UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP101: Theory Human Anatomy and Physiology	
S. NO.	**Statements**
BP101.1	Gained knowledge of morphology, structureand functions of cell, tissues and organs of the human body.
BP101.2	Perceptions about homeostatic mechanisms and their imbalances
BP101.3	Understand about workingpattern ofvarious organs.
BP101.4	Identifythe various tissues, bonesandorgans of human body
BP101.5	Acquiredknowledgeabout anatomyandphysiologicalroleofvarious systems.
BP107: Practical Human Anatomy and Physiology	
S. NO.	**Statements**
BP107.1	Acquired practical knowledge of microscopicanatomy
BP107.2	Developing insights to various hematological tests
BP107.3	Identification of various tissues and bones in human body.
BP102: Theory Pharmaceutical Analysis - I	
S. NO.	**Statements**
BP102.1	Describe the fundamentals of titrimetric analysis
BP102.2	Detection and minimization of errors
BP102.3	Development of analytical skills
BP102.4	Explain various terms of expressing concentration and its method of preparation.
BP102.5	Knowledge about the basic principles of electrochemical methods of analysis
BP108: Practical Pharmaceutical Analysis - I	
S. NO.	**Statements**
BP108.1	Prepare and standardize volumetric solutions
BP108.2	Perform different titrations and electrochemical methods
BP108.3	Understand how to evaluate the experimental results and arrive at inference

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from each semester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP103: Theory Pharmaceutics	
S. NO.	**Statements**
BP103.1	Helps to know the history of profession of Pharmacy and also about the way of handling of prescription. Provides basics of all types of dosage forms.
BP103.2	Helps to gain knowledge about the Pharmaceutical dose calculations and also preparation of powders and liquid dosage forms.
BP103.3	Describe the formulation of monophasic and biphasic dosage forms and its types.
BP103.4	Explain the idea about incompatibilities and formulation aspects of suppositories.
BP103.5	Gives a detailed information about the semi-solid dosage forms and their formulation methods.
BP109: Practical Pharmaceutics	
S. NO.	**Statements**
BP109.1	Develop various types of formulations including Solid, liquid and Semi-solid dosage forms
BP109.2	Acquire knowledge about choosing proper containers and closures
BP109.3	Able to prepare Suppositories using the mould
BP104: Theory Pharmaceutical Inorganic Chemistry	
S. NO.	**Statements**
BP104.1	Acquire knowledge of sources of impurities and methodsto determine the impurities in inorganic drugs and pharmaceuticals.
BP104.2	Understanding of the basic concepts of acidity/ basicity/ buffers and tonicity applicable in pharmaceuticals.
BP104.3	Preparing and identify different inorganic drugs as per category
BP104.4	Knows the medicinal and pharmaceutical use of inorganic compound
BP104.5	Describes the properties, storage condition and application of radiopharmaceuticals
BP110: Practical Pharmaceutical Inorganic Chemistry	
S. NO.	**Statements**
BP110.1	Develop skills to perform limit test
BP110.2	Ability to perform test for purity and identification of inorganic compounds as per Indian Pharmacopoeia
BP110.3	Knowledge and skills to prepare inorganic salts- Boric acid, Potash alum, and Ferrous sulphate

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP105: Theory Communication Skills	
S. NO.	**Statements**
BP105.1	Interacteffectivelywithheathcareteammembers,patientsand public
BP105.2	Understand the behavioral needs of Pharmacist to furnish Pharmaceuticalservicetopatients andsociety
BP105.3	Improvement of soft skills and to work in a team efficiently
BP105.4	Develop leadership qualities
BP105.5	Generate interview skills
BP111: Practical Communication Skills	
S. NO.	**Statements**
BP111.1	Develop constructive verbal Communication andWritingSkills
BP111.2	Improving listening and questioning skills
BP111.3	Develop discussion skills both in group and individual
BP106RBT/RMT: Theory Remedial Biology/Remedial Mathematics	
S. NO.	**Statements**
BP106.1 RBT	Understand the components of living world.
BP106.1 RMT	Inculcate mathematical knowledge andunderstanding inPharmacy
BP106.2 RBT	Knowledge about structural system of plant and animal kingdom
BP106.2 RMT	Pertain mathematicalconceptsandprinciplestodo calculations in the field of Pharmacy
BP106.3 RBT	Knowledge about functional system of plant and animal kingdom
BP106.3 RMT	Understand the theory and its applications
BP106.4 RBT	Classification and salient features of five kingdoms of life
BP106.4 RMT	Solve different types of problems as per theoretical ideas
BP106.5 RBT	Acquire information regarding anatomy and physiology of humans
BP106.5 RMT	Performabstractmathematicalreasoning

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP112: Practical Remedial Biology	
S. NO.	**Statements**
BP112.1	Gained knowledge about use and applications of Microscope
BP112.2	Identification of blood cells and blood group and determination of blood pressure
BP112.3	Understand about plants and animals using models
BP201: Theory Human Anatomy and Physiology – II	
S. NO.	**Statements**
BP201.1	Knowledge about structure and function of nervous system
BP201.2	Learn knowledge on the digestion in various part of GIT
BP201.3	Acquired knowledge of structure,mechanisms and function of renal, respiratory,endocrine system and its disorders
BP201.4	Studied about the reproductive system
BP201.5	Acquired basic knowledge on genetics
BP207: Practical Human Anatomy and Physiology – II	
S. NO.	**Statements**
BP207.1	Study of various systems with help of charts, models, and specimen
BP207.2	Performed about me experiment like body mass index , body temperature measurement
BP207.3	Performed the experiment like olfactory nerve function, visual acuity test & identification of taste

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP202: Theory Pharmaceutical Organic Chemistry - I	
S. NO.	**Statements**
BP202.1	Knowledge of the classification, nomenclature, structure and the type of isomerism of the organic compound.
BP202.2	Understanding of important physical properties, reactions (and underlying mechanisms)and methods of preparation of various functional groups
BP202.3	Account for Reactivity/stability of compounds and intermediates forming in reactions.
BP202.4	Appreciate the importance of reaction intermediates
BP202.5	Identify/Confirm the identification of organic compounds
BP208: Practical Pharmaceutical Organic Chemistry - I	
S. NO.	**Statements**
BP208.1	Knowledge of safety measures in organic chemistry laboratory and various techniques to construct the molecular models of simple organic compounds
BP208.2	Understanding of steps to perform qualitative analysis of unknown organic compounds with different functional groups
BP208.3	Ability to prepare suitable solid derivatives from organic compounds& purification of it with one step reaction.
BP203: Theory Biochemistry	
S. NO.	**Statements**
BP203.1	Acquire knowledge about the chemical process associated with living cells at the molecular level
BP203.2	Understand the therapeutic and diagnostic applications of enzymes and its role in design of new drugs
BP203.3	Illustrate the metabolism of nutrient molecules in physiological and pathological conditions
BP203.4	Explain the genetic organization of mammalian genome
BP203.5	Describe the significance of various biochemical tests.
BP209: Practical Biochemistry	
S. NO.	**Statements**
BP209.1	Acquire knowledge to handle the instruments used in quantitative estimations
BP209.2	Interpret the pathological conditions using various biochemical tests.
BP209.3	Perform the qualitative tests for nutrients in body fluids

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (SAR should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP204: Theory Pathophysiology	
S. NO.	**Statements**
BP204.1	Describe the mechanism of cell injury, inflammation and repair
BP204.2	Summarize the cardio vascular and respiratory system
BP204.3	Categorize the Hematological and GI system diseases
BP204.4	Understand the principle of cancer and bone disorder
BP204.5	Classify the infectious and STDs
BP205: Theory Computer Applications in Pharmacy	
S. NO.	**Statements**
BP205.1	Understand the types of database and its applications in the clinical studies
BP205.2	Effective use of ICT tools in the field of Pharmacy
BP205.3	Interpretation and tabulations of clinical data using softwares
BP205.4	Acquire knowledge on applications of computers in Pharmacy.
BP205.5	Efficient use database management system in Pharmaceutical field
BP210: Practical Computer Applications in Pharmacy	
S. NO.	**Statements**
BP210.1	Design web page, database, form creation, generating and printing report in matters related with Pharmacy
BP210.2	Retrievetheinformationofadruganditsadverseeffects usingMS Access
BP210.3	Designing of labels in Pharmaceutical preparations.
BP206: Theory – Environmental Sciences	
S. NO.	**Statements**
BP206.1	Explain the importance of Environmental science and conservation of natural resources.
BP206.2	Discuss the importance of ecosystems and biodiversity.
BP206.3	Impart basic knowledge about the environment and its allied problems.
BP206.4	Motivate to participate in environment protection and environment improvement
BP206.5	Apply the environmental science knowledge on Biomedical waste management

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP301: Theory Pharmaceutical Organic Chemistry - II	
S. NO.	**Statements**
BP301.1	Illustrate the concept of aromaticity, structure, and general reactions of benzene including mechanism orientations of electrophilic substitution reaction
BP301.2	Evaluation of organic compounds and analyzing the acidity and basicity of compounds.
BP301.3	Extrapolate the knowledge and applications of fats and oils
BP301.4	Understand the methods of preparations & properties of organic compounds.
BP301.5	Summarize the stability and reactivity of aromatic hydrocarbons and cycloalkanes.
BP305: Practical Pharmaceutical Organic Chemistry - II	
S. NO.	**Statements**
BP305.1	Outline the recrystallization techniques to purify the crude product.
BP305.2	Can develop the synthetic procedures for the organic compound preparations.
BP305.3	To relate the analytical constants there by evaluating the purity of fats and oils.
BP302: Theory Physical Pharmaceutics – I	
S. NO.	**Statements**
BP302.1	Explain the solubility behavior of drugs and the laws explaining them
BP302.2	Describe the physical states of matter/molecules and determination of their properties
BP302.3	Acquire the knowledge about the methods of particle size and distribution analysis and explain the importance of particle size and distribution on pharmaceutical area.
BP302.4	Importance of complexation and protein binding in drug action and manufacturing of drugs
BP302.5	Understand the role of buffers, pH in pharmaceutical and biological system
BP306: Practical Physical Pharmaceutics – I	
S. NO.	**Statements**
BP306.1	Determine the solubility, pKa value and partition coefficient of pharmaceutical products
BP306.2	Demonstrate different the particle size distribution methods
BP306.3	Explain Flow characters, bulk density, true density and porosity of pharmaceuticals

UNDERGRADUATE PHARMACY PROGRAM	
CRITERION	**Course Outcomes (COs)**

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)

. Establish the correlation between the courses and the Program Outcomes

(NBA defined Program Outcomes as mentioned in Annexure I)

. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP303: Theory Pharmaceutical Microbiology	
S. NO.	**Statements**
BP303.1	Elaborate the basic knowledge about microbiology and the detailed study regarding culturing techniques and preservation of microorganisms.
BP303.2	Illustrate to identify bacteria and various sterilization process
BP303.3	Describe about classification of fungi and viruses and different types of disinfectant in detail. Learn sterility testing of Pharmaceutical products
BP303.4	Explain the aseptic techniques,microbiological assay of antibiotics,vitamins and aminoacids
BP303.5	Distinguish microbial spoilage products and animal cell cultures.
BP307: Practical Pharmaceutical Microbiology	
S. NO.	**Statements**
BP307.1	Study of different equipments and processing & understand the concept of Sterilization
BP307.2	Attain knowledge on identification of bacteria by Staining and biochemical methods
BP307.3	Apply microbiological testing tools in pharmaceutical products
BP304: Theory Pharmaceutical Engineering – I	
S. NO.	**Statements**
BP304.1	Helps to understand the basics of fluid flow and also about the equipments used for various pharmaceutical operations like size reduction, size separation, mixing.
BP304.2	Gives an idea about various heat transfer mechanisms and also the equipments for evaporation.
BP304.3	Describe the process of drying and distillation and equipments used for it.
BP304.4	Gives an idea about the pharmaceutical operations like filtration and centrifugation and its applications.
BP304.5	To understand the various aspects of material handling in pharmaceutical industry.
BP308: Practical Pharmaceutical Engineering – I	
S. NO.	**Statements**
BP308.1	Determine the overall heat transfer coefficient by heat exchanger, moisture content, humidity of air, particle size determination, factors affecting the filteration and evaporation rate
BP308.2	Express the drying rate curve, mixing index, particle size analysis
BP308.3	Demonstrate the major equipments

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:

BP401: Theory Pharmaceutical Organic Chemistry - III	
S. NO.	**Statements**
BP401.1	Explain the stereoisomerism with chirality,recemic modification and its resolution and asymmetric synthesis.
BP401.2	Explain the conformational isomerism and sterospecific and steroselective reactions
BP401.3	Describe and categories heterocyclic compounds with their structure,numbering, type, synthesis, reactivity and their application in medical chemistry
BP401.4	Explain the synthesis and chemical reaction of hero cyclic compound
BP401.5	Explain the various naming reactions along with their mechanism and synthetic importance

BP402: Theory Medicinal Chemistry - I	
S. NO.	**Statements**
BP402.1	Outline the history and physicochemical properties to inculcate knowledge about the metabolism phases.
BP402.2	To understand the chemistry of drugs with respect to their pharmacological action.
BP402.3	To examine the SAR & QSAR of specified classes of drugs
BP402.4	To impart the knowledge of drug metabolism and the adverse effects of the drugs
BP402.5	To impart fundamental knowledge on the structure, chemistry, therapeutic value of drugs

BP406: Practical Medicinal Chemistry - I	
S. NO.	**Statements**
BP406.1	To synthesize different medically important compounds and purify them.
BP406.2	To perform the monographic analysis of selected drugs as per pharmacopoeia.
BP406.3	Develop the skill using software as well as the laboratory skill to determine the physicochemical properties.

BP403: Theory Physical Pharmaceutics – II	
S. NO.	**Statements**
BP403.1	Distinguish the principles of chemical kinetics and to use them for stability testing and demonstration of expiry date of formulation.
BP403.2	Describe the rheological properties of Newtonian systems and Non-Newtonian systems and deformation of solids
BP403.3	Explain the stability of flocculated and deflocculated suspensions, emulsions and preservation of emulsions
BP403.4	Describe the importance of surface and interfacial phenomenon and properties adsorption of materials
BP403.5	Explain the concept of colloidal dispersions and general properties of dispersed systems

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP407: Practical Physical Pharmaceutics – II	
S. NO.	**Statements**
BP407.1	Determine the reaction rate, constant first order, reaction rate constant second order, accelerated stability studies of pharmaceuticals
BP407.2	Understand about the surface tension, CMC, HLB, Adsorption isotherms of the sample
BP407.3	Demonstrate the rheological characters of fluids and physical stability of suspension
BP404: Theory Pharmacology – I	
S. NO.	**Statements**
BP404.1	Discuss the various routes of drug administration, source of drugs and the terminologies used in pharmacology
BP404.2	Summarisethe mechanism of drug action at organ system/sub cellular/ macromolecular levels, Adverse drug reactions, Drug discovery and clinical evaluation of new drugs
BP404.3	IllustratePharmacology of drugs acting on peripheral nervous system
BP404.4	Explain the Pharmacology of drugs acting on CNS includes General anesthetics, pre-anesthetics, Sedatives, hypnotics, centrally acting muscle relaxants, Anti-epileptics, Alcohols and disulfiram
BP404.5	Describe the pharmacology of Psychopharmacological agents, CNS stimulants, Opioid drugs,antiparkinsons, antialzheimer's, addiction, drug abuse, tolerance anddependence
BP408: Practical Pharmacology – I	
S. NO.	**Statements**
BP408.1	Explain the application and need of experimental pharmacology
BP408.2	Demonstrate the DRC of acetylcholine using isolated chicken ileum.
BP408.3	Determine the acute oral toxicity and calculation in application experimental pharmacology.
BP405: Theory Pharmacognosy and Phytochemistry	
S. NO.	**Statements**
BP405.1	Know about Pharmacognosy and basic knowledge
BP405.2	Understand the cultivation & collection
BP405.3	Production of plant & plant metabolites
BP405.4	Understand the Indian system of medicine.
BP405.5	Ability to find out the primary metabolites

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP409: Practical Pharmacognosy and Phytochemistry	
S. NO.	**Statements**
BP409.1	Screening the Phytoconstituents leads to find out the crude drug
BP409.2	Determination of leaf constants used to find out the adulterant
BP409.3	Demonstration about physicochemical parameters for qualitative analysis.
BP501: Theory Medicinal Chemistry - II	
S. NO.	**Statements**
BP501.1	To gain knowledge of the pharmacological activity of medicines in relation to their chemistry
BP501.2	To understand drug metabolism, side effects, and the therapeutic efficacy of medications.
BP501.3	To understand the relationships between the structural activity of different class of drugs
BP501.4	To write the synthesis selected drugs
BP501.5	To knowledge the pharmacological activity of medicines in relation to their chemistry
BP502: Theory Formulative Pharmacy	
S. NO.	**Statements**
BP502.1	Explain concepts and applications of preformulation study of drug substances
BP502.2	Describe classification, excipients,formulation and evaluation of tablet and tablet coating with its processing problems and its tooling
BP502.3	Describe classification, excipients,formulation, evaluation and packaging of capsules and pelletization techniques
BP502.4	Gain knowledge about sterile dosage forms like parenteral ophthalmic and aerosols and able to understand its types, preformulation, requirements and characterization with its packaging techniques.
BP502.5	Understand the formulation and preparation of the various cosmetic preparations with its evaluation, labeling and packaging methods.
BP506: Practical Formulative Pharmacy	
S. NO.	**Statements**
BP506.1	Able to perform preformulation, preparation and evaluation of tablets and capsules
BP506.2	Able to conduct preparation and evaluation and packaging of parenteral and ophthalmic dosage forms with its labeling requirements
BP506.3	Able to perform formulation, preparation and labeling requirements of creams.

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)

. Establish the correlation between the courses and the Program Outcomes (NBA defined Program Outcomes as mentioned in Annexure I)

. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP503: Theory Pharmacology – II	
S. NO.	**Statements**
BP503.1	Describe the hemodynamic and electrophysiology of Heart
BP503.2	Illustrate the drug mechanism and Pharmacological action of cardiovascular and urinary system
BP503.3	Categorize autacoids and its pharmacological action
BP503.4	Summarize the mechanism of actions of endocrine system.
BP503.5	Classify the drugs acting on endocrine system
BP507: Practical Pharmacology – II	
S. NO.	**Statements**
BP507.1	Express the role of Physiological salt solution and effect of drugs in frog and rat heart
BP507.2	Demonstrate the bioassay of different drugs using various tissues preparation
BP507.3	Determine the dog BP and Frog heart of various drugs on animal models
BP504: Theory Pharmacognosy and Phytochemistry	
S. NO.	**Statements**
BP504.1	Acquire the knowledge about formation of secondary metabolites.
BP504.2	To carry out the secondary metabolite isolation and identification
BP504.3	To know the knowledge about how to isolate and identify and produce them industrially
BP504.4	To understand the preparation and development of herbal formulation
BP504.5	To know about extraction methods, characterization and identification of herbal drugs and phytoconstituent
BP508: Practical Pharmacognosy and Phytochemistry	
S. NO.	**Statements**
BP508.1	Performing the transverse section and identify the crude drug by the microscopical characters.
BP508.2	Extraction of Phytoconstituents from crude form of the drug.
BP508.3	Analyzing the Phytoconstituents by chromatography techniques and chemical test.

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)

. Establish the correlation between the courses and the Program Outcomes

(NBA defined Program Outcomes as mentioned in Annexure I)

. Course Outcomes (should include course outcomes of one course from each semester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP505: Theory Pharmaceutical Jurisprudence	
S. NO.	**Statements**
BP505.1	Acquire knowledge on schedule rules, laws andregulations related to drugs and cosmetics
BP505.2	Describe the regulatory authorities and agencies governing the manufacture and sale of Pharmaceuticals.
BP505.3	Insight on various Indian Pharmaceutical Acts and Laws
BP505.4	Understand rules and provisions for advertisement of drug, drug price and Prevention of Cruelty to animals
BP505.5	Explain pharmaceutical legislation & the intellectual property rights and regulatory guidelines
BP601: Theory Medicinal Chemistry - III	
S. NO.	**Statements**
BP601.1	To understand the significance of drug design and its different techniques
BP601.2	To understand chemistry of drugs affects their biological function.
BP601.3	To learn about the drug's metabolism, side effects, and therapeutic value of drugs
BP601.4	To know the significance of SAR of drugs.
BP601.5	To acquire knowledge on combinatorial chemistry of drugs
BP607: Practical Medicinal Chemistry - III	
S. NO.	**Statements**
BP607.1	Synthesize medicinal compounds
BP607.2	Perform assay of drugs as per pharmacopoeial standards
BP607.3	Understand the importance of drug design & different techniques of drug design

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP602: Theory Pharmacology – III	
S. NO.	**Statements**
BP602.1	Describe the Drug acting on respiratory system
BP602.2	Illustrate the drug mechanism and Pharmacological action of gastrointestinal tract
BP602.3	Categorize the mechanism of chemotherapy and its pharmacological action
BP602.4	Summarize the mechanism of actions of Immunopharmacology .
BP602.5	Classify the principles of Toxicology
BP608: Practical Pharmacology – III	
S. NO.	**Statements**
BP608.1	Express the application and need of cell based assay
BP608.2	Demonstrate the anti allergic and anti-ulcer models of different drugs.
BP608.3	Determine the bio statistics application in experimental pharmacology.
BP603: Theory Herbal Drug Technology	
S. NO.	**Statements**
BP603.1	Understand the monograph and processing of crude drug
BP603.2	Carry out the Indian system of medicine
BP603.3	Detailed knowledge about Nutraceuticals and their role played in the ailments.
BP603.4	Study about herbal formulation and development
BP603.5	Learning about regulatory issues for herbal medicine and their patents

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP609: Practical Herbal Drug Technology	
S. NO.	**Statements**
BP609.1	Preparation and standardization of herbal formulation / herbal cosmetic
BP609.2	Determination of physicochemical constituents in herbal formulation
BP609.3	Analysis of fixed oil
BP604: Theory Biopharmaceutics and Pharmacokinetics	
S. NO.	**Statements**
BP604.1	Understanding the concepts of absorption and distribution of drugs and their relevance in efficacy of dosage forms
BP604.2	Illuminate relevance and significance of biotransformation , drug elimination(renal non renal)
BP604.3	Understanding concepts of dissolution and in-vitro, in-vivo correlation and the concepts of bioavailability and bioequivalence studies
BP604.4	Learning various compartmental and non-compartmental analysis methods
BP604.5	Understanding the concepts of nonlinear pharmacokinetics
BP605: Theory Pharmaceutical Biotechnology	
S. NO.	**Statements**
BP605.1	Understand and gain knowledge about the basic principles of biotechnology,enzymes,protein engineering and genetic engineering
BP605.2	Apply genetic engineering in production of Pharmaceutical
BP605.3	Importance of Monoclonal antibodies in Industries
BP605.4	Elaborate the methods of preparation and storage of various vaccine & blotting techniques
BP605.5	Appreciate the use of microorganisms in fermentation technology
BP606: Theory Quality Assurance	
S. NO.	**Statements**
BP606.1	Understand the responsibilities of QA and QC departments
BP606.2	Illustrate the importance of documentation, Stabilitytesting of drug and drug substances, Statisticalapproaches forqualitycontrol
BP606.3	Knowledgeofqualitycertificationsand regulatory affairs applicable to pharmaceutical industries.
BP606.4	Understand the basic principles of Calibration and validation
BP606.5	Gained an overview of quality by design, NABL accreditation

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:

BP701: Theory Instrumental Methods of Analysis	
S. NO.	**Statements**
BP701.1	The basic theoretical knowledge of the instrumentation techniques available.
BP701.2	To learn the principle, instrumentation ,interferences and applications of Emission Spectroscopical Techniques.
BP701.3	To learnbasic theoretical knowledge , Principle, apparatus, instrumentation parameters, factors affecting resolution, isolation of drug from excipients by using flurometer & Nepheloturbidometer.
BP701.4	To learn the principle ,instrumentation and applications of separation techniques of Electrophoresis .
BP701.5	Study about separation of analyte and excipients by using various chromatographic techniques.

BP705: Practical Instrumental Methods of Analysis	
S. NO.	**Statements**
BP705.1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
BP705.2	Understand the chromatographic separation and analysis of drugs.
BP705.3	Perform quantitative & qualitative analysis of drugs using various analytical instruments.

BP702: 2017-2018 – Theory Industrial Pharmacy	
S. NO.	**Statements**
BP702.1	Explain concepts and applications and general considerations Pilot plant scale up techniques for solids, semi-solids and liquid orals
BP702.2	Understanding concepts of WHO guidelines of Technology development and transfer and TT agencies in India
BP702.3	Able to explain role and responsibility of regulatory affairs professionals and regulatory requirements for drug approval like Investigational New Drug (IND), Investigator's Brochure (IB) and New Drug Application (NDA) and data presentation for FDA Submissions.
BP702.4	Studying the fundamentals of Indian Regulatory Requirements like Central Drug Standard Control Organization (CDSCO) and State Licensing Authority with its organization, responsibilities, and common technical document (CTD)
BP702.5	Understanding the importance of Industrial Safety including Plant Location and layout and studying various hazards and its preventive measures

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP703: Theory Pharmacy Practice	
S. NO.	**Statements**
BP703.1	Aware of various drug distribution methods, pharmacymanagementand inventorycontrolin ahospital.
BP703.2	Monitoring drug therapy through medication chart review and clinical review
BP703.3	Identify drug related problems and assessment of drug interactions and adverse drug reactions.
BP703.4	Interpret laboratory results and their significance in specificdiseases
BP703.5	Understand about pharmaceutical care services and rational drug therapy
BP704: Theory Novel Drug Delivery System	
S. NO.	**Statements**
BP704.1	To integrate the study of Controlled drug delivery system and selection of polymers for the development of novel drug delivery systems.
BP704.2	To understand about Microencapsulation, Mucosal and Implantable drug delivery systems.
BP704.3	To illustrate different component and formulation of Transdermal drug delivery system and also express the study of Gastroretentive and Nasopulmonary drug delivery system
BP704.4	To review about the targeted drug delivery system and Ocular drug delivery systems
BP704.5	Acquired knowledge about the principles and technology used in the design of various NDDS
BP706: Practice School	
S. NO.	**Statements**
BP706.1	Hands on training in the field of industry, hospital and community pharmacy
BP706.2	Implement knowledge in a practical way in the field of manufacturing and patient care
BP706.3	Increase the students employability
BP706.4	Expose students to real time problem solving
BP706.5	Build interpersonal skills, communication skills, leadership qualities etc.
BP801: Theory Biostatistics and Research Methodology	
S. NO.	**Statements**
BP801.1	Able to understand the Introduction, Types, protocols and Significance of research in Pharmaceutical Sciences
BP801.2	Able to understand the methods and types of for data collection for the fulfilment of research
BP801.3	Basic concepts of epidemiological methods including types standard measures, study designs and errors in Epidemiological studies.
BP801.4	Understanding the concepts of biostatistics
BP801.5	Gain knowledge about Research question and Hypothesis and able to understand thesis writing skills

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP802: Theory Social and Preventive Pharmacy	
S. NO.	**Statements**
BP802.1	Acquired basic knowledge on health, concept of health and various dimension, Indicators
BP802.2	Acquired high knowledge related to the prevention and control of communicable and non-communicable diseases
BP802.3	Able to counsel general public about Immunization, balanced diet, nutrition deficiencies diseases and its prevention
BP802.4	Actively participate in community services related to rural urban and school heath
BP802.5	Aware and actively participate in national health programs
BP803ET: Elective Theory Pharmaceutical Marketing	
S. NO.	**Statements**
BP803ET.1	Acquired basic knowledge on general concepts, and scope of marketing
BP803ET.2	Understanding the product portfolio analysis, product positioning, Product branding, packaging and labelling decisions
BP803ET.3	Acquired theoretical knowledge on strategies in sales promotion
BP803ET.4	Possess knowledge on pharmaceutical marketing channels and role of Medical Representatives
BP803ET.5	Understanding of drug pricing policies in India and also adapt to emerging concepts of marketing.
BP804ET: Elective Theory Pharmaceutical Regulatory Science	
S. NO.	**Statements**
BP804ET.1	Understanding New Drug Discovery and development of drug product development.
BP804ET.2	Able to understand Regulatory Approval Process involved in IND, NDA, ANDA and Regulatory authorities and agencies
BP804ET.3	Gain knowledge about Registration of Indian drug product in overseas market
BP804ET.4	Explain Clinical trial protocol, working procedure of institutional Review Board and safety monitoring in clinical trials
BP804ET.5	Understanding the importance of regulatory concepts
BP805ET: Elective Theory Pharmacovigilance	
S. NO.	**Statements**
BP805ET.1	Awareabout the history, need and terminologies ofpharmacovigilance andPvPI.
BP805ET.2	Assess, monitor, detectandreport ofAdverse Drug Reactions
BP805ET.3	Understand about drug safety in various phases of drugs' life cycle and in special population.
BP805ET.4	Learned about the criteria for classification of diseases and drugs.
BP805ET.5	Knowledge about ICH guidelines for ICSR, PSUR, Expedited reporting, PV planning.

UNDERGRADUATE PHARMACY PROGRAM	
CRITERION	**Course Outcomes (COs)**

CRITERION

. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP806ET: Elective Theory Quality Control and Standardization	
S. NO.	**Statements**
BP806ET.1	Learn about the WHO guidelines for quality control of crude drugs
BP806ET.2	Know about the quality assurance of herbal formulation
BP806ET.3	Study about the safety and efficacy of crude drugs from EU and ICH guidelines.
BP806ET.4	Clarification about regulatory approval process and their registration
BP806ET.5	Regulatory requirements for herbal medicine.
BP807ET: Elective Theory Computer Aided Drug Designing	
S. NO.	**Statements**
BP807ET.1	Understand the importance of drug design and different techniques of drug design.
BP807ET.2	Understand the chemistry of drugs with respect to their biological activity
BP807ET.3	Know the metabolism, adverse effects and therapeutic value of drugs.
BP807ET.4	Know the importance of SAR of drugs.
BP807ET.5	Understand the importance of drug design and different techniques of drug design.
BP808ET: Elective TheoryCell and Molecular Biology	
S. NO.	**Statements**
BP808ET.1	Summarize cell and molecular biology history, cellular functioning and composition
BP808ET.2	Describe the chemical foundations of cell biology
BP808ET.3	Explain the structure and functions of cellular membrane, DNA and Cell cycle
BP808ET.4	Discuss basic molecular genetics mechanisms
BP808ET.5	Illustrate on cell signaling pathways
BP809ET: Elective Theory Cosmetic Science	
S. NO.	**Statements**
BP809ET.1	Learn the concept of cosmetics, anatomy of skin v/s hair, general excipients used in cosmetics
BP809ET.2	Explain the principle and formulations aspects of skin, hair and oral care products
BP809ET.3	Describe the benefits of herbal cosmetics and the analytical methods for the evaluation of cosmetic products
BP809ET.4	Basics about the instruments used in the cosmetic analysis
BP809ET.5	Understand the mechanism of action and problems of cosmetic products

UNDERGRADUATE PHARMACY PROGRAM

CRITERION	Course Outcomes (COs)

CRITERION
. Course Outcomes (COs) and Program Outcomes (POs)
. Establish the correlation between the courses and the Program Outcomes
(NBA defined Program Outcomes as mentioned in Annexure I)
. Course Outcomes (should include course outcomes of one course from eachsemester of study, however, should be prepared for all courses)

On successful completion of this Course, students will be able to:	
BP810ET: Elective Theory Experimental Pharmacology	
S. NO.	**Statements**
BP810ET.1	Describe the CPCSEA and OECD guidelines for the maintenance of laboratory animals.
BP810ET.2	Illustrate the dose calculation and preclinical screening models.
BP810ET.3	Categorize the Preclinical screening models for ANS activity
BP810ET.4	Classify the Preclinical screening models for CVS activity
BP810ET.5	Summarize the research methodology and to determine Bio-statistics
BP811ET: Elective Theory Advanced Instrumentation Techniques	
S. NO.	**Statements**
BP811ET.1	Understand the advanced instruments used and its applications in drug analysis.
BP811ET.2	Understand the chromatographic separation and analysis of drugs
BP811ET.3	Possess in depth knowledge on principles and instrumentation of hyphenated techniques like LCM/MS, GC-MS/MS, HPTLC-MS.
BP811ET.4	Understand the Thermal Methods of Analysis and X- Ray Diffraction Methods used for analysing various of drugs. .
BP811ET.5	Able to perform the calibration and validation of UV, IR,HPLC as per ICH guidelines
BP812PW: Project Work	
S. NO.	**Statements**
BP812PW.1	Acquire knowledge to perform literature review
BP812PW.2	Designing of research protocol
BP812PW.3	Analysis and Interpretation of research data using appropriate statistical tools
BP812PW.4	Carryout the works as per designed protocol and arriving at conclusion
BP812PW.5	Developed skills in group discussion and group activities