program Outcomes	2017-18
C	Course Outcomes	2017-18 to 2020-21



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**2.6.1**

**A -PROCESS FOR ESTABLISHING THE  
COS AND POS**



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## Process for Establishing the Cos and Pos

1. Course outcomes are designed by respective faculty based on the curriculum given by Dr. Babasaheb Ambedkar Technological University, Lonere.
2. In the process of defining the COs and POs the reference documents used are:
  - a. Rules & Syllabus for the Bachelor of Pharmacy (B. Pharm) Course Provided by PCI.
  - b. The NAAC accreditation manual for Pharmacy Programmes.
3. The course outcomes are redefined if necessary to bridge the curricular gap and program outcomes.

Programme Outcomes (POs) and Course Outcomes (COs) are communicated to students through:

- a. Lectures
- b. College Website: [pharmacy.kkwagh.edu.in](http://pharmacy.kkwagh.edu.in)
- c. The student's laboratory journals.
- d. Display at prominent places in college building.



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**2.6.1**

**B - PROGRAM OUTCOMES**



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#	Type	ID	Program Outcomes
1	PO	PO1	<b>Pharmacy Knowledge</b> Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioural, social, and administrative pharmacy sciences; and manufacturing practices.
2	PO	PO2	<b>Planning Abilities</b> Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3	PO	PO3	<b>Problem analysis</b> Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4	PO	PO4	<b>Modern tool usage</b> Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy- related computing tools with an understanding of the limitations.
5	PO	PO5	<b>Leadership skills</b> Understand and consider the human reaction to change, motivation issues, leadership and team- building when planning changes required for fulfilment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
6	PO	PO6	<b>Professional Identity</b> Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
7	PO	PO7	<b>Pharmaceutical Ethics</b> Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behaviour that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8	PO	PO8	<b>Communication</b> Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.



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9	PO	PO9	The Pharmacist and society Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10	PO	PO10	Environment and sustainability Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11	PO	PO11	Life-long learning Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.



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**2.6.1**

**C - COURSE OUTCOMES**





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<b>First Year B Pharmacy- Semester-I</b>	
<b>CO ID</b>	<b>Course Outcome</b>
<b>BP101T</b>	<b>Human Anatomy and Physiology-I Theory</b>
BP101T.1	Identify the cellular components of animal cell.
BP101T.2	Discuss the anatomical features of human organ and tissue.
BP101T.3	Discuss various vital physiological parameters of human body.
BP101T.4	Explain the various homeostatic mechanisms in human body.
<b>BP102T</b>	<b>Pharmaceutical Analysis I – Theory</b>
BP102T.1	Understand the basic concepts of Pharmaceutical Analysis including monographs, limit tests and sources of impurities.
BP102T.2	Understand the principles of volumetric and electro chemical analysis.
BP102T.3	Develop analytical skills.
BP102T.4	Explain the various volumetric and electrochemical titrations.
BP102T.5	Illustrate preparation and standardization of solutions, as well as estimation of substances.
<b>BP103T</b>	<b>Pharmaceutics I – Theory</b>
BP103T.1	Explain different components of prescription.
BP103T.2	Describe the history of pharmacy profession and its scope.
BP103T.3	Summarize the basics of different dosage forms.
BP103T.4	Perform pharmaceutical calculations.
BP103T.5	Interpret pharmaceutical incompatibilities.
<b>BP104T</b>	<b>Pharmaceutical Inorganic Chemistry – Theory</b>
BP104T.1	Outline Pharmacopoeial standards and to Know the various sources of impurities in inorganic drugs and pharmaceuticals.
BP104T.2	Describe the principles and methods to determine the impurities by performing various limit tests.
BP104T.3	Understand acid, base, buffers, and various physiological ions and their roles.
BP104T.4	Understand the different classes of inorganic pharmaceuticals and their analysis with applications.
BP104T.5	Summarize radiopharmaceuticals and their applications.
<b>BP105T</b>	<b>Communication skills – Theory</b>
BP105T.1	Define the communication and recall the communication process.
BP105T.2	Summarize the communication theory with example.
BP105T.3	Explain the role of communication for a variety of Context and audiences.
BP105T.4	Demonstrate professional presentations.
BP105T.5	Classify and compare different communication styles.
<b>BP106RBT</b>	<b>Remedial Biology – Theory</b>
BP106RBT.1	Discuss the classification and salient features of five kingdoms of life.
BP106RBT.2	Describe the basic components and anatomical characteristics of plant.
BP106RBT.3	Understand the functional systems of plant.
BP106RBT.4	Describe the various organ systems of the body.



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<b>BP106RMT</b>	<b>Remedial Mathematics – Theory</b>
BP106RMT.1	Understand the definition, properties of laplas transformation.
BP106RMT.2	Explain the concept of limit along with determine the limit of function.
BP106RMT.3	Calculate the matrix multiplication and roots of a square matrix.
BP106RMT.4	Interprete integrals with the help of integration by part and application of logarithm to solve pharmaceutical problems.
BP106RMT.5	Find the derivative of trigonometric functions from first principles.
<b>BP107P</b>	<b>Human Anatomy and Physiology – Practical</b>
BP107P.1	Describe anatomical features of human tissues under microscopical condition.
BP107P.2	Discuss anatomical and physiological characteristics of human bone.
BP107P.3	Perform a haematological test of human subject and interpret the result.
BP107P.4	Record the vital physiological parameters of human subject.
<b>BP108P</b>	<b>Pharmaceutical Analysis I – Practical</b>
BP108P.1	Recognize and handle different glasswares, equipments and chemicals.
BP108P.2	Prepare solutions of different concentrations.
BP108P.3	Perform limit tests for impurities.
BP108P.4	Standardize various titrants.
BP108P.5	Execute estimation of different substances.
<b>BP109P</b>	<b>Pharmaceutics I – Practical</b>
BP109P.1	Memorize the formulations mentioned in the official books.
BP109P.2	Highlight the difference between similar kinds of dosage forms.
BP109P.3	Predict the usage and category of the dosage form.
BP109P.4	Categorize the various types of dosage forms.
BP109P.5	Determine the role of various excipients in the dosage form.
<b>BP110P</b>	<b>Pharmaceutical Inorganic Chemistry – Practical</b>
BP110P.1	Recognize and handle different glasswares, equipments and chemicals.
BP110P.2	Prepare reagents different concentrations.
BP110P.3	Perform limit tests for impurities.
BP110P.4	Prepare and Identify Various Inorganic Compounds.
BP110P.5	Determine Acid neutralising Capacity value, Swelling Index of Bentonite
<b>BP111P</b>	<b>Communication skill– Practical</b>
BP111P.1	Define communication and identify different communication styles.
BP111P.2	Discuss the communication theory with example.
BP111P.3	Apply Verbal and Non Verbal communication techniques in Professional environment.
BP111P.4	Demonstrate ability to interpret texts and observe the rules of effective writing.
BP111P.5	Prepare and present effective presentations.
<b>BP112RBP</b>	<b>Remedial Biology– Practical</b>
BP112RBP.1	Understand the basic concept of permanent slide preparation.
BP112RBP.2	Understand the use of computer model for study of frog.
BP112RBP.3	Microscopic observation and identification of parts of plant and their tissue.
BP112RBP.4	Perform physiological parameters of human subject.



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<b>First Year B Pharmacy- Semester-II</b>	
<b>BP201T</b>	<b>Human Anatomy and Physiology II – Theory</b>
BP201T.1	Describe various organ systems of the human body.
BP201T.2	Discuss anatomy of human organ system.
BP201T.3	Discuss physiology of human organ body.
BP201T.4	Explain the basic concept of genetics.
<b>BP202T</b>	<b>Pharmaceutical Organic Chemistry I – Theory</b>
BP202T.1	Sketch structure from given IUPAC nomenclature and <i>vice-versa</i> .
BP202T.2	Illustrate name the reaction.
BP202T.3	Describe structures and uses of organic compounds.
BP202T.4	Discuss methods of preparations and chemical reactions of organic compounds.
BP202T.5	Explain reactivity/stability of compounds.
<b>BP203T</b>	<b>Biochemistry – Theory</b>
BP203T.1	Describe biomolecules along with their biological roles.
BP203T.2	Discuss about bioenergetics.
BP203T.3	Summarize the metabolism of nutrient molecules in physiological and pathological conditions.
BP203T.4	Discuss the different classes of inorganic pharmaceuticals and their analysis with applications.
BP203T.5	Summarize radiopharmaceuticals and their applications.
<b>BP204T</b>	<b>Pathophysiology – Theory</b>
BP204T.1	List the etiology of the selected disease states.
BP204T.2	Name the signs and symptoms of the diseases.
BP204T.3	Outline the pathogenesis and complications of the diseases.
BP204T.4	Relate the pharmacological treatment of disease or conditions.
BP204T.5	Choose the common laboratory and diagnostic tests.
<b>BP205T</b>	<b>Computer Applications in Pharmacy – Theory</b>
BP205T.1	Know the various types of application of computer in pharmacy.
BP205T.2	Know the various types of databases.
BP205T.3	Know the various application of databases in pharmacy.
BP205T.4	Know web technology.
BP205T.5	Identify role of computers in data analysis in Preclinical development.
<b>BP206T</b>	<b>Environmental sciences – Theory</b>
BP206T.1	Know the different natural sources and their conservation to save the environment.
BP206T.2	Import basic knowledge about the environment and its allied problems.
BP206T.3	Understand basics of environment like ecology, ecosystem, food chain, food web and ecological pyramids.



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BP206T.4	Create the awareness about environmental pollution and measures to minimize it.
<b>BP207P</b>	<b>Human Anatomy and Physiology II –Practical</b>
BP207P.1	Discuss the significance of various anatomical and physiological characteristics of the human body.
BP207P.2	Demonstrate the vital physiological parameters of human.
BP207P.3	Record physiological parameters of human subject and interpret the result.
BP207P.4	Describe family planning devices and pregnancy diagnosis tests.
<b>BP208P</b>	<b>Pharmaceutical Organic Chemistry I– Practical</b>
BP208P.1	Analyse the unknown organic compounds by qualitative analysis technique.
BP208P.2	Determine physical constant of organic compounds.
BP208P.3	Prepare derivatives of organic compounds.
BP208P.4	Construct the molecular models.
BP208P.5	Understand handlings of instrument and glassware's used for experiment.
<b>BP209P</b>	<b>Biochemistry – Practical</b>
BP209P.1	Prepare buffer solutions and measure pH.
BP209P.2	Perform qualitative analysis of carbohydrates
BP209P.3	Perform identification tests for proteins.
BP209P.4	Determine metabolites in blood and serum.
BP209P.5	Perform quantitative analysis of reducing sugars.
<b>BP210P</b>	<b>Computer Applications in Pharmacy – Practical</b>
BP210P.1	Make a list of questionnaires and label wizard using MS Word.
BP210P.2	Retrieve information about drugs.
BP210P.3	Creating (Database, working with queries, mailing labeling wizard invoice table) in MS Access.
BP210P.4	Understand the create HTML Web page.
BP210P.5	Know how to export data and reports to and HTML and XML.



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<b>Second Year B Pharmacy- Semester-III</b>	
<b>BP301T</b>	<b>Pharmaceutical Organic Chemistry II – Theory</b>
BP301T.1	Explain principle & mechanism of different electrophilic aromatic substitution reactions.
BP301T.2	Recall the effect of substituent on acidity and basicity of compounds.
BP301T.3	Describe the different analytical constants along with significance and principle involved in their determination.
BP301T.4	Discuss the Synthesis & reactions of Polynuclear hydrocarbons.
BP301T.5	State the stability of cycloalkanes.
<b>BP302T</b>	<b>Physical Pharmaceutics I – Theory</b>
BP302T.1	Associate solubility and complex phenomenon.
BP302T.2	Recite matter and properties.
BP302T.3	Interpret phenomenon at surface and interfaces.
BP302T.4	Identify the importance of pH and buffers in pharmaceutical and biological systems.
BP302T.5	Apply key physical pharmacy concepts.
<b>BP303T</b>	<b>Pharmaceutical Microbiology – Theory</b>
BP303T.1	Define, identify, Cultivate and preserve microbes of various categories and aware about historical developments.
BP303T.2	Classify and explain mechanism of action and effectiveness of various sterilization processes & their evaluation.
BP303T.3	Write and use various sterility testing methods in pharmaceuticals.
BP303T.4	Test potency of various agents by various assay methods.
BP303T.5	Summarize microbial spoilage and cell culture and its applications.
<b>BP304T</b>	<b>Pharmaceutical Engineering – Theory</b>
BP304T.1	Define various unit operations used in Pharmaceutical industries & laws & theories governing them.
BP304T.2	Illustrate the need, principles & discuss equipment used in unit operations.
BP304T.3	Compare material of construction used in designing of pharmaceutical equipment.
BP304T.4	Develop understanding of construction & working of various equipment.
BP304T.5	List the various preventive methods used for corrosion control in Pharmaceutical industries.
<b>BP305P</b>	<b>Pharmaceutical Organic Chemistry II – Practical</b>
BP305P.1	Purify organic compounds by different purification techniques.
BP305P.2	Determine purity of oil samples.
BP305P.3	Prepare small organic compounds.
BP305P.4	Outline reagent properties, reaction, mechanism involved in synthesis of organic compound.
BP305P.5	Understand handlings of instrument and glassware's used for experiment.



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<b>BP306P</b>	<b>Physical Pharmaceutics I – Practical</b>
BP306P.1	Determine different physicochemical properties.
BP306P.2	Determine percent composition of third component in two component system.
BP306P.3	Perform the study to determine different properties of surfactant.
BP306P.4	Analyse different properties of complexes.
BP306P.5	Calculate the adsorption constants.
<b>BP307P</b>	<b>Pharmaceutical Microbiology – Practical</b>
BP307P.1	Define and identify various instruments and process.
BP307P.2	Summarize methods of identification, cultivation and preservation of various microorganisms.
BP307P.3	Describe the importance and implementation of sterilization.
BP307P.4	Examine various biochemical tests.
BP307P.5	To develop the skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure.
<b>BP308P</b>	<b>Pharmaceutical Engineering – Practical</b>
BP308P.1	Demonstration of various equipments used in unit operations.
BP308P.2	Explain the various factors affecting various unit operations.
BP308P.3	Analyse the critical parameters of unit operations.
BP308P.4	Determine the parameters influencing unit operations.
BP308P.5	Perform various processes involved in pharmaceutical manufacturing plant.



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<b>Second Year B Pharmacy- Semester-IV</b>	
<b>BP401T</b>	<b>Pharmaceutical Organic Chemistry III– Theory</b>
BP401T.1	Interpret knowledge on stereo chemical aspects of organic compounds and organic reactions
BP401T.2	Enlighten methods of racemic modification and resolution of racemic mixture.
BP401T.3	Memorize the nomenclature of Heterocyclic compounds.
BP401T.4	Explain chemistry of heterocyclic compounds with medicinal importance.
BP401T.5	Describe detailed mechanisms for common naming reactions.
<b>BP402T</b>	<b>Medicinal Chemistry I – Theory</b>
BP402T.1	Summarize history of drug design, development, classification and chemistry of different classes of drugs.
BP402T.2	Discuss structural activity relationship of different classes of agents.
BP402T.3	Recognize therapeutic uses, adverse effects and recent developments of some agents.
BP402T.4	Understand receptor interaction, mechanism of action of medicinal compounds.
BP402T.5	Write synthetic route of APIs.
<b>BP403T</b>	<b>Physical Pharmaceutics II – Theory</b>
BP403T.1	Comprehend the terms and concepts related to particle.
BP403T.2	Relate the insights into various areas of dispersion.
BP403T.3	Classifying and predicting rheological systems.
BP403T.4	Know the principles of chemical kinetics.
BP403T.5	Demonstrate use of physicochemical properties in formulation.
<b>BP404T</b>	<b>Pharmacology I – Theory</b>
BP404T.1	Understand basic pharmacology, nature & sources of drugs & various routes for drug administration.
BP404T.2	Explain the concept of pharmacokinetics and pharmacodynamics.
BP404T.3	Understand receptors, drug-receptor interactions, adverse drug reactions, drug discovery and development process.
BP404T.4	Explain basic pharmacological actions of different categories of drugs acting on autonomic and central nervous system.
<b>BP405T</b>	<b>Pharmacognosy and Phytochemistry I– Theory</b>
BP405T.1	Recall the history, scope and development of pharmacognosy and remember different sources of crude drugs and also classify them accordingly.
BP405T.2	Illustrate on Cultivation, Collection, Processing, Storage and Conservation of Medicinal Plants.
BP405T.3	Summarize the concepts and Principles of Plant Tissue Culture.
BP405T.4	Explain the systematic pharmacognostic study of primary & secondary metabolites, role of Pharmacognosy in allopathy and traditional systems of medicine, marine drugs and teratogens.
BP405T.5	To evaluate the various techniques for the quality herbal drugs.



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<b>BP406P</b>	<b>Medicinal Chemistry I – Practical</b>
BP406P.1	Recall safety measures while working in laboratory.
BP406P.2	Discuss the methods of sample purification in laboratory.
BP406P.3	Outline reagent, reaction, mechanism involved in synthesis of Medicinal compounds.
BP406P.4	Prepare purify some medicinally important compounds.
BP406P.5	Analyze medicinal compounds with different methods.
<b>BP407P</b>	<b>Physical Pharmaceutics II – Practical</b>
BP407P.1	Determine particle size and particle size distribution by different methods.
BP407P.2	Evaluate flow properties of solid materials.
BP407P.3	Compare the effect of suspending agents on sedimentation volume.
BP407P.4	Perform the study to know rheological properties of liquid and semisolid materials.
BP407P.5	Perform the study to determine kinetics of reaction and drug stability.
<b>BP408P</b>	<b>Pharmacology I – Practical</b>
BP408P.1	Obtain knowledge about instruments used in experimental Pharmacology.
BP408P.2	Observe the effects of drugs on animal by simulated techniques.
BP408P.3	Understand the pharmacological actions of different categories of drugs.
BP408P.4	Understand common laboratory animals used and parameters associated with their use in experimental Pharmacology.
<b>BP409P</b>	<b>Pharmacognosy and Phytochemistry I – Practical</b>
BP409P.1	Remember different morphological and microscopical characteristic features of crude drugs.
BP409P.2	Demonstrate camera lucida and diagrams of microscopic objects to scale with camera lucida.
BP409P.3	Evaluate the crude drugs by quantitative evaluation methods.
BP409P.4	Evaluate the crude drugs by physical methods of evaluation.
BP409P.5	Analyse crude drugs by using chemical test.



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<b>Third Year B Pharmacy- Semester-V</b>	
<b>BP501T</b>	<b>Medicinal Chemistry II – Theory</b>
BP501T.1	Recognize history of drug design, development and classification of different classes of drugs.
BP501T.2	Understand the chemistry of drugs with respect to their pharmacological activity.
BP501T.3	Discuss structural activity relationship of different class of drugs.
BP501T.4	Know therapeutic uses, adverse effects and recent developments of some agents.
BP501T.5	Recall and Sketch the chemical synthesis of selected drugs.
<b>BP502T</b>	<b>Industrial Pharmacy-I– Theory</b>
BP502T.1	Understand preformulation considerations in the development of pharmaceutical dosage forms.
BP502T.2	Summarize the formulation aspects of tablet and liquid oral dosage forms and their processing problems.
BP502T.3	Describe the capsule and pellet production with quality control tests.
BP502T.4	Illustrate the formulation and evaluation of various sterile dosage form.
BP502T.5	Explain the formulation and evaluation of cosmetics.
<b>BP503T</b>	<b>Pharmacology II – Theory</b>
BP503T.1	Understand fundamental knowledge on various aspects of drugs acting on cardiovascular system.
BP503T.2	Comprehend the pharmacology of drugs acting on urinary system.
BP503T.3	Describe pharmacology of autacoids.
BP503T.4	Apply the knowledge of drugs acting on endocrine system.
BP503T.5	Illustrate concept of bioassay and applications of bioassay using various prototype compounds.
<b>BP504T</b>	<b>Pharmacognosy and Phytochemistry II– Theory</b>
BP504T.1	Understand metabolic pathways involved in biosynthesis of secondary metabolites and application of biogenetic studies.
BP504T.2	Explain source, chemistry, therapeutic application of various secondary metabolites containing drugs.
BP504T.3	Discuss isolation, identification and analysis of some phytoconstituents.
BP504T.4	Describe methods for industrial production, estimation and utilization of some therapeutically important secondary metabolites.
BP504T.5	Know various modern extraction techniques & application of latest technique for analysis of phytoconstituents.
<b>BP505T</b>	<b>Pharmaceutical Jurisprudence – Theory</b>
BP505T.1	Understand the Drug and Cosmetics Act 1940.
BP505T.2	Illustrate regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
BP505T.3	Explain various Indian pharmaceutical Acts and Laws.
BP505T.4	Summarize the Pharmaceutical legislations, the concept of Intellectual property rights and Right to information act and their implications in the development and marketing of pharmaceuticals.
BP505T.5	Apply code of ethics during the pharmaceutical practice.



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<b>BP506P</b>	<b>Industrial Pharmacy-I – Practical</b>
BP506P.1	Formulate and evaluate Cosmetics
BP506P.2	Determine the preformulation characteristics of drug substance/ excipients.
BP506P.3	Formulate and evaluate the solid oral dosage form.
BP506P.4	Evaluate of Packaging material of parenteral dosage form.
BP506P.5	Formulate and evaluate the parenteral dosage form.
<b>BP507P</b>	<b>Pharmacology II – Practical</b>
BP507P.1	Get in-depth knowledge about in-vitro pharmacology.
BP507P.2	Demonstrate the various receptor actions using isolated tissue preparation.
BP507P.3	Understand concept of bioassay and isolation of different organs/tissues from the laboratory animals by simulated experiments.
BP507P.4	Demonstrate effect of some drugs using preclinical screening methods.
<b>BP508P</b>	<b>Pharmacognosy and Phytochemistry II – Practical</b>
BP508P.1	Demonstrate isolation of phytoconstituents from crude drugs.
BP508P.2	Construct isolation, evaluation of volatile oil water distillation method.
BP508P.3	Identify unorganized crude drugs by chemical tests
BP508P.4	Evaluate crude drugs by using morphological and microscopical characteristics
BP508P.5	Analyze phytoconstituents by Paper and Thin Layer Chromatography of phytoconstituents/extracts.



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<b>Third Year B Pharmacy- Semester-VI</b>	
<b>BP601T</b>	<b>Medicinal Chemistry III – Theory</b>
BP601T.1	Recognize history of drug design, development, classification and chemistry of different classes of chemotherapeutic agents.
BP601T.2	Illustrate the structural activity relationship of chemotherapeutic agents.
BP601T.3	Know therapeutic uses, adverse effects and recent developments of chemotherapeutic agents.
BP601T.4	Recall and Sketch the chemical synthesis of selected drugs.
BP601T.5	Explain the importance of drug design and different techniques of drug design.
<b>BP602T</b>	<b>Pharmacology III – Theory</b>
BP602T.1	Discuss the Pharmacology of drugs acting on various Respiratory and Gastrointestinal system.
BP602T.2	Explain the Pharmacology of various drugs used in infections disease.
BP602T.3	Explain role of Immuno-pharmacology
BP602T.4	Comprehend the principles of toxicology and chronopharmacology.
<b>BP603T</b>	<b>Herbal Drug Technology – Theory</b>
BP603T.1	Recall the WHO and ICH guidelines for evaluation of herbal drugs
BP603T.2	Understand raw material as source of herbal drugs from cultivation to herbal drug product.
BP603T.3	Discuss the herbal cosmetics, natural sweeteners, nutraceuticals.
BP603T.4	Appreciate patenting of herbal drugs and regulatory bodies for ASU.
BP603T.5	Comprehend herbal industry and GMP of Indian system of medicine.
<b>BP604T</b>	<b>Biopharmaceutics and Pharmacokinetics – Theory</b>
BP604T.1	Demonstrate the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
BP604T.2	Explain the concepts of bioavailability and bioequivalence of drug products and their significance.
BP604T.3	Restate various pharmacokinetic parameters, their significance & applications.
BP604T.4	Summarize the fundamentals related to the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
BP604T.5	Interpret the fundamentals of nonlinear pharmacokinetics.
<b>BP605T</b>	<b>Pharmaceutical Biotechnology – Theory</b>
BP605T.1	Understand various techniques used in modern biotechnology.
BP605T.2	Summarize the aspects of genetic engineering in relation to production of pharmaceuticals.
BP605T.3	Discuss the significance of immunology, monoclonal antibodies and vaccines production in Pharmaceutical Sciences.
BP605T.4	Explain the use of microorganisms in fermentation technology.
BP605T.5	Illustrate importance of biotechnological methods in pharmacy.



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<b>BP606T</b>	<b>Quality Assurance –Theory</b>
BP606T.1	Explain the Quality management concepts including regulatory guidelines.
BP606T.2	Summarize ICH guidelines and quality by design concepts, cGMP aspects in a pharmaceutical industry.
BP606T.3	Illustrate Quality control tests and good laboratory practices.
BP606T.4	Apply the knowledge regarding pharmaceutical complaints and document maintenance.
BP606T.5	Demonstrate calibration, validation and good warehousing practices.
<b>BP607P</b>	<b>Medicinal chemistry III – Practical</b>
BP607P.1	Recall the basic concepts of purification and physical constant determination.
BP607P.2	Understand the principal and reaction mechanism of every experiment.
BP607P.3	Demonstrate the ChemDraw / ChemSketch software.
BP607P.4	Sketch the chemical synthesis, structure and reactions of selected drugs.
BP607P.5	Analyse the purity of medicinal compounds.
<b>BP608P</b>	<b>Pharmacology III – Practical</b>
BP608P.1	Dose calculations in Pharmacological experiments.
BP608P.2	Pre-clinical models for estimation of drug activity.
BP608P.3	Clinical Chemistry Analyser OR Biochemistry Analyser study.
BP608P.4	Toxicity studies of drug and chemicals in experimental animals.
BP608P.5	Bio statistical studies in experimental Pharmacology.
<b>BP609P</b>	<b>Herbal Drug Technology – Practical</b>
BP609P.1	Understand raw material as a source of herbal drugs by phytochemical Screening.
BP609P.2	Know the herbal cosmetics and its evaluation as per Pharmacopoeia.
BP609P.3	Know the residual content in traditional preparation.
BP609P.4	Report the various parameters in the designing of monographs.
BP609P.5	Report the procedure to determine multiple parameters.



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<b>Final Year B Pharmacy- Semester-VII</b>	
<b>BP701T</b>	<b>Instrumental Methods of Analysis – Theory</b>
BP701T.1	Describe the fundamentals of UV and Fluorescence spectroscopy.
BP701T.2	Summarize different aspects of infra-red, atomic and scattering spectroscopy.
BP701T.3	Understand basic chromatographic separations and electrophoresis.
BP701T.4	Demonstrate various aspects of High Performance and Gas chromatography.
BP701T.5	Interpret the concepts Ion-exchange, gel and affinity chromatography.
<b>BP702T</b>	<b>Industrial Pharmacy-II – Theory</b>
BP702T.1	Apply pilot plant and scale up of considerations to various pharmaceutical dosage forms.
BP702T.2	Illustrate the process of technology transfer from lab scale to commercial batch.
BP702T.3	Demonstrate the importance of Quality management concepts in Pharmaceutical industry.
BP702T.4	Compare different Laws and Acts that regulate pharmaceutical industry.
BP702T.5	Summarize and compare the approval process and regulatory requirements for drug products.
<b>BP703T</b>	<b>Pharmacy Practice – Theory</b>
BP703T.1	Appraise organization of hospital & hospital pharmacy, drug distribution system in hospitals, hospital formulary.
BP703T.2	Specify importance of adverse drug reactions, clinical laboratory tests & their interpretation, investigational use of drugs.
BP703T.3	Recognize drug distribution system in hospitals, role of hospital pharmacist and their services involved in hospital (viz. TDM, Medication adherence, patient history).
BP703T.4	Comprehend importance and role of pharmacy and therapeutic committee, counselling, drug information services.
BP703T.5	Illustrate role of community pharmacy & its management, drug store management & inventory control, budget preparation.
BP703T.6	Explain role of clinical pharmacy, sale of OTC drugs.
<b>BP704T</b>	<b>Novel Drug Delivery System – Theory</b>
BP704T.1	List various approaches for development of novel drug delivery systems.
BP704T.2	Illustrate the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation.
BP704T.3	Choose alternative routes for delivery of drug in the body.
BP704T.4	Motivate thinking ability for research in the field of advanced drug delivery and innovative approaches for drug delivery.
BP704T.5	Appreciate different novel drug delivery system and describe their advantages, disadvantages, applications and classifications based on design concept with their applications.



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<b>BP705P</b>	<b>Instrumental Methods of Analysis – Practical</b>
BP705P.1	Demonstrate working of various instruments.
BP705P.2	Perform analysis of various drugs by UV-Visible spectroscopy.
BP705P.3	Perform analysis of various drugs by Fluorescence spectroscopy.
BP705P.4	Determine inorganic substances by nepheloturbidimetry.
BP705P.5	Perform TLC and Paper chromatography and determine metals by flame photometry.
<b>BP706PS</b>	<b>Practice School</b>
BP706PS.1	Understand the importance of documentation.
BP706PS.2	Explain various stages of drug discovery.
BP706PS.3	Acquire different methods for Literature review.
BP706PS.4	Handle the various chemicals and instruments as per standard protocols.
BP706PS.5	Acquire knowledge about effective presentation of data.



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<b>Final Year B Pharmacy- Semester-VIII</b>	
<b>BP801T</b>	<b>Biostatistics and Research Methodology</b>
BP801T.1	Describe the importance of statistics and revise basic concepts of measures of central tendency, dispersion and correlation.
BP801T.2	Explain the notations of probability and distributions; sampling and hypothesis and also apply parametric and non-parametric tests to given data.
BP801T.3	Perform linear regression and multiple regression.
BP801T.4	Select approaches for research topic, study design, protocol, presentation of data and report writing.
BP801T.5	Design experiments employing optimization, viz., factorial designs and use of surface response plots.
<b>BP802T</b>	<b>Social and Preventive Pharmacy</b>
BP802T.1	Identify current issues related to health and pharmaceutical problems within the country and worldwide.
BP802T.2	Illustrate alternative ways of solving problems related to health and pharmaceutical issues.
BP802T.3	Explain different National Health Programs coordinated by Government of India to prevent and control different diseases and health issues.
BP802T.4	Develop a critical way of thinking based on current healthcare development.
BP802T.5	Categorize about different community services available in rural, urban and school health.
<b>BP805ET</b>	<b>Pharmacovigilance</b>
BP805ET.1	Recall the importance of drug safety monitoring, History and development of Pharmacovigilance.
BP805ET.2	Understanding International standards for Classification of diseases and drugs, ADR detection and reporting systems.
BP805ET.3	Understand methods to generate safety data during preclinical, clinical and post approval phases of drug's lifecycle.
BP805ET.4	Able to know requirement of ADR reporting in India, ICSR, PSUR, expedited reporting and pharmacovigilance planning.
BP805ET.5	Writing case narratives of Adverse events.
<b>BP809ET</b>	<b>Cosmetic Science</b>
BP809ET.1	Know and explain about cosmetics and cosmeceuticals products. Classify and define Cosmetics and Cosmeceuticals as per Indian and EU regulations Describe the role of cosmetic excipients and building blocks in the formulation of cosmetics.
BP809ET.2	Explain the structure and function of the skin, hair, teeth and gums, bleeding gums, mouth odour, teeth discoloration and sensitive teeth.
BP809ET.3	Describe the fundamentals of sun protection and the formulation of Sunscreens, antiperspirants and deodorants.
BP809ET.4	Evaluate cosmetics for various physico-chemical properties.
BP809ET.5	Design cosmetics and cosmeceuticals that address the problems of dry skin, acne, dermatitis, prickly heat, wrinkles, blemishes, hair fall, Dandruff, body odour.



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<b>BP811ET</b>	<b>Advanced Instrumentation Techniques</b>
BP811ET.1	Summarize the advanced instruments used and its applications in drug analysis.
BP811ET.2	Discuss the principle and methodologies of advance techniques used in drug analysis.
BP811ET.3	Explain the calibration of various analytical instruments
BP811ET.4	Apply the concepts of spectroscopy and chromatography in drug analysis.
BP811ET.5	Compare various hyphenated techniques used in drug analysis.
<b>BP813PW</b>	<b>Project Work</b>
BP813PW.1	Understand some basic concepts of research methodology.
BP813PW.2	Collect, review and assemble the literature defining need and objective of work.
BP813PW.3	Identify problem and define title of the project.
BP813PW.4	Outline and assemble the plan of work.
BP813PW.5	Report and present the findings from project.



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