

Program Outcomes 2017 (PCI) Pattern

Course code/Course title	Course outcomes	Program outcome										
First Year B. Pharm (Semester I)		1	2	3	4	5	6	7	8	9	10	11
BP101T. Human Anatomy and physiology-I (Theory)	The student should able to											
	CO1: Describe various parts of human body and their roles.	3	–	3	3	–	–	3	–	2	–	3
	CO2: Explain the structure of cells, tissues and organs along with its significance, various parts of CNS and PNS.	3	–	2	2	–	–	3	–	2	–	3
	CO3: Explain different bones in the human skeleton system, their location and significance, Endocrine system and its importance with the help of charts and models.	3	–	2	2	–	–	3	–	2	–	3
	CO4: Acquire the knowledge regarding health education in human life.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.57 (max 3.00)	3	-	2.2	2.2	-	-	3	-	2	-	3
BP102T. Pharmaceutical Analysis-I	The student should able to											
	CO1: Outline the method of expressing the concentration with preparation and standardization of various molar and normal solutions.	3	–	2	3	–	–	3	–	3	–	2
	CO2: Recall the sources, type and method of minimizing the errors.	3	–	3	3	–	–	3	–	2	–	3
	CO3: Explain the principle involved in	3	–	2	2	–	–	3	–	2	–	3

	volumetric and electrochemical analysis of inorganic compounds.											
	Average course outcomes = 2.63 (max 3.00)	3	-	2.3	2.6	-	-	3	-	2.3	-	2.6
BP103T. Pharmaceutics- I	The student should able to											
	CO1: Outline the history of profession of pharmacy.	3	-	-	3	-	2	3	-	3	-	2
	CO2: Enumerate the basics of different dosage forms.	3	-	-	2	-	2	3	-	3	-	3
	CO3: Identify pharmaceutical incompatibilities in prescription, their manifestation and suggest solution to correct same.	3	-	-	2	-	2	3	-	3	-	3
	CO4: Describe the professional way of handling prescription.	3	-	-	2	-	2	3	-	3	-	3
	CO5: Perform the pharmaceutical calculations required during formulation of dosage form.	3	-	-	3	-	2	3	-	3	-	3
	Average course outcomes = 2.7 (max 3.00)	3	-	-	2.4	-	2	3	-	3	-	2.8
BP104T. Pharmaceutical Inorganic chemistry	The student should able to											
	CO1: Explain the sources of impurities and method to determine the impurities in an inorganic drugs and pharmaceuticals.	3	-	-	2	-	-	3	-	-	-	3
	CO2: Describe the importance of radiopharmaceuticals.	3	-	-	2	-	-	3	-	-	-	3
	CO3: Explain the method of preparation, assay, storage conditions and uses of Inorganic compounds such as acidifiers, antacids, cathartics, electrolyte replenisher, antimicrobials, dental products, medicinal gases and miscellaneous compounds like	3	-	-	2	-	-	3	-	-	-	3

BP106RMT. Remedial Mathematics	The student should able to CO1: Know the theory and their application of Partial fraction, Logarithms, Function, in Pharmacy Limits and continuity, Matrices and Determinant, Calculus in Pharmacy.	3	–	2	3	–	2	3	–	3	–	2
	CO2: Solve the different types of problems by applying theory of Partial fraction, Logarithms, Function, in Pharmacy Limits and continuity, Matrices and Determinant, Calculus.	3	–	3	3	–	2	3	–	2	–	3
	Average course outcomes = 2.64 (max 3.00)	3	-	2.5	3	-	2	3	-	2.5	-	2.5
BP107P. Human anatomy and physiology-I	The student should able to											
	CO1: Identify, compare and contrast between the microscopy of epithelial, connective, muscular, nervous tissue of human body.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Explain the significance of bleeding time, clotting time, blood group detection, hemoglobin detection and measurement of blood pressure.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Demonstrate procedure of white blood cell count and red blood cell count and red blood cell count of blood sample.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	-	-	2	-	-	3	-	-	-	3
BP108P. Pharmaceutical Analysis-I	The student should able to											
	CO1: Prepare and standardize primary and secondary standard solutions of various normality and molarity.	3	2	2	–	–	–	2	–	–	–	3

	CO2: Perform various volumetric and electrochemical titrations.	3	2	2	-	-	-	2	-	-	-	3
	Average course outcomes = 2.4 (max 3.00)	3	2	2	-	-	-	2	-	-	-	3
BP109P. Pharmaceutics-I	The student should able to											
	CO1: Formulate various conventional dosage forms in professional way.	3	-	-	3	-	2	3	-	3	-	3
	CO2: Emphasize on the concepts of prescription like translation, calculation and suitability.	3	-	-	2	-	2	3	-	3	-	3
	Average course outcomes = 2.75 (max 3.00)	3	-	-	2.5	-	2	3	-	3	-	3
BP110P. Pharmaceutical inorganic chemistry	The student should able to											
	CO1: Identify the Inorganic compounds through various chemical tests.	3	-	2	2	-	2	3	-	2	-	3
	CO2: Perform the limit test for certain impurities like chloride, sulphate, iron, arsenic, lead and heavy metals as per the Indian Pharmacopoeia.	3	-	2	2	-	2	3	-	2	-	3
	Average course outcomes = 2.42 (max 3.00)	3	-	2	2	-	2	3	-	2	-	3
BP111P. Communication Skills	The student should able to											
	CO1: Demonstrate and Apply basic communication skills and advance learning skills.	3	-	-	2	-	-	3	-	-	-	3
	CO 2: Practice skills of communication, medium and presentation.	3	-	-	2	-	-	3	-	-	-	3
	Average course outcomes = 2.75 (max 3.00)	3	-	-	2	-	-	3	-	-	-	3
BP112RBP Remedial biology	The student should able to											
	CO1: Demonstration of different bone in human skeleton system, their location and significance.	3	-	-	2	-	-	3	-	-	-	3

	CO2: Perform blood group detection, measurement of blood pressure and tidal volume.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Able to identify microscopy of tissues pertinent to stem, root, leaf, seed, fruit and flower.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3
First Year B. Pharm (Semester-II)												
	The student should able to											
BP 201T. Human anatomy and physiology–II	CO1: Explain the gross morphology, structure and functions of various organs of the human body.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Describe various homeostatic mechanisms and their imbalances.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Discuss the anatomy of lungs and other parts of respiratory system, tidal volume, artificial respiration and resuscitation methods.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3
	The student should able to											
BP202T. Pharmaceutical organic chemistry-I	CO1: Outline the structure, name and the type of isomerism of the organic compound.	3	–	2	2	–	–	3	–	2	–	3
	CO2: Describe the reaction name of the reaction and orientation of reactions.	3	–	2	2	–	–	3	–	2	–	3
	CO3: Explain the mechanism, kinetics and reactivity of the certain reactions.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.50 (max 3.00)	3	–	2	2	–	–	3	–	2	–	3
	The student should able to											
BP203 T. Biochemistry	CO1: Describe the chemistry, biological importance and metabolism pattern of	3	2	3	–	–	–	2	–	2	–	3

	Biomolecules.											
	CO2: Summaries the concept of biological oxidation emphasizing on ETC and oxidative phosphorylation and identifying related inhibitors.	3	2	3	–	–	–	2	–	2	–	3
	CO3: Explain catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzyme.	3	2	3	–	–	–	2	–	2	–	3
	CO4: Explain the genetic organization of mammalian genome and functions of DNA in synthesis of RNAs and proteins.	3	2	3	–	–	–	2	–	2	–	3
	Average course outcomes = 2.50 (max 3.00)	3	2	3	–	–	–	2	–	2	–	3
BP204T. Pathophysiology	The student should able to											
	CO1: Explain the etiology and pathogenesis and complications of severe diseases and disorders.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Discuss the signs and symptoms of different diseases and their diagnostic procedures.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Differentiate between acute and chronic diseases based on etiology, signs and symptoms and complications.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3
BP205 T. Computer applications in pharmacy	The student should able to											
	CO1: know the various types of application of computers in pharmacy.	3	–	2	3	–	2	3	–	3	–	2
	CO2: Understand Concept of Information Systems and Software, various types of	3	–	3	3	–	2	3	–	2	–	3

	databases like MYSQL, MS ACCESS, Pharmacy Drug database, Number systems, Web technologies and Bioinformatics.											
	CO3: Apply computer knowledge for Chromatographic data analysis (CDS), Laboratory Information management System (LIMS) and Text Information Management System (TIMS).	3	–	2	3	–	2	3	–	3	–	2
	Average course outcomes = 2.55 (max 3.00)	3	–	2.3	3	–	2	3	–	2.6	–	2
BP206T. Environmental sciences	The student should be able to											
	CO1: Understand Multidisciplinary nature of environmental studies Natural Resources Renewable and non-renewable resources, associated problems.	3	–	2	2	–	–	3	–	2	2	3
	CO2: Understand, explain and Draw Structure and function of various ecosystem.	3	–	2	2	–	–	3	–	2	2	3
	CO3: Understand Environmental Pollution and its remedial methods to reduce.	3	–	2	2	–	–	3	–	2	2	3
	Average course outcomes = 2.43 (max 3.00)	3	–	2	2	–	–	3	–	2	2	3
BP207P. Human anatomy and physiology–II	The student should be able to											
	CO1: Identify various tissues and organs of different systems of human body.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Explain construction and working of spirometer for the measurement of lung volume and capacities.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3
BP208P. Pharmaceutical organic chemistry – I	The student should be able to											
	CO1: Perform the systematic qualitative analysis of organic compounds.	3	–	2	2	–	–	3	–	2	–	3

	CO2: Prepare the suitable solid derivatives from organic compounds.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.5 (max 3.00)	3	–	2	2	–	–	3	–	2	–	3
BP 209 P. Biochemistry	The student should able to											
	CO1: Identify and characterize carbohydrates, proteins by various qualitative chemical tests in a given sample.	3	2	3	–	–	–	2	–	2	–	3
	CO2: Determine blood creatinine, sugar, total cholesterol and action of salivary amylase.	3	2	3	–	–	–	2	–	2	–	3
	Average course outcomes = 2.5 (max 3.00)	3	2	3	–	–	–	2	–	2	–	3
BP210P. Computer applications in pharmacy	The student should able to											
	CO1: Use MS Word, MS Access for designing questionnaire, form to record patient information, creating patient database, mailing labels, invoice table, and generate reports.	3	–	2	3	–	2	3	–	3	–	2
	CO2: Create HTML web page, Export Tables, Queries, Forms and Reports to web pages and XML Pages.	3	–	3	3	–	2	3	–	2	–	3
	Average course outcomes = 2.64 (max 3.00)	3	–	2.5	3	–	2	3	–	2.5	–	2.5
Second Year B. Pharm (Semester- III)												
	The student should able to											
BP 301T. Pharmaceutical Organic chemistry–II	CO1: Describe the reaction and mechanism of Benzene, phenols, aromatic amines and polynuclear hydrocarbons.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Explain the stabilities of cycloalkanes through different theories.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Summarize the chemistry of fats and oils.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3

	The student should able to											
BP302T. Physical Pharmaceutics-I	CO1: Explain various physicochemical properties of drug molecules applicable in the designing of dosage forms.	3	–	3	3	–	–	3	–	2	–	3
	CO2: Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.	3	–	2	2	–	–	2	–	2	–	3
	Average course outcomes = 2.58 (max 3.00)	3	–	2.5	2.5	–	–	2.5	–	2	–	3
BP303T. Pharmaceutical Microbiology	The student should able to											
	CO1: Explain methods of identification, cultivation and preservation of various microorganisms	3	–	–	3	–	2	3	–	3	–	2
	CO2: Summarize the importance and implementation of sterilization in pharmaceutical processing and industry.	3	–	–	3	–	–	3	–	3	–	3
	CO3: Discuss microbiological standardization of Pharmaceuticals.	3	–	–	2	–	–	3	–	3	–	3
	CO4: Outline cell culture technology and its applications in pharmaceutical industries.	3	–	–	2	–	–	3	–	3	–	3
	Average course outcomes = 2.84 (max 3.00)	3	-	-	2.5	-	-	3	-	3	-	2.7
BP304T. Pharmaceutical engineering	The student should able to											
	CO1: Explain use of various unit operations used in pharmaceutical industries.	3	–	–	3	–	–	3	–	–	–	3
	CO2: Describe the material handling techniques.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Discuss various methods of hazards and safety management used in Pharmaceutical industry.	3	–	–	2	–	–	3	–	–	–	3

	CO1: Select and utilize different equipment and processing in experimental microbiology	3	–	–	3	–	2	3	–	3	–	2
	CO2: Identify and isolate various microorganisms.	3	–	–	2	–	–	3	–	3	–	3
	CO3: Perform sterility testing of pharmaceutical products.	3	–	–	2	–	–	3	–	3	–	3
	CO4: Perform microbiological standardization of Pharmaceuticals.	3	–	–	2	–	–	3	–	3	–	3
	Average course outcomes = 2.6 (max 3.00)	3	–	–	2.2	–	2	3	–	3	–	2.7
BP308P - Pharmaceutical Engineering	The student should able to											
	CO1: Perform various unit operation process involved in pharmaceutical manufacturing.	3	–	–	2	–	–	3	–	–	–	3
	CO2: Perform numerical involved in calculating process related determinants.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Create graphs and illustrate actions for data representation.	3	–	–	2	–	–	3	–	–	–	3
	CO4: Analyze and interpret the data generated from the experiments performed.	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	–	–	2	–	–	3	–	–	–	3
Second Year B. Pharm (Semester- IV)												
BP401T. Pharmaceutical organic chemistry- III	The student should able to											
	CO1: Understand the methods of preparation and properties of organic compounds.	3	–	3	3	–	–	3	–	2	–	3
	CO2: Explain the stereo chemical aspects of organic compounds and stereo chemical reactions.	3	–	2	2	–	–	3	–	2	–	3
	CO3: know the medicinal uses and other applications of organic compounds.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.6 (max 3.00)	3	–	2.3	2.3	–	–	3	–	2	–	3

BP402T Medicinal Chemistry-I	The student should able to											
	CO1: Correlate the physicochemical properties and metabolism of drugs with biological activity.	2	–	2	2	–	–	2	–	2	1	3
	CO2: Explain the chemistry of drugs acting on nervous system, opioid and non-opioid receptor.	2	–	2	2	–	–	2	–	2	-	3
	CO3: Describe the mechanism of action of certain pharmacodynamics agents.	3	–	2	–	–	–	2	–	2	1	3
	Average course outcomes = 2 (max 3.00)	2.3	–	2	2	–	–	2	–	2	1	3
BP403T. Physical pharmaceutics-II	The student should able to											
	CO1: Compare and contrast between colloidal and coarse dispersion based on their general properties, principles of formulation and evaluation.	3	–	3	2	–	–	2	–	2	–	3
	CO2: Explain and comprehend the principles of preformulations like rheology, deformation of solid and micromeretics.	3	–	3	2	–	–	2	–	2	–	3
	CO3: Explain use of physicochemical properties in the formulation development and evaluation of dosage forms.	3	–	3	2	–	–	2	–	2	–	3
	CO4: Explain with illustration the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.	3	–	2	3	–	–	2	–	2	–	3
	Average course outcomes = 2.48 (max 3.00)	3	–	2.7	2.2	–	–	2	–	2	–	3
	The student should able to											
	CO1: Explain various terminologies used in	3	–	1	–	–	2	1	–	3	–	2

BP404T. Pharmacology I	pharmacology like synergism, agonist, antagonist, side effect, adverse effects etc.											
	CO2: Describe the pharmacological actions of different categories of drugs.	3	–	1	–	–	2	1	–	2	–	2
	CO3: Discuss the mechanism of drug action at organ system/sub cellular/ macromolecular levels.	3	–	1	–	–	1	1	–	2	–	2
	CO4: Classify various drugs used for the treatment of disorders of nervous system according to their mechanism of action and apply the basic pharmacological knowledge in the prevention and treatment of various diseases.	3	–	1	–	–	2	1	–	2	–	2
	Average course outcomes = 1.82 (max 3.00)	3	–	1	–	–	1.7	1	–	2.2	–	2
BP405T. Pharmacognosy & phytochemistry–I	The student should able to											
	CO1: Explain the history, scope, development of pharmacognosy, sources of drugs and differentiate between organized and unorganized drugs.	3	–	2	3	1	2	3	3	3	–	3
	CO2: Understand and explain classification of drugs and quality control of drugs of natural origin.	3	–	3	2	1	2	3	3	3	–	3
	CO3: Comprehend and understand cultivation, collection, processing, storage of drugs of natural origin, conservation of medicinal plants, plant tissue culture including its development, applications.	3	–	3	2	1	2	3	3	3	–	3
	CO4: Explain and understand morphology and anatomy of plant parts. Explain	3	–	2	3	1	2	3	3	3	–	3

	classification, properties, identification of Glycosides, Tannins, volatile oil, Flavanoids and resins.											
	CO5: Comprehend the biological source, chemical nature, uses of plant fibers, hallucinogens, Teratogens, Natural allergens.	3	–	3	2	1	2	3	3	3	–	3
	CO6: Understand and explain pharmacognostic study of carbohydrates, Proteins, enzymes, lipids, marine drugs.	3	–	3	2	1	2	3	1	3	–	3
	Average course outcomes = 2.50 (max 3.00)	3	–	2.6	2.3	1	2	3	2.6	3	–	3
BP406P. Medicinal chemistry-I	The student should able to											
	CO1: Synthesize and explain reaction mechanism of medicinally important compounds by using conventional methods and purify them by using TLC and Column Chromatography.	3	–	2	2	–	–	3	–	2	–	3
	CO2: Perform quantitative analysis of drugs such as Chlorpromazine, Phenobarbitone, Atropine, Ibuprofen, Aspirin and Furosemide.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.5 (max 3.00)	3	–	2	2	–	–	3	–	2	–	3
BP407P. Physical pharmaceuticals- II	The student should able to											
	CO1: Determine physicochemical properties in the formulation development and evaluation of dosage forms.	3	–	3	2	–	–	2	–	2	–	3
	CO2: Make use of principles of chemical kinetics & to use them for stability testing.	3	–	2	3	–	–	2	–	2	–	3
	CO3: Compare and contrast between different	3	–	2	2	–	–	2	–	2	–	3

	Method used in the determination of the same physicochemical parameters.											
	CO4: Demonstrate and explain the effect of different excipients and their differing concentration on physicochemical determinants of dosage forms.	3	–	2	3	–	–	2	–	2	–	3
	Average course outcomes = 2.45 (max 3.00)	3	–	2.2	2.5	–	–	2	–	2	–	3
BP408P. Pharmacology I	The student should able to											
	CO1: Handle the laboratory equipments and apply techniques used in experimental pharmacology.	3	3	2	1	–	1	2	–	–	1	2
	CO2: Identify various laboratory animals and describe CPCSEA guidelines for care and handling and care of laboratory animals.	3	3	3	1	–	1	1	–	—	–	2
	CO3: Explain common laboratory techniques, like blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.	3	3	2	1	–	1	1	–	–	–	2
	CO4: Describe the different routes of drug administration in mice/ rats.	3	3	3	1	–	1	–	–	–	–	2
	CO5: Demonstrate the effect of drugs on animals by simulated experiments.	3	3	2	1	–	1	2	–	–	1	2
	Average course outcomes = 1.81 (max 3.00)	3	3	2	1	–	1	1.5	–	—	1	2
BP409P. Pharmacognosy & phytochemistry–I	The student should able to											
	CO1: Perform analysis of crude drugs by chemical tests	3	3	3	3	–	2	3	–	2	–	3
	CO2: Determine and perform stomatal number, stomatal index, vein islet number,	3	3	3	3	–	2	3	–	2	–	3

	vein islet termination and palisade ratio of leaf drug.											
	CO3: Understand and determine size of starch grains, calcium oxalate crystals, length and width of fiber by eye piece micrometer and number of starch grains by Lycopodium spore method.	3	3	3	3	–	2	3	–	2	–	3
	CO4: Perform Ash value, Extractive values, moisture content, swelling and foaming index of crude drug.	3	3	3	3	–	2	3	–	2	–	3
	Average course outcomes = 2.75 (max 3.00)	3	3	3	3	–	2	3	–	2	–	3
Third Year B. Pharm (Semester-V)												
BP501T. Medicinal Chemistry II	The student should able to											
	CO1: Understand the chemistry of drugs with respect to their pharmacological activity.	2	–	2	2	–	–	2	–	2	1	3
	CO2: Understand the drug metabolic pathways, adverse effect and therapeutic value of Drugs.	2	–	2	2	–	–	2	–	2	1	3
	CO3: Know the Structural Activity Relationship of different class of drugs.	3	–	2	–	–	–	2	–	2	–	3
	CO4: Understand the drug metabolic pathways, adverse effect and therapeutic value of Drugs.	2	–	2	2	–	–	2	–	2	1	3
	Average course outcomes = 2 (max 3.00)	2.2	–	2	2	–	–	2	–	2	1	3
BP502T. Industrial Pharmacy-I	The student should able to											
	CO1: Know the various pharmaceutical dosage forms and their manufacturing techniques.	3	–	3	3	–	–	3	–	2	–	3
	CO2: Know various considerations in development of pharmaceutical dosage forms.	3	–	2	2	–	–	3	–	2	–	3

	CO3: Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.6 (max 3.00)	3	–	2.3	2.3	–	–	3	–	2	–	3
BP503T. Pharmacology II	The student should able to											
	CO1: Understand the mechanism of drug action and its relevance in the treatment of different diseases.	3	–	1	2	–	–	2	–	2	–	2
	CO2: Pharmacology of drug acting on cardiovascular system.	3	–	1	2	–	–	1	–	2	–	2
	CO3: Describe the bioassay and its role in drug discovery.	3	–	1	2	–	–	2	–	2	–	2
	CO4: To Explain Pharmacology of drugs acting on Endocrine system.	3	–	1	2	–	–	2	–	2	–	2
	Average course outcomes = 1.95 (max 3.00)	3	–	1	2	–	–	1.7	–	2	–	2
BP504T. Pharmacognosy and Phytochemistry II	The student should able to											
	CO1: To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.	3	–	2	2	–	–	3	–	2	–	3
	CO2: To understand the preparation and development of herbal formulation.	3	–	2	3	–	–	3	–	2	–	3
	CO3: Establish the structure of natural molecules like a Glycosides, Alkaloids, Carotenoids etc.	3	–	2	3	–	–	3	–	2	–	3
	CO4: To carry out isolation and identification of phytoconstituents.	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.58 (max 3.00)	3	–	2	2.5	–	–	3	–	2	–	3
BP505T. Pharmaceutical Jurisprudence	The student should able to											
	CO1: Acquire knowledge on schedule rules, laws and regulations related to drugs and cosmetics.	3	–	2	3	–	–	3	–	3	–	2
	CO2: Explain pharmaceutical legislation, history, evolution and growth of pharmaceutical	3	–	3	3	–	–	3	–	2	–	3

	industry.											
	CO3: Describe the pharmaceutical education and its regulatory bodies; pharmacy profession in concern to code of ethics.	3	–	2	2	–	–	3	–	2	–	3
	CO4: Explain other acts and rules associated with food and factories	3	–	2	2	–	–	3	–	2	–	3
	Average course outcomes = 2.6 (max 3.00)	3	–	2.2	2.5	–	–	3	–	2.2	–	2.7
BP506P. Industrial Pharmacy I	The student should able to											
	CO1: Correct use of various equipments in pharmaceuticals laboratory relevant to tablets, capsules and tablet coating.	3	3	3	2	–	–	3	–	2	–	3
	CO2: Inculcate the knowledge of formulation, evaluation and labeling of tablets & capsules.	3	–	3	3	–	–	2	–	–	3	2
	CO3: Use the equipments and apparatus needed for the preparation as per SOP.	3	–	2	2	–	–	3	–	3	–	3
	CO4: Describe use of ingredients in formulation and category of formulation.	3	3	2	2	–	–	3	–	–	–	2
	Average course outcomes = 2.67 (max 3.00)	3	3	2.5	2.2	–	–	2.7	–	2.5	3	2.5
BP507P. Pharmacology II	The student should able to											
	CO1: Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments	3	2	1	–	–	2	3	2	2	–	2
	CO2: Demonstrate the effect of drugs on animals by simulated experiments.	3	–	1	–	–	2	1	–	2	–	2
	CO3: Concepts of bioassays. Simulated bioassays using suitable software for interpolation assay.	3	2	1	2	–	–	–	–	2	–	2
	Average course outcomes = 2.0 (max 3.00)	3	2	1	2	–	2	2	2	2	–	2
	The student should able to											
	CO1: Describe morphological, microscopical	3	3	3	3	–	2	3	–	2	–	3

BP508P. Pharmacognosy and Phytochemistry II	and powder characteristics of crude drugs.											
	CO2: Understanding the process behind extraction and isolation of alkaloids.	3	3	3	3	–	2	3	–	2	–	3
	CO3: To perform the TLC of herbal extract	3	3	3	3	–	2	3	–	2	–	3
	CO4: Analysis of crude drugs by chemical tests	3	3	3	3	–	2	3	–	2	–	3
	Average course outcomes = 2.75 (max 3.00)	3	3	3	3	–	2	3	–	2	–	3
Third Year B. Pharm (Semester-VI)												
BP601T. Medicinal Chemistry III	The student should able to											
	CO1: Understand the chemistry of drugs with respect to their pharmacological activity.	3	–	3	3	–	–	2	–	–	3	2
	CO2: Know the metabolism, adverse effects and therapeutic value of drugs.	3	–	2	2	–	–	3	–	3	–	3
	CO3: Know the Structural Activity Relationship of different class of drugs.	3	3	2	2	–	–	3	–	–	–	2
	CO4: Understand the importance of drug design and different techniques of drug design.	3	2	3	3	–	–	3	–	3	3	3
	Average course outcomes = 2.71 (max 3.00)	3	2.5	2.5	2.5	–	–	2.7	–	3	3	2.5
BP602T. Pharmacology III	The student should able to											
	CO1: Understand the mechanism of drug action and its relevance in the treatment of different diseases.	3	2	1	–	–	2	3	2	2	–	2
	CO2: Pharmacology of drug acting on respiratory system.	3	–	1	–	–	2	1	–	2	–	2
	CO3: To comprehend the principles of toxicology and treatment of various poisonings.	3	2	1	2	–	–	–	–	2	–	2
	CO4: To Explain the chemotherapy of different drugs.	3	2	1	–	–	2	3	2	2	–	2
	Average course outcomes = 1.96 (max 3.00)	3	2	1	2	–	2	1.7	2	2	–	2
	The student should able to											
	CO1: To know the modern extraction techniques, characterization and identification of	3	–	2	2	–	–	2	–	—	–	3

BP603T. Herbal Drug Technology	the herbal drugs and phytoconstituents.											
	CO2: To understand the preparation and development of herbal formulation.	3	2	3	3	3	—	3	—	—	—	3
	CO3: Establish the study of natural molecules like a Glycosides, Alkaloids, Carotenoids etc.	3	3	3	3	3	—	3	—	—	—	3
	CO4: To carry out isolation and identification of phytoconstituents.	3	3	3	3	2	—	2	—	—	—	3
	Average course outcomes = 2.85 (max 3.00)	3	2	2.7	2.7	2.6	—	2.5	—	—	—	3
BP604T. Biopharmaceutics and Pharmacokinetics	The student should able to											
	CO1: To understand the concepts of bioavailability and bioequivalence of drug Products.	3	—	2	3	—	2	3	—	3	3	3
	CO2: To understand various pharmacokinetic parameters, their significance.	3	3	2	3	—	2	3	—	3	3	3
	CO3: To Understand the bioequivalence of drug products.	3	2	2	3	—	2	3	—	3	3	3
	Average course outcomes = 2.72 (max 3.00)	3	2.5	2	3	—	2	3	—	3	3	3
BP605T. Pharmaceutical Biotechnology	The student should able to											
	CO1: To understand and describe the basic concept in fermentation technology.	3	—	2	2	—	2	3	—	3	—	3
	CO2: Able to classify methods of plant tissue culture.	3	—	2	2	—	2	3	—	3	—	3
	CO3: To know about various genetic recombination techniques.	3	—	2	2	—	2	3	—	2	—	3
	CO4: Understand the basic concept behind biotechnological production of hormones.	3	—	2	2	—	2	3	—	2	—	3
	Average course outcomes = 2.42 (max 3.00)	3	—	2	2	—	2	3	—	2	—	3
	The student should able to											
	CO1: Understand the cGMP aspects in a pharmaceutical industry.	3	—	2	2	—	—	2	—	2	—	3
	CO2: Understand the scope of quality	3	—	2	2	—	—	2	—	2	—	3

BP606T. Quality Assurance	certifications applicable to pharmaceutical Industries.											
	CO3: Understand the responsibilities of QA & QC departments.	3	–	2	2	–	–	2	–	2	–	3
	CO4: Understand the importance of documentation.	3		2	2			2		2	–	3
	Average course outcomes = 2.33 (max 3.00)	3		2	2			2		2	–	3
BP607P. Medicinal Chemistry III	The student should able to											
	CO1: Preparation of drugs and their intermediates.	3	3	2	3	–	–	2	–	–	2	3
	CO2: Drawing structures and reactions using different softwares.	3	2	2	2	–	–	2	–	–	1	3
	CO3: Determination of physicochemical properties of different drugs.	3	3	2	2	–	–	2	–	–	2	3
	CO4: Assays of drugs	3	3	2	2	–	–	2	–	–	1	3
	Average course outcomes = 2.35 (max 3.00)	3	2.7	2	2.2	–	–	2	–	–	1.5	3
BP608 P. Pharmacology III	The student should able to											
	CO1: Dose calculation in pharmacological experiments.	3	2	2	2	–	–	3	–	2	–	3
	CO2: Demonstrate the effect of drugs on animals by simulated experiments.	3	2	2	2	–	–	2	–	1	–	3
	CO3: Determination of different toxicity study	3	2	2	2	–	–	2		1	–	3
	CO4: Different Biostatistics methods in experimental pharmacology.	3	1	1	1	–	–	2		1	–	3
	Average course outcomes = 2 (max 3.00)	3	1.7	1.7	1.7	–	–	2.2	–	1.2		3
BP609P. Herbal Drug Technology	The student should able to											
	CO1: Perform preliminary phytochemical screening of crude drugs.	3	3	3	3	–	2	3	–	2	–	3
	CO2: Understanding the process behind extraction and isolation of alkaloids.	3	3	3	3	–	2	3	–	2	–	3
	CO3: To perform the TLC of herbal extract	3	3	3	3	–	2	3	–	2	–	3

	CO4: Analysis of herbal drugs.	3	3	3	3	–	2	3	–	2	–	3
	Average course outcomes = 2.75 (max 3.00)	3	3	3	3	–	2	3	–	2	–	3
Final Year B. Pharm (Semester-VII)												
BP701T Instrumental Methods of Analysis	CO 1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis	3	3	2	2	-	2	3	-	3	3	3
	CO 2: Understand the chromatographic separation and analysis of drugs.	3	2	3	3	-	2	2	-	2	3	3
	CO 3. Perform quantitative & qualitative analysis of drugs using various analytical instruments	3	3	3	2	-	2	3	-	2	2	3
	Average course outcomes= 2.6 (max 3.00)	3	2.7	2.7	2.3	-	2	2.7	-	2.3	2.7	3
BP702T Industrial Pharmacy-II	The student should be able to											
	CO1: Know the process of pilot plant and scale up of pharmaceutical dosage forms	2	2	1	1	-	2	2	1	2	1	2
	CO2: Understand the process of technology transfer from lab scale to commercial batch	2	1	1	2	-	1	2	1	1	1	2
	CO3: Know different Laws and Acts that regulate pharmaceutical industry	2	2	1	1	-	2	2	1	1	2	2
	CO4: Understand the approval process and regulatory requirements for drug products	2	1	1	1	-	2	1	2	2	1	2
	Average course outcomes= 1.55 (max 3.00)	2	1.5	1	1.3	-	1.8	1.8	1.3	1.5	1.3	2
BP703T Pharmacy Practice	The students should be able to											
	CO 1. Knows various drug distribution methods in a hospital	3	3	1	-	-	2	2	2	2	-	3
	CO 2. Appreciates the pharmacy stores management and inventory control	3	-	2	-	-	2	2	-	2	-	3
	CO 3. Monitor drug therapy of patient through medication chart review and clinical review	3	3	1	2	-	-	-	-	2	-	2
	CO4. Obtains medication history interview	3	-	1	-	-	2	2	-	2	-	2

	and counsel the patients											
	CO5. Identifies drug related problems and detect and assess adverse drug reactions	3	-	2	-	-	2	2	-	2		2
	Average course outcomes = 2.2 (max 3.00)	3	3	1.4	2	-	2	2	2	2	-	2.4
BP704T Novel Drug Delivery System	The students should be able to											
	CO1. To understand various approaches for development of novel drug delivery systems	3	-	2	3	-	-	3	-	2	-	3
	CO2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation	3	-	2	2	-	-	2	-	2	-	3
	Average course outcomes = 2.5 (max 3.00)	3	-	2	2.5	-	-	2.5	-	2	-	3
Final Year B. Pharm (Semester-VIII)												
BP801T Biostatistics and Research Methodology	The students should be able to											
	CO1 Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)	3	-	2	3	-	-	3	-	2	-	3
	CO2 Know the various statistical techniques to solve statistical problems	3	-	2	2	-	-	2	-	2	-	3
	CO3. Appreciate statistical techniques in solving the problems	3	-	2	2	-	-	2	-	2	-	2
	Average course outcomes = 2.3 (max 3.00)	3	-	2	2.3	-	-	2.3	-	2	-	2.6
BP802T Social and Preventive Pharmacy	The students should be able to											
	CO1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide	3	-	2	3	-	-	3	-	2	-	3
	CO2. Have a critical way of thinking based on current healthcare development	3	-	2	2	-	-	2	-	2	-	3
	CO3. Evaluate alternative ways of solving	3	-	2	2	-	-	2	-	2	-	2

	problems related to health and pharmaceutical issues											
	Average course outcomes = 2.3 (max 3.00)	3	-	2	2.3	-	-	2.3	-	2	-	2.6
BP804ET Pharmaceutical Regulatory Science	The students should be able to											
	CO1 Know about the process of drug discovery and development	3	3	2	2	-	2	3	-	3	3	3
	CO2 Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals	3	2	3	3	-	2	2	-	2	3	3
	CO3. Know the regulatory approval process and their registration in Indian and international markets	3	3	3	2	-	2	3	-	2	2	3
	Average course outcomes= 2.6 (max 3.00)	3	2.7	2.7	2.3	-	2	2.7	-	2.3	2.7	3
BP805 ET Pharmacovigilance	The students should be able to											
	CO1 History and development of pharmacovigilance	3	3	2	1	1	2	2	2	2	1	2
	CO2 National and international scenario of pharmacovigilance	3	3	3	2	2	2	1	2	2	—	2
	CO3 Dictionaries, coding and terminologies used in pharmacovigilance	3	3	2	1	2	2	2	2	2	—	2
	CO4 Detection of new adverse drug reactions and their assessment	3	3	3	2	2	2	—	1	2	2	2
	CO5 International standards for classification of diseases and drugs	3	3	2	2	2	2	2	2	1	1	2
	CO6 Adverse drug reaction reporting systems and communication in pharmacovigilance	3	3	3	2	2	2	2	1	2	2	2
	Average course outcomes= 1.9 (max 3.00)	3	3	2.5	1.6	1.8	2	1.5	1.6	1.8	1	2
BP811ET Advanced Instrumentation Techniques	The students should be able to:											
	CO1 understand the advanced instruments used and its applications in drug analysis	3	3	2	2	-	2	3	-	3	3	3

	CO2 understand the chromatographic separation and analysis of drugs	3	2	3	3	-	2	2	-	2	3	3
	CO3. understand the calibration of various analytical instruments	3	3	3	2	-	2	3	-	2	2	3
	Average course outcomes= 2.6 (max 3.00)	3	2.7	2.7	2.3	-	2	2.7	-	2.3	2.7	3

Program Outcomes M.Pharm Pharmaceutics 2017 (PCI) Pattern

Course code/Course title	Course outcomes	Program outcome										
First Year M. Pharm (Semester I)		1	2	3	4	5	6	7	8	9	10	11
MPH101T Modern Pharmaceutical Analytical Techniques	The student should be able to											
	CO1: To understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments	2	2	1	-	-	2	3	-	1	1	2
	CO2: To develop basic practical skills using instrumentation techniques	3	1	1	-	-	1	3	-	2	1	2
	CO3: Skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals	3	-	2	-	-	1	3	-	2	1	2
	CO4: To expand the theoretical knowledge on various instrumental techniques available for analysis of organic substances	3	-	2	--	-	1	3	-	2	2	2
	CO5: To apply the knowledge learnt in developing new procedures of their own design	2	2	1	-	-	2	2	-	-	2	2
	CO6: Comparing various methods of analysis and their outcomes.	2	2	1	-	-	2	2	-	-	2	2
	Average course outcomes = 1.85 (max 3.00)	2.5	1.7	1.3	-	-	1.5	2.6	-	1.7	1.5	2
MPH102T Drug Delivery System	The student should be able to											
	CO1: To Study the various approaches for development of novel drug delivery systems	2	-	2	2	-	-	2	-	3	-	2
	CO2: To have brief knowledge about the criteria for selection of drugs and polymers for the development of delivery systems	2	-	2	2	-	-	2	-	2	-	2
	CO3: To study the formulation and evaluation of	3	-	2	2	-	-	2	-	2	-	3

	novel drug delivery systems											
	Average course outcomes = 2.18 (max 3.00)	2.3	-	2	2	-	-	2	-	2.5	-	2.3
MPH103T Modern Pharmaceutics	The student should able to											
	CO1: To learn the elements of preformulation studies	3	-	-	2	-	2	2	-	2	-	2
	CO2: To have an idea about the active pharmaceutical ingredients and generic drug product development	3	-	-	2	-	2	2	-	2	-	2
	CO3: To learn various Optimization techniques and pilot plant scale up techniques	3	-	-	2	-	2	2	-	2	-	3
	CO4: Study of various Stability testing, sterilization process and packaging of dosage forms	3	-	-	2	-	2	2	-	2	-	3
	CO5: To study the Industrial Management and GMP considerations	3	-	-	2	-	2	2	-	2	-	3
	Average course outcomes = 2.26 (max 3.00)	3	-	-	2	-	2	2	-	2	-	2.6
MPH 104T Regulatory Affairs	The student should able to											
	CO1: The Concepts of innovator and generic drugs, drug development process	3	-	-	2	-	-	3	-	-	-	3
	CO2: To study the regulatory guidance's and guidelines for filing and approval process	3	-	-	2	-	-	3	-	-	-	3
	CO3: Preparation of dossiers and their submission to regulatory agencies in different countries	3	-	-	2	-	-	3	-	-	-	3
	CO4: To study documentation of Post approval regulatory requirements for actives and drug products	3	2	2	-	-	2	2	-	-	2	2
	CO5: To learn the submission of global documents in CTD/ eCTD formats	2	2	2	-	-	2	2	-	-	2	2
	CO6: To study what are the different clinical trials requirements for approvals for conducting clinical	3	2	2	-	-	2	2	-	-	2	2

	trials											
	CO7: Brief knowledge about pharmacovigilance and process of monitoring in clinical trials	2	2	2	-	-	2	2	-	-	2	2
	Average course outcomes = 2.18 (max 3.00)	2.7	2	2	2	-	2	2.4	-	-	2	2.4
MPH 105P Pharmaceutics Practicals - I	The student should able to											
	CO1: To perform In-vitro dissolution profile of CR/ SR marketed formulation	3	-	-	2	-	-	3	-	-	-	3
	CO2: To learn the Experiments based on Gas Chromatography	3	-	-	2	-	-	3	-	-	-	3
	CO3: Simultaneous estimation of multi component containing formulations by UV Spectrophotometry	2	2	2	1	1	-	2	-	-	2	2
	CO4: To study the effect of particle size on dissolution of a tablet.	3	-	-	2	-	-	3	-	-	-	3
	CO5: To study the effect of compressional force on tablets disintegration time.	2	2	2	-	-	1	1	-	-	2	2
	Average course outcomes = 1.94 (max 3.00)	2.8	2	2	1.7	1	1	2.4	-	-	2	2.6
M. Pharm First Year (Semester-II)												
MPH 201T Molecular Pharmaceutics (Nano Technology & Targeted DDS)	The student should able to											
	CO1: To study the various approaches for development of novel drug delivery systems.	3	2	-	2	-	-	3	-	-	-	3
	CO2: Brief knowledge about the criteria for selection of drugs and polymers for the development of NTDS	3	2	-	2	-	-	3	-	-	-	3
	CO3: To study the formulation and evaluation of novel drug delivery systems.	3	2	-	2	-	-	3	-	-	-	3
	Average course outcomes = 2.60 (max 3.00)	3	2	-	2	-	-	3	-	-	-	3

MPH202T Advanced Biopharmaceutics and pharmacokinetics	The student should able to CO1: To understand basic concepts in biopharmaceutics and pharmacokinetics.	3	2	2	-	-	2	2	-	-	2	2
	CO2: To learn the use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.	2	2	2	-	-	2	2	-	-	2	2
	CO3: To study the critical evaluation of biopharmaceutic studies involving drug product equivalency.	3	2	2	-	-	2	2	-	-	2	2
	CO4: To study the design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.	2	2	2	-	-	2	2	-	-	2	2
	CO5: To understand the potential clinical pharmacokinetic problems and application of basics of pharmacokinetic.	3	2	2	-	-	2	2	-	-	2	2
	Average course outcomes = 2.11 (max 3.00)	2.6	2	2.2	-	-	2	2	-	-	2	2
MPH203T Computer Aided Drug Delivery System	The student should able to											
	CO1: History of Computers in Pharmaceutical Research and Development	3	2	–	2	–	–	3	–	–	–	3
	CO2: Computational Modeling of Drug Disposition	3	2	–	2	–	–	3	–	–	–	3
	CO3: Computers in Preclinical Development CO4: Optimization Techniques in Pharmaceutical Formulation	3	2	–	2	–	–	3	–	–	–	3

	CO5: Computers in Market Analysis	3	2	–	2	–	–	3	–	–	–	3
	CO6: Computers in Clinical Development	3	2	–	2	–	–	3	–	–	–	3
	CO7: Artificial Intelligence (AI) and Robotics and Computational fluid dynamics (CFD).	3	2	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.60 (max 3.00)	3	2	-	2	-	-	3	-	-	-	3
MPH204T Cosmetics and Cosmeceuticals	The student should able to											
	CO1: Students should know about the key ingredients used in cosmetics and cosmeceuticals.	3	2	2	–	–	–	2	–	–	–	3
	CO2: Brief idea about key building blocks for various formulations.	3	2	2	-	-	-	2	-	-	-	3
	CO3: To study various key ingredients and basic science to develop cosmetics and cosmeceuticals	3	2	2	–	–	–	2	–	–	–	3
	CO4: To have scientific knowledge to develop cosmetics and with desired Safety, stability, and efficacy.	3	2	2	-	-	-	2	-	-	-	3
	Average course outcomes = 2.4 (max 3.00)	3	2	2	-	-	-	2	-	-	-	3
MPH205P Pharmaceutics Practical II	The student should able to											
	CO1: To study the effect of temperature change , non- solvent addition, incompatible polymer addition in microcapsules preparation	3	2	–	3	–	2	3	–	3	–	3
	CO2: Computational Modeling Of Drug Disposition	3	2	–	2	–	2	3	–	3	–	3
	CO3: To develop Clinical Data Collection manual.	2	2	-	2	-	2	2	-	1	-	2
	Average course outcomes = 2.34 (max 3.00)	2.6	2	-	2.3	-	2	2.6	-	2.3	-	2.6

Program Outcomes M.Pharm Pharmaceutical Quality Assurance 2017 (PCI) Pattern

Course code/Course title	Course outcomes	Program outcome										
First Year M. Pharm (Semester I)		1	2	3	4	5	6	7	8	9	10	11
MQA101T Modern Pharmaceutical Analytical Techniques	The student should able to											
	CO1: To apply the Spectrometric techniques for identification, characterization, quantification and structural elucidation of drugs by using the knowledge of UV, IR, Mass, NMR, Spectrofluorimetry and Flame emission techniques.	2	2	1	-	-	2	3	–	1	1	2
	CO2: To apply the Chromatographic techniques for identification, characterization quantification and separation of drugs by using the knowledge of HPLC, HPTLC, Ion exchange, Gas, Affinity, Gel, Ultra HPLC	3	1	1	-	–	2	2	–	2	2	2
	CO3: To apply the knowledge for research using Electrophoretic and X Ray Crystallography Techniques.	3	–	2	-	–	1	2	–	2	1	2
	CO4: To apply the knowledge for research using Thermal Techniques.	3	–	2	--	–	1	3	–	2	2	2
	Average course outcomes = 1.86 (max 3.00)	2.7	1.5	1.5	-	-	1.5	2.5	-	1.7	1.5	2
	The student should able to											
	CO1: Understand the importance of quality with ISO management systems.	2	–	2	2	–	–	2	–	3	–	2
	CO2: Understand the importance of quality with ISO management systems.	2	–	2	2	–	–	2	–	3	–	2

MQA102T Quality Management System												
	CO3: Describe analysis of issues in quality	3	–	2	2	–	–	2	–	2	–	3
	CO4: Explain Quality evaluation of pharmaceuticals	3	–	2	2	–	–	2	–	2	–	3
	Average course outcomes = 2.25 (max 3.00)	2.5	-	2	2	-	-	2	-	2.5	-	2.5
MQA103T Quality Control and Quality Assurance	The student should able to											
	CO1: Understand the cGMP aspects in a pharmaceutical industry	3	–	–	2	–	2	2	–	2	–	2
	CO2: Appreciate the importance of documentation in Pharmaceutical industries	3	–	–	2	–	2	2	–	2	–	2
	CO3: Understand the scope of quality certifications applicable to Pharmaceutical industries	3	–	–	2	–	2	2	–	2	–	3
	CO4: Understand the responsibilities of QA & QC departments.	3	–	–	2	–	2	2	–	2	–	3
	Average course outcomes = 2.25 (max 3.00)	3	–	–	2	–	2	2	–	2	–	2.5
MQA104T Product Development and Technology Transfer	The student should able to											
	CO1: Understand the new product development process	3	–	–	2	–	–	3	–	–	–	3
	CO2: Understand the necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R&D.	3	–	–	2	–	–	3	–	–	–	3
	CO3: Elucidate necessary information to transfer technology of existing products between various manufacturing places	3	–	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.75 (max 3.00)	3	-	--	2	–	-	3	–	–	–	3
MQA105P Pharmaceutical Quality	The student should able to											
	CO1: Perform analysis of Pharmacopoeial compounds in bulk and in their formulations along	3	–	–	2	1	–	3	–	–	–	3

[illegible]

	hazards and to implement safety standards and management of fires and explosion											
	CO5: Study the factory acts and rules and processes of risk managements.											
	Average course outcomes = 2.60 (max 3.00)	3	2	-	2	-	-	3	-	-	-	3
MQA 202T Pharmaceutical Validation	The student should able to											
	CO1: Understand concepts of calibration, qualification and validation	3	2	2	-	-	2	2	-	-	2	2
	CO2: Qualification of various Manufacturing and Laboratory equipment and validation of utility systems	2	2	2	-	-	2	2	-	-	2	2
	CO3: Study different Concept, Process and documentation of Process Validation, ICH and guidelines regarding analytical method development USFDA guidelines regarding process validation	3	2	2	-	-	2	2	-	-	2	2
	CO4: Understand the concept of cleaning validation and computerized system validation	2	2	2	-	-	2	2	-	-	2	2
	Average course outcomes = 2.07 (max 3.00)	2.5	2	2	-	-	2	2	-	-	2	2
MQA 203T Audits and Regulatory Compliance	The student should able to											
	CO1: Understand objectives, management, responsibilities, planning and administration of auditing.	3	2	-	2	-	-	3	-	-	-	3
	CO2: study auditing processes in pharmaceutical manufacturing environment	3	2	-	2	-	-	3	-	-	-	3
	CO3: auditing of vendors and production department consisting bulk manufacturing,	3	2	-	2	-	-	3	-	-	-	3

	packaging material, storage and warehousing and dry production											
	CO4: study the microbiological laboratory auditing consisting of manufacturing process, Product and process information, building raw materials and Water, Packaging materials.	3	2	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.60 (max 3.00)	3	2	-	2	-	-	3	-	-	-	3
MQA 204T Pharmaceutical Manufacturing Technology	The student should able to											
	CO1: Understand the Regulatory and legal aspects required to set up a pharmaceutical industry.	3	2	–	2	–	–	3	–	–	–	3
	CO2: Understand and apply the principles and practices of Aseptic Process Technology, Non-sterile Manufacturing Technology and Packaging Technology.	3	2	–	2	–	–	3	–	–	–	3
	CO3: Understand and apply the novel concepts of QbD and PAT in the design of experiments in Formulation development and Analytical method development.	3	2	–	2	–	–	3	–	–	–	3
	CO4: Remain up-to-date about the FDA initiatives on PAT and QbD.	3	2	–	2	–	–	3	–	–	–	3
	Average course outcomes = 2.60 (max 3.00)	3	2	-	2	-	-	3	-	-	-	3
MQA205P Pharmaceutical Quality Assurance	The student should able to											
	CO1: perform analysis of Organic contaminants residue analysis by HPLC and estimation of Metallic contaminants by Flame photometer.	3	2	2	–	–	–	2	–	–	–	3
	CO2: identify of antibiotic residue by TLC and Estimation of Hydrogen Sulphide in Air as well as Chlorine in Work Environment	3	2	2	-	-	-	2	-	-	-	3
	CO3: perform Sampling and analysis of SO2 using Colorimetric method	3	2	2	–	–	–	2	–	–	–	3

	CO4: perform qualification of Autoclave, Hot air oven, Powder Mixer (Dry) Tablet compression Machine, Pharmaceutical Testing Equipment (Dissolution testing apparatus, Friability Apparatus, Disintegration Tester) and two analytical instruments	3	2	2	-	-	-	2	-	-	-	3
	Average course outcomes = 2.4 (max 3.00)	3	2	2	-	-	-	2	-	-	-	3




 Institute of Pharmaceutical Education
 Education Boradi-425 428