

Shellino Education Society's

ARUNAMAI COLLEGE OF PHARMACY

● Gat No 285, Vidgaon Road, Mamurabad, Jalgaon, (MS) 425002

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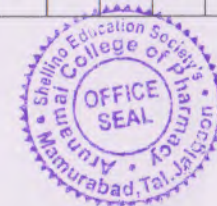
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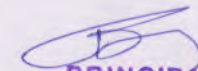
Nanasaheb R. G. Patil
(President)

Dr. T. A. Deshmukh
(Principal)

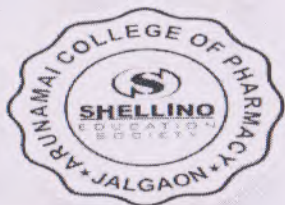
Course Outcome B. Pharmacy (PCI) Syllabus:

Course code /Course title													
First year B. Pharmacy (Semester-I)	CO	Statements	1	2	3	4	5	6	7	8	9	10	11
BP101T. Human Anatomy & Physiology-I (Theory)	CO1:	Understand the various parts of human body, Structural and functions of cell and classification of tissue and types of tissue.	3	-	3	-	-	3	-	3	3	-	-
	CO2:	Describe the structure and function of skin & Deferent salient features and functions of Joints and also structural and function of bones.	3	-	3	-	-	3	-	3	3	3	-
	CO3:	Explain the body fluids & composition and function of blood; as well as Lymphatic organ and functions of lymphatic system.	3	-	3	-	-	3	-	3	3	3	-
	CO4:	Gain the knowledge about Structure and functions of sympathetic and parasympathetic nervous system and Structure and functions of Sensory organ and there disorder.	3	-	-	-	-	3	-	3	3	3	-
	CO5:	Understands the anatomy of heart ; Structure and function of Cardiovascular system	3	-	3	-	-	3	-	3	3	3	-




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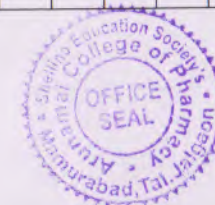
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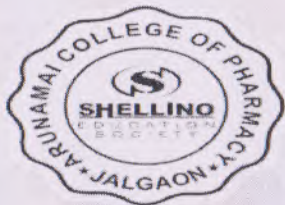
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BP102T. Pharmaceutical Analysis-I	CO1	Explain the Different techniques of analysis; expressing Concentration; 1 ⁰ & 2 ⁰ standards. Preparation & standardization of various molar & normal solutions & Explain the source, types, methods of minimizing errors.	0	-	0	0	-	-	-	0	-	-	0
	CO2:	Understands theories of acid base titration , neutralization curves; Solvents, acidimetry and alkalimetry titration and estimation of Sodium benzoate and Ephedrine HCl	0	-	0	0	-	-	-	0	-	-	0
	CO3:	Explain the different method like Mohr's, Volhard's Modified Volhard's, Fajans method. Principle and steps involved in gravimetric analysis.	0	-	0	0	-	-	-	0	-	-	0
	CO4:	Explain the concept of Oxidation and reduction, Types of redox titrations their Principles and applications.	0	-	0	0	-	-	-	0	-	-	0
	CO5:	Learn the Electrochemical methods of analysis like conductometry, potentiometer, polarography and understand their application.	0	-	0	0	-	-	-	0	-	-	0
		Average Course outcomes= 0 (Max 3.00)	0	-	0	0	-	-	-	0	-	-	0
BP103T. Pharmaceutics-I	CO1:	Knowledge of pharmacopoeias also study the dosage forms; Parts of prescription; dose calculations based on age, body weight and body surface area..	3	-	3	-	-	-	3	3	3	-	3



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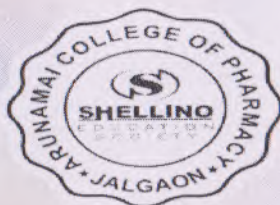
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	CO2:	Study the Pharmaceutical calculations; Study the definition classification, official preparations of powders & liquid dosage forms.	3	-	3	3	-	3	-	3	-	-	3
	CO3:	Understand definition, advantages and disadvantages classification and preparation of monophasic and biphasic dosage forms.	3	3	3	3	-	3	3	3	-	-	3
	CO4:	Types and preparation evaluation suppositories. Identify the physical & chemical incompatibilities.	3	-	3	3	-	-	-	3	-	-	3
	CO5:	Composition of ointments, pastes, creams and gels. Evaluation of semi solid dosages forms.	3	3	-	3	-	3	-	3	3	-	3
		Average Course outcomes= 3 (Max 3.00)	3	3	-	3	-	3	-	3	3	-	3
BP104T. Pharmaceutical Inorganic Chemistry	CO1:	Explain the Sources and types of impurities & method of preparation inorganic drugs and pharmaceuticals.	2	2	2	2	-	2	-	-	-	-	-
	CO2:	Explain the different buffers, their preparation and use in pharmaceutical systems; Functions of major physiological ions,	2	2	2	2	-	2	-	2	-	-	-
	CO3:	Explain the medicinal important of pharmaceutical inorganic compound.	2	2	2	2	-	2	-	2	-	-	-
		Average Course outcomes= 2 (Max 3.00)	2	2	2	2	-	2	-	2	-	-	-




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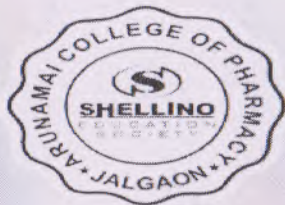
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BP105T. Communication Skills	CO1:	Understand the behavioural needs for a Pharmacist to function effectively in the areas of pharmaceutical operation	3	-	-	-	-	3	-	3	-	-	-
	CO2:	Basic listening skills, writing skills to communicate effectively and manage team as team player.	-	-	-	-	-	3	3	-	-	-	3
	CO3:	Effectively develop presentation skill with confidence to crack interviews.	-	-	-	-	-	-	-	3	-	-	-
	CO4:	Communication skills in group discussion; effectively stand in group/ businesswise.	-	-	-	3	3	-	-	3	3	-	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	3	3	3	3	3	3	-	3
BP106T.RBT Remedial biology	CO1:	The student must able to Know the cell biology and classification	3	-	-	-	-	3	-	3	3	3	3
	CO2:	Learn and comprehend various tissue organ system in plant and animal	3	-	-	-	-	3	-	3	3	3	3
	CO3:	Understands and explain anatomy and physiology of animal and plant	3	-	-	-	-	3	-	3	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	-	-	3	-	3	3	3	3



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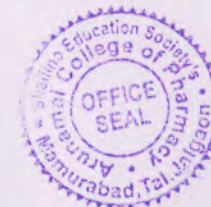
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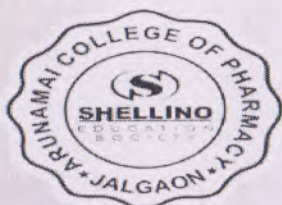
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BP106T.RMT Remedial Mathematics	CO1:	The student must able to Study the theoretical concept of various topics and their application in pharmacy.	3	-	3	-	-	-	-	-	-	-	-
	CO2:	Solve the different types of pharmaceutical problems by applying theoretical concept.	3	-	3	3	-	-	-	-	-	-	-
	CO3:	Appreciate the important application of mathematics and statistics in pharmacy.	3	-	3	3	-	-	3	-	-	-	-
		Average Course outcomes= (Max 3.00)	3	-	3	3	-	-	3	-	-	-	-
BP107P. Human Anatomy & Physiology-I (Theory)	CO1:	Explain the microscope parts apply this knowledge to study histology of different tissue.	3	-	-	3	-	3	3	-	3	3	3
	CO2:	Explain the component of skeletal system and identify and described parts in detail.	3	-	-	-	-	3	3	-	3	3	3
	CO3:	Methods use in diagnosis of disease using haematological test like bleeding time, clotting time, WBC, RBC, Blood group.	3	-	3	3	-	3	3	-	3	3	3
	CO4:	Describe the basic principle of cardiovascular system bright to aces heart rate, pulse rate and blood pressure.	3	-	3	3	-	3	3	-	3	3	3
		Average Course outcomes= (Max 3.00)	3	-	3	3	-	3	3	-	3	3	3



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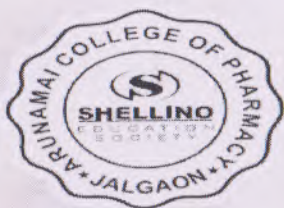
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BP108P. Pharmaceutical Analysis-I	CO1:	The student must able to Perform limit test of Chloride, Sulphate, Iron, and Arsenic.	3	3	-	3	-	-	-	-	-	-	3
	CO2:	Preparation and standardization of Sodium hydroxide Sulphuric acid, Sodium thiosulfate, Potassium permanganate, Ceric ammonium sulphate	3	3	-	3	-	-	-	-	-	-	3
	CO3:	Perform, Record and calculate Assay with Standardization of Titrant.	3	3	-	3	-	-	-	-	-	-	3
	CO4:	To understand electro-analytical methods by determination of Normality	3	3	-	3	-	-	-	-	-	-	3
		Average Course outcomes= 3 (Max 3.00)	3	3	-	3	-	-	-	-	-	-	3
BP109P. Pharmaceutics-I	CO1:	Prepare monophasic, biphasic, powder and semisolid systems.	3	3	3	-	3	3	3	-	-	3	3
	CO2:	Perform experiment according to GLP & record in the journals.	3	3	3	-	3	3	3	-	-	3	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	-	3	3	3	-	-	3	3
BP110P. Pharmaceutical Inorganic Chemistry	CO1	Perform qualitative analysis of given inorganic compound.	3	3	-	-	-	-	-	3	-	-	-
	CO2:	Cary out qualitative test of given inorganic compound	3	3	3	-	-	-	-	-	-	-	-
	CO3:	Perform Limit test Chloride, sulphate Iron etc.	3	3	-	3	-	3	-	3	-	-	-



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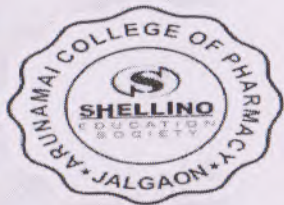
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	CO4:	Preparation of inorganic pharmaceuticals	3	3	-	3	-	3	-	3	-	-	-
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	-	3	-	-	-
BP111P. Communication Skills	CO1:	Demonstrate and Apply basic communication & pronunciations skill and advanced learning skill.	3	-	-	3	-	3	3	-	-	-	3
	CO2:	Practice skill and presentation skill.	3	3	3	3	-	3	-	-	-	3	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	3	-	-	3	3
BP112RBP. Remedial biology	CO1:	Demonstrate microscope, section cutting technique its significance.	3	-	-	3	-	-	3	-	-	3	3
	CO2:	Perform blood group detection, Measurement of blood pressure, Tidal volume.	3	-	-	3	-	-	3	-	-	3	3
	CO3:	Identify microscopy of tissue pertinent steam, root, leaf, seed, fruit, and flower.	3	-	-	3	-	-	3	-	-	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	3	-	-	3	-	-	3	3

*Note: First Year B.Pharm Second Semester Examination Not yet Completed.



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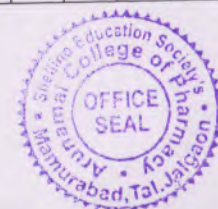
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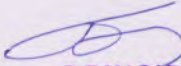
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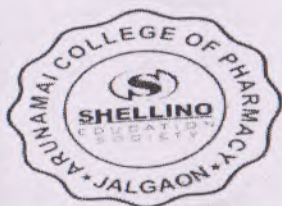
Second year B. Pharmacy (Semester-III)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11
BP301T. Pharmaceutical organic chemistry-II	CO1:	Explain different reaction and aromatic character, resonance, orientation effect of substituent in benzene and its derivatives.	3	-	3	-	-	-	-	3	-	-	-
	CO2:	Explain and described the method of preparation reaction chemical properties and uses structure and qualitative identification test for phenols, aromatic amines, aromatic acids and hydrocarbon.	3	-	3	-	-	-	-	3	-	-	3
	CO3:	Understand the chemistry of fats and oils along with determine their analytical constants like acid value, Saponification value, iodine value and RM value	3	-	3	-	-	-	-	3	-	-	-
	CO4:	Synthesis, reactions, Structure and medicinal uses polynuclear hydrocarbons.	3	-	3	-	-	-	-	3	-	-	-
	CO5:	Explain different conformational Stabilities & reactions of cyclopropane and cyclobutane	3	-	3	-	-	-	-	3	-	-	-
			Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	-	3	-	-	-
BP302T. Physical Pharmaceutics-I	CO1:	Understand the different physicochemical properties of drug molecule in the designing of the dosage form.	3	3	-	3	-	3	3	-	3	-	3
	CO2:	Know the principle of the chemical Kinetic & to use them for stability testing and determination of expiry	3	-	-	3	-	3	3	-	3	-	3





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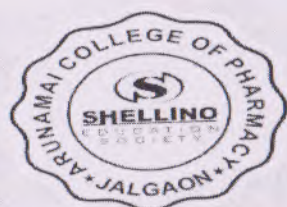
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	CO3:
BP303T. Pharmaceutical Microbiology	CO1:
	CO2:
	CO3:
	CO4:
	CO5:
	Average Course outcomes= 3 (Max 3.00)
BP304T.	CO1:

e of formulation.												
monstrate the use of physicochemical properties in formulation development and evaluation of dosage forms.	3	3	-	3	-	3	3	-	3	-	3	
Average Course outcomes= (Max 3.00)	3	3	-	3	-	3	3	-	3	-	-	
nderstand classification and method of identification, isolation and cultivation and preservation of various classes of microorganisms.	3	-	-	-	-	3	-	3	3	-	3	
nderstand the uses of various microscopic techniques including staining technique and biochemical test for identification of microorganism	3	-	-	-	-	3	-	3	3	-	3	
scribe various method for control microorganism, their evolution and factor affecting their efficiency.	3	-	3	-	-	3	-	3	3	3	3	
scribe various method used for sterilization of pharmaceutical product and evaluation of efficiency of method of sterilization.	3	-	3	-	-	3	-	3	3	-	3	
ntline cell culture technology and its applications in pharmaceutical industries.	3	-	-	3	-	3	-	3	3	-	3	
Average Course outcomes= 3 (Max 3.00)	3	-	-	3	-	3	-	3	3	-	3	
plain the various unit operations used in	3	3	3	-	-	-	-	3	-	-		



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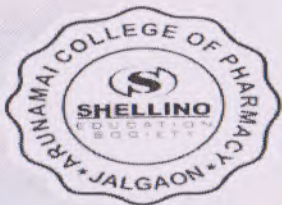
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Pharmaceutical Engineering		Pharmaceutical industries.																		3
	CO2:	Perform various processes involved in pharmaceutical manufacturing process.	3	3	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	3
	CO3:	Appreciate and comprehend significance of plant layout design for optimum use of resources like Evaporation, Distillation, Filtration, Centrifugation, Size Separation.	3	3	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	3
	CO4:	Described various preventive methods used for corrosion control in Pharmaceutical industries	3	3	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
		Average Course outcomes= 3 (Max 3.00)	3	3	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	3
BP305P. Pharmaceutical organic chemistry-II	CO1:	Perform experiment involving in laboratory techniques recrystallization & distillation.	3	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO2:	Determine analytical constant like acid value, Saponification value, iodine value of fats and oil	3	3	3	3	-	-	-	3	-	-	-	-	-	-	-	-	-	-
	CO3:	Explain the theoretical aspect of organic synthesis and perform various organic synthetic reactions.	3	-	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
	CO4:	Plan, execute and conclude the experiment using various methodologies.	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Average Course outcomes= (Max 3.00)	3	3	3	3	3	3	-	3	-	-	-	-	-	-	-	-	-	-



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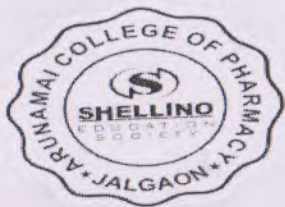
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BP306P. Physical Pharmaceutics-I	CO1:	Understand the principle & method for determination various physical parameter of formulation & drug.	3	-	3	3	-	3	-	-	-	3	3
	CO2:	Analyze HLB number of a surfactant by Saponification method.	3	-	3	-	-	-	-	-	-	-	-
	CO3:	Compare and contrast between different methods used in the determination of the same physicochemical parameters.	3	-	3	3	-	3	-	-	-	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	3	-	3	-	-	-	3	3
BP307P. Pharmaceutical Microbiology	CO1:	Select and utilize different equipment and processing in experimental microbiology.	3	3	3	-	-	3	3	3	-	3	3
	CO2:	Identify and isolate various microorganisms.	3	3	3	-	-	3	3	3	-	-	3
	CO3:	Perform sterility testing of pharmaceutical products.	3	3	3	-	-	3	3	3	-	-	3
	CO4:	Perform microbiological standardization of Pharmaceuticals.	3	3	3	-	-	3	3	3	-	-	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	-	-	3	3	3	-	3	3
BP308P. Pharmaceutical	CO1:	Impact knowledge of different unit operations process.	3	3	3	3	-	-	-	-	-	-	3
	CO2:	Perform numerical involved in calculating process	3	3	3	-	-	-	-	3	-	-	-



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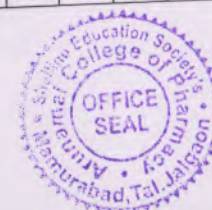
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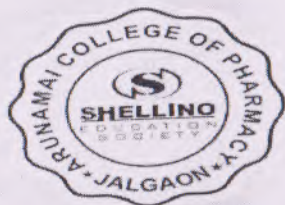
Engineering		related determinants.											
	CO3:	Analyze and interpret the data generated from the experiments performed.	3	3	3	-	-	-	-	3	-	-	-
	Average Course outcomes= 3 (Max 3.00)		3	3	3	3	-	-	-	3	-	-	-

Second year B. Pharmacy (Semester-IV)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11	
BP401T. Pharmaceutical organic chemistry-III	CO1:	Basic knowledge and various terminologies involved in stereochemistry.	3	-	-	-	-	-	-	-	-	-	3	
	CO2:	Understand nomenclature and classification Synthesis, reactions and medicinal uses heterocyclic compounds/derivatives	3	-	-	-	-	3	-	-	3	-	3	
	CO3:	Remembers the reaction Metal hydride, Clemmensen, Birch reduction, Wolff Kishner reduction. Oppenauer-oxidation & Dakin reaction. Beckmanns and Schmidt rearrangement. Claisen-Schmidt condensation	3	-	3	-	-	-	-	-	-	3	-	3
			3	-	3	-	-	3	-	-	3	-	3	



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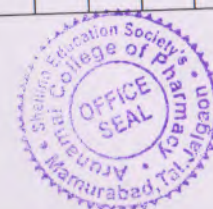
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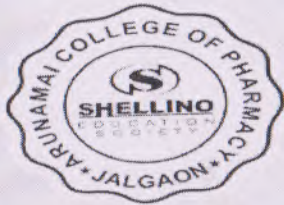
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		Average Course outcomes= 3 (Max 3.00)											
BP402T. Medicinal Chemistry-I	CO1:	Correlate the physico-chemical properties of drug with biological response and metabolism of drugs with biological activity	3	-	3	-	-	3	-	-	-	-	-
	CO2:	Explain the chemistry, metabolic pathways & SAR of drug acting on CNS like adrenergic, cholinergic drug.	3	-	3	-	-	3	-	-	-	-	-
	CO3:	Explain the chemistry & SAR of Benzodiazepines, Barbiturates & Phenothiazines	3	-	3	-	-	3	-	-	-	-	-
	CO4:	Explain the chemistry, metabolic pathways & SAR of narcotic & non-narcotic drugs.	3	-	3	-	-	3	-	-	-	-	-
			Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	-	-	-	-
BP403T. Physical Pharmaceutics-II	CO1:	Understand the concept of coarse & colloidal dispersion, rheology and powder technology and drug stability.	3	-	-	-	-	3	-	-	3	3	3
	CO2:	Identify the different type of dispersion, rheological properties of the different dosage forms.	3	-	-	-	-	3	-	-	3	3	3
	CO3:	Understand different type of orders of reaction and ways of	3	-	-	-	-	3	-	-	3	3	3



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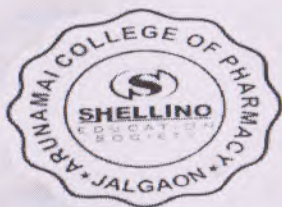
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		drug interaction and drug development process.												
		Average Course outcomes= 3 (Max 3.00)	3	3	3	-	3	3	3	3	3	3	3	3
BP405T. Pharmacognosy & Phyto chemistry-I	CO1:	Outline the alternative system medicine, Classify the drug according to origin, quality & quantitative control parameter of drug.	3	-	3	-	-	3	3	-	3	3	3	3
	CO2:	Describe the primary and secondary plant metabolite their biosynthesis and evaluation and therapeutics application.	3	-	3	-	-	3	3	-	3	3	3	3
	CO3:	Describe the application of plant tissue culture technique to with value to production secondary metabolite	3	-	3	-	-	3	3	-	3	3	3	3
	CO4:	Cultivation, Collection, Processing and storage of drugs, Factors influencing cultivation of medicinal plants. Plant hormones and their applications.	3	-	3	-	-	3	3	-	3	3	3	3
	CO5:	Detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as	3	-	3	-	-	3	3	-	3	3	3	3



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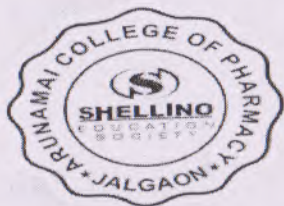
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		Pharmaceutical Aids and Medicines.												
		Average Course outcomes= (Max 3.00)	3	-	3	-	-	3	3	-	3	3	3	3
BP406P. . Medicinal Chemistry-I	CO1:	Demonstrate skills of handling synthetic procedure and quantitative evaluation technique.	3	-	-	-	-	-	-	-	3	3	3	3
	CO2:	Synthesize and explain reaction mechanism of medicinally important compounds by using conventional methods.	3	-	3	-	-	-	-	-	3	3	3	3
	CO3:	Perform quantitative analysis of drug such as Chlorpromazine, Phenobarbitone, Atropine Ibuprofen, Aspirin and furosemide.	3	-	3	-	-	-	-	-	3	3	3	3
	CO4:	Design the experimental requirement of Determination of Partition coefficient of organic molecule and evaluation.	3	-	3	-	-	-	-	-	3	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	-	-	-	3	3	3	3



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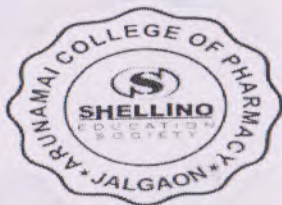
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BP407P. Physical Pharmaceutics-II	CO1:	Determine physico chemical properties in the formulation development and, evaluation of dosage form.	3	3	3	3	3	3	-	3	-	3	3
	CO2:	Determine reaction rate constant, order of different reaction.	3	3	3	3	3	3	-	3	-	3	3
	CO3:	Carrying out Accelerated stability studies.	3	3	3	3	3	3	-	3	-	3	3
	CO4:	Find out properties of powder & liquid dosage forms And observe on quality.	3	3	3	3	3	3	-	3	-	3	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	3	3	-	3	-	3	3
BP408P. Pharmacology-I	CO1:	Explain, Understand, evaluate and apply basic technique related instrument and animal handling for experiment purpose. Route of administration.	3	3	3	3	-	3	3	-	-	3	3
	CO2:	Understand the CPCSEA guideline for ethical animal handling & Care of laboratory animal.	3	3	3	3	-	3	3	-	-	3	3
	CO3:	Explain common laboratory techniques, like blood withdrawal, serum plasma separation, anaesthetics and euthanasia used for animal studies.	3	3	3	3	-	3	3	-	-	3	3
	CO4:	Demonstrate the effect of drugs on animals by simulated experiments.	3	3	3	3	-	3	3	-	-	3	3



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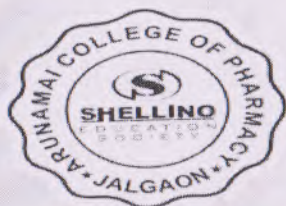
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		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	3	-	-	3	3
BP409P. Pharmacognosy & Phyto chemistry-I	CO1:	Determination the quantitative microscopy for leaf constant.	3	-	3	-	-	3	-	-	3	3	3
	CO2:	Determine different extractive, ash value, moisture content, swelling index and foaming index by official books.	3	-	3	-	-	3	-	-	3	3	3
	CO3:	Determination of histological future of plant of diagnostic significance like size of starch grains, calcium oxalate crystals.	3	-	3	-	-	3	-	-	3	3	3
	CO4:	Analysis of crude drugs by chemical tests.	3	-	3	-	-	3	-	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	-	-	3	3	3

Third year B. Pharmacy (Semester-V)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11
BP501T. Medicinal Chemistry-II	CO1:	Understand the chemistry of drugs with respect to their pharmacological activity.	3	-	-	-	-	-	-	-	-	-	3



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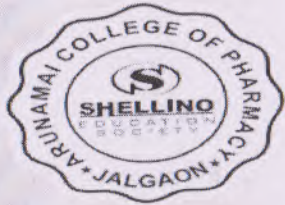
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	CO2:	Be aware of the drug metabolic pathways, adverse effect and therapeutic value of drugs.	3	-	3	3	-	-	-	-	-	-	3
	CO3:	Know the Structural Activity Relationship of different class of drugs.	3	-	3	-	-	-	-	3	-	-	3
	CO4:	Study the chemical synthesis of selected drugs.	3	-	3	-	-	-	-	3	-	-	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	-	-	3	-	-	3
BP502T. Industrial Pharmacy-I	CO1:	Understand the various dosage form and their manufacturing technique.	3	-	-	-	-	3	-	-	-	-	-
	CO2:	All the related and practical aspect of solid, liquid and semisolid dosage form and their development & evaluation.	3	-	3	-	-	3	-	-	-	-	-
	CO3:	Correlate the theoretical knowledge with professional and practical need of pharmaceutical industry.	3	-	-	-	-	3	-	-	-	-	-
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	-	-	-	-	-
BP503T. Pharmacology-II	CO1:	Classify the drug use for cardiovascular, urinary and endocrine system and explain their pharmacology.	3	-	-	-	-	3	-	3	3	3	3
	CO2:	Explain autacoids and their drug and role in inflammatory disorder like gout & rheumatoid.	3	-	-	-	-	3	-	3	3	3	3
	CO3:	Explain & understand the concept of bioassay, Types of bioassay, method and applications of with different	3	-	-	-	-	3	-	3	3	3	3



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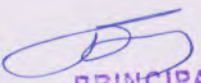
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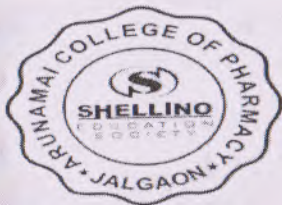
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		example of drug.												
		Average Course outcomes= 3 (Max 3.00)	3	-	-	-	-	-	3	-	3	3	3	3
BP504T. Pharmacognosy & Phyto chemistry-II	CO1:	Explain the modern process of extraction by using different method principles, isolation, purification, identification and analysis of diverse phytoconstituents.	3	-	3	-	-	-	3	3	-	3	3	3
	CO2:	To develop the skill of general method of extraction, evaluation and chemical test of crude drug containing secondary metabolite.	3	-	3	-	-	-	3	3	-	3	3	3
	CO3:	Establish the characterization & identification of the herbal drugs like Forskolin, Sennoside, Artemisinin, Diosgenine Digoxin.	3	-	3	-	-	-	3	3	-	3	3	3
	CO4:	Study of utilization of radioactive isotopes in the investigation of Biogenetic studies. development and marketing of pharmaceuticals.	3	-	3	-	-	-	3	3	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	-	3	3	-	3	3	3
BP505T. Pharmaceutical	CO1:	The Pharmaceutical legislations and their implications	3	-	-	-	-	3	3	-	-	3	3	3
	CO2:	Various Indian pharmaceutical Acts and Laws	3	-	-	-	-	3	3	-	-	3	3	3


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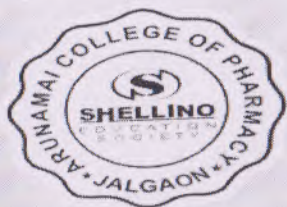
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Jurisprudence	CO3:	The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.	3	-	-	-	3	3	-	-	3	3	3
	CO4:	The code of ethics during the pharmaceutical practice.	3	-	-	-	3	3	-	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	-	3	3	-	-	3	3	3
BP506P. Industrial Pharmacy-I	CO1:	Proper use of various equipments in pharmaceutical laboratory related to tablets, capsules and tablet coating.	3	-	3	3	-	3	3	-	-	-	3
	CO2:	Include knowledge of formulation evaluation and labeling of Tablets and capsules	3	3	3	3	-	-	3	3	-	3	3
	CO3:	Use necessary tools and equipment for preparation as per SOP	3	3	3	3	3	3	3	3	3	3	3
	CO4:	Describe the evaluation criteria for glass containers as per I.P.	-	3	3	3	3	3	-	3	-	-	3
	CO5:												
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	3	3	3	3	3	3	3
BP507P. Pharmacology-II	CO1:	Understand methods of blood collection from experimental animals and various routes of drug administration and experimental principles for experiments.	3	-	3	3	-	3	3	-	3	3	3



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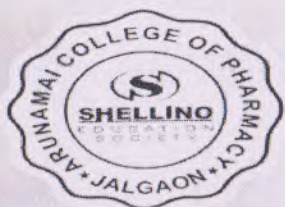
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	CO2:	Describe the composition of physiological salt solutions and basic tools used in pharmacology	3	-	3	3	-	3	3	-	3	3	3
	CO3:	Perform experiments using different isolated preparations and describe the effect of different drugs on the concentration response curve, interpret the action of different drugs using simulation software.	3	-	3	3	-	3	3	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	3	-	3	3	-	3	3	3
BP508P. Pharmacognosy & Phyto chemistry-II	CO1:	Identify crude drugs based on morphological and microscopic characters and assign biological source chemical constituents and therapeutic uses.	3	-	3	-	3	3	-	-	3	3	3
	CO2:	Apply the knowledge of microscopic characters for powder drug formulation.	3	-	3	-	3	3	-	-	3	3	3
	CO3:	Understanding the processes behind the extraction and isolation of alkaloids.	3	-	3	-	3	3	-	-	3	3	3
	CO4:	Perform TLC on herbal extract.	3	-	3	-	3	3	-	-	3	3	3
	CO5:	Analysis of crude drugs by chemical tests.	3	-	3	-	3	3	-	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	3	3	-	-	3	3	3



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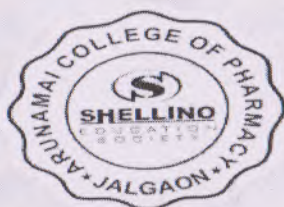
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Third year B. Pharmacy (Semester-VI)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11
BP601T. Medicinal Chemistry-III	CO1:	Understand the chemistry of drugs such as B-lactam antibiotics in relation to their pharmacological activity.	3	-	3	-	-	-	-	3	-	-	3
	CO2:	Learn the metabolism, adverse effects and therapeutic value of drugs such as antibiotics and antimalarial.	3	-	3	-	-	-	-	3	-	-	3
	CO3:	Know the Structural Activity Relationship of different class of drugs like anti-tubercular agents, Quinolones & antiviral agents.	3	-	3	-	-	-	-	3	-	-	3
	CO4:	Understand the importance of metabolism, SA& IUPAC of sulphonamides and sulfones.	3	-	3	3	-	-	-	3	-	-	3
	CO5:	Understand the importance of drug design and different techniques of drug design.	3	-	3	3	-	-	-	-	-	-	3
			Average Course outcomes= 3 (Max 3.00)	3	-	3	3	-	-	-	3	-	-
BP602T. Pharmacology-III	CO1:	Understand the mechanism of action of drugs and its relevance in the treatment of various infectious diseases.	3	-	3	-	-	3	-	3	3	3	-



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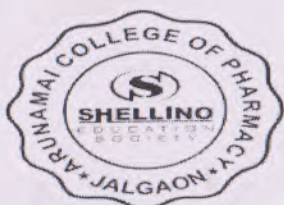
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	CO2:	Comprehend the principles of toxicology and treatment of various poisoning.	3	-	3	-	-	3	-	3	3	3	-
	CO3:	Appreciate correlation of pharmacology with related medical sciences.	3	-	3	-	-	3	-	3	3	3	-
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	-	3	3	3	-
BP603T. Herbal Drug Technology	CO1:	Understand raw material as source of herbal drugs from cultivation to herbal drug product.	3	-	3	-	-	3	3	-	3	3	3
	CO2:	Know the WHO and ICH guidelines for evaluation of herbal drugs.	3	-	3	-	-	3	3	-	3	3	3
	CO3:	Know the herbal cosmetics, natural sweeteners, nutraceuticals	3	-	3	-	-	3	3	-	3	3	3
	CO4:	Appreciate patenting of herbal drugs, GMP.	3	-	3	-	-	3	3	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	3	-	3	3	3
BP604T. Biopharmaceutics & Pharmacokinetics	CO1:	Understand the basic concepts and their importance in biopharmaceutics and pharmacokinetics.	3	3	3	3	3	3	3	3	3	3	
	CO2:	Use of plasma drug concentration-time data to	3	-	3	-	-	3	3	-	3	3	



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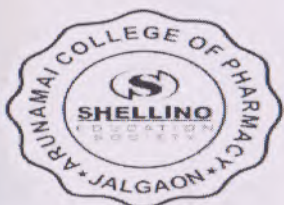
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(Principal)

BP606T. Quality Assurance	CO1:	Understand the cGMP aspects in a pharmaceutical industry	3	3	3	3			-	-	3	-	-
	CO2:	To appreciate the importance of documentation	-	3	3		3	3	-	-	3	3	-
	CO3:	Understand the scope of quality certifications applicable to pharmaceutical industries	-	3	3	3	-	-	-	-	-	-	3
	CO4:	Be aware of the responsibilities of QA & QC departments	3	3	3	3	-	-	-	-	-	-	3
		Average Course outcomes= 3 (Max 3.00)		3	3	3	3	-	-	-	-	-	-
BP607P. Medicinal Chemistry-III	CO1:	Preparation of medicinally important compounds or intermediates by Microwave irradiation technique.	3	3	3	-	3	-	-	-	-	-	3
	CO2:	Perform assay on drug.	3	3	3	-	3	-	-	-	-	-	3
	CO3:	Apply the principle of green chemistry.	3	3	3	-	3	-	-	-	-	-	3
	CO4:	Determination of physicochemical properties using drug design software.	3	3	3	3	3	-	-	-	-	-	3
		Average Course outcomes= 3 (Max 3.00)		3	3	3	3	3	-	-	-	-	-
BP608P.	CO1:	Problem based on dose calculation in pharmacological	3	3	3	-	3	3		3	3	-	-



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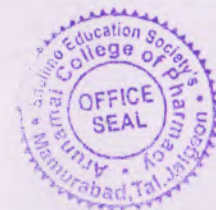
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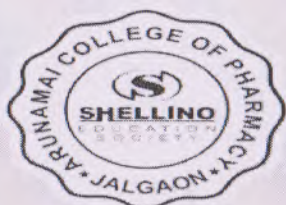
Pharmacology-III		experiment and calculation of pharmacokinetic parameter like Student's t test, ANOVA, Chi square test, Wilcoxon Signed Rank test.											
	CO2:	The effect of drugs on animals by simulated software's.	3	3	3	-	-	3	3	3	3	-	-
	CO3:	Determination of different toxicity study.	3	3	3	-	-	3	3	3	3	-	-
	CO4:	Different biostatistics methods in experimental pharmacology.	3	3	3	-	-	3	3	3	3	-	-
		Average Course outcomes= 3 (Max 3.00)	3	3	3	-	-	3	3	3	3	-	-
BP609P. Herbal Drug Technology	CO1:	Perform preliminary photochemical screening of crude drugs.	3	-	3	-	-	3	3	-	3	3	3
	CO2:	Understanding the process behind extraction and isolation of alkaloids.	3	-	3	-	-	3	3	-	3	3	3
	CO3:	Analysis of herbal drugs from recent pharmacopoeias	3	-	3	-	-	3	3	-	3	3	3
	CO4:	Determine Phenol content, Aldehydes content etc.	3	-	3	-	-	3	3	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	3	-	-	3	3	-	3	3	3



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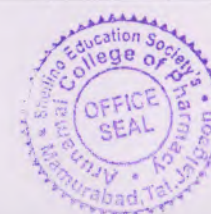
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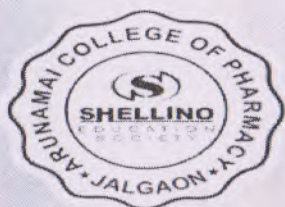
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Final year B. Pharmacy (Semester-VII)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11
BP701T. Instrumental Method Analysis	CO1:	Explain and illustrate the theory and application of UV Visible spectroscopy , Fluorimetry, IR spectroscopy , Flame Photometry, Atomic absorption spectroscopy, HPLC, GC, TLC, Paper chromatography, Ion exchange, Affinity chromatography, Gel chromatography.	3	3	3	3	-	3	-	3	-	-	3
	CO2:	Perform mathematical calculation to obtain quantitative result from UV & chromatography parameter.	-	3	3	3	-	-	-	3	-	-	-
	CO3:	Understand the chromatographic separation and analysis of drugs.	3	3	3	3	-	3	-	3	-	-	3
	CO4:	Recall the terminologist associated with spectroscopy & chromatography .	3	3	3	3	-	3	-	3	-	-	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	-	3	-	-	3
BP702T. Industrial Pharmacy-II	CO1:	Know the process of pilot plant and scale up of pharmaceutical dosage forms.	3	3	3	3		3	3	-	-	3	3
	CO2:	Understand the process of technology transfer from lab scale to commercial batch.	3	3	3	3		3	3	-	-	3	3




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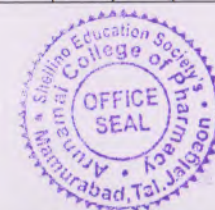
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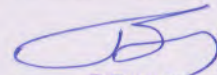
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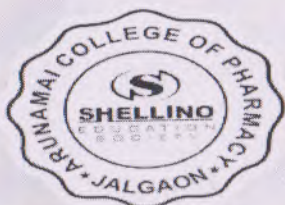
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	CO3:	Know different Laws and Acts that regulate pharmaceutical industry.	3	3	3	3	3	3	3	-	-	3	3
	CO4:	Understand the approval process and regulatory requirements for drug products.	3	3	3	3	3	3	3	-	-	3	3
	CO5:												
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	3	3	3	-	-	3	3
BP703T. Pharmacy Practice	CO1:	Understand the management of hospital, community, clinical pharmacy and therapeutic committee.	3	3	3	3	-	3	3	-	-	3	-
	CO2:	ADR classification, therapeutic drug monitoring, drug store management and inventory control.	3	-	3	-	3		3	-	-	-	-
	CO3:	Précis the OTC medication, investigational use of drug and interpretation of clinical lab tests.	3	3	-	3	-	-	-	-	-	-	3
	CO4:	Understanding of drug delivery systems, prescribed drug orders and communication skills in practical situations.	3	-	-	-	-	-	-	-	-	-	-
	CO5:	Evaluation of patient counselling and Rational drug therapy	-	3	3	3	-	3	-	-	-	-	3
			Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	-	-	-	-
BP704T. Novel Drug Delivery System	CO1:	To understand various approaches for the development of new drug delivery systems.	3	3	3	3	3	3	3	3	3	3	3




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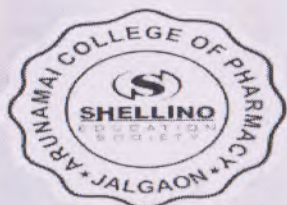
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	CO2:	To understand the criteria for selecting drugs and polymers for the development	3	3	3	3	3	3	3	3	3	3	3
	CO3:	New drug delivery systems, their design and evaluation.	3	3	3	3	3	3	3	3	3	3	3
		Average Course outcomes= 3 (Max 3.00)	-	3	-	3	3	-	3	3	3	3	3
BP705P. Instrumental Method Analysis	CO1:	Perform analyze and determine and report the content of drug by using UV Visible spectroscopy , Fluorimetry, IR spectroscopy , Flame Photometry, Atomic absorption spectroscopy, colourometry and turbidometry.	-	3	3	3	-	3	-	3	-	-	3
	CO2:	The separation of mixture component by applying separation principle on chromatographic technique.	-	3	3	3	-	3	-	3	-	-	3
	CO3:	Elaborate the Demonstration experiment on HPLC' Gas Chromatography.	3	3	3	3	-	3	-	3	-	-	3
		Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	3	-	3	-	-	3
Practice school	CO1:	Development of skill in the modern tools.	3	-	-	3	-	-	-	-	-	-	3
	CO2:	Acquire skill of documentation and record keeping.	3	-	-	3	-	-	-	-	-	-	3
	CO3:	Plan academic carrier, and personal interests via research experiences.	3	-	-	3	-	-	-	-	-	-	3



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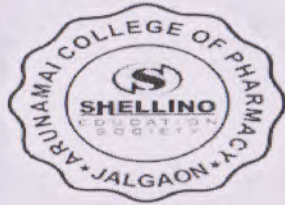
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		Average Course outcomes= 3 (Max 3.00)	3	-	-	3	-	-	-	-	-	-	3
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Final year B. Pharmacy (Semester-VIII)	CO	Statement	1	2	3	4	5	6	7	8	9	10	11
BP801T. Biostatistics And Research Methodology	CO1:	Understand various approaches in Biostatistics & Mean, Median, Mode used in pharmaceutical field	3	-	3	-	-	-	3	-	3	3	3
	CO2:	Know the operation of M.S. Excel, SPSS, R and MINITAB, DoE (Design of Experiment)	3	3	3	3	-	-	-	-	-	3	3
	CO3:	Know the various statistical techniques to solve statistical problems.	3	3	3	3	-	-	-	-	-	3	3
	CO4:	Appreciate statistical techniques in solving the problems	3	3	3	3	-	-	-	-	-	3	3
			Average Course outcomes= 3 (Max 3.00)	3	3	3	3	-	-	-	-	3	3
BP802T. Social And Preventive Pharmacy	CO1:	Gain a higher consciousness/awareness of current issues related to health and pharmaceutical issues in the country and around the world.	3	-	3	-	-	3	3	3	3	3	3
	CO2:	A critical way of thinking is based on current healthcare developments.	3	3	-	3	3	-	3	3	3	3	3



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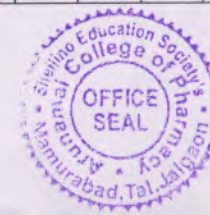
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	CO3:	Evaluate alternative ways of solving health related problems and Pharmaceutical problems.	-	3	-	3	3	-	3	3	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	3	-	3	3	-	3	3	3	3	3
BP804ET.	CO1:	Learn about the drug discovery and development process	3	-	-	-	3	-	-	-	3	3	3
	CO2:	Know the regulatory authorities and agencies that regulate production and sales of pharmaceuticals.	3	-	-	-	3	-	-	-	3	3	3
	CO3:	Know the regulatory approval process and their Indian and registration International markets.	3	-	-	-	3	-	-	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	-	3	-	-	-	3	3	3
BP806ET.	CO1:	Know the WHO guidelines for quality control of herbal medicines.	3	-	-	-	3	-	-	-	3	3	3
	CO2:	Learn about quality assurance in the herbal medicine industry.	3	-	-	-	3	-	-	-	3	3	3
	CO3:	Regulatory approval process and their registration in India and International markets.	3	-	-	-	3	-	-	-	3	3	3
	CO4:	Appreciate EU and ICH guidelines for quality control of herbal medicines.	3	-	-	-	3	-	-	-	3	3	3
		Average Course outcomes= 3 (Max 3.00)	3	-	-	-	3	-	-	-	3	3	3



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