PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

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COURSE OUTCOME

I ST SEMESTER B PHARM

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

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NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**I**
SUBJECT	**Human Anatomy & Physiology-I Theory**

SL.NO	COURSE OUTCOME	DESCRIPTION	BLOOMS LEVEL
1	**CO1:BP.101 T**	Describe the structure and functions of various systems of the human body, cellular organization, and tissue levels.	Remember(L1) Understand (L2), Apply(L3)
2	**CO2:BP.101 T**	Explain the integumentary, skeletal system, joints, and their disorders	Understand (L2)
3	**CO3:BP.101 T**	Demonstrate knowledge of body fluids, blood, and the lymphatic system.	Analyze (L4)
4	**CO4:BP.101 T**	Correlate various organ physiology and nervous system control; understand special senses.	Understand (L2)
5	**CO5:BP.101 T**	Understand the cardiovascular system and its regulation.	Understand (L2)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**I**
SUBJECT	**Pharmaceutical Analysis-I Theory**

Sl No:	**Course Code**	**Description**	**Bloom Level (L1-L6)**
1.	**CO1:BP.102 T**	Explain the different technique of analysis and methods for expressing concentration. Basic principles and significance of errors in pharmaceutical analysis.	Remember (L1) Understand (L2)
2.	**CO2:BP.102 T**	Describe and classify volumetric analytical methods such as acid-base and non-aqueous methods	Understand (L2) Apply (L3)
3.	**CO3:BP.102 T**	Apply concepts of precipitation, complexometry and gravimetric titrations.	Understand (L2) Analyze (L4)
4.	**CO4:BP.102 T**	Determine the concentration of analyte using redox titration methods	Remember(L1) Understand(L2) Apply(L4)
5.	**CO5:BP.102 T**	Explain the concepts of electrochemicalmethods including potentiometry, conductometry, and polarography, and discuss their applications in pharmaceutical analysis.	Remember (L1) Understand (L2)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**I**
SUBJECT	**PHARMACEUTICS- I-Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1:BP.103 T**	Explain the history and development of the pharmacy profession in India, along with the features of major pharmacopoeias (IP, BP, USP and Extra Pharmacopoeia). Understand the classification and principles of conventional dosage forms. Describe the parts of a prescription, proper handling, posology, and perform dosage calculations—including pediatric dosing.	Remember(L1)/ Understand(L2)/ Apply(L3)
2.	**CO2: BP.103T**	Apply various pharmaceutical calculations (e.g. Imperial & Metric system) required in dosage formulation and compounding. Understand the classification, requirements and methods for formulating powders. Learn the excipients used in liquid dosage forms and about Solubility enhancement techniques.	Apply(L3)/ Understand (L2)/ Remember (L1)
3.	**CO3:BP.103 T**	Understand the requirements and methods for formulating both monophasic and biphasic (Suspension & Emulsions) liquid dosage forms.	Understand(L2) / Analyze(L4)
4.	**CO4:BP.103T**	Learn the basic formulation and evaluation of suppositories. Explain types of pharmaceutical incompatibilities and strategies to manage them during formulation	Remember(L1) / Understand(L2) / Apply(L3)
5.	**CO5:BP.103T**	Learn the basic formulation and evaluation of semisolid dosage forms like creams, ointments, gels, including transdermal penetration mechanisms and influencing factors.	Remember(L1) / Understand (L2)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**First**
SUBJECT	**Pharmaceutical Inorganic Chemistry - Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: **BP104T**	Concept and role of pharmacopoeias, identify pharmaceutical impurities, and explain their control methods.	Remember(L1), Understand(L2)
2.	**CO2**: **BP104T**	The principles of buffers, electrolytes, NaCl equivalence, freezing point depression, and their pharmaceutical relevance	Understand(L2), Apply(L3)
3.	**CO3**: **BP104T**	The composition and therapeutic use of dental products and gastrointestinal agents, along with their mechanisms of action.	Apply(L3), Analyze(L4)
4.	**CO4**: **BP104T**	The properties, functions, and mechanisms of action of inorganic drugs such as expectorants, emetics, haematinics, antidotes, and astringents.	Understand(L1), Analyze(L4)
5.	**CO5**: **BP104T**	The principles, types, and pharmaceutical applications of radiopharmaceuticals	Apply(L3), Evaluate(L5)

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COURSE OUTCOME

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PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**1**
SUBJECT	**Human Anatomy and Physiology 1 Practical**

SL NO	COURSE OUTCOME	DESCRIPTION	MILLER PYRAMID LEVEL
1	**CO1:BP.107 P**	Identify and describe the microscopic structure of epithelial, connective, muscular, and nervous tissues, and major bones of the human skeleton.	Knows / Knows How
2	**CO2:BP.107 P**	Demonstrate hematological techniques including hemocytometer use for counting RBCs and WBCs.	Shows How
3	**CO3:BP.107 P**	Perform and interpret basic blood investigations such as bleeding time, clotting time, hemoglobin estimation, blood grouping, and ESR	Shows How
4	**CO4:BP.107 P**	Measure, record, and interpret vital physiological parameters including heart rate, pulse rate, and blood pressure	Shows How/ Does
5	**CO5:BP.107 P**	Integrate practical laboratory skills with theoretical knowledge to correlate experimental findings with normal physiological functions.	Shows How/ Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**1**
SUBJECT	**Pharmaceutical Analysis-I Practical**

Sl No:	**Course Code**	**Outcome Description**	**Miller's Pyramid**
1.	**CO1:BP.108 P**	Carry out the impurity determination using limit test	Know's How Show's How
2.	**CO2:BP.108 P**	Preparation of analytical solutions	Show's How
3.	**CO3:BP.108 P**	Standardization of solutions and determining the normality	Show's How
4.	**CO4:BP.108 P**	Perform and Calculate percentage purity of some compounds (Assay)	Show's How
5.	**CO5:BP.108 P**	Normality determination using electroanalytical methods	Show's How

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**I**
SUBJECT	**Pharmaceutics-I Practical**

Sl No:	**Course Code**	**Outcome Description**	**Miller's Pyramid**
1.	**CO1:BP.109P**	Prepare Effervescent Granules, Dusting powder, ORS powder, Divided powders.	Knows/ Shows How
2.	**CO2:BP.109P**	Prepare monophasic liquid dosage forms (Syrups, Elixirs, Linctus, Throat paint, Solutions, Gargles, Mouthwashes) for internal use.	Knows/ Shows How
3.	**CO3:BP.109P**	Prepare Biphasic liquid dosage forms (Suspension and Emulsion) for internal & external use.	Knows/ Shows How
4.	**CO4:BP.109P**	Prepare Suppositories by Fusion method.	Knows How/ Shows How
5.	**CO5:BP.109P**	Prepare Ointment by Trituration, Fusion and Chemical reaction methods.	Knows How/ Show's How

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**I**
SUBJECT	**Pharmaceutical Inorganic Chemistry - Practical**

Sl No:	Course Code	Description	Millers Level
1.	**CO1: BP.110 P**	Find impurites present in pharmaceutial compounds	Knows How
2.	**CO2: BP.110 P**	Demonstrate the limit tests for impurities like chlorides, sulphates, iron, and heavy metals as per IP.	Shows How
3.	**CO3: BP.110 P**	Prepare official inorganic pharmaceutical compounds and evaluate their purity by appropriate methods..	Shows How
4.	**CO4: BP.110 P**	Perform identification tests for cations and anions in inorganic salts using qualitative analysis techniques	Knows How
5.	**CO5: BP.110 P**	Record and interpret experimental data accurately and maintain laboratory notebooks as per scientific standards.	Does

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COURSE OUTCOME

SECOND SEMESTER B PHARM

THEORY

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Pharmaceutical Organic Chemistry I- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.202 T	Recall and explain the classification, structure, and nomenclature of organic compounds based on IUPAC rules.	Remember(L1), Understand (L2)
2.	**CO2**: BP.202 T	Describe and interpret fundamental organic reaction mechanisms, including halogenation, nitration, sulphonation, and Friedel-Crafts reactions	Understand (L2), Apply (L3)
3.	**CO3**:BP.202 T	Apply the concepts of electronic effects, resonance, and inductive effects to predict the reactivity and stability of organic compounds	Apply(L3), Analyze(L4)
4.	**CO4**:BP.202 T	Differentiate between types of isomerism and determine stereochemistry in simple organic molecules	Understand(L2), Analyze (L4)
5.	**CO5**:BP.202 T	Perform basic qualitative tests to identify functional groups and understand their chemical behavior in laboratory experiments	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B.Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Human Anatomy & Physiology – II(Theory)**

SL.NO	COURSE CODE	DESCRIPTION	BLOOM LEVELS (L1 TO L6)
1.	**CO1**: BP 201T	Explain the structure and functions of the nervous system and central nervous system	Remember **(L1)** Understand**(L2)** Apply **(L3)**
2.	**CO2**: BP 201T	Describe the anatomy & physiology of the digestive system and energetics	Understand**(L2)** Apply **(L3)** Analyze **(L4)**
	CO3: BP 201T	Explain the functions of the respiratory & urinary systems and associated disorders	Understand**(L2)** Apply **(L3)** Analyze **(L4)**
4.	**CO4**: BP 201T	Understand the endocrine system and the mechanism of hormone action	Remember**(L1)** Understand**(L2)** Apply **(L3)**
5.	**CO5**: BP 201T	Describe the reproductive system & basics of genetics	Understand**(L2)** Apply **(L3)** Analyze **(L4)**

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B.Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**BIOCHEMISTRY-Theory**

COs	OUTCOME DESCRIPTION	Bloom's Level
CO1	Understand classification, chemical nature, biological roles, and metabolism of biomolecules (carbohydrates, lipids, proteins, amino acids, nucleic acids)	L2
CO2	Explain bioenergetics and biological oxidation pathways (e.g., glycolysis, Krebs cycle, oxidative phosphorylation)	L2
CO3	Comprehend the genetic organization of mammalian genome and functions of DNA in transcription and translation	L2
CO4	Understand catalytic roles of enzymes and the importance of enzyme inhibition for drug design, diagnostics, and therapeutic use	L3
CO5	Summarize metabolism of nutrients in physiological vs pathological states	L4

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**2**
SUBJECT	**Pathophysiology-Theory**

Sl No:	Course Code	Description	Bloom Level
1.	CO1:BP.204 T	Describe the etiology, pathogenesis, and morphological features of cell injury, adaptation Analyze the mechanisms underlying inflammatory processes, wound healing and repair, atherosclerosis.	Remembering (Level 1) & Understanding (Level 2)
2.	CO2:BP. 204T	Explain clinical signs, symptoms, and complications associated with diseases affecting cardiovascular, respiratory, renal, hematological, endocrine, gastrointestinal, musculoskeletal, nervous, and psychiatric systems	Understanding (Level 2)
3.	CO3:BP. 204 T	Apply pathophysiological principles to interpret the systemic manifestations of conditions like hypertension, asthma, diabetes mellitus, anemia, peptic ulcer.	Applying (Level 3)
4.	CO4:BP. 204 T	Integrate knowledge of systemic pathophysiology to predict disease progression in complex or co-morbid conditions like rheumatoid arthritis, dementia, infectious disease and oncogenesis.	Analyzing (Level 4)
5.	CO5:BP. 204 T	Apply pathophysiological principles to interpret the systemic manifestations of conditions like Meningitis, Typhoid, Leprosy, Tuberculosis Urinary tract infections, AIDS, Syphilis, Gonorrhea	Applying (Level 3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**2**
SUBJECT	**Environmental Sciences-Theory**

Sl No:	Course Code	Description	Bloom Level
1.	CO1:BP.206T	Understand the importance of environmental studies and the need for sustainable development in relation to human health and pharmaceutical practice.	Level 2
2.	CO2:BP. 206T	Explain key environmental concepts such as ecosystems, biodiversity, and natural resource management, relevant to the pharmaceutical industry	Level 2
3.	CO3:BP. 206T	Analyze various types of environmental pollution (air, water, soil, noise, radioactive), their causes, effects, and preventive measures, with emphasis on pharmaceutical waste.	Level 4
4.	CO4:BP.206T	Describe environmental laws and regulations related to pollution control, waste management (including biomedical and pharmaceutical waste), and environmental protection in India.	Level 1 & 2
5.	CO5:BP.206T	Apply principles of environmental ethics and sustainable development in pharmaceutical practice, including green chemistry and eco-friendly manufacturing	Level 3
6	CO6:BP.206T	Evaluate the impact of human and industrial activities (especially pharmaceutical industries) on the environment and suggest mitigation strategies.	Level 5

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Computer Applications in Pharmacy – Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.205 T	Describe the basics of computer and their components	Remember (L1)
2.	**CO2**:BP.205 T	Apply MS Office tools for documentation, data management and presentations	Apply (L3)
3.	**CO3**:BP.205 T	Utilize software for drug information retrieval and patient data management	Apply (L3)
4.	**CO4**:BP.205 T	Explain the importance of databases and networking in pharmacy	Understand(L2)
5.	**CO5**:BP.205 T	Demonstrate the use of software in pharmacy practice (e.g., billing, inventory)	Apply (L3)

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SECOND SEMESTER B PHARM

PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Pharmaceutical Organic Chemistry I- Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.208 P	Perform purification techniques such as recrystallization and distillation of organic compounds.	Shows how
2.	**CO2:** BP.208 P	Identify and detect functional groups in organic compounds using qualitative chemical tests.	Shows how
3.	**CO3**: BP.208 P	Understand and carry out the reactions like nitration, halogenation, and hydrolysis of organic compounds.	Knows how
4.	**CO4**: BP.208 P	Record and interpret experimental data accurately and maintain laboratory notebooks as per scientific standards.	Does
5.	**CO5**: BP.208 P	Demonstrate safe handling of chemicals and follow ethical and environmental practices in laboratory settings.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B.Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Human Anatomy & Physiology –II(Practical)**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.208 P	Perform purification techniques such as recrystallization and distillation of organic compounds.	Shows how
2.	**CO2:** BP.208 P	Identify and detect functional groups in organic compounds using qualitative chemical tests.	Shows how
3.	**CO3**: BP.208 P	Understand and carry out the reactions like nitration, halogenation, and hydrolysis of organic compounds.	Knows how
4.	**CO4**: BP.208 P	Record and interpret experimental data accurately and maintain laboratory notebooks as per scientific standards.	Does
5.	**CO5**: BP.208 P	Demonstrate safe handling of chemicals and follow ethical and environmental practices in laboratory settings.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Computer Applications in Pharmacy – Practical**

Sl No:	Course Code	Description	Millers Pyramid
1.	**CO1:BP.210 P**	Operate MS Word to create, format, and edit pharmacy-related documents	Knows how
2.	**CO2:BP. 210 P**	Create Web Pages using HTML	Does
3.	**CO3:BP. 210 P**	Retrieve and interpret drug information using online databases and search engines	Shows how
4.	**CO4:BP. 210 P**	Explain the importance of databases	Knows how
5.	**CO5: BP. 210P**	Networking in pharmacy	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Second**
SUBJECT	**Biochemistry- Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**:BP.209P	Demonstrate the preparation and handling of laboratory reagents and solutions used in biochemical experiments.	Does
2.	**CO2**:BP.209P	Estimate the abnormal constituent s in urine samples.	Shows How
3.	**CO3**:BP.209P	Perform quantitative and qualitative analysis of biomolecules (glucose, urea, creatinine, etc.) in biological fluids.	Shows How
4.	**CO4**:BP.209P	Interpret the biochemical significance of test results in clinical scenarios and correlate the	Shows How

		practical findings with theoretical knowledge for better understanding of biochemical processes.	
5.	**CO5**:BP.209P	Follow safe laboratory practices, maintain proper records and demonstrate professionalism in lab settings.	Does

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THIRD SEMESTER B PHARM

THEORY

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Organic Chemistry II- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.301 T	Understand and Recall the chemistry and reactivity of Benzene.	Remember(L1), Understand (L2)
2.	**CO2**: BP.301 T	Explain the classification, reactivity, synthesis, reactions and qualitative test for phenols and aromatic amines	Understand (L2), Apply (L3)
3.	**CO3**: BP.301 T	Detailed study on Fats and oils.	Apply(L3), Analyze(L4)
4.	**CO4**: BP.301 T	Describe the reactivity, stability and uses of Polynuclear compounds.	Understand(L2), Analyze (L4)
5.	**CO5**: BP.301 T	Describe the reactivity and stability of Cycloalkanes.	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B.Pharm**
BATCH	**2025 -2026**
SEMESTER	**Third**
SUBJECT	**Physical Pharmaceutics –I(Theory)**

Sl. No.	Course Code	Description	Bloom Level
1.	**CO1:**BP302T	Explain the principles of solubility and the factors affecting drug solubility in various solvents and biological systems.	Understand (level 2)
2.	**CO2:**BP302T	Describe the different states of matter, phase transitions, and evaluate key physicochemical properties of drug molecules.	Analyze (Level 4)
3.	**CO3:**BP302T	Apply micromeritics concepts to determine particle size, surface area, porosity, and flow properties relevant to dosage form design.	Apply (Level 3)
4.	**CO4**:BP302T	Understand drug-complex formation, protein binding, and their impact on drug stability and pharmacological action.	Understand (Level 2)
5.	**CO5:**BP302T	Demonstrate the role of pH, buffers, and isotonic solutions in pharmaceutical formulation and biological compatibility.	Apply (Level 3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Microbiology- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.303T	Describe the structure, classification, and characteristics of microorganisms relevant to pharmacy.	Remember(L1) Understand(L2)
2.	**CO2**: BP.303T	Perform basic microbiological techniques (staining, culture, isolation, identification of microbes).	Remember(L1) Apply(L3)
3.	**CO3**:BP.303T	Apply methods of sterilization, disinfection, and preservation in pharmaceutical and clinical practice.	Remember(L1) Apply(L3)
4.	**CO4**:BP.303T	Design and evaluate aseptic areas and contamination control procedures in pharmaceutical industries.	Understand(L2) Evaluate(L5)
5.	**CO5**:BP.303T	Correlate animal cell culture with pharmaceutical applications	Understand(L2) Analyze (L4)

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COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Engineering -Theory**

Sl. No.	Course Code	Description	Bloom's Level
1	**CO1**:BP304T	Explain and classify fundamental concepts of pharmaceutical unit operations such as size reduction, size separation, and mixing techniques	Level2(Understand), Level 4 (Analyze)
2	**CO2**:BP304T	Apply and analyze principles of fluid flow in pharmaceutical processes	Level3(Apply), Level 4 (Analyze)
3	**CO3**:BP304T	Apply and interpret heat transfer operations including evaporation, distillation, and drying processes	Level3(Apply), Level 4 (Analyze)
4	**CO4**:BP304T	Apply principles and compare methods of filtration and centrifugation	Level3(Apply), Level 4 (Analyze)
5	**CO5**:BP304T	Understand materials of pharmaceutical plant construction, corrosion and its prevention, and material handling systems used in pharmaceutical industries.	Level2(Understand), Level 4 (Analyze)

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PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Organic Chemistry II- Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.305 P	Perform purification techniques such as recrystallization and distillation of organic compounds.	Shows how
2.	**CO2:** BP.305 P	Understand and carry out the reactions like nitration, halogenation, and hydrolysis of organic compounds.	Shows how
3.	**CO3**: BP.305 P	Preparation of various organic compounds.	Knows how
4.	**CO4**: BP.305 P	Standardization of reagents used in the determination of various oil values.	Does
5.	**CO5**: BP.305 P	Estimation of various analytical constants of fats and oils.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B.Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Physical Pharmaceutics –I(Practical)**

Sl. No.	Course Code	Description	Millers Pyramid
1.	**CO1:**BP 306P	Determine the solubility and evaluate the partition coefficient in multi-solvent systems.	Knows How
2.	**CO2:**BP 306P	Analyze particle size, size distribution, and micromeritic properties using sieving and microscopy techniques.	Shows How
3.	**CO3:**BP 306P	Evaluate powder characteristics such as bulk density, true density, porosity, and angle of repose relevant to preformulation.	Shows How
4.	**CO4:**BP 306P	Determine the percentage composition and understand the effect of electrolytes on mutual solubility.	Knows How
5.	**CO5:**BP 306P	Determine the pKa of pharmaceutical substances using appropriate analytical methods.	Shows How

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Microbiology– Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.305 P	Perform purification techniques such as recrystallization and distillation of organic compounds.	Shows how
2.	**CO2:** BP.305 P	Understand and carry out the reactions like nitration, halogenation, and hydrolysis of organic compounds.	Shows how
3.	**CO3**: BP.305 P	Preparation of various organic compounds.	Knows how
4.	**CO4**: BP.305 P	Standardization of reagents used in the determination of various oil values.	Does
5.	**CO5**: BP.305 P	Estimation of various analytical constants of fats and oils.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Third**
SUBJECT	**Pharmaceutical Engineering- Practical**

Sl No.	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.308 P	Analyze the effect of process variables on filtration and evaporation operations	Shows How
2.	**CO2**: BP.308 P	Perform particle size determination using sieve analysis and sedimentation methods	Shows How / Does
3.	**CO3**: BP.308 P	Construct drying rate curves and evaluate drying and size-reduction processes	Shows How
4.	**CO4**: BP.308 P	Explain the working principles and operational features of pharmaceutical equipment	Knows How
5.	**CO5**: BP.308 P	Measure and interpret humidity, moisture content, and loss on drying using standard methods	Shows How / Does

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COURSE OUTCOME

IV th SEMESTER B PHARM

THEORY

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Pharmaceutical Organic Chemistry III-Theory**

Sl. No:	Course Code	Description	Bloom Level
1.	**CO1:BP.401 T**	Principles of stereoisomerism, optical activity, DL & RS nomenclature	Understand(L2), Apply (L3)
2.	**CO2:BP.401 T**	Enantiomers, diastereomers, racemates, resolution, asymmetric synthesis	Analyze (L4)
3.	**CO3:BP.401 T**	Five-membered heterocycles (pyrrole, furan, thiophene) – synthesis, reactions & uses.	Understand(L2), Apply (L3)
4.	**CO4:BP.401 T**	Six-membered & fused heterocycles and medicinal relevance	Understand(L2), Analyze (L4)
5.	**CO5:BP.401 T**	Reactions of synthetic importance in pharmaceutical chemistry	Apply(L3), Analyze (L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Medicinal Chemistry- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1:BP.402 T**	Understand the various physicochemical properties and study of phase I and phase II reactions.	Apply(L3)
2.	**CO2:BP.402 T**	Identify the structure, IUPAC and stereochemistry of drugs belonging to ANS, CNS and analgesics.	Understand (L1)
3.	**CO3:BP.402 T**	Describe the MOA and uses of drugs belonging to ANS, CNS and analgesics.	Remember (L2)
4.	**CO4:BP.402 T**	Discuss the SAR of drugs belonging to ANS, CNS and analgesics.	Understand(L1)
5.	**CO5:BP.402 T**	Outline the synthesis and chemical reaction of drugs belonging to ANS, CNS and analgesics.	Create (L6)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**1V**
SUBJECT	**Physical Pharmaceutics II**

Sl No:	**Course Code**	**Description**	**Bloom Level**
1.	**CO1:BP.403 T**	Know the principles of chemical kinetics and to use them in assigning expiry date of formulation.	Understand(L1)/ Apply (L3)
2.	**CO2:BP.403 T**	Apply rheological principles in evaluating pharmaceutical formulations	Apply(L3)
3.	**CO3:BP.403 T**	Learn the formulation concepts of pharmaceutical suspensions and emulsions and their stability problems	Understand(L1) / Apply(L3)
4.	**CO4:BP.403 T**	Analyze the behavior of colloidal systems and surfactants in drug delivery systems	Analyze(L4)
5.	**CO5:BP.403 T**	Acquire skills and working knowledge of the principles and concepts of surface tension and its measurement	Understand(L1)/Apply(L3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Pharmacology -I -Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1:BP.404 T**	Understand the general pharmacological principles including drug absorption, distribution, metabolism, and excretion (ADME).	Understand(L1)
2.	**CO2:BP.404 T**	Explain pharmacodynamics including drug-receptor interactions and dose-response relationships.	Understand(L1)
3.	**CO3:BP.404 T**	Describe autonomic pharmacology including drugs acting on the autonomic nervous system.	Apply(L3)
4.	**CO4:BP.404 T**	Understand the pharmacology of drugs affecting the cardiovascular system.	Understand (L1), Apply(L3)
5.	**CO5:BP.404 T**	Comprehend mechanisms, clinical uses, and side effects of major drug classes covered in the course.	Understand(L1)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Pharmacognosy & Phytochemistry I, Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.405 T	Understand the fundamental principles and scope of Pharmacognosy and Phytochemistry. Evaluate the adulteration and quality control measures of herbal drugs.	Understand/Evaluate
2.	**CO2:** BP.405 T	Explain the cultivation, collection, processing, and storage of medicinal plants and factors influencing their quality. Discuss the conservation of rare medicinal plants.	Understand
3.	**CO3**:BP.405 T	Understand the basic principles and techniques of plant tissue culture. Describe various types of plant tissue culture methods. Apply plant tissue culture in pharmaceutical and medicinal plant propagation.	Understand /Apply
4.	**CO4**:BP.405 T	Illustrate the fundamentals and significance of Traditional Systems of Medicine (Ayurveda, Siddha, Unani, Homeopathy, etc.). Interpret the role of secondary metabolites (alkaloids, glycosides, tannins, terpenoids, etc.) in pharmacological activities and quality assessment.	Remember/ Understand
5.	**CO5**:BP.405 T	Explain about various drugs from natural sources. Explain about primary metabolites and chemical tests on selected crude drugs.	Apply / Analyze

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COURSE OUTCOME

IV th SEMESTER B PHARM

PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Medicinal Chemistry-Practical**

Sl No:	Course Code	Description	Millers Pyramid
1.	CO1:BP.406P	Assay of various preparations to identify the percentage purity and determination of normality of secondary solutions.	Does
2.	CO2:BP.406P	Preparation of various drugs and intermediates	Shows how
3.	CO3:BP.406P	Monitoring of various reactions using melting point determination and chromatography techniques	Does
4.	CO4:BP.406P	Apply various techniques of purification like recrystallization.	Does
5.	BP.406P	Estimation of various physicochemical properties like partition co-efficient, Ionization constant.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Physical Pharmaceutics II- Practical**

Sl No:	Course Code	Description	Millers Pyramid
1.	CO1:BP.407P	Determine first and second order reaction rate constants and perform accelerated stability studies to assess formulation integrity over time.	Shows how
2.	CO2:BP.407P	Conduct sedimentation studies, including evaluating the effect of different suspending agents and their concentrations on suspension stability.	Shows how
3.	CO3:BP.407P	Measure the viscosity of liquids using ostwald's viscometer and assess the viscosity of semisolid preparations via Brookfield viscometer.	Shows how
4.	CO4:BP.407P	Accurately determine surface tension using both drop count and drop weight method.	Shows how
5.	CO5:BP.407P	Determine HLB value and critical micellar concentration of surfactants .	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Pharmacology -I -Practical**

Sl No:	Course Code	Description	Millers Pyramid
1.	BP.408P	Describe the basic principles of pharmacokinetics and pharmacodynamics, including dose–response relationships and factors affecting drug action.	Knows
2.	BP.408P	Explain the mechanism of action, pharmacological effects, therapeutic uses, and adverse effects of drugs acting on the autonomic nervous system.	Knows How
3.	BP.408P	Apply pharmacological principles to analyze drug actions, interactions, and rational drug selection in conditions related to autonomic pharmacology.	Knows How
4.	BP.408P	Demonstrate experimental pharmacology techniques, interpret dose–response curves, and analyze results obtained from pharmacology practicals.	Shows How
5.	BP.408P	Practice ethical conduct, laboratory safety, and rational drug use, correlating pharmacological knowledge with clinical and community pharmacy practice.	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**IV**
SUBJECT	**Pharmacognosy & Phytochemistry I, Practical**

Sl No:	Course Code	Description	Millers Pyramid
1.	**CO1**: BP409 P	Identify and evaluate the morphological and microscopical characteristics of crude drugs of natural origin.	Shows How
2.	**CO2**:BP.409 P	Demonstrate the use of various chromatographic techniques (TLC, paper chromatography) for the identification and separation of phytoconstituents.	Shows How
3.	**CO3**:BP.409 P	Perform physical and chemical tests to detect adulteration and evaluate purity of crude drugs.	Shows How
4.	**CO4**:BP.409 P	Carry out extraction, isolation, and preliminary phytochemical screening of natural products.	Shows How
5.	**CO5**:BP.409 P	Maintain laboratory records, follow safety practices, and apply good laboratory practices in practical experiments.	Does

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V th SEMESTER B PHARM

THEORY

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Medicinal Chemistry II**

Sl. No.:	Course Code	Description	Bloom Level
1.	BP.501 T	Classification, mechanism of action and therapeutic applications of antihistaminic agents (H1 and H2 antagonists) and gastric proton pump inhibitors, with emphasis on receptor distribution and pharmacological relevance.	Apply (L3
2.	BP.501 T	Chemical class, mechanism of action and clinical use of anti-neoplastic agents, including alkylating agents, antimetabolites, antibiotics, plant products and miscellaneous agents.	Analyze (L4)
3.	BP.501 T	Mechanism of action, structure–activity relationships and therapeutic significance of cardiovascular drugs, including anti-anginal, diuretic, antihypertensive, anti-arrhythmic and anti-hyperlipidemic agents.	Analyze (L4)
4.	BP.501 T	Nomenclature, stereochemistry, metabolism and therapeutic uses of drugs acting on the endocrine system, including sex hormones, corticosteroids, thyroid drugs, oral contraceptives and drugs for erectile dysfunction.	Apply (L3)
5.	BP.501 T	Antidiabetic agents and local anesthetics-correlate mechanism of action and structure–activity relationships with their pharmacological effects and clinical use.	Analyze (L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Formulative Pharmacy Theory**

Sl. No:	Course Code	Description	Bloom Level
1.	BP 502 T	Explain the principles of pharmaceutical formulation and the role of excipients in the development of dosage forms.	Understand (L2)
2.	BP 502 T	Describe and apply **pre-formulation studies** including physicochemical properties of drugs required for formulation design.	Apply (L5)
3.	BP 502 T	Formulate and evaluate solid dosage forms such as tablets and capsules using appropriate techniques.	Evaluate (L3)
4.	BP 502 T	Formulate and evaluate liquid dosage forms including solutions, suspensions, and emulsions.	Evaluate (L3)
5.	BP 502 T	Understand and apply quality control tests, stability studies, and packaging requirements for various pharmaceutical dosage forms.	Apply (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Pharmacology II Theory**

Sl. No:	Course Code	Description	Bloom Level
1.	BP503 T	Describe the basic principles of hemodynamics, electrophysiology of heart, blood physiology, autacoids, endocrine pharmacology and bioassay.	Understand (L2)
2.	BP503 T	Explain the classification, mechanism of action, pharmacological effects, therapeutic uses, adverse effects and contraindications of drugs acting on: Cardiovascular system, Blood and blood-forming organs, Urinary system, Autacoids, Endocrine system.	Understand (L2)
3.	BP503 T	Apply pharmacological knowledge to: Selection of appropriate drugs for cardiovascular, blood, endocrine and inflammatory disorders, Clinical management of conditions like hypertension, shock, diabetes, gout, rheumatic diseases. Management of drug poisoning (aspirin and paracetamol).	Apply (L3)
4.	BP503 T	Analyze and differentiate various drug classes based on: Mechanism of action, Therapeutic relevance Drug interactions, Clinical advantages and limitations.	Analyze (L4)
5.	BP503 T	Demonstrate and evaluate the principles, procedures and applications of bioassay, including: Types of bioassays, Bioassay of insulin, oxytocin, vasopressin, ACTH, digitalis, histamine, heparin, vaccines and antitoxins	Evaluate (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Pharmacognosy & Phytochemistry II Theory**

Sl. No:	Course Code	Description	Bloom Level
1.	BP504 T	Understand metabolic pathways in higher plants responsible for the formation of secondary metabolites.	Understand (L 2)
2.	BP504 T	Know the biological source, chemical constituents, and uses of important secondary metabolites.	Remember (L 1)
3.	BP504 T	Apply extraction, isolation, and identification methods for phytoconstituents.	Apply (L3)
4.	BP504 T	Demonstrate the use of modern analytical techniques such as spectroscopy, chromatography, and electrophoresis in phytochemistry.	Apply (L3)
5.	BP504 T	Explain the principles of industrial production, estimation, and utilization of important phytoconstituents.	Understand (L2)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Pharmaceutical Jurisprudence**

Sl. No:	Course Code	Description	Bloom Level
1.	BP 505 T	Explain and interpret the Drugs and Cosmetics Act, 1940 and Rules, 1945 related to import, manufacture, licensing, offences, and penalties.	Understand – Apply (L2–L3)
2.	BP 505 T	Apply regulatory provisions of Schedules (G, H, M, N, P, T, U, V, X, Y, F, DMR) for sale, labeling, packing, and administration of drugs.	Apply – Analyze (L3–L4)
3.	BP 505 T	Analyze the provisions of Pharmacy Act 1948, Medicinal & Toilet Preparations Act 1955, and NDPS Act 1985 for professional and industrial compliance.	Analyze (L4)
4.	BP 505 T	Evaluate legal and ethical regulations under Drugs & Magic Remedies Act, Prevention of Cruelty to Animals Act, and DPCO-2013 (NPPA, NLEM).	Evaluate (L5)
5.	BP 505 T	Understand the evolution of pharmaceutical legislations, professional ethics, IPR, MTP Act, and RTI Act in pharmacy practice.	Understand – Evaluate (L2–L5)

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COURSE OUTCOME

V th SEMESTER B PHARM

PRACTICAL

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MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Formulative Pharmacy Practical**

Sl. No:	Course Code	Description	Miller's Level
1.	BP 506 P	Prepare solid dosage forms such as tablets and capsules using appropriate formulation techniques.	Shows how
2.	BP 506 P	Formulate **liquid dosage forms** including syrups, suspensions, and emulsions following standard procedures.	Shows how
3.	BP 506 P	Perform evaluation tests for formulated dosage forms such as weight variation, hardness, friability, disintegration, and dissolution.	Does
4.	BP 506 P	Apply pre-formulation and stability testing concepts during formulation and evaluation.	Knows how
5.	BP 506 P	Maintain proper documentation, lab safety practices, and GMP guidelines during pharmaceutical formulation experiments.	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Pharmacology II Practical**

Sl. No:	Course Code	Description	Miller's Level
1.	BP507 P	Demonstrate the effects of drugs on isolated tissues and intact animal models such as frog oesophagus, frog heart, rabbit eye and intestine using standard experimental procedures.	Knows
2.	BP507 P	Perform and record the pharmacological actions of drugs on physiological parameters including: Ciliary motility, Blood pressure and heart rate, Diuretic activity, Hypoglycemic activity.	Knows how
3.	BP507 P	Analyze experimental data obtained from animal experiments to interpret drug actions, dose–response relationships and enzyme induction effects.	Shows how
4.	BP507 P	Evaluate drug responses and experimental outcomes in relation to: Mechanism of action, Therapeutic relevance Experimental limitations, Ethical considerations in animal experimentation.	Shows how
5.	BP507 P	Demonstrate and interpret various bioassay techniques (matching, bracketing, interpolation, three-point and four-point bioassays) using agonists like acetylcholine on isolated tissues.	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**V**
SUBJECT	**Pharmacognosy & Phytochemistry II Practical**

Sl. No:	Course Code	Description	Miller's Level
1.	BP 508 P	Identify and explain crude drugs based on morphological, histological, and powder microscopic characteristics of selected medicinal plants.	Shows how
2.	BP 508 P	Perform isolation and detection of active principles from natural sources using standard laboratory procedures.	Shows how
3.	BP 508 P	Apply chromatographic techniques such as paper chromatography and TLC for separation and identification of sugars and herbal extracts.	Shows how
4.	BP 508 P	Carry out distillation of volatile oils and analyze phytoconstituents using TLC techniques.	Does
5.	BP 508 P	Evaluate crude drugs using chemical tests for identification, quality assessment, and detection of adulterants in Asafoetida, Benzoin, Colophony, Aloes, and Myrrh.	Does

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COURSE OUTCOME

SIXTH SEMESTER B PHARM

THEORY

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**VI**
SUBJECT	**Medicinal Chemistry -III Theory**

CO	OUTCOME DESCRIPTION	BLOOM'S LEVEL (L1-L6)
CO1:BP 601 T	Classify and understand the structure activity relationship of different classes of antibiotics including lactams, aminoglycosides, tetracyclines	Remember(L1) Understand(L2)
CO2:BP 601 T	Identify the structure activity relationship of different classes of antibiotics including macrolides, prodrugs, antimalarials, quinolines, biguanides	Understand(L2) Apply (L3)
CO3:BP 601 T	Summarize the classification, chemistry, structure activity relationship of anti-tubercular agents, anti-viral agents and urinary tract anti-infective agents	Remember(L1), Understand (L2) Analyze(L4)
CO4:BP 601 T	Illustrate the classification, chemistry, structure activity relationship of anti-fungal agents, anti-protozoal agents, anthelmintics	Remember(L1) Understand(L2)
CO5:BP 601 T	Summarize the techniques to implement different computational techniques to calculate and visualise molecules and their activity properties quantitatively using acomputer aided tool for effective drug design and understand the concept ofcombinatorial chemistry	Understand(L2) Analyze(L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**VI**
SUBJECT	**Pharmacology III Theory**

Sl. No:	Course Code	Description	Bloom Level
1.	BP602 T	Describe the general principles of chemotherapy including classification of chemotherapeutic agents, microbial resistance, and chemoprophylaxis.	Understand (L2)
2.	BP602 T	Explain the pharmacology of antibacterial drugs and urinary antiseptics with respect to mechanism of action, uses, and adverse effects.	Understand (L2)
3.	BP602 T	Apply and analyze the therapeutic use of drugs employed in major infectious diseases.	Apply (L3)
4.	BP602 T	Analyze and evaluate the pharmacological management of UTIs, STDs, cancer, and immune-related disorders.	Analyze (L4)
5.	BP602 T	Evaluate advanced therapeutic approaches such as gene therapy and stem cell therapy and their applications in modern medicine.	Evaluate (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Sixth**
SUBJECT	**Herbal Drug Technology- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:BP.603 T	To understand and describe the significance and scope of medicinal plants in cultivation, Good Agricultural Practices and processing	Remember(L1), Understand (L2)
2.	**CO1**:BP.603 T	To know various Traditional Systems of Medicine, formulate, differentiate and standardize various traditional formulatons.	Remember(L1), Understand (L2), Apply (L3) Analyze(L4)
3.	**CO1**:BP.603 T	To know the importance of various nutraceuticals in Global market, various disease treatment and assess possible chemical and herbal drug interactions.	Understand (L2), Analyze(L4)
4.	**CO1**:BP.603 T	To know and develop herbal cosmetics, herbal excipients and herbal formulations.	Understand(L2), Apply (L3)
5.	**CO1**:BP.603 T	To understand WHO and ICH guidelines for assessment of Herbal drugs, wGMP, apply patenting aspects for herbal formulations, requirement of setting up Herbal Industries	Understand(L2), Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**VI**
SUBJECT	**Biopharmaceutics and Pharmacokinetics- Theory**

CO	COURSE OUTCOME	BLOOM'S TAXONOMY
CO1:BP 604 T	Describe the fundamental principles of biopharmaceutics, describe drug absorption mechanisms and influencing factors, and analyze distribution processes including protein binding and its clinical implications.	Level 2(Understand) Level 4(Analyze)
CO2:BP 604 T	Describe drug metabolism and elimination processes, evaluate bioavailability and bioequivalence data, and apply dissolution and IVIVC principles for formulation assessment.	Level 2(Understand) Level 5(Evaluate) Level 3(Apply)
CO3:BP 604 T	Apply pharmacokinetic models to analyze drug concentration–time data, and calculate absorption and elimination rate constants.	Level 3(Apply)
CO4:BP 604 T	Interpret multi-compartment pharmacokinetic models and analyze multiple dosing regimens to optimize therapeutic drug administration.	Level 3(Apply) Level 4(Analyze)
CO5:BP 604 T	Analyze nonlinear pharmacokinetic behavior, identify causes, and evaluate parameters using Michaelis–Menten kinetics.	Level 4(Analyze) Level 5(Apply)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**VI**
SUBJECT	**Pharmaceutical Biotechnology**

COs	OUTCOME DESCRIPTION	BLOOM LEVEL
CO1:BP 605 T	Explain the principles of biotechnology and enzyme immobilization techniques in pharmaceutical industries.	Understand (Level 2)
CO2:BP 605 T	Illustrate cloning vectors, rDNA technology, PCR, and immunity types for pharmaceutical applications.	Apply (Level 3)
CO3:BP 605 T	Describe immune responses, MHC, monoclonal antibody production, and vaccine development methods.	Understand (Level 2)
CO4:BP 605 T	Analyze blotting techniques, microbial genetics, and biotransformation applications in biotechnology.	Analyze (level 4)
CO5:BP 605 T	Summarize mutation types, fermentation techniques, and large-scale production of industrial bioproducts.	Understand (Level 2)

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**VI**
SUBJECT	**Pharmaceutical Quality Assurance-Theory**

Sl No:	**Course Code**	**Description**	**Bloom Level**
1.	**CO1**:**BP606 T**	Explain the concepts and principles of Quality Assurance (QA) and Quality Control (QC) including Good Manufacturing Practices (GMP) and Quality Management Systems.Describe the importance and implementation of regulatory guidelines and standards such as ICH Guidelines, ISO 9000, ISO 14000, and NABL accreditation in pharmaceutical industries.	Remember/ Understand
2.	**CO2**:**BP606 T**	Demonstrate knowledge of organization and personnel roles, facility design, sanitation, equipment & raw material maintenance and Warehousing in ensuring product quality.	Understand / Apply
3.	**CO3**:**BP606 T**	Apply the principles of Good Laboratory Practices (GLP) and understand quality control tests for packaging materials, raw materials, and finished products.	Understand / Apply
4.	**CO4**:**BP606 T**	Manage and maintain quality documentation including Standard Operating Procedures (SOPs), Batch Manufacturing Records, Complaint handling, Recalls & waste disposal and audit reports.	Apply /Analyze
5.	**CO5**:**BP606 T**	Understand and apply the processes of calibration, validation and qualification of equipment.	Understand/ Apply

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COURSE OUTCOME

SIXTH SEMESTER B PHARM

PRACTICAL

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VI**
SUBJECT	**Medicinal Chemistry -III Practical**

COURSE OUTCOME	OUTCOME DESCRIPTION	MILLER'S PYRAMID
CO1:BP 607 P	Demonstrate synthesis methods of a drug	Shows How
CO2:BP 607 P	Evaluate the quality and purity of synthetic drugs	Shows How
CO3:BP 607 P	Describe linear measurements for drugs using computational tools	Knows How
CO4:BP 607 P	Demonstrate the use of softwares for structure generation	Shows How
CO5:BP 607 P	Examine physicochemical and ADME properties of drugs	Knows How Shows How

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2024-2025**
SEMESTER	**VI**
SUBJECT	**Pharmacology III Practical**

Sl. No:	Course Code	Description	Bloom Level
1.	BP608 P	Demonstrate basic experimental skills and explain the principles involved in screening of drugs affecting allergic and gastric disorders.	Shows How
2.	BP608 P	Perform and interpret experiments related to biochemical and neuromuscular pharmacology.	Shows How
3.	BP608 P	Evaluate the effects of drugs on CNS and behavior using suitable experimental models.	Shows How
4.	BP608 P	Assess anti-inflammatory and analgesic activities of drugs using standard experimental models.	Shows How
5.	BP608 P	Apply appropriate biostatistical tools to analyze, interpret, and validate experimental pharmacology data.	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**Sixth**
SUBJECT	**Herbal Drug Technology - Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: BP.609 P	To evaluate herbal drugs for quality control parameters including physicochemical properties and preliminary phytochemical screening	Knows how Shows how
2.	**CO2**: BP.609 P	To prepare of herbal cosmetics	Knows how Shows how
3.	**CO3**: BP.609 P	To prepare and standardize of herbal formulations	Knows how Shows how
4.	**CO4**: BP.609 P	To perform monograph analysis of herbal drugs from recent Pharmacopoeiaa	Knows how Shows how
5.	**CO5**: BP.609 P	To perform the analysis of fixed oil	Knows how Shows how

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COURSE OUTCOME

VII th SEMESTER B PHARM

THEORY

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VII**
SUBJECT	**Instrumental Methods of Analysis-Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: BP701T	Explain and interpret the principles of UV–Visible spectroscopy and fluorimetry, including electronic transitions, Beer–Lambert's law, spectral shifts, instrumentation, and pharmaceutical applications.	Understand(L2)/ Apply (L3)/ Analyze(L4)
2.	**CO2**: BP701T	Describe the principles, instrumentation, interferences, and applications of IR spectroscopy, flame photometry, atomic absorption spectroscopy, and nepheloturbidometric methods.	Remember(L1) Understand (L2)
3.	**CO3**: BP701T	Apply the principles of adsorption, partition, paper, thin layer, and electrophoretic techniques for separation, identification, and qualitative analysis of pharmaceutical compounds.	Apply(L3)/ Understand (L2)
4.	**CO4**: BP701T	Analyze the methodology, instrumentation, and operational parameters of gas chromatography and high-performance liquid chromatography for pharmaceutical analysis.	Apply(L3)/ Understand (L2)
5.	**CO5**: BP701T	Evaluate the suitability of ion-exchange, gel filtration, and affinity chromatography techniques for the separation and purification of drugs and biomolecules.	Understand (L2)/ Analyze(L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VII**
SUBJECT	**Industrial Pharmacy- Theory**

Sl No:	Course code	OUTCOME DESCRIPTION	BLOOM LEVEL
1	**CO1:BP 702 T**	Explain pilot plant scale-up techniques and considerations for solids, liquids, semi-solids, and relevant pharmaceutical documentation.	Understand (L2)
2	**CO2:BP 702 T**	Describe technology transfer processes, including protocols, regulatory bodies, documentation, and commercialization practices.	Understand (L2)
3	**CO3:BP 702 T**	Understand regulatory affairs, drug approval processes, and the responsibilities of regulatory professionals in the pharmaceutical industry.	Understand (L2)
4	**CO4:BP 702 T**	Explain the Indian drug regulatory system, roles of CDSCO, CTD, COPP, and approval procedures for new drug applications.	Apply (L3)
5	**CO5:BP 702 T**	Identify industrial hazards and safety measures in pharmaceutical plants, including layout, fire, chemical, and mechanical safety	Apply (L3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VII**
SUBJECT	**Pharmacy Practice- Theory**

Sl No	Course Code	Description	Bloom's Level
1	CO1: BP703T	Unit I – Hospital & Hospital Pharmacy: Definition and classification of hospitals; hospital organizational structure; roles of medical and paramedical staff; hospital pharmacy organization, functions, layout, staffing; drug distribution systems and hospital formulary management.	Understand (L2)
2	CO2: BP703T	Unit II – Pharmacy & Therapeutics Committee and Clinical Pharmacy: Organization and functions of P&T committee; formulary policies; concepts of clinical pharmacy; medication history interview; drug therapy monitoring; therapeutic drug monitoring and medication adherence.	Understand(L2)/ Apply (L3)
3	CO3: BP703T	Unit III – ADRs, Drug Interactions & Patient Care: Classification, reporting and management of adverse drug reactions; pharmacokinetic and pharmacodynamic drug interactions; drug information services; patient counseling and communication skills with prescribers and patients.	Apply(L3)/Analyze (L4)
4	CO4: BP703T	Unit IV – Rational Drug Use & Pharmacotherapeutics: Rational use of injections, antibiotics and OTC drugs; pharmacotherapy of diabetes, hypertension, CCF, MI, asthma, epilepsy, peptic ulcer, rheumatoid arthritis and tuberculosis; interpretation of clinical laboratory investigations.	Apply(L3)/Analyze(L4)/ Evaluate (L5)
5	CO5: BP703T	Unit V – Community Pharmacy & Drug Store Management: Organization and legal requirements of retail and wholesale drug stores; dispensing and record maintenance; drug store management, procurement, inventory control, EOQ, reorder levels and drug expenditure analysis.	Apply(L3)/ Evaluate (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VII**
SUBJECT	**Novel Drug Delivery System- Theory**

Sl No:	**Course Code**	**Description**	**Bloom Level**
1.	**CO1**:BP.704 T	Explain the Fundamental Concept of controlled Drug delivery systems, Drug Release and Pre requisites of drug candidates, along with various approaches and classification and illustrate the Polymers classification, types, selection, application and examples to apply for development of novel drug delivery systems.	Understand (L2)
2.	**CO2**:BP.704 T	Classify various technologies like concept of microencapsulation, merits, demerits and application, Types of Microencapsulation and Evaluation of microcapsules Identify and develop novel drug delivery systems like Mucosal and implantable drug delivery	Understand (L2)
3.	**CO3**:BP.704 T	Identify and develop novel Systems for delivery by topical route as transdermal drug delivery, oral route as Gastroprotective and pulmonary route as Nasopulmonary	Evaluate (L5)
4.	**CO4**:BP.704 T	Apply knowledge of concepts to develop, targeted Drug Delivery systems like liposomes, niosomes, nanoparticles, and monoclonal antibodies	Analyze (L4)
5.	**CO5**:BP.704 T	Identify and develop devices like intraocular formulations and ocusert	Apply (L3)

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COURSE OUTCOME

VII th SEMESTER B PHARM

PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2024-2025**
SEMESTER	**VII**
SUBJECT	**Instrumental Methods of Analysis-Practical**

Sl No:	**Course Code**	**Description**	**Millers Pyramid**
1.	**CO1**: BP705P	Summarize significance of weights and measures in analysis	Knows (L1)
2.	**CO2**: BP705P	Demonstrate and apply UV-Vis Spectroscopy in pharmaceutical analysis	Shows How(L3)/ Knows How (L2)
3.	**CO3**: BP705P	Determine quantity of drugs in samples by fluorimetry	Does (L4)
4.	**CO4**: BP705P	Apply chromatographic methods to separate components	Shows How (L3)
5.	**CO5**: BP705P	Analyze and interpret experimental data to calculate assay values, concentrations, and validate results.	Shows How (L3)

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COURSE OUTCOME

EIGHTH SEM B PHARM

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**8**
SUBJECT	**Social and Preventive Pharmacy**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: **BP 802T**	Unit I – Concept of Health and Disease: Definition, concept and evaluation of public health; concept of prevention and control of diseases; social causes of diseases and social problems of the sick. Sociology and Health: Socio-cultural factors related to health and disease; impact of urbanization, poverty and health.	Understand (Level 2)
2.	**CO2**: **BP 802T**	Unit II – Preventive Medicine: General principles of prevention and control of diseases such as Cholera, SARS, Ebola, Influenza, ARI, Malaria, Chikungunya, Dengue, Filariasis, Pneumonia, Hypertension, Diabetes, Cancer, Drug Addiction/Substance Abuse.	Understand / Apply (Level 2–3)
3.	**CO3**: **BP 802T**	Unit I – Social and Health Education: Food in relation to nutrition and health; balanced diet; nutritional and vitamin deficiencies; malnutrition and its prevention. Hygiene and Health: Personal hygiene and health care; avoidable habits.	Understand / Apply (Level 2–3)
4.	**CO4**: **BP 802T**	Unit III – National Health Programs: HIV/AIDS, TB, IDSP, Leprosy, Mental Health, Deafness Control, Universal Immunization, Blindness Control, Pulse Polio. Unit IV – National Health Intervention Programs: For mother and child, family welfare, tobacco control, malaria prevention, elderly care, social health program; role of WHO.	Analyze / Evaluate (Level 4–5)
5.	**CO5**: **BP 802T**	Unit V – Community Services: Rural, urban, and school health; functions of PHCs; improvement in rural sanitation; national urban health mission; health promotion and education in schools.	Apply / Evaluate (Level 3–5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
YEAR	**EIGHTH SEMESTER**
SUBJECT	**PHARMACEUTICAL MARKETING [Theory]**

Sl. No.	Course Code	Course Outcome Description	Bloom's Level
1	**CO1: BP803ET**	Describe the fundamental concepts, scope, and environment of marketing and differentiate between marketing and selling with specific reference to the pharmaceutical industry.	Remembering (L1)
2	**CO2: BP803ET**	Explain consumer and industrial buying behavior, pharmaceutical market structure, market segmentation, targeting strategies, and the role of market research in decision-making.	Understanding (L2)
3	**CO3: BP803ET**	Apply product management principles including product life cycle, product mix, branding, packaging, labeling, and new product development in pharmaceutical marketing.	Applying (L3)
4	**CO4: BP803ET**	Analyze promotional strategies, marketing channels, physical distribution systems, and the professional role of pharmaceutical sales representatives in achieving organizational goals.	Analyzing (L4)
5	**CO5: BP803ET**	Evaluate pharmaceutical pricing methods, regulatory controls such as DPCO and NPPA, and emerging marketing concepts including rural, global, and digital marketing.	Evaluating (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**EIGHTH**
SUBJECT	**PHARMACEUTICAL REGULATORY SCIENCE**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: **BP804 ET**	New Drug Discovery and development: Stages of drug discovery, Drug development process, pre- clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development..	Remember/ Understand
2.	**CO2**: **BP804 ET**	Regulatory Approval Process: Approval processes and time lines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA) in US. Changes to an approved NDA / ANDA. Regulatory authorities and agencies: Overview of regulatory authorities of United States, European Union, Australia, Japan, Canada (Organization structure and types of applications only)	Understand / Apply
3.	**CO3**: **BP804 ET**	Registration of Indian drug product in overseas market Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical Document (eCTD), ASEAN Common Technical Document (ACTD) research.	Understand / Apply
4.	**CO4**: **BP804 ET**	Clinical trials Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance - safety monitoring in clinical trials	Apply /Analyze
5.	**CO5**: **BP804ET**	Regulatory Concepts Regulatory Concepts Basic terminologies, guidance, guidelines, regulations, laws and acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book	Understand/ Apply

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B. Pharm**
BATCH	**2025-2026**
SEMESTER	**VIII**
SUBJECT	**Pharmacovigilance**

Sl. No.:	Course Code	Description	Bloom Level
1.	BP 805T	Explain the history, scope, importance, and organizational structure of Pharmacovigilance, including WHO Programme and PvPI, and basic ADR concepts.	Understand (L1 – L2)
2.	BP 805T	Classify drugs and diseases using international systems (ATC, ICD, DDD, INN) and apply drug dictionaries and coding systems used in pharmacovigilance.	Understand and Apply (L2 – L3)
3.	BP 805T	Describe and compare pharmacovigilance methods, including vaccine safety surveillance, spontaneous reporting, active surveillance, and observational studies.	Applying and Analyzing (L3 – L4)
4.	BP 805T	Apply statistical methods, ICH guidelines, safety reporting systems, and good clinical practice principles in pharmacovigilance.	Apply (L3 – L4)
5.	BP 805T	Analyze pharmacogenomic aspects, special populations, CIOMS, CDSCO regulations, and compare Indian and global pharmacovigilance requirements.	Analyzing and Evaluating (L4 – L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**EIGHTH**
SUBJECT	**QUALITY CONTROL AND STANDARDIZATION OF HERBALS**

Sl No:	Course Code	Description	Bloom Level
1.	CO1: BP806 ET	Understand basic quality control tests and WHO guidelines for herbal drugs and herbal formulations	Understand
2.	CO2: BP806 ET	Understand quality assurance systems like GMP, cGMP, GAP, GACP, and GLP used in herbal industries	Understand
3.	CO3: BP806 ET	Know WHO, EU, and ICH guidelines for quality, safety, and efficacy of herbal medicines	Remember
4.	CO4: BP806 ET	Apply chromatographic techniques for standardization and stability testing of herbal products	Apply
5.	CO5: BP806 ET	Understand regulatory requirements, pharmacovigilance, and the role of markers in herbal drug standardization	Understand

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**EIGHTH**
SUBJECT	**COMPUTER AIDED DRUG DESIGN**

Sl No:	Course Code	Description	Bloom Level
1.	CO1: BP807 ET	Describe the basic concepts, scope, and role of Computer-Aided Drug Design in the drug discovery and development process.	Remember/ Understand
2.	CO2: BP807 ET	Explain the principles of molecular modeling, QSAR, pharmacophore modeling, and virtual screening techniques used in CADD.	Understand / Apply
3.	CO3: BP807 ET	Apply in-silico tools to perform basic molecular modeling, docking, and ADMET prediction studies for drug candidates.	Understand / Apply
4.	CO4: BP807 ET	Analyse molecular interactions, QSAR results, and docking outcomes to identify potential lead compounds.	Apply /Analyze
5.	CO5: BP807 ET	Evaluate the advantages and limitations of computational approaches in drug design and their relevance in pharmaceutical research.	Evaluate

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**EIGHTH**
SUBJECT	**COSMETIC SCIENCE**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: **BP809ET**	Definition and classification of cosmetics and cosmeceutical products as per Indian regulations, Functions and applications of major cosmetic excipients, Basic structure and function of skin and hair including the hair growth cycle, Common problems associated with the oral cavity(teeth and gums).	Remember/ Understand
2.	**CO2**: **BP809ET**	Principles of formulation and building blocks of Skin care products (Face wash, Moisturizing cream, Cold cream, Vanishing cream), Hair care products (Shampoos, Conditioners, Antidandruff products, Hair oils, Hair dyes), Oral care products (Tooth pastes, Mouth wash), Advantages, Disadvantages, Applications in the development of cosmeceutical products.	Understand/ Apply
3.	**CO3**: **BP809ET**	Principles of sun protection, Classification of sunscreens and SPF, Role of herbs in cosmetic formulations for Skin care (Aloe and Turmeric), Hair care (Henna, Amla), Oral care (Neem, Clove), BIS specifications and analytical methods for the evaluation of cosmetic products such as shampoos, skin creams, and toothpaste.	Understand/ Analyze
4.	**CO4**: **BP809ET**	Principles of cosmetic evaluation including Sebumeter, Corneometer, Measurement of TEWL, Skin colour, Hair tensile strength.	Understand/ Apply
5.	**CO5**: **BP809ET**	Oily and dry skin, causes leading to dry skin, skin moisturisation, Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes, Cosmetic Problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor. Antiperspirants and Deodorants- actives and mechanism of action.	Understand/Apply

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
SEMESTER	**EIGHT**
SUBJECT	**EXPERIMENTAL PHARMACOLOGY**

Sl. No	Course outcome & Code	Decsription	Blooms level
1	CO1: BP810 ET.1	Describe the principles, objectives, scope, and ethical considerations involved in pharmacological screening, including CPCSEA guidelines and regulatory requirements for animal experimentation.	Understand (L2)
2	CO2: BP810 ET.2	Explain in-vitro and in-vivo screening models used for evaluation of drugs acting on the central nervous system, cardiovascular system, gastrointestinal system, and autonomic nervous system.	Understand (L2)
3	CO3: BP810 ET.3	Discuss experimental screening methods for analgesic, anti-inflammatory, antipyretic, anticonvulsant, antidepressant, antidiabetic, anti-ulcer, and anti-asthmatic activities.	Understand (L2)
4	CO4: BP810 ET.4	Analyze dose–response relationships, bioassay principles, and interpretation of pharmacological data obtained from screening experiments.	Analyze (L4)
5	CO5: BP810 ET.5	Correlate preclinical pharmacological screening results with therapeutic applications, safety evaluation, and drug discovery and development processes.	Apply (L3)

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COURSE OUTCOME

FIRST YEAR PHARM D

THEORY

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Human Anatomy and Physiology-Theory**

Sl No	Course outcome & Code	Decsription	Blooms level
1	**CO1: PD 1.1T**	Describe the structure and functions of human body organ system.	Remember (L1) Understand (L2)
2	**CO2: PD 1.1T**	Explain the physiological processes, homeostasis mechanism and regulatory pathways	Understand (L2)
3	**CO3: PD 1.1T**	Identify and relate the anatomical features with clinical relevance.	Apply (L3)
4	**CO4: PD 1.1T**	Perform basic physiological experiments, measurements and interpret results.	Apply(L3) Analyze(L4)
5	**CO5 : PD 1.1T**	Apply anatomical / physiological knowledge in understanding disease mechanism.	Apply(L3) Analyze(L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Pharmaceutics -Theory**

Sl No	Course outcome & Code	Decsription	Blooms level
1	**CO1: PD 1.2 T**	Explain history of the profession of pharmacy in India & Pharmacopoeia and its development.	Understand (L2)
2	**CO2: PD 1.2 T**	Learn parts and handling of prescription, posology in dose calculation of drug in imperial as well as metric system.	Apply (L3)
3	**CO3: PD 1.2 T**	Understand basic requirements, formulation and evaluation of conventional dosage forms like powder, liquid (monophasic & biphasic) and semi solid dosage forms.	Apply (L3)
4	**CO4: PD 1.2 T**	To understand about pharmaceutical incompatibility and methods to overcome.	Analyze(L4)
5	**CO5 : PD1.2 T**	Understand the method of preparation, purification and storage of galenicals as well as surgical aids and its pharmaceutical and clinical applications.	Understand (L2)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Medicinal Biochemistry - Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1:PD 1.3 T**	Describe the biochemical organization of the cell, transport mechanisms across membranes, and the significance of energy-rich compounds such as ATP and cyclic AMP	Remember(L1), Understand (L2)
2.	**CO2: PD 1.3 T**	Explain the classification, mechanism of action, inhibition, and clinical relevance of enzymes, isoenzymes, and coenzymes with associated deficiency disorders.	Understand (L2), Apply (L3)
3.	**CO3:PD 1.3 T**	Illustrate major metabolic pathways of carbohydrates, lipids, proteins, and nucleic acids, and analyze related metabolic disorders and their biochemical basis.	Understand (L1) Apply(L3),
4.	**CO4:PD 1.3 T**	Evaluate the biochemical principles underlying biological oxidation, electron transport chain function, oxidative phosphorylation, and the effects of inhibitors and uncouplers.	Understand(L2), Evaluate (L5)
5.	**CO5:PD 1.3 T**	Interpret the results of clinical chemistry investigations including kidney function tests, liver function tests, lipid profile, immunochemical assays (RIA, ELISA), and electrolyte estimation.	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Pharmaceutical Organic Chemistry-Theory**

Sl. No.	Course Outcome & Code	Description	Bloom Level
1.	**CO1: PD 1.4T**	Classify organic compounds and apply appropriate nomenclature systems relevant to pharmaceutical chemistry.	Understand
2.	**CO2: PD 1.4T**	Explain the physical properties of organic compounds—including polarity, melting point, boiling point, and solubility—and relate them to chemical structure.	Understand
3.	**CO3: PD 1.4T**	Differentiate and interpret isomerism in organic compounds, including structural and stereoisomerism, with pharmaceutical significance.	Analyze
4.	**CO4: PD 1.4T**	Describe and apply organic reaction mechanisms, including free radical reactions, nucleophilic and electrophilic substitution and addition, elimination, and oxidation–reduction reactions, along with named reactions and orientation effects.	Apply
5.	**CO5: PD 1.4T**	Explain the preparation, assay, purity tests, and medicinal uses of important organic compounds used in pharmacy.	Understand / Apply

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Pharmaceutical Inorganic Chemistry-Theory**

Sl. No.	Course Outcome & Code	Description	Bloom Level
1.	**CO1: PD 1.5T**	Apply analytical principles to minimize errors and perform volumetric and gravimetric analysis	Apply, Perform
2.	**CO2: PD 1.5T**	Differentiate and execute various titrimetric techniques and select suitable indicators	Differentiate, Execute, Select, Interpret
3.	**CO3: PD 1.5T**	Evaluate quality and purity of inorganic pharmaceuticals using limit tests	Evaluate, Assess
4.	**CO4: PD 1.5T**	Explain pharmaceutical significance, composition, uses, and adverse effects of inorganic medicinal agents	Explain, Describe
5.	**CO5: PD 1.5T**	Describe roles and applications of pharmaceutical aids, dental products, radiopharmaceuticals, and related compounds	Describe, Illustrate

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COURSE OUTCOME

FIRST YEAR PHARM D

PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Human Anatomy and Physiology-Practical**

Sl. No.	Course Outcome & Code	Description	Miller's Level
1.	**CO1: PD 1.1P**	Recall and explain the basic anatomical structures and physiological concepts related to various human body systems required for practical experiments	Knows
2.	**CO2: PD 1.1P**	Explain the principles, procedures, and clinical relevance of physiological measurements and basic hematological investigations.	Knows How
3.	**CO3: PD 1.1P**	Demonstrate proper techniques for anatomical identification, physiological measurements, and hematological experiments in the laboratory.	Shows How
4.	**CO4: PD 1.1P**	Perform routine HAP practical procedures such as recording blood pressure, pulse rate, respiratory rate, hemoglobin estimation, and blood cell counting while adhering to safety guidelines.	Does
5.	**CO5: PD 1.1P**	Record, analyze, and communicate experimental observations and results effectively through practical records, viva-voce, and laboratory discussions.	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Pharmaceutics -Practical**

Sl. No.	Course Outcome & Code	Description	Miller's Level
1.	**CO1: PD 1.2P**	Prepare basic pharmaceutical dosage forms by applying standard formulation principles and calculations	Shows How
2.	**CO2: PD 1.2P**	Demonstrate correct handling and use of laboratory instruments and equipment.	Shows How
3.	**CO3: PD 1.2P**	Perform pharmaceutical calculations relevant to formulation and compounding.	Knows How
4.	**CO4: PD 1.2P**	Evaluate prepared pharmaceutical formulations using appropriate physico-chemical tests.	Shows How
5.	**CO5: PD 1.2P**	Record experimental procedures, observations and results systematically in laboratory records. .	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**First**
SUBJECT	**Medicinal Biochemistry - Practical**

Sl No:	Course Code	Description	Miller Level
1.	**CO1:PD 1.3 P**	Perform qualitative analysis of normal and abnormal constituents of urine and interpret the results.	Shows (L3)
2.	**CO2: PD 1.3 P**	Accurately perform quantitative biochemical estimations in urine and serum using standard manual methods (Benedict's, Volhard's, Jaffe's, Libermann Burchard reaction, precipitation methods, enzymatic methods, Folin-Wu, etc.).	Shows How (L4)
3.	**CO3:PD 1.3 P**	Prepare standard reagents/filtrates, buffers and handle laboratory equipment including colorimeters and pH meters with proper technique and safety.	Does (L4)
4.	**CO4:PD 1.3 P**	Analyze biochemical test results, calculate concentrations, interpret deviations from normal values, and correlate findings with possible clinical conditions.	Knows How (L3)
5.	**CO5:PD 1.3 P**	Demonstrate competency in conducting routine biochemical investigations used in clinical laboratories, ensuring accuracy, precision, and adherence to quality control principles.	Does (L4)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2024-2025**
YEAR	**I**
SUBJECT	**Pharmaceutical Organic Chemistry-Practical**

Sl. No.	Course Outcome & Code	Description	Bloom Level
1.	**CO1: PD 1.4P**	**Perform qualitative analysis and identification** of organic compounds using preliminary tests, functional group tests, and confirmation reactions.	Apply
2.	**CO2: PD 1.4P**	**Carry out preparation of selected organic compounds** using appropriate laboratory techniques, ensuring accuracy and safety.	Apply
3.	**CO3: PD 1.4P**	**Apply purification techniques** such as crystallization and distillation, and assess the purity of organic compounds.	Apply
4.	**CO4: PD 1.4P**	**Determine physical constants and assay values** of organic compounds and interpret the results in accordance with pharmacopoeial standards.	Analyze
5.	**CO5: PD 1.4P**	**Demonstrate good laboratory practices (GLP)** including proper handling of chemicals, use of apparatus, maintenance of laboratory records, and adherence to safety and waste-disposal norms.	Apply

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**I**
SUBJECT	**Pharmaceutical Inorganic Chemistry-Practical**

Sl. No.	Course Outcome & Code	Description	Bloom Level
1.	**CO1: PD 1.5P**	Perform Pharmacopoeial limit tests and interpret results	Perform Pharmacopoeial limit tests and interpret results
2.	**CO2: PD 1.5P**	Carry out quantitative assays using volumetric and gravimetric techniques	Carry out quantitative assays using volumetric and gravimetric techniques
3.	**CO3: PD 1.5P**	Estimate binary mixtures using analytical calculations and titration methods	Estimate binary mixtures using analytical calculations and titration methods
4.	**CO4: PD 1.5P**	Identify substances and evaluate purity using official tests	Identify substances and evaluate purity using official tests
5.	**CO5: PD 1.5P**	Prepare inorganic pharmaceutical compounds using proper laboratory techniques	Prepare inorganic pharmaceutical compounds using proper laboratory techniques

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COURSE OUTCOME

SECOND YEAR PHARM D

THEORY

PUSHPAGIRI COLLEGE OF PHARMACY
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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**II**
SUBJECT	**Pathophysiology- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1: 22PD201**	Describe the etiology, pathogenesis, morphological and functional changes associated with cell injury, adaptation, inflammation, wound healing, immunity, neoplasia, shock, radiation injury, and environmental & nutritional disorders	Remember(L1), Understand (L2)
2.	**CO2: 22PD201**	Explain the pathophysiology, clinical manifestations, and complications of diseases affecting major body systems including cardiovascular, respiratory, renal, gastrointestinal, endocrine, hematological, nervous, musculoskeletal, and psychiatric systems	Understand (L2),
3.	**CO3: 22PD201**	Apply pathophysiological principles to interpret disease mechanisms and systemic manifestations in common disorders such as hypertension, diabetes mellitus, asthma, COPD, anemia, peptic ulcer disease, stroke, myocardial infarction, and heart failure	Apply(L3),
4.	**CO4: 22PD201**	Analyze alterations in normal physiological processes leading to acute, chronic, autoimmune, metabolic, infectious, degenerative, and neoplastic diseases, and correlate them with disease progression.	Analyze (L4)
5.	**CO5: 22PD201**	Integrate pathophysiological knowledge to predict complications, prognosis, and therapeutic implications in conditions such as tuberculosis, HIV/AIDS, typhoid, leprosy, renal failure, liver cirrhosis, and malignancies	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**B Pharm**
BATCH	**2025-2026**
YEAR	**II**
SUBJECT	**Pharmaceutical Microbiology- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:PD 2.2	Describe the structure, classification, and characteristics of microorganisms relevant to pharmacy.	Remember(L1) Understand(L2)
2.	**CO2**:PD 2.2	Perform basic microbiological techniques (staining, culture, isolation, identification of microbes) and Apply methods of sterilization, disinfection, and preservation in pharmaceutical and clinical practice..	Remember(L1) Apply(L3)
3.	**CO3**:PD 2.2	Understand the basic concepts of immunity, antigens, antibodies, immune reactions, toxins, and immunization programmes, diagnostic tests and explain their role in disease prevention.	Understand(L2) Apply(L3)
4.	**CO4**:PD 2.2	Understand the principles, methods, interpretation of microbial culture sensitivity testing, microbiological assays of antibiotics and vitamins, and the standardization of vaccines and sera.	Understand(L2) Analyze(L4)
5.	**CO5**:PD 2.2	Understand the etiology, mode of transmission, clinical features, diagnosis, prevention, and control of common infectious diseases.	Understand(L2) Evaluate (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Pharmacognosy and Phytopharmaceuticals- Practical- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**: PD 2	Define Pharmacognosy and explain its history, scope, Classify crude drugs, Describe the methods of cultivation, collection, processing, and storage of crude drugs.	Understand (L2)
2.	**CO2**: PD 2	Explain in detail the methods of cultivation of crude drugs, Identify and differentiate cell wall constituents and cell inclusions, Perform microscopical and powder microscopical evaluation of crude drugs for identification and quality control.	Apply(L3), Analyze(L4)
3.	**CO3**: PD 2	Describe the sources, properties, and applications of natural pesticides in crude drugs. Explain the chemistry, classification, and significance of carbohydrates and related products. Analyze carbohydrate-containing crude drugs	Understand(L2), Analyze (L4)
4.	**CO4**: PD 2	Explain the sources, extraction methods, chemistry, and analysis of lipids. analyze various fixed oils with respect to source, chemistry, and pharmaceutical uses. Explain the definition, classification, chemistry, and methods of analysis of proteins.	Understand(L2), Analyze (L4)
5.	**CO5**: PD 2	Identify plant fibers used in surgical dressings and evaluate their pharmaceutical applications. Detect and differentiate various methods of adulteration of crude drugs to ensure drug quality and safety.	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**II**
SUBJECT	**Pharmacology I - Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1: 22PD2.4**	Describe the fundamental principles of general pharmacology including routes of administration, pharmacokinetics, pharmacodynamics, adverse drug reactions, drug interactions, and toxicity.	Remember(L1), Understand (L2)
2.	**CO2: 22PD2.4**	Explain and classify drugs acting on the Autonomic Nervous System (ANS) with respect to their mechanism of action, therapeutic uses, adverse effects, and contraindications.	Understand (L2),
3.	**CO3: 22PD2.4**	Analyze the pharmacology of drugs acting on the Cardiovascular System, Central Nervous System, and Respiratory System including their mechanism of action, pharmacological effects, and clinical applications.	Analyze (L4)
4.	**CO4: 22PD2.4**	Apply the knowledge of hormones, hormone antagonists, and autacoids in understanding disease management, rational drug use, and selection of appropriate therapy.	Apply (L3)
5.	**CO5: 22PD2.4**	Evaluate drug therapy by correlating pharmacological actions with therapeutic outcomes, adverse effects, contraindications, and patient-specific considerations for safe and effective drug use.	Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**Second**
SUBJECT	**COMMUNITY PHARMACY- Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1**:PD.205 T	Describe the organization, functions, and professional roles of community pharmacy services in the healthcare system.	Remembering (L1)
2.	**CO2**: PD.205 T	Explain Good Pharmacy Practice (GPP), ethical principles, and legal requirements governing community pharmacy practice in India.	Understand (L2)
3.	**CO3**:PD.205 T	Demonstrate effective communication skills in patient counselling and handling non-prescription (OTC) medication requests. And promoting rational use of medicines in community pharmacy.	Apply(L3)
4.	**CO4**:PD.205 T	Identify, analyse and report medication-related problems, including ADRs and medication errors, using pharmacovigilance systems.	Analyzing (L4)
5.	**CO5**:PD.205 T	Evaluate prescriptions for legality, completeness, and appropriateness and provide drug information to patients and healthcare professionals.	Evaluating (L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**Second**
SUBJECT	**Pharmacotherapeutics I - Theory**

Sl No:	Course Code	Description	Bloom Level
1	**CO1:PD 2.6**	Recall and describe the etiology, pathophysiology, clinical features, and classification of cardiovascular disorders such as hypertension, congestive cardiac failure, angina pectoris, myocardial infarction, hyperlipidemias, electrophysiology of the heart, and arrhythmias.	Remember (L1)
2	**CO2:PD 2.6**	Explain pulmonary function tests and the disease mechanisms, signs, symptoms, and pharmacological management of respiratory disorders including asthma, chronic obstructive airway disease, and drug-induced pulmonary diseases.	Understand (L1)
3	**CO3:PD 2.6**	Apply principles of pharmacotherapy and general prescribing guidelines in special populations such as paediatric, geriatric, pregnant, and breastfeeding patients.	Apply (L3)
4	**CO4:PD 2.6**	Analyze endocrine disorders including diabetes mellitus, thyroid diseases, osteoporosis, and compare therapeutic approaches involving oral contraceptives and hormone replacement therapy.	Analyze (L4)
5	**CO5:PD 2.6**	Evaluate rational drug use by assessing essential drug concepts, rational drug formulations, ophthalmic management of glaucoma and conjunctivitis, and justify the professional role of the pharmacist in promoting safe and effective therapy	Evaluate (L5)

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COURSE OUTCOME

SECOND YEAR PHARM. D.

PRACTICAL

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**II**
SUBJECT	**Pharmaceutical Microbiology- Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: PD.2.2	Demonstrate the use of microscopes, staining techniques and biochemical tests for identification of microorganisms.	Shows How
2.	**CO2:** PD.2.2	Perform aseptic techniques in handling and transferring microbial cultures.	Does
3.	**CO3**: PD.2.2	Prepare and sterilize culture media using physical and chemical methods.	Shows How
4.	**CO4**: PD.2.2	Interpretation of bacterial motility	Knows How
5.	**CO5**: PD.2.2	Analyze the effectiveness of antibiotics	Shows How

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm. D.**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Pharmacognosy and Phytopharmaceuticals-Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: PD 2	Principles of pharmacognosy laboratory practices, Study of Constituents of cell wall & cell inclusions, Sources, morphology, and constituents of crude drugs, physicochemical constants, Chemical reactions.	Knows
2.	**CO2:** PD 2	Explains methods of microscopic evaluation, describes procedures for determination of iodine, acid, ester, and saponification values, Explains chemical tests for carbohydrates, lipids, and proteins	Knows how
3.	**CO3**: PD 2	Identification of crude drugs by macro, powder, and microscopic characters, Calculation of physicochemical constants, Performance of chemical identification tests	Shows How
4.	**CO4**: PD 2	Identifies crude drugs using standard pharmacognostic methods, performs quality control tests on oils, fats, and excipients, Applies pharmacognostic evaluation in routine laboratory practice	Does

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm. D.**
BATCH	**2025-2026**
SEMESTER	**II**
SUBJECT	**Pharmacotherapeutics I- Practical**

Sl No:	Course Code	Description	Miller's Pyramid
1.	**CO1**: PD 2.6	The pathophysiology of selected disease states and the rationale for drug therapy; The therapeutic approach to management of these diseases; The controversies in drug therapy; The importance of preparation of individualised therapeutic plans based on diagnosis;	Knows
2.	**CO2:** PD 2.6	Explains clinical features, investigations, and management of cardiovascular, respiratory, endocrine, and ophthalmic disorders	Knows how
3.	**CO3**: PD 2.6	Present and assess clinical cases related to cardiovascular, respiratory, endocrine, and ophthalmic disorders Interpret relevant investigations such as ECG and pulmonary function tests Identify drug-related problems and evaluate prescription rationality	Shows How
4.	**CO4**: PD 2.6	Recommend appropriate pharmacotherapy and dose adjustments Provide patient counselling and monitoring for drug therapy Apply principles of rational drug use and essential medicines in clinical cases	Does
5	**CO5**: PD 2.6	Demonstrate the professional role of the clinical pharmacist by designing, implementing, and evaluating individualized therapeutic plans, ensuring patient safety, treatment effectiveness, and rational medication use across different patient populations.	Does

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COURSE OUTCOME

THIRD YEAR PHARM D

THEORY

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmacology- Theory**

SI NO	**Course outcome & code**	**Description**	**Blooms level**
1	CO1:PD 3.1T	Describe the pharmacology, mechanisms, therapeutic uses, and adverse effects of drugs acting on blood and blood-forming agents, including anticoagulants, thrombolytics, antiplatelets, haemopoietics, and plasma expanders.	Understand (L2)
2	CO2: PD 3.1T	Explain the pharmacological actions, classifications, and clinical applications of drugs acting on the renal system, such as diuretics and antidiuretics.	Understand (L2)
3	CO3: PD 3.1T	Discuss the principles of chemotherapy, including mechanisms, resistance, and specifics of antibacterial (sulfonamides, penicillins, cephalosporins, tetracyclines, etc.), antifungal, antiviral, antiprotozoal, antihelminthic, antimalarial, antitubercular, antileprotic, and anticancer agents.	Understand (L2) Analyze (L4)
4	CO4: PD 3.1T	Outline the pharmacology of immunosuppressants and stimulants in immunopharmacology.	Understand (L2)
5	CO5 : PD 3.1T	Describe principles of animal toxicology (acute, subacute, chronic) and apply knowledge of cell biology, including cell structure, macromolecules, chromosome organization, DNA replication, cell cycle, signaling pathways, gene structure, expression, transcription, RNA processing, protein synthesis, mutations, oncogenes, tumor suppressors, and recombinant DNA technology.	Understand (L2) Apply (L3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**Third**
SUBJECT	**Pharmaceutical Analysis - Theory**

Sl No:	Course Code	Description	Bloom Level
1.	**CO1:PD 3.2 T**	Explain the principles of Quality Assurance, sources and control of quality variation, statistical quality control, validation procedures, GLP, ISO, TQM, ICH guidelines, and regulatory requirements applicable to pharmaceutical industries.	Remember(L1), Understand (L2)
2.	**CO2: PD 3.2 T**	Describe and compare the principles, instrumentation, separation mechanisms and pharmaceutical applications of chromatographic techniques including column chromatography, TLC, PC, ion-exchange chromatography, HPLC, HPTLC, GC, electrophoresis, gel filtration, and affinity chromatography.	Understand (L2), Apply (L3) Analyze(L4)
3.	**CO3:PD 3.2 T**	Apply the theoretical principles and instrumentation of electrometric methods such as potentiometry, conductometry, polarography, and amperometric titrations for quantitative pharmaceutical analysis and interpretation of analytical data.	Understand (L2) Apply(L3),
4.	**CO4:PD 3.2 T**	Principle, instrumentation, interpretation and analysis of UV–Visible, IR, Fluorimetry, Flame photometry, Atomic absorption and emission spectroscopy for qualitative and quantitative estimation of drugs and pharmaceutical substances.	Understand(L2), Analyze (L4)
5.	**CO5:PD 3.2 T**	Evaluate and justify the selection of appropriate analytical techniques including NMR, ESR, Mass spectroscopy, Polarimetry, X-ray diffraction, and Thermal analysis (DSC, DTA) for drug characterization, quality control, and regulatory compliance.	Apply(L3), Evaluate(L5)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmacotherapeutics II -Theory**

Sl. No.	Course Outcome & Code	Description	Bloom Level
1.	CO1: PD 3.3T	Explain the pathophysiology and etiopathogenesis of common infectious, musculoskeletal, renal, oncologic, and dermatological disorders.	Understand (L2)
2.	CO2: PD 3.3T	Apply evidence-based guidelines to select appropriate pharmacotherapeutic strategies for the management of infectious diseases, musculoskeletal disorders, renal illnesses, cancers, and dermatological conditions	Apply (L3)
3.	CO3: PD 3.3T	Analyze the rationale behind drug selection, dosing, and duration of therapy, including controversies and current recommendations in pharmacotherapy	Analyze (L4)
4.	CO4: PD 3.3T	Evaluate therapeutic outcomes by interpreting clinical and laboratory indices, identifying adverse drug reactions, and recommending necessary adjustments in therapy.	Evaluate (L5)
5.	CO5: PD 3.3T	Demonstrate the ability to apply principles of rational antibiotic use and surgical prophylaxis in clinical scenarios.	Apply (L3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm.D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmaceutical Jurisprudence (Theory)**

Sl. No:	Course Code	Description	Bloom Level
1.	CO1: PD 3.4T	Explain the evolution, objectives, and scope of pharmaceutical legislations in India and their significance in pharmacy practice.	Understand (L2)
2.	CO2: PD 3.4 T	Describe the principles of professional ethics and critically analyze the Code of Pharmaceutical Ethics prescribed by PCI.	Analyze (L4)
3.	CO3: PD 3.4 T	Interpret the provisions of the Drugs and Cosmetics Act, 1940 and Rules, 1945 including schedules, licensing, labeling, import, and sale of drugs and cosmetics.	Apply (L3)
4.	CO4: PD 3.4 T	Explain the constitution, functions, and regulatory roles of statutory bodies such as DTAB, DCC, CDL, PCI, and Drug Control authorities.	Understand (L2)
5.	CO5: PD 3.4T	Apply legal knowledge related to NDPS Act, DPCO, Essential Commodities Act, Patents Act, and animal ethics in professional and regulatory decision-making.	Apply (L3)

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Medicinal Chemistry- Theory**

SI NO	Course Outcome & code	Description	Bloom Level
1	CO1: PD 3.5 T	Understand the various physicochemical properties, concept, and importance of drug design with different techniques involved.	Understand, Apply
2	CO2: PD 3.5 T	Identify the structure, IUPAC, and stereochemistry of various classes of drugs.	Analyze
3	CO3: PD 3.5 T	Describe the MOA and uses of various classes of drugs.	Understand, Apply
4	CO4: PD 3.5 T	Discuss the SAR of drugs belonging to various classes of drugs.	Understand, Analyze
5	CO5: PD 3.5 T	Outline the synthesis and chemical reaction of drugs belonging to various classes of drugs.	Remember, Create

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm.D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmaceutical Formulations - Theory**

Sl. No:	Course outcome & Code	Description	Bloom Level
1.	CO1: PD 3.6 T	Explain the **principles of pharmaceutical formulation** and the role of excipients in the development of dosage forms.	Understand (L2)
2.	CO2: PD 3.6 T	Apply **preformulation studies** to evaluate physicochemical properties of drugs influencing formulation development and stability.	Apply (L5)
3.	CO3: PD 3.6 T	Design, formulate, and evaluate **conventional dosage forms** such as tablets, capsules, liquids, and semisolids.	Evaluate (L3)
4.	CO4: PD 3.6 T	Understand and apply concepts related to **modified-release, novel, and specialized drug delivery systems**.	Evaluate (L3)
5.	CO5 : PD 3.6 T	Perform and interpret **quality control, stability testing, and packaging requirements** as per regulatory guidelines.	Apply (L5)

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COURSE OUTCOME

THIRD YEAR PHARM D

PRACTICAL

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmacology - Practical**

Sl. No.	Course Outcome & Code	Description	Miller's Level
1.	CO1: PD 3.1P	Demonstrate proper handling, care, and anesthesia use for laboratory animals (frogs, mice, rats, guinea pigs, rabbits) and routes of drug administration.	Knows how / Shows how
2.	CO2: PD 3.1P	Prepare physiological salt solutions and identify laboratory appliances for experimental pharmacology	Knows
3.	CO3: PD 3.1P	Record dose-response curves and perform bioassays (interpolation, three-point methods) for acetylcholine and histamine using isolated ileum, rectus abdominis, and guinea-pig ileum preparations, including agonist-antagonist studies.	Shows how / Does
4.	CO4: PD 3.1P	Conduct and interpret in vivo pharmacological screenings for analgesic (analgesiometer), anti-inflammatory (rat-paw edema), anticonvulsant (MES/PTZ), antidepressant (pole climbing/sleeping time), and locomotor (actophotometer/rotorod) activities.	Shows how
5.	CO5: PD 3.1P	Evaluate cardiotonic activity using isolated frog and mammalian heart preparations, explaining theory, procedures, and results.	Does / Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**Third**
SUBJECT	**Pharmaceutical Analysis - Practical**

Sl No:	Course Code	Description	Miller Levels
1.	**CO1:PD 3.2 P**	Perform separation and identification of pharmaceutical compounds such as amino acids and sulpha drugs using paper chromatography and TLC, and calculate Rf values for identification.	Knows how (Level 1) Shows How (Level 3)
2.	**CO2: PD 3.2 P**	Carry out UV–Visible spectrophotometric experiments to study effect of pH and solvent, comparison of spectra, determination of dissociation constant (pKa), and simultaneous estimation of drugs, with proper interpretation of spectral data.	Shows How (Level 3)
3.	**CO3:PD 3.2 P**	Execute electrometric analytical techniques including conductometric and potentiometric titrations, pH-metric determination of pKa, and flame photometric estimation of Na^+/K^+, demonstrating correct use of instruments and data interpretation.	Does (Level 4)
4.	**CO4:PD 3.2 P**	Estimate pharmaceutical substances using colorimetric, fluorimetric, nepheloturbidimetric, and polarimetric methods, including assay of drugs and determination of impurities, following standard laboratory procedures.	Does (Level 4)
5.	**CO5:PD 3.2 P**	Interpret analytical data and spectra obtained from IR, NMR, and advanced instrumental techniques such as HPLC, HPTLC, GC-MS, and DSC, and correlate results with pharmaceutical quality and structure.	Knows How / Shows How (Level 2–3)

PUSHPAGIRI COLLEGE OF PHARMACY
MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmacotherapeutics II -Practical**

Sl. No.	Course Outcome & Code	Description	Millers Level
1.	CO1: PD 3.3P	Describe the principles involved in the rational selection of drug therapy for common disease conditions encountered during hospital postings	Knows How
2.	CO2: PD 3.3P	Apply pharmacotherapeutic knowledge during ward rounds to follow up patients, assess therapeutic outcomes, and identify changes in drug therapy.	Knows How
3.	CO3: PD 3.3P	Demonstrate the ability to monitor patients by interpreting clinical signs, laboratory investigations, and treatment charts under supervision	Shows How
4.	CO4: PD 3.3P	Present and document a minimum of 20 clinical cases systematically, including diagnosis, pharmacotherapy, monitoring parameters, and discharge details.	Shows How
5.	CO5: PD 3.3P	Analyze and discuss patient-specific drug therapy during clinical discussions to support rational and evidence-based treatment decisions.	Shows How

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MEDICITY CAMPUS, PERUMTHURUTHY

COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Medicinal Chemistry - Practical**

SI NO	Course Outcomes & code	Description	Millers Pyramid
1	CO1: PD 3.5 P	Assay of various preparations to identify the percentage purity and determination of normality of secondary solutions.	Does
2	CO2: PD 3.5 P	Preparation of various drugs and intermediates	Shows how
3	CO3: PD 3.5 P	Monitoring of various reactions using melting point determination and chromatography techniques	Does
4	CO4: PD 3.5 P	Apply various techniques of purification like recrystallization.	Does
5	CO5: PD 3.5 P	Estimation of various physicochemical properties like partition co-efficient, Ionization constant.	Shows how

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COLLEGE	**Pushpagiri College of Pharmacy**
COURSE	**Pharm.D**
BATCH	**2025-2026**
YEAR	**III**
SUBJECT	**Pharmaceutical Formulations-Practical**

Sl. No:	Course Outcome & Code	Description	Miller's Level
1.	CO1: PD 3.6 P	Prepare and compound various pharmaceutical dosage forms including solid, liquid, semisolid, and sterile preparations using standard procedures.	Knows
2.	CO2: PD 3.6 P	Select and use appropriate excipients, equipment, and techniques for formulation development.	Knows how
3.	CO3: PD 3.6 P	Perform evaluation and quality control tests for formulated dosage forms and interpret the results.	Shows how
4.	CO4: PD 3.6 P	Apply pre-formulation, stability, and compatibility studies during formulation and evaluation.	Shows how
5.	CO5: PD 3.6 P	Follow Good Laboratory Practices (GLP), GMP guidelines, and safety measures while carrying out pharmaceutical formulation experiments.	Does