



Wainganga Banu-Uddeshiya Vikas Sanstha, Nagpur's

BAJIRAOJI KARANJEKAR COLLEGE OF PHARMACY

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Key Indicator: 2.6- Student Performance and Learning Outcome	
2.6.1	Teachers and students are aware of the stated programme and course outcomes of the programs offered by the institution.
File Description	Cos for all courses




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2.6.1- Teachers and students are aware of the stated programme and course outcomes of the programs offered by the institution.

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Academic Session 2017-18

Program Name	Course code	Course Name	Year of Introduction	Course Outcomes
B.Pharm Semester I	BP101 T	Human Anatomy and Physiology I (New Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to.</p> <ul style="list-style-type: none">• Students would have studied about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.• They would have understood the various homeostatic mechanisms and their imbalances.• Students would be able to identify the different types of bones in human body.• Students would be able to identify the various tissues of different systems of human body.• Students would learn about the various experimental techniques related to physiology.• They would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting
				Upon completion of the



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	BP102 T	Pharmaceutical Analysis I (New Syllabus)	2017-18	course the student shall be able to <ul style="list-style-type: none">• Learning this subject content will develop the ideas with the fundamental of analytical chemistry among the pupil.• It constructs the fundamental methodology to prepare different strength of solutions.• It facilitates the fellow pupil to predict the sources of mistakes and errors.• It helps to develop the fundamentals of volumetric analytical skills.• It peculates the basic knowledge in the principles of electrochemical analytical techniques• The student interpretation skills will be improve by the course content in terms of choice of analytical techniques to perform the estimation of different category drugs.
	BP103 T	Pharmaceutics I (New Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• To know the historical




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				<p>background and profession of pharmacy and basics of Pharmaceutical dosage forms.</p> <ul style="list-style-type: none">• To understand the importance of prescription and posology.• To solve pharmaceutical calculations and understand the formulation of powders and Liquid dosage forms.• To develop monophasic and biphasic liquid dosage forms.• To explain the concepts of suppositories and pharmaceutical in compatibilities.• To Formulate and Evaluate semi solid dosage form
BP 104T	Pharmaceutical Inorganic Chemistry (New Syllabus)	2017-18		<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Well acquainted with the principles of limit tests.• Familiar with different classes of inorganic pharmaceuticals and their analysis• Identification of different anions, cations and different inorganic pharmaceuticals.



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				<ul style="list-style-type: none">• Knowledge about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals• Understand the medicinal and pharmaceutical importance of inorganic compounds• To have been introduced to a variety of inorganic drug classes.
	BP105 T	Communication skills (New Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the behavioral needs for a Pharmacist to function effectively in the• areas of pharmaceutical operation• Communicate effectively (Verbal and Non Verbal)• Effectively manage the team as a team player• Develop interview skills• Develop Leadership qualities and essentials
	BP106 RT	Remedial Mathematics (New Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand to apply Computations for pharmaceutical sciences.• Know the applications




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				<p>of mathematical concepts for pharmacy</p> <ul style="list-style-type: none">• Understand to create, use and analyze mathematical representations and Mathematical relationships• Understand to communicate mathematical knowledge and understanding to help In the field of clinical pharmacy• Understand to perform abstract mathematical reasoning• Understand to solve the different types of problems by applying theory
	BP201 T	Human Anatomy and Physiology II (New Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of various organs of the human body.• Learnt details about various tissues and organs of different systems of human body.• Understand to elaborate coordinated working pattern of different organs of each system.• Learnt interlinked mechanisms in the




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B.Pharm Semester II	BP202 T	Pharmaceutical Organic Chemistry I (New Syllabus)	2017-18	<p>maintenance of normal functioning (homeostasis) of human.</p> <ul style="list-style-type: none">• Understand some hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
	BP203 T	Biochemistry (New Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Write the structure, name of the organic compound• Knowledge about the type of isomerism• Write the reaction, name the reaction and orientation of reactions• Account for reactivity/stability of compounds,• Identify/confirm the unknown organic compound• Knowledge about the naming reactions of carbonyl compounds• To perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration, etc. <p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand history of Biochemistry and




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				<p>introduction, classification, chemical nature & biological role of Biomolecules.</p> <ul style="list-style-type: none">• Understand introduction, classification, preparation and importance of the bioenergetics molecules.• Understand the electron transport chain and biological oxidation process.• Understand the introduction, metabolism and catabolism of nutrient molecules & Biomolecules in physiological and pathological conditions.• Understand the different disorders related to Biomolecules in which involve introduction, precautions and treatment.• Understand the genetic information of mammalian genome and introduction & functions of DNA, RNA, proteins and enzymes.
	BP204 T	Pathophysiology (New Syllabus)	2017-18	Upon completion of the course the student shall be




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				able to <ul style="list-style-type: none">• Understand mechanism of cell injury and process of inflammation and repair.• Learnt the sign and symptoms of the disease.• Understand the etiology and complications of disease.• Know most commonly encountered path physiological state.• Know the disease mechanism and clinical testing requirements.• Understand the importance of systems working in human body.
	BP205 T	Computer Applications in Pharmacy (New Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know the various types of application of computers in pharmacy• Know the various types of databases• Know the various applications of databases in pharmacy• Understand to solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to pharmacy




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				<ul style="list-style-type: none">• Understand to integrate and apply efficiently the contemporary IT tools to all pharmaceutical related activities• Understand to design and develop solutions to analyze pharmaceutical problems using computers
	BP206 T	Environmental sciences (New Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand to create the awareness about environmental problems among learners• Understand to develop basic knowledge about the environment and its allied problems• Understand to develop an attitude of concern for the environment• Learn participation in environment protection and environment improvement• Acquire skills to help the concerned individuals in identifying and solving environmental problems• Strive to attain harmony with Nature
	3T1	Pharmaceutics III (Unit Operation)	2017-18	Upon completion of the course the student shall be




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		(Old Syllabus)	
B.Pharm Semester III			able to <ul style="list-style-type: none">• Understand importance of unit operations in pharmaceutical manufacturing, importance of size reduction, powder size and size separation, principle, construction and working of equipments used in size reduction and size separations• Develop knowledge of unit operations, mixing, mass transfer and flow of fluids and theories as well as basic mechanisms; understand principle, construction and working of equipments used in mixing, mass transfer and flow of fluids.• Exemplify concepts and methods of transportations of solids, filtration and centrifugation during pharmaceutical manufacturing. understand principle, construction and working of equipments used in transportations of solids, filtration and centrifugation.• Comprehend selection of type of equipment




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				<p>used in unit operations during pharmaceutical manufacturing and logic behind selection; develop knowledge and skill of designing a proper pharmaceutical process comprising of set of equipments for various unit operations for quality result.</p> <ul style="list-style-type: none">• Build up skill and ability to analyse; particle size distribution, effect of filter aid on filtration rate, analyzing and evaluating suspension sedimentation rate and hardness of water• Develop skills in engineering drawings
	3T2		2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• After the completion of syllabus, students shall be able to understand the various methods of preparation and acquire knowledge about reagents and chemical reactions of some aliphatic and alicyclic compounds• To know the reaction mechanism, stability of intermediate and reactivity of some aliphatic and alicyclic compounds.• To interpret and distinguish chemical
		Pharmaceutical Chemistry III (Old Syllabus)		




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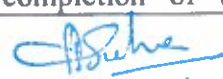


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				<p>behavior of aromatic compounds.</p> <ul style="list-style-type: none">• Understand the methods of preparation, chemical reactions include mechanism and reactivity of some aromatic compounds.• Identify unknown organic compound.• To carryout synthesis of some organic compounds.
			2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Explain causes and mechanism of cell injury, cellular adaptation and cellular ageing• explain basic mechanism involved in process of inflammation and repair along with its mediators• detail pathophysiology of common diseases• Explain diseases related to carbohydrate, protein and fat metabolism and understand different organ function test• Determine hematological parameters and normal and abnormal constituents of urine and signify their pathological importance• Demonstrate different method for collection of blood in experimental animal
	3T3	Pathophysiology And Clinical Biochemistry (Old Syllabus)		
	3T4	Pharmacology	2017-18	Upon completion of the




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		(Old Syllabus)		course the student shall be able to <ul style="list-style-type: none">• Describe the scope of pharmacology and signify routes of drug administration.• Explain the principle of absorption, distribution, metabolism and excretion and understand the factors affecting the pharmacokinetics of drug in its therapeutic regimen.• Explain molecular & biochemical aspects of drug actions, receptors, drug receptor interactions, factors modifying drug effects.• Classify recently available drugs; explain mechanism of action, target receptors, adverse effects, drug interaction, contraindication and therapeutic uses of drugs in autonomic nervous system• Explain the principle and design of official bioassays.
	3T5	Pharmaceutical Microbiology And Immunology I (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the scope, classification, historical developments, importance and application of microbiology in pharmaceutical sciences and environment.




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				<ul style="list-style-type: none">• Understand and describe the principle and applications of compound as well as electron microscopy along with sem and tem.• Explain the microbiology of bacteria, bacterial genetics and the etiology, pathophysiology, symptoms, prevention and treatment of diseases with its effect on environment and society.• Describe the microbiology of fungi and viruses along with the etiology, pathophysiology, symptoms, prevention and treatment of viral diseases and fungal infections with its effect on environment and society.• Study and describe equipment's, preparation and sterilization of culture media, aseptic transfer techniques, streak plate, pour plate, spread plate, plate count and direct microscopy methods.• Identify the bacterial morphology using staining techniques and acquire knowledge on the principles of biochemical tests.
	3T6	Pharmaceutical	2017-18	Upon completion of the




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		Jurisprudence and ethics (Old Syllabus)		course the student shall be able to <ul style="list-style-type: none">• The students should be able to know and understand the history of pharmacy profession ,scope, objective, new drug policy of pharmaceutical legislation along with principles and significance of code of pharmaceutical ethics drafted by pci• The students should be able know and understand the rules and regulations framed and amendments made under pharmacy act 1948.• The students should be able to know and understand the rules and regulations framed and amendments made under drugs and cosmetics act 1940• The students should be able know and understand the rules and regulations framed and amendments made under medicinal and toilet preparations (excise duties) act 1955, rules 1976, drug price control order, drugs and magic remedies (objectionable advertisements) act 1954, narcotic drugs and psychotropic substances act, and rules there under,
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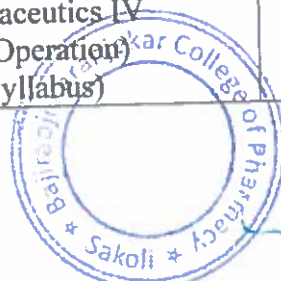
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				medical termination of pregnancy act 1970 and rules 1975 and consumer protection act.
B.Pharm Semester IV	4T1	Pharmaceutics IV (Unit Operation) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Explain and understand importance of evaporation and distillation. understand, recall and remember principle, construction and working of various evaporators. understand various types of distillation and their principle and mechanism• Understand drying and crystallization process. recall, understand and remember theories of drying and crystallization. understand principle, construction and working of various dryers and crystallizers used in manufacturing• Understand mechanism of flow of heat, laws of heat transfer and principle, construction and working of heat exchangers and heat interchangers. learn merits and demerits of equipments used.• Understand and analyse the importance of environmental control and prevention of corrosion during



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				<p>pharmaceutical manufacturing.</p> <ul style="list-style-type: none">• Understand humidification, dehumidification, air conditioning, refrigeration and corrosion. develop knowledge and skill of selecting appropriate equipment for unit operation during pharmaceutical manufacturing• Understand, evaluate and analyse effect of viscosity on evaporation, determine rate of drying, determine emc,cmc and cfmc.evaluate ,determine and analyse percentage purity by crystallization(with and without seeding).to develop skill of constructing boiling point curve of given set of mixture• Understand and develop skill of engineering drawings involving orthographic projection
	4T2	Pharmaceutical Chemistry IV (Heterocyclic and Macromolecules) (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the structure, nomenclature, numbering, molecular orbital picture, synthetic procedures, and pharmaceutical uses



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				<ul style="list-style-type: none">• Learn and understand what are bio-molecules their natural sources, structures, classification and reactions• Learn and understand structure, synthesis of selected polynuclear aromatic compounds• Understand what are lipids, fats, oil, phospholipids, derived lipids and lipoproteins its importance in human life. chemical structure, physical, chemical properties, natural resources and pharmaceutical uses• Synthesize and learn physicochemical characterization of selected organic compounds• Determine some quality parameters of lipids, and quantify the functional groups in some organic compounds.
	4T3	Pharmaceutical Analysis II (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand basic concept and principle of various electrochemical and physical methods of analysis like refractrometry and polarimetry.• Draw and acquire knowledge about various instrumentation aspects of




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				<p>electrochemical and physical methods of analysis.</p> <ul style="list-style-type: none">• Know and apply knowledge of applications of various methods of analysis like electrochemical and physical methods.• Perform the assay procedures for various pharmaceuticals for their determination by electrochemical and physical methods.• To understand the principle and evaluate the purity of pharmaceutical ingredients by performing calculations.
	4T4	Pharmacology II (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Classification of recently available drug, mechanism of action, receptors, adverse effect, drug interaction, contradiction and therapeutic uses of drug acting on cardiovascular system• Classification of recently available drug, mechanism of action, receptors, adverse effect, drug interaction, contradiction and therapeutic uses of drug acting on renal system• classification of recently available drug,




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				<p>mechanism of action, receptors, adverse effect, drug interaction, contradiction and therapeutic uses of agents acting as autocooids and their blockers</p> <ul style="list-style-type: none">• classification of recently available drug, mechanism of action, receptors, adverse effect, drug interaction, contradiction and therapeutic uses of drug acting on haemopoietic system• Demonstration of different routes of drug administration and techniques of blood withdrawal in rats and mice• recording of cumulative dose response curve and determination of unknown concentration of acetylcholine using different bioassay method
	4T5	Pharmaceutical Microbiology And Immunology II (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand different methods of sterilization, sterilization indicator and sterility testing of pharmaceutical products and its applications in society for health benefits.• Understand and explain various classification and evaluation of




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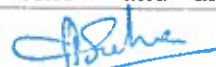


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				<p>disinfectants, along with the various aseptic techniques useful in hospitals and domestic.</p> <ul style="list-style-type: none">• Understand and describe various fundamentals of immunology and antigen-antibody reaction with its effects on human health.• Explain hypersensitivity reactions and immunological preparation with its effects on human health.• Study different biochemical tests, antimicrobial sensitivity testing, and antimicrobial activity of plant extract• Evaluate the microbiological assay of antibiotics, sterility testing as well as bacteriological examination of air, water and milk.
	4T6	Pharmaceutical Management (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand and explain the concept, principles and functions of management and human resource management along with evaluation techniques for job and career planning.• Know and understand




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				<p>the principles and functions of material management and inventory control and also understand the concept of production management in detail.</p> <ul style="list-style-type: none">• Recall and explain the functions of pharmaceutical marketing and understanding salesmanship and activities related to it like recruitment, selection, training, compensation.• Know and understand the basic principles of accountancy and methods of preparations of financial accounts and also to understand the principles of economics, insurance and its applications
			2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Describe the fundamental and derived properties of powders• Explain properties and principles of interfacial phenomena and surface active agents• Describe theoretic considerations, formulation consideration, stability and assessment of shelf life of suspensions and emulsions
	5T1	Pharmaceutics V (Old Syllabus)		




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				<ul style="list-style-type: none">• Explain the properties, stability and applications of colloidal systems.• Demonstrate the use of physicochemical properties in the formulation development and evaluation of dosage forms• Understand various physicochemical properties of drug molecules
B.Pharm Semester V	5T2	Pharmaceutical Medicinal Chemistry I (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand basic concept of medicinal chemistry related to drug action including prodrug design.• Explain the various reaction of phase i and phase ii in drug metabolism• Classify the therapeutic agents, outline the synthetic route for the selective medicinal compounds of each category and acquire knowledge on the mechanism of action of pharmacodynamics agents.• Acquire knowledge about the relationship between the biological activity and structure of therapeutic agents.• Design and adopt the reaction schemes for



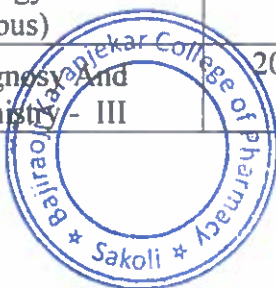

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				<p>the synthesis of diverse medicinal compounds along with their characterizations.</p> <ul style="list-style-type: none">To know the principle, procedure to estimate the actual amount of drug present in pharmaceutical formulations
			2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">Classify drugs; understand the moa and contraindication for CNS disorders.Understand the drawbacks of alcohol and drug abuse with its pharmacology.Understand the evolution, ethics and process of clinical research.Explain various drugs used for respiratory and gastrointestinal disorders.Demonstrate and identify the biological activity of unknown drug sample using basic behavioral pharmacology experimentation.Demonstrate and identify the biological activity of given drug sample using anti-inflammatory and analgesic models.
	5T3	Pharmacology III (Old Syllabus)		
	5T4	Pharmacognosy And Phytochemistry - III	2017-18	Upon completion of the course the student shall be




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		(Old Syllabus)	
			<p>able to</p> <ul style="list-style-type: none">• Upon completion of the course, the students shall be able to explain the modern extraction, isolation and purification techniques of phyto constituents• Upon completion of the course, the students shall be able to describe the biosynthetic pathways and classification of volatile oil containing drugs and resin and balsam containing drugs.• Upon completion of the course, the students shall be able to identify the drugs under volatile oil containing drugs and resin and balsam containing drugs from the characters (morphological and histological) and chemical constituents, uses of.• Upon completion of the course, the students shall be able to explain the structure elucidation of camphor, taxol, eugenol, artemisinin.• Upon completion of the course, the students shall be able to identify the crude drugs by morphological, organoleptic and histological characters• Upon completion of the course, the students shall be able to estimate




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				balsamic acid, cineole, citral, carvone content in balsom, eucalyptus oil, lemongrass oil, dill/caraway oil respectively
	5T5	Clinical Pharmacy (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Students should be able to understand the basic concept in toxicology and piosioning.• Describe the mechanisms of drug interaction, adverse drug reaction and therapeutic drug monitoring• Understand and explain the pathophysiology of drug induced diseases.• Understand the concept of pharmacoeconomics and application of it in clinical pharmacy• To determine and interpret biochemical data from biological samples• Interpret the given prescription for different case studies.
	5T6	Regulatory Affairs And Intellectual Property Right (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the scope, importance, functions of regulatory affairs; apply drug regulatory strategy and acquire knowledge of regulatory authorities and agencies.



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				<ul style="list-style-type: none">• Explain the types, requirements, content and formats of inda, nda, anda and dmf.• Understand and describe the importance and applications of ipr, ipr laws in india, patent legislation and patent prosecution.• Describe the international treaties, conventions on ipr, hatch-waxman act, importance of compulsory licensing and evaluate the patent infringement issues/cases
B.Pharm Semester VI	6T1	Pharmaceutics IV (Physical Pharmacy) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Describe the process of solubility of solids, diffusion, and dissolution and distribution phenomena for application in the design of drugs• Describe the types of flow (rheology) and their measurement, thixotropic/stability of dispersions, semisolids systems• Describe the reaction kinetics, rate, order and factors affecting the rate of reaction; prevent degradation, stabilization of drugs and shelf-life assessment and to explain the reaction




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				<p>kinetics of dosage forms</p> <ul style="list-style-type: none">• Explain the methods of detection of complexes and describe the properties and applications of polymers• Evaluate solvent cosolvency, distribution coefficient of drug and explain its importance in the formulation development of dosage forms• Evaluate the physicochemical properties of drugs and solvents
	6T2	Pharmaceutical Medicinal Chemistry II (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Classify the medicinal compound and acquire knowledge about IUPAC names along with mechanism of action of them or the class to which they belongs.• Apply scientific knowledge about relationship between biological activity and structure of various chemotherapeutic agents and antibiotics• Outline the synthetic route for selective medicinal compounds along with their stereo chemical aspects, stability and related issues.




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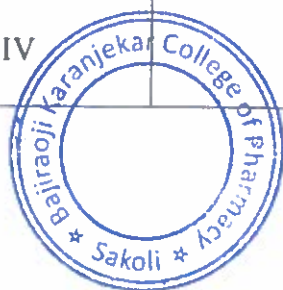
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				<ul style="list-style-type: none">• Understand various concepts of drug design, qsar studies, combinatorial chemistry and genetic engineering in medicinal chemistry.• Design and adopt the reaction scheme for synthesis of diverse medicinal compounds along with their characterization.• Know the principle, procedure to estimate the actual amount of drug present in formulation.
	6T3	Pharmacology IV (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the pharmacology and resistance mechanism of antibiotics.• Explain the pharmacodynamics and pharmacokinetics for endocrine disorders.• Describe the details of anticancer drugs and immunomodulatory drugs• Understand the details of clinical trials: history, processing, ethics and legal aspects.• Determine the p_{a2} value of given antagonist.• Demonstrate the biological screening techniques for analgesic and anti-inflammatory




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			2017-18	drugs. Upon completion of the course the student shall be able to <ul style="list-style-type: none">• upon completion of the course, the students shall be able to understand and classify the drugs containing glycosides and tannins• Upon completion of the course, the students shall be able to isolate the important phytoconstituents of therapeutic value.• Upon completion of the course, the students shall be able to isolate and estimate phytoconstituents.• Upon completion of the course, the students shall be able to estimate the isolated phytoconstituents by spectroscopical methods (UV, IR).• Upon completion of the course, the students shall be able to identify and differentiate the drugs of natural origin by morphological and histological characters, and by chemical tests.• Upon completion of the course, the students shall be able to understand the tlc profile of drugs and apply in the identification of phytoconstituents.
	6T4	Pharmacognosy and Phyto Chemistry IV (Old Syllabus)		




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			2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the rational behind the use of drugs in clinical practices• Understand the etiopathogenesis of cardiovascular, respiratory and respectively as well as understand the pharmacotherapy of these disorders• Explain the etiopathogenesis and therapy for gastrointestinal and central nervous system disorders.• Understand and explain the pathophysiology and therapy for urogenital system and musculoskeletal system disorders respectively.• Analyzed the prescription related patient oriented problem via case studies• Understand the basic concept in clinical practices.
	6T5	Clinical Pharmacotherapeutics I (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand and describe validation of pharmaceutical processes such as validation options, committee, master plan, protocol, report and
	6T6	Pharmaceutical Validation (Old Syllabus)		



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				<p>explain preapproval inspection, pilot plant scale up, change control and its importance in pharmaceutical company.</p> <ul style="list-style-type: none">• Explain and analyze prospective process validation, organization, documentation, product development, experimental design and parameters of analytical method validation.• Describe the retrospective validation strategies, product selection criteria, documentation and evaluation of processing data of drug a to e, caad, and packaging data.• Understand the guidelines for validation of raw material, analytical method, equipment/facilities, process variables, tablets, and capsule and design the validation of new solid dosage forms.
B.Pharm Semester VII	7T1	Pharmaceutics (DFT-1) (Conventional) (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the concept of Preformulations• Understand the chemical properties of drug for their




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				<p>stabilities in formulation</p> <ul style="list-style-type: none">• Knowledge about various manufacturing process if different dosage forms• Able to know about the quality control process• Able to know the evolution techniques of different dosage forms• Able to know formulation and development of sterile dosage forms
	7T2	Pharmaceutical Medicinal Chemistry-III (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the chemistry of drugs with respect to their pharmacological activity• Understand the drug metabolic pathways adverse effect and therapeutic value of drugs• Know the structural activity relationship of different class of drugs• Study the chemical synthesis of selected drugs• Understand the writing techniques of chemical nomenclature of drugs• Understand the physiochemical and sterile aspects of drugs




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	7T3	Pharmaceutical Analysis-III (Separation Techniques) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the interaction of matters with chromatographic techniques and its application• Understand the chromatographic separation of drug during analysis• Understand the qualitative and quantitative analysis of drugs• Understand the solvent extraction techniques and their application• Demonstrate evaluation and interpretation of experimental data• Understand the polarity of different solvent for analytical techniques
	7T4	Clinical Pharmacotherapeutics-II (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the guidelines for handling prescription• Ability to design a dosage regimen of drug based on its route of administration• Discuss the preparation of individualized




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				<p>therapeutic plans based on diagnosis</p> <ul style="list-style-type: none">• Discuss the path physiology of selected disease states and explain the rational for drug therapy• Summarize the therapeutic approach to management of these diseases including references to the latest available evidence• Discuss the controversies in drug therapy
	7T5	Pharmacognosy and Phytochemistry-V (Phytopharmaceutical/Herbal Technology) (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To attain detailed knowledge about chemistry of medicinal compound from natural origin• To attain knowledge regarding isolation and purification of medicinal compounds from natural origin• To understand general method of screening of medicinally active natural compounds• Appreciate patenting of herbal drugs• To know the use of natural products as starting materials• To identify different




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				types of natural products, their occurrence, structure, biosynthesis and properties
	7T6	Biopharmaceutics and pharmacokinetics (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Ability to apply the concepts of pharmacokinetics to individualize the drug dosage regimen in clinical setting• Ability to design a dosage regimen of a drug based on its route of administration• Ability to design and implement pharmacokinetics method• Broader understanding about the significance of pharmacokinetics and bioequivalence• Understand how the drugs are metabolized in human body• Ability to assess the compartment models for pharmacokinetics
B.Pharm Semester VIII	8T1	Pharmaceutics (DFT-1) (NDDS) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Students shall be able to understand the common practice in the pharmaceutical industry developments in controlled drug




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				<p>delivery system</p> <ul style="list-style-type: none">• To apply the knowledge to develop new procedure of their own design controlled drug delivery system• To need, concept, design and evaluation of various customized, sustained and controlled release dosage forms.• To formulate and evaluate various novel drug delivery system• Understand the polymer properties in designing sustained or controlled release drug product• Understand the biological factors affecting in designing of drug products
	8T2	Pharmaceutical Biotechnology and molecular Biology (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the importance of immobilized technology in Pharmaceutical Industries• Genetic engineering application in relation to pharmaceuticals• Importance of monoclonal antibodies in industry• Understand the use of microorganisms in fermentation



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				technology • Understand the tools and technique of rDNA technology
	8T3	Pharmaceutical Analysis-IV (Spectroscopy) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to • Understand the interaction of matter with electromagnetic radiation and its application in drug analysis • Understand spectrophotometric analysis of drug • Understand the advanced instrument used in drug analysis • Understand the calibration in analytical instrument • Qualitative and quantitative estimation of newer drugs by spectrophotometric
	8T4	Pharmacognosy and phytochemistry-VI (Industrial Pharmacognosy) (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to • To attain knowledge regarding herbal formulations of medicinal compounds from natural origin • Know the regulatory Requirements for nutraceutical with the regulation for registration and labeling of nutraceutical and food supplements in India




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				<ul style="list-style-type: none">• Cosmetics regulations in regulated and semi regulated countries• Various key ingredients and basic science to develop cosmetic and cosmeceuticals• They will acquire operative know-how and be able to carry out technical and management tasks and professional activities in the areas of transformation of medicinal herbs, management of the quality of the process• The recognition of marine drugs with, identification and their application in various diseases.
	8T5	Pharmacovigilance (Drug Safety) (Old Syllabus)	2017-18	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Writing case narratives of adverse events and their quality• ICH Guidelines for ICSR, PSUR, expedited reporting and Pharmacovigilance Planning• Pharmacovigilance program in India• Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation




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				<ul style="list-style-type: none">• Adverse drug reaction reporting system and communication in Pharmacovigilance• International standards for classification of drugs and diseases
	8T6	Industrial Pharmacy (Old Syllabus)	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the approval process and regulatory requirement for drug products• Know different laws and acts that regulates pharmaceutical industries• Understand the regulatory importance of cGMP• Selection and evaluation of pharmaceutical packaging materials• Optimization parameters in pharmaceutical formulations• Know about manufacturing and stabilities in pilot plant scale
	8T7	Project	2017-18	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• The basic theoretical knowledge on




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				<p>document compilation created on small project work.</p> <ul style="list-style-type: none">• Practical skills for the analysis of drugs and excipients using various instrumentation techniques.• To make accurate analysis and report the results in defined formats to learn documentation and express the observations with conclusion.• The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases.• Upon completion of project work the student will know the formulation aspects of different dosage forms to do different pharmaceutical calculations involved in formulation and appreciate the importance of good formulation for effectiveness.• Student will able to
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				develop dynamics of motivation and concept development by increasing the knowledge to handle the challenges in project work.
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Program Name	Course code	Course Name	Year of Introduction	Course Outcomes
B.Pharm Semester I	BP101T	Human Anatomy and Physiology I (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Students would have studied about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.• They would have understood the various homeostatic mechanisms and their imbalances.• Students would be able to identify the different types of bones in human body.• Students would be able to identify the various tissues of different systems of human body.• Students would learn about the various experimental techniques related to physiology.• They would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting <p>Upon completion of the</p>



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	BP102T	Pharmaceutical Analysis I (New Syllabus)	2018-19	<p>course the student shall be able to</p> <ul style="list-style-type: none">• Learning this subject content will develop the ideas with the fundamental of analytical chemistry among the pupil.• It constructs the fundamental methodology to prepare different strength of solutions.• It facilitates the fellow pupil to predict the sources of mistakes and errors.• It helps to develop the fundamentals of volumetric analytical skills.• It peculates the basic knowledge in the principles of electrochemical analytical techniques• The student interpretation skills will be improve by the course content in terms of choice of analytical techniques to perform the estimation of different category drugs.
	BP103T	Pharmaceutics I (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To know the historical




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				<p>background and profession of pharmacy and basics of Pharmaceutical dosage forms.</p> <ul style="list-style-type: none">• To understand the importance of prescription and posology.• To solve pharmaceutical calculations and understand the formulation of powders and Liquid dosage forms.• To develop monophasic and biphasic liquid dosage forms.• To explain the concepts of suppositories and pharmaceutical in compatibilities.• To Formulate and Evaluate semi solid dosage form
	BP 104T	Pharmaceutical Inorganic Chemistry (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Well acquainted with the principles of limit tests.• Familiar with different classes of inorganic pharmaceuticals and their analysis• Identification of different anions, cations and different inorganic pharmaceuticals.




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				<ul style="list-style-type: none">• Knowledge about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals• Understand the medicinal and pharmaceutical importance of inorganic compounds• To have been introduced to a variety of inorganic drug classes.
	BP105T	Communication skills (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the behavioral needs for a Pharmacist to function effectively in the• areas of pharmaceutical operation• Communicate effectively (Verbal and Non Verbal)• Effectively manage the team as a team player• Develop interview skills• Develop Leadership qualities and essentials
	BP106R T	Remedial Mathematics (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand to apply Computations for pharmaceutical sciences.• Know the applications




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				<p>of mathematical concepts for pharmacy</p> <ul style="list-style-type: none">• Understand to create, use and analyze mathematical representations and Mathematical relationships• Understand to communicate mathematical knowledge and understanding to help In the field of clinical pharmacy• Understand to perform abstract mathematical reasoning• Understand to solve the different types of problems by applying theory
	BP201T	Human Anatomy and Physiology II (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of various organs of the human body.• Learnt details about various tissues and organs of different systems of human body.• Understand to elaborate coordinated working pattern of different organs of each system.• Learnt interlinked mechanisms in the



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B.Pharm Semester II	BP202T	Pharmaceutical Organic Chemistry I (New Syllabus)	2018-19	<p>maintenance of normal functioning (homeostasis) of human.</p> <ul style="list-style-type: none">• Understand some hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
	BP203T	Biochemistry (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Write the structure, name of the organic compound• Knowledge about the type of isomerism• Write the reaction, name the reaction and orientation of reactions• Account for reactivity/stability of compounds,• Identify/confirm the unknown organic compound• Knowledge about the naming reactions of carbonyl compounds• To perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration, etc. <p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand history of




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				<p>Biochemistry and introduction, classification, chemical nature & biological role of Biomolecules.</p> <ul style="list-style-type: none">• Understand introduction, classification, preparation and importance of the bioenergetics molecules.• Understand the electron transport chain and biological oxidation process.• Understand the introduction, metabolism and catabolism of nutrient molecules & Biomolecules in physiological and pathological conditions.• Understand the different disorders related to Biomolecules in which involve introduction, precautions and treatment.• Understand the genetic information of mammalian genome and introduction & functions of DNA, RNA, proteins and enzymes.
	BP204T	Pathophysiology	2018-19	Upon completion of the




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		(New Syllabus)		
				course the student shall be able to <ul style="list-style-type: none">• Understand mechanism of cell injury and process of inflammation and repair.• Learnt the sign and symptoms of the disease.• Understand the etiology and complications of disease.• Know most commonly encountered path physiological state.• Know the disease mechanism and clinical testing requirements.• Understand the importance of systems working in human body.
	BP205T	Computer Applications in Pharmacy (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know the various types of application of computers in pharmacy• Know the various types of databases• Know the various applications of databases in pharmacy• Understand to solve and work with a professional context pertaining to ethics,




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				social, cultural and regulations with regard to pharmacy
				<ul style="list-style-type: none">• Understand to integrate and apply efficiently the contemporary IT tools to all pharmaceutical related activities• Understand to design and develop solutions to analyze pharmaceutical problems using computers
	BP206T	Environmental sciences (New Syllabus)	2018-19	Upon completion of the course the student shall be able to
				<ul style="list-style-type: none">• Understand to create the awareness about environmental problems among learners• Understand to develop basic knowledge about the environment and its allied problems• Understand to develop an attitude of concern for the environment• Learn participation in environment protection and environment improvement• Acquire skills to help the concerned individuals in identifying and solving environmental problems




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				<ul style="list-style-type: none">• Strive to attain harmony with Nature
B.Pharm Semester III	BP301T	Pharmaceutical Organic Chemistry II (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand basic knowledge about common methods of preparation of organic compounds.• Understand the reactions of organic compounds.• Understand the reactivity and orientation in organic chemistry.• Understand the mechanism of organic reactions.• To acquire knowledge about electrophilic substitution reactions of aromatic compounds.• Understand the reactions and methods of analysis of fats and oils.
	BP302T	Physical Pharmaceutics I (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the descriptive terms for solubility, their meaning and various type of solution.• Understand the role of surfactants, interfacial phenomenon and




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				<p>thermodynamics.</p> <ul style="list-style-type: none">• Understand the role of state of matter and change in the state of matter• Understand the properties of matter including liquid crystal, crystalline and amorphous• Understand the physical properties of solutions, buffers, isotonicity, disperse systems and principle of relative humidity, glass transition temperature• Understand various physicochemical properties of drugs molecules in the designing the dosage form
	BP303T	Pharmaceutical Microbiology (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand structure of bacteria and different types of microscopes.• Understand methods of identification, cultivation and preservation of various microorganisms.• Understand the importance and implementation of sterilization in pharmaceutical processing and industry.



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				<ul style="list-style-type: none">• Learn sterility testing of pharmaceutical products.• Carried out microbiological standardization of Pharmaceuticals.• Understand the cell culture technology and its applications in pharmaceutical industries.
	BP304T	Pharmaceutical Engineering (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know about the various unit operation processes used in pharmaceutical industry.• Comprehend the various materials handling technique.• Carry out the various processes involved in pharmaceutical manufacturing process.• Understand the various tests for preventing the environmental pollution.• Appreciate and understand the significance of plant lay out design for optimal uses of resources.• Know about the various preventive methods for corrosion control used in pharmaceutical industries.
	BP401T	Pharmaceutical Organic	2018-19	Upon completion of the




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		Chemistry III (New Syllabus)		course the student shall be able to <ul style="list-style-type: none">• Understand the various nomenclature systems in stereochemistry and its application.• Understand the various stereo chemical aspects of organic compounds.• Understand the detail mechanism of some useful organic reactions.• To acquire knowledge about structures of different heterocyclic compounds.• Understand the nomenclature rules in heterocyclic chemistry.• Understand preparations, reactions and medicinal uses of various heterocyclic compounds.
B.Pharm Semester IV	BP402T	Medicinal Chemistry I (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the history of Medicinal Chemistry and introduction & importance of physicochemical properties related to biological actions of drugs.• Understand the phases present in drug




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				<p>metabolism with chemical reactions.</p> <ul style="list-style-type: none">• Understand different classes of drugs according to mechanism of action of drugs.• Understand synthetic procedures of drug molecules with chemical reactions.• Understand structure, nomenclature, mode of action and uses of drug molecules.• Understand structure activity relationship of selective class of drugs.
	BP403T	Physical Pharmaceutics II (New Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand various physicochemical properties of drug molecules in the designing the dosage forms.• Understand the principles of colloidal dispersion, deformation of solids and coarse dispersion.• Understand the physical properties of solutions, buffers, isotonicity, disperse systems, colloidal and rheology.• Understand the chemical stability of various drug product.• Understand the role of



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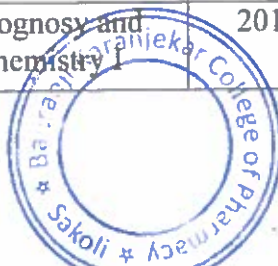
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				optical, kinetic & electrical properties. <ul style="list-style-type: none">• Understand the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulation
	BP404T	Pharmacology I (New Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the pharmacological actions of different categories of drugs.• Understand the mechanism of drug action at organ system/sub cellular/ macromolecular levels.• Understand how to apply the basic pharmacological knowledge in the prevention and treatment of various diseases.• Understand the adverse drug reactions and drug interactions.• Understand correlation of pharmacology with other bio medical sciences• Understand the signal transduction mechanism of various receptors
	BP405T	Pharmacognosy and Phytochemistry I	2018-19	Upon completion of the course the student shall be



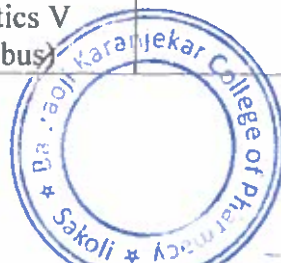

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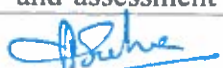


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		(New Syllabus)		able to <ul style="list-style-type: none">• Know techniques in the cultivation and production of crude drugs• Know the crude drugs, their uses and chemical nature.• Know evaluation techniques for evaluation of drugs.• Understand microscopic & morphological evaluation of crude drugs.• Understanding traditional system of medicine along primary & secondary metabolite.• Understand recognition of medicinal plants, identification of adulteration & contamination
	5T1	Pharmaceutics V (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Describe the fundamental and derived properties of powders• Explain properties and principles of interfacial phenomena and surface active agents• Describe theoretic considerations, formulation consideration, stability and assessment of shelf




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				<p>life of suspensions and emulsions</p> <ul style="list-style-type: none">• Explain the properties, stability and applications of colloidal systems.• Demonstrate the use of physicochemical properties in the formulation development and evaluation of dosage forms• Understand various physicochemical properties of drug molecules
B.Pharm Semester V	5T2	Pharmaceutical Medicinal Chemistry I (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand basic concept of medicinal chemistry related to drug action including prodrug design.• Explain the various reaction of phase i and phase ii in drug metabolism• Classify the therapeutic agents, outline the synthetic route for the selective medicinal compounds of each category and acquire knowledge on the mechanism of action of pharmacodynamics agents.• Acquire knowledge about the relationship between the biological activity and structure of therapeutic agents.




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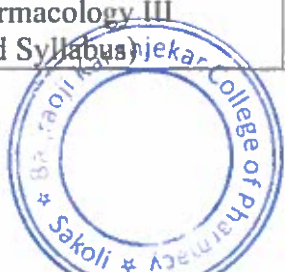
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				<ul style="list-style-type: none">design and adopt the reaction schemes for the synthesis of diverse medicinal compounds along with their characterizations.To know the principle, procedure to estimate the actual amount of drug present in pharmaceutical formulations
	5T3	Pharmacology III (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">Classify drugs, understand the moa and contraindication for cns disorders.Understand the drawbacks of alcohol and drug abuse with its pharmacology.Understand the evolution, ethics and process of clinical research.Explain various drugs used for respiratory and gastrointestinal disorders.Demonstrate and identify the biological activity of unknown drug sample using basic behavioral pharmacology experimentation.Demonstrate and identify the biological activity of given drug sample using anti-inflammatory and analgesic models.




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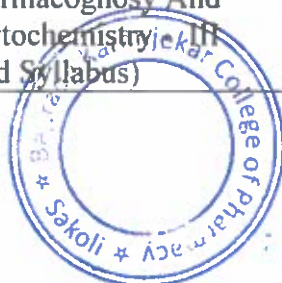
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			2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Upon completion of the course, the students shall be able to explain the modern extraction, isolation and purification techniques of phytoconstituents• Upon completion of the course, the students shall be able to describe the biosynthetic pathways and classification of volatile oil containing drugs and resin and balsam containing drugs.• Upon completion of the course, the students shall be able to identify the drugs under volatile oil containing drugs and resin and balsam containing drugs from the characters (morphological and histological) and chemical constituents, uses of.• Upon completion of the course, the students shall be able to explain the structure elucidation of camphor, taxol, eugenol, artemisinin.• Upon completion of the course, the students shall be able to identify the crude drugs by morphological, organoleptic and histological characters
	ST4	Pharmacognosy And Phytochemistry III (Old Syllabus)		




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				<ul style="list-style-type: none">• Upon completion of the course, the students shall be able to estimate balsamic acid, cineole, citral, carvone content in balsom, eucalyptus oil, lemongrass oil, dill/caraway oil respectively
	5T5	Clinical Pharmacy (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Students should be able to understand the basic concept in toxicology and piosioning.• Describe the mechanisms of drug interaction, adverse drug reaction and therapeutic drug monitoring• Understand and explain the pathophysiology of drug induced diseases.• Understand the concept of pharmacoeconomics and application of it in clinical pharmacy• To determine and interprit biochemical data from biological samples• Interprit the given prescription for different case studies.
	5T6	Regulatory Affairs And Intellectual Property Right (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the scope, importance, functions of regulatory affairs; apply drug regulatory strategy and acquire




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				<p>knowledge of regulatory authorities and agencies.</p> <ul style="list-style-type: none">• Explain the types, requirements, content and formats of inda, nda, anda and dmf.• Understand and describe the importance and applications of ipr, ipr laws in india, patent legislation and patent prosecution.• Describe the international treaties, conventions on ipr, hatch-waxman act, importance of compulsory licensing and evaluate the patent infringement issues/cases
B.Pharm Semester VI	6T1	Pharmaceutics IV (Physical Pharmacy) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Describe the process of solubility of solids, diffusion, and dissolution and distribution phenomena for application in the design of drugs• Describe the types of flow (rheology) and their measurement, thixotropic/stability of dispersions, semisolids systems• Describe the reaction kinetics, rate, order and factors affecting the rate of reaction; prevent degradation, stabilization of drugs




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				<p>and shelf-life assessment and to explain the reaction kinetics of dosage forms</p> <ul style="list-style-type: none">• Explain the methods of detection of complexes and describe the properties and applications of polymers• Evaluate solvent cosolvency, distribution coefficient of drug and explain its importance in the formulation development of dosage forms• Evaluate the physicochemical properties of drugs and solvents
			2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Classify the medicinal compound and acquire knowledge about IUPAC names along with mechanism of action of them or the class to which they belong .• Apply scientific knowledge about relationship between biological activity and structure of various chemotherapeutic agents and antibiotics• Outline the synthetic route for selective medicinal compounds along with their
		Pharmaceutical Medicinal Chemistry II (Old Syllabus)		



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				<p>stereochemical aspects, stability and related issues.</p> <ul style="list-style-type: none">• Understand various concepts of drug design, qsar studies, combinatorial chemistry and genetic engineering in medicinal chemistry.• Design and adopt the reaction scheme for synthesis of diverse medicinal compounds along with their characterization.• Know the principle, procedure to estimate the actual amount of drug present in formulation.
			2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the pharmacology and resistance mechanism of antibiotics.• Explain the pharmacodynamics and pharmacokinetics for endocrine disorders.• Describe the details of anticancer drugs and immunomodulatory drugs• Understand the details of clinical trials: history, processing, ethics and legal aspects.• Determine the p_{a2} value of given antagonist.• Demonstrate the



Pharmacology IV
(Old Syllabus)


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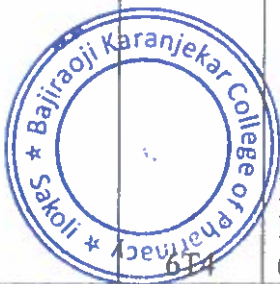
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				biological screening techniques for analgesic and anti-inflammatory drugs.
			2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• upon completion of the course, the students shall be able to understand and classify the drugs containing glycosides and tannins• Upon completion of the course, the students shall be able to isolate the important phytoconstituents of therapeutic value.• Upon completion of the course, the students shall be able to isolate and estimate phytoconstituents.• Upon completion of the course, the students shall be able to estimate the isolated phytoconstituents by spectroscopical methods (uv, ir).• Upon completion of the course, the students shall be able to identify and differentiate the drugs of natural origin by morphological and histological characters, and by chemical tests.• Upon completion of the course, the students shall be able to understand the tlc profile of drugs and



Pharmacognosy and
Phyto Chemistry IV
(Old Syllabus)


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				apply in the identification of phytoconstituents.
			2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none"> • Understand the rational behind the use of drugs in clinical practices • Understand the etiopathogenesis of cardiovascular, respiratory and respectively as well as understand the pharmacotherapy of these disorders • Explain the etiopathogenesis and therapy for gastrointestinal and central nervous system disorders. • Understand and explain the pathophysiology and therapy for urogenital system and musculoskeletal system disorders respectively. • Analyzed the prescription related patient oriented problem via case studies • Understand the basic concept in clinical practices.
	6T5	Clinical Pahrmacotherapeutics I (Old Syllabus)		
			2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none"> • Understand and describe validation of pharmaceutical processes such as
		Pharmaceutical Validation (Old Syllabus)		



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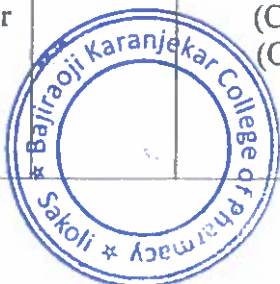
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				<p>validation options, committee, master plan, protocol, report and explain preapproval inspection, pilot plant scale up, oos, change control and its importance in pharmaceutical company.</p> <ul style="list-style-type: none">• Explain and analyze prospective process validation, organization, documentation, product development, experimental design and parameters of analytical method validation.• Describe the retrospective validation strategies, product selection criteria, documentation and evaluation of processing data of drug a toe, caad, and packaging data.• Understand the guidelines for validation of raw material, analytical method, equipment/facilities, process variables, tablets, and capsule and design the validation of new solid dosage forms.
B.Pharm Semester VII	7T1	Pharmaceutics (DFT-1) (Conventional) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the concept of




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				<p>Preformulations</p> <ul style="list-style-type: none">• Understand the chemical properties of drug for their stabilities in formulation• Knowledge about various manufacturing process if different dosage forms• Able to know about the quality control process• Able to know the evolution techniques of different dosage forms• Able to know formulation and development of sterile dosage forms
	7T2	Pharmaceutical Medicinal Chemistry-III (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the chemistry of drugs with respect to their pharmacological activity• Understand the drug metabolic pathways adverse effect and therapeutic value of drugs• Know the structural activity relationship of different class of drugs• Study the chemical synthesis of selected dugs• Understand the writing techniques of chemical




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				nomenclature of drugs • Understand the physiochemical and sterile aspects of drugs
	7T3	Pharmaceutical Analysis-III (Separation Techniques) (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to • Understand the interaction of matters with chromatographic techniques and its application • Understand the chromatographic separation of drug during analysis • Understand the qualitative and quantitative analysis of drugs • Understand the solvent extraction techniques and their application • Demonstrate evaluation and interpretation of experimental data • Understand the polarity of different solvent for analytical techniques
	7T4	Clinical Pharmacotherapeutics-II (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to • Understand the guidelines for handling prescription • Ability to design a dosage regimen of drug based on its route




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				<p>of administration</p> <ul style="list-style-type: none">• Discuss the preparation of individualized therapeutic plans based on diagnosis• Discuss the path physiology of selected disease states and explain the rational for drug therapy• Summarize the therapeutic approach to management of these diseases including references to the latest available evidence• Discuss the controversies in drug therapy
	7T5	Pharmacognosy and phytochemistry-V (Phytopharmaceutical/Herbal Technology) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To attain detailed knowledge about chemistry of medicinal compound from natural origin• To attain knowledge regarding isolation and purification of medicinal compounds from natural origin• To understand general method of screening of medicinally active natural compounds• Appreciate patenting of herbal drugs




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				<ul style="list-style-type: none">• To know the use of natural products as starting materials• To identify different types of natural products, their occurrence, structure, biosynthesis and properties
	7T6	Biopharmaceutics and pharmacokinetics (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Ability to apply the concepts of pharmacokinetics to individualize the drug dosage regimen in clinical setting• Ability to design a dosage regimen of a drug based on its route of administration• Ability to design and implement pharmacokinetics method• Broader understanding about the significance of pharmacokinetics and bioequivalence• Understand how the drugs are metabolized in human body• Ability to assess the compartment models for pharmacokinetics
B.Pharm Semester VIII	8T1	Pharmaceutics (DFT-1) (NDDS) (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Students shall be able




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				<p>to understand the common practice in the pharmaceutical industry developments in controlled drug delivery system</p> <ul style="list-style-type: none">• To apply the knowledge to develop new procedure of their own design controlled drug delivery system• To need, concept, design and evaluation of various customized, sustained and controlled release dosage forms.• To formulate and evaluate various novel drug delivery system• Understand the polymer properties in designing sustained or controlled release drug product• Understand the biological factors affecting in designing of drug products
	8T2	Pharmaceutical Biotechnology and molecular Biology (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the importance of immobilized technology in Pharmaceutical Industries• Genetic engineering application in relation to pharmaceuticals• Importance of monoclonal antibodies




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				<p>in industry</p> <ul style="list-style-type: none">• Understand the use of microorganisms in fermentation technology• Understand the tools and technique of rDNA technology
	8T3	Pharmaceutical Analysis-IV (Spectroscopy) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the interaction of matter with electromagnetic radiation and its application in drug analysis• Understand spectrophotometric analysis of drug• Understand the advanced instrument used in drug analysis• Understand the calibration in analytical instrument• Qualitative and quantitative estimation of newer drugs by spectrophotometric
	8T4	Pharmacognosy and phytochemistry-VI (Industrial Pharmacognosy) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To attain knowledge regarding herbal formulations of medicinal compounds from natural origin• Know the regulatory Requirements for nutraceutical with the regulation for



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				<p>registration and labeling of nutraceutical and food supplements in india</p> <ul style="list-style-type: none">• Cosmetics regulations in regulated and semi regulated countries• Various key ingredients and basic science to develop cosmetic and cosmeceuticals• They will acquire operative know-how and be able to carry out technical and management tasks and professional activities in the areas of transformation of medicinal herbs, management of the quality of the process• The recognition of marine drugs with, identification and their application in various diseases.
	8T5	Pharmacovigilance (Drug Safety) (Old Syllabus)	2018-19	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Writing case narratives of adverse events and their quality• ICH Guidelines for ICSR, PSUR, expedited reporting and Pharmacovigilance Planning



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				<ul style="list-style-type: none">• Pharmacovigilance program in India• Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation• Adverse drug reaction reporting system and communication in Pharmacovigilance• International standards for classification of drugs and diseases
	8T6	Industrial Pharmacy (Old Syllabus)	2018-19	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the approval process and regulatory requirement for drug products• Know different laws and acts that regulates pharmaceutical industries• Understand the regulatory importance of cGMP• Selection and evaluation of pharmaceutical packaging materials• Optimization parameters in pharmaceutical formulations• Know about manufacturing and stabilities in pilot plant scale
	8T7	Project	2018-19	Upon completion of the course the student shall be




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				<p>able to</p> <ul style="list-style-type: none"> • The basic theoretical knowledge on document compilation created on small project work. • Practical skills for the analysis of drugs and excipients using various instrumentation techniques. • To make accurate analysis and report the results in defined formats to learn documentation and express the observations with conclusion. • The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases. • Upon completion of project work the student will know the formulation aspects of different dosage forms to do different pharmaceutical calculations involved in formulation and appreciate the importance of good
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				formulation for effectiveness. • Student will be able to develop dynamics of motivation and concept development by increasing the knowledge to handle the challenges in project work.
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Academic Session 2019-20

Program Name	Course code	Course Name	Year of Introduction	Course Outcomes
B.Pharm Semester I	BP101T	Human Anatomy and Physiology I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.• Understood the various homeostatic mechanisms and their imbalances.• Identify the different types of bones in human body.• Identify the various tissues of different systems of human body• Learn about the various experimental techniques related to physiology. <p>Learnt various techniques</p> <ul style="list-style-type: none">• measurement, blood cells counting
				<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To develop the fundamentals of volumetric and instrumental analytical skills.• Understand the fundamental




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	BP102T	Pharmaceutical Analysis I (New Syllabus)	2019-20	<p>methodology to prepare different strength of solutions.</p> <ul style="list-style-type: none">• To understand and develop skill to minimize the sources of mistakes and errors in Analytical chemistry.• Understand the principle of fundamental of analytical chemistry and its scope in Pharmaceutical field.• Understand the principles and application of electrochemical analytical techniques in pharmacy.• Understand to improve skills by the course content in terms of selection analytical Techniques to perform the estimation of different class of drugs.
	BP103T	Pharmaceutics I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To know the historical background and profession of pharmacy and basics of Pharmaceutical dosage forms.• To understand the importance of prescription and




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				<p>posology.</p> <ul style="list-style-type: none">• To solve pharmaceutical calculations and understand the formulation of powders and Liquid dosage forms.• To develop monophasic and biphasic liquid dosage forms.• To explain the concepts of suppositories and pharmaceutical in compatibilities.• To Formulate and Evaluate semi solid dosage form
	BP 104T	Pharmaceutical Inorganic Chemistry (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the history of Pharmaceutical Inorganic Chemistry, principles of limit Tests and introduction & handling of Indian Pharmacopoeia.• Understand introduction, properties, preparation and uses of inorganic Pharmaceuticals.• Understand introduction, sources and identification tests for impurities in inorganic Pharmaceuticals.• Understand introduction




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				and applications of pharmaceutical drugs used in different Classes. <ul style="list-style-type: none">• Understand the medicinal and pharmaceutical importance of radiopharmaceuticals.• Learnt principles and preparation procedures of inorganic drugs.
	BP105T	Communication skills (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.• Understand to communicate effectively-Verbal and Nonverbal.• Understand effectively manage the team as a team member.• Understand interview skills.• Understand Leadership qualities.• Learnt planning, preparation and delivering techniques of presentations.
	BP106RMT	Remedial Mathematics (New Syllabus)	2019-20	Upon completion of the course the student shall be able to




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				<ul style="list-style-type: none">• Understand to apply mathematical concepts and principles to perform Computations for pharmaceutical sciences.• Know the applications of mathematical concepts for pharmacy• Understand to create, use and analyze mathematical representations and Mathematical relationships• Understand to communicate mathematical knowledge and understanding to help In the field of clinical pharmacy• Understand to perform abstract mathematical reasoning• Understand to solve the different types of problems by applying theory
	BP201T	Human Anatomy and Physiology II (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of various organs of the human body.• Learnt details about various tissues and organs of different systems of human




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				<p>body.</p> <ul style="list-style-type: none">• Understand to elaborate coordinated working pattern of different organs of each system.• Learnt interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human.• Understand some hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
B.Pharm Semester II	BP202T	Pharmaceutical Organic Chemistry I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To Know and recall the fundamental principles of organic chemistry that include nomenclature, structural isomerism, stereochemistry, chemical reactions and mechanism.• Name the functional groups and different class of organic compounds.• To know the reaction of various of alkane, alcohol, carbonyl



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				<p>compound, amines and carboxylic acid.</p> <ul style="list-style-type: none">• Understand the reactivity and stability of organic compounds.• To know the name, structure of organic compound and its use in pharmacy.• Illustrate stereochemistry of organic reaction.
	BP203T	Biochemistry (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand history of Biochemistry and introduction, classification, chemical nature & biological role of Biomolecules.• Understand introduction, classification, preparation and importance of the bioenergetics molecules.• Understand the electron transport chain and biological oxidation process.• Understand the introduction, metabolism and catabolism of nutrient molecules & Biomolecules in physiological and pathological conditions.• Understand the different disorders



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				related to Biomolecules in which involve introduction, precautions and treatment. <ul style="list-style-type: none">• Understand the genetic information of mammalian genome and introduction & functions of DNA, RNA, proteins and enzymes.
	BP204T	Pathophysiology (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand mechanism of cell injury and process of inflammation and repair.• Learnt the sign and symptoms of the disease.• Understand the etiology and complications of disease.• Know most commonly encountered path physiological state.• Know the disease mechanism and clinical testing requirements.• Understand the importance of systems working in human body.
	BP205T	Computer Applications in Pharmacy (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know the various types of application of



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				<p>computers in pharmacy</p> <ul style="list-style-type: none">• Know the various types of databases• Know the various applications of databases in pharmacy• Understand to solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to pharmacy• Understand to integrate and apply efficiently the contemporary IT tools to all pharmaceutical related activities• Understand to design and develop solutions to analyze pharmaceutical problems using computers
	BP206T	Environmental sciences (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand to create the awareness about environmental problems among learners• Understand to develop basic knowledge about the environment and its allied problems• Understand to develop an attitude of concern for the environment




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				<ul style="list-style-type: none">• Learn participation in environment protection and environment improvement• Acquire skills to help the concerned individuals in identifying and solving environmental problems• Strive to attain harmony with Nature
B.Pharm Semester III	BP301T	Pharmaceutical Organic Chemistry II (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand basic knowledge about common methods of preparation of organic compounds.• Understand the reactions of organic compounds.• Understand the reactivity and orientation in organic chemistry.• Understand the mechanism of organic reactions.• To acquire knowledge about electrophilic substitution reactions of aromatic compounds.• Understand the reactions and methods of analysis of fats and oils.
	BP302T	Physical Pharmaceutics I	2019-20	Upon completion of the



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		(New Syllabus)		course the student shall be able to <ul style="list-style-type: none">• Understand the descriptive terms for solubility, their meaning and various type of solution.• Understand the role of surfactants, interfacial phenomenon and thermodynamics.• Understand the role of state of matter and change in the state of matter• Understand the properties of matter including liquid crystal, crystalline and amorphous• Understand the physical properties of solutions, buffers, isotonicity, disperse systems and principle of relative humidity, glass transition temperature• Understand various physicochemical properties of drugs molecules in the designing the dosage form
	BP303T	Pharmaceutical Microbiology (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand structure of bacteria and different types of microscopes.




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				<ul style="list-style-type: none">• Understand methods of identification, cultivation and preservation of various microorganisms.• Understand the importance and implementation of sterilization in pharmaceutical processing and industry.• Learn sterility testing of pharmaceutical products.• Carried out microbiological standardization of Pharmaceuticals.• Understand the cell culture technology and its applications in pharmaceutical industries.
	BP304T	Pharmaceutical Engineering (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know about the various unit operation processes used in pharmaceutical industry.• Comprehend the various materials handling technique.• Carry out the various processes involved in pharmaceutical manufacturing process.• Understand the various tests for preventing the environmental pollution.• Appreciate and




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				<p>understand the significance of plant lay out design for optimal uses of resources.</p> <ul style="list-style-type: none">• Know about the various preventive methods for corrosion control used in pharmaceutical industries.
B.Pharm Semester IV	BP401T	Pharmaceutical Organic Chemistry III (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the various nomenclature systems in stereochemistry and its application.• Understand the various stereo chemical aspects of organic compounds.• Understand the detail mechanism of some useful organic reactions.• To acquire knowledge about structures of different heterocyclic compounds.• Understand the nomenclature rules in heterocyclic chemistry.• Understand preparations, reactions and medicinal uses of various heterocyclic compounds.
	BP402T	Medicinal Chemistry I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the history




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				<p>of Medicinal Chemistry and introduction & importance of physicochemical properties related to biological actions of drugs.</p> <ul style="list-style-type: none">• Understand the phases present in drug metabolism with chemical reactions.• Understand different classes of drugs according to mechanism of action of drugs.• Understand synthetic procedures of drug molecules with chemical reactions.• Understand structure, nomenclature, mode of action and uses of drug molecules.• Understand structure activity relationship of selective class of drugs.
	BP403T	Physical Pharmaceutics II (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand various physicochemical properties of drug molecules in the designing the dosage forms.• Understand the principles of colloidal dispersion,




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				<p>deformation of solids and coarse dispersion.</p> <ul style="list-style-type: none">• Understand the physical properties of solutions, buffers, isotonicity, disperse systems, colloidal and rheology.• Understand the chemical stability of various drug products.• Understand the role of optical, kinetic & electrical properties.• Understand the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulation
	BP404T	Pharmacology I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the pharmacological actions of different categories of drugs.• Understand the mechanism of drug action at organ system/sub cellular/macromolecular levels.• Understand how to apply the basic pharmacological knowledge in the prevention and treatment of various diseases.• Understand the adverse drug reactions and drug




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				interactions. <ul style="list-style-type: none">• Understand correlation of pharmacology with other bio medical sciences• Understand the signal transduction mechanism of various receptors
	BP405T	Pharmacognosy and Phytochemistry I (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know techniques in the cultivation and production of crude drugs• Know the crude drugs, their uses and chemical nature.• Know evaluation techniques for evaluation of drugs.• Understand microscopic & morphological evaluation of crude drugs.• Understanding traditional system of medicine along primary & secondary metabolite.• Understand recognition of medicinal plants, identification of adulteration & contamination
	BP501T	Medicinal Chemistry II (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the




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B.Pharm Semester V				<p>structure of various drugs and their IUPAC names.</p> <ul style="list-style-type: none">• To acquire basic knowledge about different diseases.• To acquire knowledge about synthesis of some drugs.• To know the structure activity relationship of different classes of drugs.• To understand the mode of action of medicinal compounds.• To acquire knowledge about uses of different medicinal agents.
	BP502T	Industrial Pharmacy I (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the various drug delivery system and its mechanisms.• Students will learn advanced drug delivery system early stage.• Developing a preparation of the drug which is both stable and acceptable to the patient.• They know very well about orally administered drugs, injectable, aerosol and semisolid preparations with standard protocols.




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				<ul style="list-style-type: none">Formulated drugs are stored in a suitable container closure system for extended periods of time.Also they know the stability study and its standard evaluation procedure for better storage conditions.
	BP503T	Pharmacology II (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Understand the mechanism of drug action and its relevance in the treatment of different diseases.Understand isolation of different organs and tissues from the laboratory animals by simulated experiments.Understand the various receptor actions using isolated tissue preparation.Understand correlation of pharmacology with related medical sciences.Understand the cell communication mechanism.Understand the newer targets of several disease conditions for treatment.
	BP504T	Pharmacognosy and Phytochemistry II (New Syllabus)	2019-20	Upon completion of the course the student shall be able to




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				<ul style="list-style-type: none">• To outline the metabolic pathway in higher plants and their biogenetic studies.• To the Pharmacognostical study of secondary metabolites like alkaloids, glycosides, tannins, volatile oils etc.• To demonstrate the different types and steps involved in isolation, identification and analysis of Phytoconstituents like terpenoids, glycosides, alkaloids and resins.• To plan the industrial production, estimation and utilization of Phytoconstituents• To assess the crude drug by modern methods of extraction, spectroscopy, chromatography, isolation and purification.• Understand Ethno botany and Ethno pharmacology in drug discovery process
	BP505T	Pharmaceutical Jurisprudence (New Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Know the Pharmaceutical legislations and their implications in the development and marketing




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				<ul style="list-style-type: none">• Know various Indian pharmaceutical Acts, Laws and schedule• Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals• Know code of ethics during the pharmaceutical practice• Understand the knowledge of IPR.• Know the narcotic drugs and psychotropic substances act-1985 and rules
B.Pharm Semester VI	BP601T	Medicinal Chemistry III (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To acquire knowledge about microbial and parasitic diseases.• Understand the structure of various drugs and their IUPAC names.• Understand the SAR and mode of action of various drugs used in the treatment of different microbial and parasitic diseases.• To acquire knowledge about synthesis of some drugs.• Understand physicochemical properties of drugs and



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				<p>different techniques for development of drugs.</p> <ul style="list-style-type: none">To acquire knowledge about uses of different medicinal agents.
	BP602T	Pharmacology III (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">Understand mechanism of drug action and its relevance in the treatment of different infectious diseases.Understand the principles of toxicology and treatment of various poisoningsUnderstand the methods of toxicity studies.Understand study about symptoms of several poisoningsUnderstand the toxicity profile of each drugsUnderstand the classification of each drug used in the treatment of cancer and compare and contrast the mechanisms of action, uses, and adverse effects.
	BP603T	Herbal Drug Technology (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">To recall the fundamental concepts of herbal raw materials and biodynamic




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				<p>agriculture techniques.</p> <ul style="list-style-type: none">• To understand the concept of nutraceutical and herbal food interactions.• To apply the knowledge for evaluation and preparation of herbal formulations.• To remember the regulatory guidelines for the assessment of herbal drugs and patenting.• To illustrate the scope and future prospects of the herbal drug industry.• To establish and follow the SOP's, infrastructure of industries as per GMP.
	BP604T	Biopharmaceutics and Pharmacokinetics (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Basic understanding about the concepts of bio pharmaceutics and pharmacokinetics and their significance.• Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug and also describe the kinetics of drug absorption, distribution, metabolism, excretion,




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				<p>elimination.</p> <ul style="list-style-type: none">• Understand about the concepts of bioavailability and bioequivalence of drug products and their significance.• Ability to calculate the various pharmacokinetic parameters, their significance and applications• Understand the various multi component models.• To know the Knowledge about nonlinear pharmacokinetics.
	BP605T	Pharmaceutical Biotechnology (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the various techniques used in modern biotechnology.• Design research strategy with step -by -step instructions to address a research problem• Provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation,




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				<p>agricultural, plant, animal, and forensic</p> <ul style="list-style-type: none">• Explain the concept and application of monoclonal antibody technology• Demonstrate and Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products• Explain the general principles of generating transgenic plants, animals and microbes
	BP606T	Quality Assurance (New Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the importance of quality in pharmaceutical products.• Explored into importance of Good practices such as GMP, GLP• The factors affecting the quality of pharmaceuticals• Understands the regulatory aspects of pharmaceutical taught to the student• Process involved in manufacturing of pharmaceuticals different




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				section/department and activity is learnt. <ul style="list-style-type: none">Understand the various documentation processes is highlighted to the student.
B.Pharm Semester VII	7T1	Pharmaceutics (DFT-1) (Conventional) (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Understand the concept of PreformulationsUnderstand the chemical properties of drug for their stabilities in formulationKnowledge about various manufacturing process if different dosage formsAble to know about the quality control processAble to know the evolution techniques of different dosage formsAble to know formulation and development of sterile dosage forms
	7T2	Pharmaceutical Medicinal Chemistry-III (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Understand the chemistry of drugs with respect to their pharmacological activity




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				<ul style="list-style-type: none">• Understand the drug metabolic pathways adverse effect and therapeutic value of drugs• Know the structural activity relationship of different class of drugs• Study the chemical synthesis of selected drugs• Understand the writing techniques of chemical nomenclature of drugs• Understand the physiochemical and sterile aspects of drugs
	7T3	Pharmaceutical Analysis-III (Separation Techniques) (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the interaction of matters with chromatographic techniques and its application• Understand the chromatographic separation of drug during analysis• Understand the qualitative and quantitative analysis of drugs• Understand the solvent extraction techniques and their application• Demonstrate evaluation and interpretation of experimental data• Understand the




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				polarity of different solvent for analytical techniques
7T4		Clinical Pharmacotherapeutics-II (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the guidelines for handling prescription• Ability to design a dosage regimen of drug based on its route of administration• Discuss the preparation of individualized therapeutic plans based on diagnosis• Discuss the path physiology of selected disease states and explain the rational for drug therapy• Summarize the therapeutic approach to management of these diseases including references to the latest available evidence• Discuss the controversies in drug therapy
7T5		Pharmacognosy and phytochemistry-V (Phytopharmaceutical/Herbal Technology) (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• To attain detailed knowledge about chemistry of medicinal compound from natural origin




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				<ul style="list-style-type: none">• To attain knowledge regarding isolation and purification of medicinal compounds from natural origin• To understand general method of screening of medicinally active natural compounds• Appreciate patenting of herbal drugs• To know the use of natural products as starting materials• To identify different types of natural products, their occurrence, structure, biosynthesis and properties
	7T6	Biopharmaceutics and pharmacokinetics (Old Syllabus)	2019-20	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Ability to apply the concepts of pharmacokinetics to individualize the drug dosage regimen in clinical setting• Ability to design a dosage regimen of a drug based on its route of administration• Ability to design and implement pharmacokinetics method• Broader understanding about the significance of pharmacokinetics




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				and bioequivalence <ul style="list-style-type: none">• Understand how the drugs are metabolized in human body• Ability to assess the compartment models for pharmacokinetics
B.Pharm Semester VIII	8T1	Pharmaceutics (DFT-1) (NDDS) (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Students shall be able to understand the common practice in the pharmaceutical industry developments in controlled drug delivery system• To apply the knowledge to develop new procedure of their own design controlled drug delivery system• To need, concept, design and evaluation of various customized, sustained and controlled release dosage forms.• To formulate and evaluate various novel drug delivery system• Understand the polymer properties in designing sustained or controlled release drug product• Understand the biological factors affecting in designing of drug products
	8T2	Pharmaceutical Biotechnology and Molecular Biology (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to



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				<ul style="list-style-type: none">• Understand the importance of immobilized technology in Pharmaceutical Industries• Genetic engineering application in relation to pharmaceuticals• Importance of monoclonal antibodies in industry• Understand the use of microorganisms in fermentation technology• Understand the tools and technique of rDNA technology
	8T3	Pharmaceutical Analysis-IV (Spectroscopy) (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the interaction of matter with electromagnetic radiation and its application in drug analysis• Understand spectrophotometric analysis of drug• Understand the advanced instrument used in drug analysis• Understand the calibration in analytical instrument• Qualitative and quantitative estimation of newer drugs by spectrophotometric
	8T4	Pharmacognosy and	2019-20	Upon completion of the



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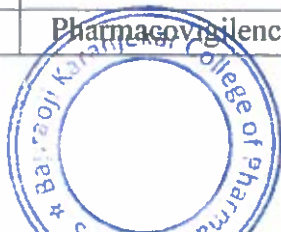
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		phytochemistry-VI (Industrial Pharmacognosy) (Old Syllabus)		course the student shall be able to <ul style="list-style-type: none">• To attain knowledge regarding herbal formulations of medicinal compounds from natural origin• Know the regulatory Requirements for nutraceutical with the regulation for registration and labeling of nutraceutical and food supplements in india• Cosmetics regulations in regulated and semi regulated countries• Various key ingredients and basic science to develop cosmetic and cosmeceuticals• They will acquire operative know-how and be able to carry out technical and management tasks and professional activities in the areas of transformation of medicinal herbs, management of the quality of the process• The recognition of marine drugs with, identification and their application in various diseases.
	8T5	Pharmacovigilance (Drug	.2019-20	Upon completion of the




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Ref:		Safety) (Old Syllabus)		Date:
				course the student shall be able to <ul style="list-style-type: none">• Writing case narratives of adverse events and their quality• ICH Guidelines for ICSR, PSUR, expedited reporting and Pharmacovigilance Planning• Phamacovigilance program in India• Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation• Adverse drug reaction reporting system and communication in Phamacovigilance• International standards for classification of drugs and diseases
	8T6	Industrial Pharmacy (Old Syllabus)	2019-20	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the approval process and regulatory requirement for drug products• Know different laws and acts that regulates pharmaceutical industries• Understand the regulatory importance of cGMP• Selection and evaluation of




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				pharmaceutical packaging materials • Optimization parameters in pharmaceutical formulations • Know about manufacturing and stabilities in pilot plant scale
	8T7	Project	2019-20	Upon completion of the course the student shall be able to • The basic theoretical knowledge on document compilation created on small project work. • Practical skills for the analysis of drugs and excipients using various instrumentation techniques. • To make accurate analysis and report the results in defined formats to learn documentation and express the observations with conclusion. • The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases.




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				<ul style="list-style-type: none">• Upon completion of project work the student will know the formulation aspects of different dosage forms to do different pharmaceutical calculations involved in formulation and appreciate the importance of good formulation for effectiveness.• Student will able to develop dynamics of motivation and concept development by increasing the knowledge to handle the challenges in project work.
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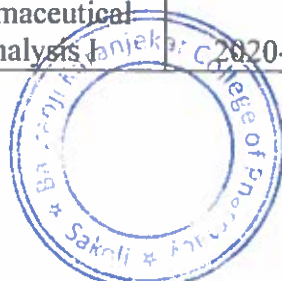
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Academic Session 2020-21 (New Syllabus)

Program Name	Course code	Course Name	Year of Introduction	Course Outcomes
B.Pharm Semester I	BP101T	Human Anatomy and Physiology I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.• Understood the various homeostatic mechanisms and their imbalances.• Identify the different types of bones in human body.• Identify the various tissues of different systems of human body• Learn about the various experimental techniques related to physiology. <p>Learnt various techniques like blood group determination,</p> <ul style="list-style-type: none">• measurement, blood cells counting
	BP102T	Pharmaceutical Analysis I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To develop the fundamentals of volumetric and instrumental analytical skills.• Understand the fundamental methodology to prepare different strength of solutions.• To understand and develop skill to minimize the sources of mistakes and errors in Analytical chemistry.• Understand the principle of




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				<p>fundamental of analytical chemistry and its scope in Pharmaceutical field.</p> <ul style="list-style-type: none">• Understand the principles and application of electrochemical analytical techniques in pharmacy.• Understand to improve skills by the course content in terms of selection analytical Techniques to perform the estimation of different class of drugs.
	BP103T	Pharmaceutics I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To know the historical background and profession of pharmacy and basics of Pharmaceutical dosage forms.• To understand the importance of prescription and posology.• To solve pharmaceutical calculations and understand the formulation of powders and Liquid dosage forms.• To develop monophasic and biphasic liquid dosage forms.• To explain the concepts of suppositories and pharmaceutical in compatibilities.• To Formulate and Evaluate semi solid dosage form
	BP 104T	Pharmaceutical Inorganic Chemistry	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the history of Pharmaceutical Inorganic Chemistry, principles of limit Tests and introduction & handling of Indian




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				<p>Pharmacopoeia.</p> <ul style="list-style-type: none">• Understand introduction, properties, preparation and uses of inorganic Pharmaceuticals.• Understand introduction, sources and identification tests for impurities in inorganic Pharmaceuticals.• Understand introduction and applications of pharmaceutical drugs used in different Classes.• Understand the medicinal and pharmaceutical importance of radiopharmaceuticals.• Learnt principles and preparation procedures of inorganic drugs.
	BP105T	Communication skills	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.• Understand to communicate effectively-Verbal and Nonverbal.• Understand effectively manage the team as a team member.• Understand interview skills.• Understand Leadership qualities.• Learnt planning, preparation and delivering techniques of presentations.
	BP106RMT	Remedial Mathematics	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand to apply Computations for




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				<p>pharmaceutical sciences.</p> <ul style="list-style-type: none">• Know the applications of mathematical concepts for pharmacy• Understand to create, use and analyze mathematical representations and Mathematical relationships• Understand to communicate mathematical knowledge and understanding to help In the field of clinical pharmacy• Understand to perform abstract mathematical reasoning• Understand to solve the different types of problems by applying theory
	BP201T	Human Anatomy and Physiology II	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of various organs of the human body.• Learnt details about various tissues and organs of different systems of human body.• Understand to elaborate coordinated working pattern of different organs of each system.• Learnt interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human.• Understand some hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
	BP202T	Pharmaceutical	2020-21	Upon completion of the course the




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	BP203T	Biochemistry	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand history of Biochemistry and introduction, classification, chemical nature & biological role of Biomolecules.• Understand introduction, classification, preparation and importance of the bioenergetics molecules.• Understand the electron transport chain and biological oxidation process.• Understand the introduction, metabolism and catabolism of




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				<p>nutrient molecules & Biomolecules in physiological and pathological conditions.</p> <ul style="list-style-type: none">• Understand the different disorders related to Biomolecules in which involve introduction, precautions and treatment.• Understand the genetic information of mammalian genome and introduction & functions of DNA, RNA, proteins and enzymes.
	BP204T	Pathophysiology	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand mechanism of cell injury and process of inflammation and repair.• Learnt the sign and symptoms of the disease.• Understand the etiology and complications of disease.• Know most commonly encountered path physiological state.• Know the disease mechanism and clinical testing requirements.• Understand the importance of systems working in human body.
	BP205T	Computer Applications in Pharmacy	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know the various types of application of computers in pharmacy• Know the various types of databases• Know the various applications



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				<p>of databases in pharmacy</p> <ul style="list-style-type: none">• Understand to solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to pharmacy• Understand to integrate and apply efficiently the contemporary IT tools to all pharmaceutical related activities• Understand to design and develop solutions to analyze pharmaceutical problems using computers
	BP206T	Environmental sciences	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand to create the awareness about environmental problems among learners• Understand to develop basic knowledge about the environment and its allied problems• Understand to develop an attitude of concern for the environment• Learn participation in environment protection and environment improvement• Acquire skills to help the concerned individuals in identifying and solving environmental problems• Strive to attain harmony with Nature
	BP301T	Pharmaceutical Organic Chemistry II	2020-21	<p>Upon completion of the course the student shall be able to</p>




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				<ul style="list-style-type: none">• Understand basic knowledge about common methods of preparation of organic compounds.• Understand the reactions of organic compounds.• Understand the reactivity and orientation in organic chemistry.• Understand the mechanism of organic reactions.• To acquire knowledge about electrophilic substitution reactions of aromatic compounds.• Understand the reactions and methods of analysis of fats and oils.
B.Pharm Semester III	BP302T	Physical Pharmaceutics I	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the descriptive terms for solubility, their meaning and various type of solution.• Understand the role of surfactants, interfacial phenomenon and thermodynamics.• Understand the role of state of matter and change in the state of matter• Understand the properties of matter including liquid crystal, crystalline and amorphous• Understand the physical properties of solutions, buffers, isotonicity, disperse systems and principle of relative humidity, glass transition




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				temperature <ul style="list-style-type: none">Understand various physicochemical properties of drugs molecules in the designing the dosage form
	BP303T	Pharmaceutical Microbiology	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Understand structure of bacteria and different types of microscopes.Understand methods of identification, cultivation and preservation of various microorganisms.Understand the importance and implementation of sterilization in pharmaceutical processing and industry.Learn sterility testing of pharmaceutical products.Carried out microbiological standardization of Pharmaceuticals.Understand the cell culture technology and its applications in pharmaceutical industries.
	BP304T	Pharmaceutical Engineering	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Know about the various unit operation processes used in pharmaceutical industry.Comprehend the various materials handling technique.Carry out the various processes involved in pharmaceutical manufacturing process.Understand the various tests for preventing the environmental pollution.Appreciate and understand the significance of plant lay out design for optimal uses of resources.Know about the various




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				preventive methods for corrosion control used in pharmaceutical industries.
B.Pharm Semester IV	BP401T	Pharmaceutical Organic Chemistry III	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the various nomenclature systems in stereochemistry and its application.• Understand the various stereochemical aspects of organic compounds.• Understand the detail mechanism of some useful organic reactions.• To acquire knowledge about structures of different heterocyclic compounds.• Understand the nomenclature rules in heterocyclic chemistry.• Understand preparations, reactions and medicinal uses of various heterocyclic compounds.
	BP402T	Medicinal Chemistry I	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the history of Medicinal Chemistry and introduction & importance of physicochemical properties related to biological actions of drugs.• Understand the phases present in drug metabolism with chemical reactions.• Understand different classes of drugs according to mechanism of action of drugs.• Understand synthetic procedures of drug molecules




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				<p>with chemical reactions.</p> <ul style="list-style-type: none">• Understand structure, nomenclature, mode of action and uses of drug molecules.• Understand structure activity relationship of selective class of drugs.
	BP403T	Physical Pharmaceutics II	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand various physicochemical properties of drug molecules in the designing the dosage forms.• Understand the principles of colloidal dispersion, deformation of solids and coarse dispersion.• Understand the physical properties of solutions, buffers, isotonicity, disperse systems, colloidal and rheology.• Understand the chemical stability of various drug product.• Understand the role of optical, kinetic & electrical properties.• Understand the principles of chemical kinetics and to used them for stability testing and determination of expiry date of formulation
	BP404T	Pharmacology I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the pharmacological actions of different categories of drugs.• Understand the mechanism of drug action at organ system/sub cellular/macromolecular levels.• Understand how to apply the basic pharmacological




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				<p>knowledge in the prevention and treatment of various diseases.</p> <ul style="list-style-type: none">• Understand the adverse drug reactions and drug interactions.• Understand correlation of pharmacology with other bio medical sciences• Understand the signal transduction mechanism of various receptors
	BP405T	Pharmacognosy and Phytochemistry I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know techniques in the cultivation and production of crude drugs• Know the crude drugs, their uses and chemical nature.• Know evaluation techniques for evaluation of drugs.• Understand microscopic & morphological evaluation of crude drugs.• Understanding traditional system of medicine along primary & secondary metabolite.• Understand recognition of medicinal plants, identification of adulteration & contamination
	BP501T	Medicinal Chemistry II	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the structure of various drugs and their IUPAC names.• To acquire basic knowledge about different diseases.• To acquire knowledge about




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B.Pharm Semester V				<p>synthesis of some drugs.</p> <ul style="list-style-type: none">• To know the structure activity relationship of different classes of drugs.• To understand the mode of action of medicinal compounds.• To acquire knowledge about uses of different medicinal agents.
	BP502T	Industrial Pharmacy I	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the various drug delivery system and its mechanisms.• Students will learn advanced drug delivery system early stage.• Developing a preparation of the drug which is both stable and acceptable to the patient.• They know very well about orally administered drugs, injectable, aerosol and semisolid preparations with standard protocols.• Formulated drugs are stored in a suitable container closure system for extended periods of time.• Also they know the stability study and its standard evaluation procedure for better storage conditions.
	BP503T	Pharmacology II	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the mechanism of drug action and its relevance in the treatment of different diseases.




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				<ul style="list-style-type: none">• Understand isolation of different organs and tissues from the laboratory animals by simulated experiments.• Understand the various receptor actions using isolated tissue preparation.• Understand correlation of pharmacology with related medical sciences.• Understand the cell communication mechanism.• Understand the newer targets of several disease conditions for treatment.
	BP504T	Pharmacognosy and Phytochemistry II	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• To outline the metabolic pathway in higher plants and their biogenetic studies.• To the Pharmacognostical study of secondary metabolites like alkaloids, glycosides, tannins, volatile oils etc.• To demonstrate the different types and steps involved in isolation, identification and analysis of Phytoconstituents like terpenoids, glycosides, alkaloids and resins.• To plan the industrial production, estimation and utilization of Phytoconstituents• To assess the crude drug by modern methods of extraction, spectroscopy, chromatography, isolation and purification.• Understand Ethno botany and Ethno pharmacology in drug discovery process
	BP505T	Pharmaceutical Jurisprudence	2020-21	Upon completion of the course the student shall be able to




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				<ul style="list-style-type: none">• Know the Pharmaceutical legislations and their implications in the development and marketing• Know various Indian pharmaceutical Acts, Laws and schedule• Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals• Know code of ethics during the pharmaceutical practice• Understand the knowledge of IPR.• Know the narcotic drugs and psychotropic substances act-1985 and rules
B.Pharm Semester VI	BP601T	Medicinal Chemistry III	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To acquire knowledge about microbial and parasitic diseases.• Understand the structure of various drugs and their IUPAC names.• Understand the SAR and mode of action of various drugs used in the treatment of different microbial and parasitic diseases.• To acquire knowledge about synthesis of some drugs.• Understand physicochemical properties of drugs and different techniques for development of drugs.• To acquire knowledge about uses of different medicinal agents.




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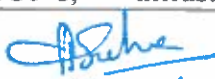


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	BP602T	Pharmacology III	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand mechanism of drug action and its relevance in the treatment of different infectious diseases.• Understand the principles of toxicology and treatment of various poisonings• Understand the methods of toxicity studies.• Understand study about symptoms of several poisonings• Understand the toxicity profile of each drugs• Understand the classification of each drug used in the treatment of cancer and compare and contrast the mechanisms of action, uses, and adverse effects.
	BP603T	Herbal Drug Technology	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To recall the fundamental concepts of herbal raw materials and biodynamic agriculture techniques.• To understand the concept of nutraceutical and herbal food interactions.• To apply the knowledge for evaluation and preparation of herbal formulations.• To remember the regulatory guidelines for the assessment of herbal drugs and patenting.• To illustrate the scope and future prospects of the herbal drug industry.• To establish and follow the SOP's, infrastructure of




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	BP604T	Biopharmaceutics and Pharmacokinetics	2020-21	industries as per GMP. Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Basic understanding about the concepts of biopharmaceutics and pharmacokinetics and their significance.• Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug and also describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.• Understand about the concepts of bioavailability and bioequivalence of drug products and their significance.• Ability to calculate the various pharmacokinetic parameters, their significance and applications• Understand the various multi component models.• To know the Knowledge about nonlinear pharmacokinetics.
	BP605T	Pharmaceutical Biotechnology	2020-21	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the various techniques used in modern biotechnology.• Design research strategy with step -by -step instructions to address a research problem• Provide examples of current applications of biotechnology and advances in the different




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				<p>areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic</p> <ul style="list-style-type: none">• Explain the concept and application of monoclonal antibody technology• Demonstrate and Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products• Explain the general principles of generating transgenic plants, animals and microbes
	BP606T	Quality Assurance	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the importance of quality in pharmaceutical products.• Explored into importance of Good practices such as GMP, GLP• The factors affecting the quality of pharmaceuticals• Understands the regulatory aspects of pharmaceutical taught to the student• Process involved in manufacturing of pharmaceuticals different section/department and activity is learnt.• Understand the various documentation processes is highlighted to the student.
B.Pharm Semester VII	BP701T	Instrumental Methods of Analysis	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the basic principles and instrumentation




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				<p>of UV, fluorimeter, flame Photometer and atomic absorption spectroscopy.</p> <ul style="list-style-type: none">• Understand the basic principles involved in TLC, column chromatography and paper Chromatography.• To know the theory and instrumentation of GC, HPLC, gel chromatography, ion Exchange chromatography and affinity chromatography.• Learn separation and identification of compounds by various chromatographic techniques.• Learn applications of various chromatographic techniques for organic, inorganic and Natural products.• To know Instrumentation, separation and identification of compounds by Electrophoresis technique.
	BP702T	Industrial Pharmacy II	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the process of pilot plant and scale up of pharmaceutical dosage forms.• Know the various pharmaceutical dosage forms and their manufacturing techniques.• Understand the process of technology transfer from lab scale to commercial batch.• Know different Laws and Acts that regulate pharmaceutical industry.• Understand the approval




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				<p>process and regulatory requirements for drug products.</p> <ul style="list-style-type: none">• Understand the process of Quality management systems and Indian Regulatory Requirement.
	BP703T	Pharmacy Practice	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects, health policy and legal issues in the practice of pharmacy.• Use knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy.• Effectively apply principles of drugs to remanagement and inventory control to Medication use.• Provide patient-centered care to diverse patients using the best available evidence And monitor drug therapy of patient through medication chart review, obtain medication history interview and counsel the patients, identify drug related problems.• Engage in innovative activities by making use of the knowledge of clinical trials• Exhibit professional ethics by producing safe and appropriate



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				medication use throughout society
	BP704T	Novel Drug Delivery System	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand various approaches used for development to novel drug delivery systems.• To know the criteria for selection of drugs and polymers used in the development process of Novel drug delivery systems.• Understand the various criteria for formulation and evaluation of Novel drug delivery systems.• To know about the various microencapsulation methods.• The students will know the latest drug delivery knowledge and think to develop new formulation based on the individual Requirement.• Understand the information for ADME of Drug compound in the body as needed to safely achieve its desired therapeutic effect.
	BP706PS	Practice School	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the basic theoretical knowledge on document compilation.• Understand the practical skills using various instrumentation techniques.• To make analysis and report the results in defined formats to learn documentation and express the observations with conclusion.




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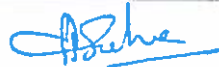
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				<ul style="list-style-type: none">• Understand the GMP procedures for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases.• Upon completion of practice school the student will know all the aspects of GLP to do different pharmaceutical procedures involved in formulation, preparation and evaluation of different dosage forms.• Student will be able to develop skills by increasing the knowledge which helps in successful completion of project working Pharm final year.
B.Pharm Semester VIII	BP801T	Biostatistics and Research Methodology	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know the various statistical methods to solve different types of problems• Understand the importance of computer in Hospital and Community Pharmacy• Know the principles of statistics, biostatistics and frequency distribution• Understand the process of measures of central tendency, regression and probability• Understand the principles measures of dispersion- dispersion, range, standard deviation• Understand the role of correlation, multiple




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	BP802T	Social and Preventive Pharmacy	2020-21	<p>correlation and parametric test</p> <p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Acquire high consciousness / realization of current issues related to health and pharmaceutical problems within the country and worldwide• Understand critical way of thinking based on current health care development• Evaluate alternative ways of solving problems related to health and pharmaceutical issues• Knowledge about national health programme• Understand community services• Understand importance of national health programme to pharmacy field
	BP805ET	Pharmacovigilance	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Writing case narratives of adverse events and their quality• ICH Guidelines for ICSR, PSUR, expedited reporting and Pharmacovigilance Planning• Pharmacovigilance program in India• Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation• Adverse drug reaction reporting system and communication in Pharmacovigilance




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				<ul style="list-style-type: none">• International standards for classification of drugs and diseases
	BP806ET	Quality Control and Standardization of Herbals	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To recall the WHO guidelines for the quality control of herbal drugs.• To illustrate and outline the quality assurance in traditional system of medicine including CGMP, GMP and GLP.• To compare the quality control parameters of drugs according to European Union and ICH guidelines.• To make use of research guidelines for evaluation of safety and efficacy of herbal medicine.• To apply the knowledge of chromatography in standardization of herbal drugs and to perform the stability studies.• To improve the knowledge on regulatory issues for herbal medicine including GMP,• WHO guidelines on safety monitoring of herbal medicine in Phamacovigilance.
	BP809ET	Cosmetic Science	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Basic understand the classification of cosmetic and cosmeceuticals products.• Understand the principles and building blocks of skin care products and there



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				<p>formulations.</p> <ul style="list-style-type: none">• To know the role of herbs used in cosmetics.• Know the principles of Cosmetic Evaluation.• Understand the various cosmetic problems.• Understand the manufacturing procedure used in formulation of cosmetic products.
	BP811ET	Advanced Instrumentation Techniques	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the calibration and validation of various analytical instruments like electronic balance, UV-Visible spectrophotometer,• To understand the analysis of drugs using various analytical instruments.• To understand principle and application of hyphenated techniques-LC-MS/MS,GC-MS/MS, HPTLC-MS.in pharmacy.• To know the general principle and procedure involved in the solid phase extraction and liquid-liquid extraction.• To know the instrumentation of various method of Thermal Methods of Analysis.• To know the basics instrumentation and application of NMR and mass spectroscopy.
	BP813PW	Project Work	2020-21	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• The basic theoretical




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				<p>knowledge on document compilation created on small project work.</p> <ul style="list-style-type: none">• Practical skills for the Analysis of drugs and excipients using various Instrumentation techniques.• To make accurate analysis and report the results in defined formats to learn Documentation and express the observations with conclusion.• The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases.• Upon completion of project work the student will know the formulation aspects of different dosage forms to do different pharmaceutical calculations involved in formulation and appreciate the importance of good formulation for effectiveness.• Student will be able to develop dynamics of motivation and concept development by increasing the knowledge to handle the challenges in project work.
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Academic Session 2021-22 (New Syllabus)

Program Name	Course code	Course Name	Year of Introduction	Course Outcomes
B.Pharm Semester I	BP101T	Human Anatomy and Physiology I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.• Understood the various homeostatic mechanisms and their imbalances.• Identify the different types of bones in human body.• Identify the various tissues of different systems of human body• Learn about the various experimental techniques related to physiology. <p>Learnt various techniques like blood group determination,</p> <ul style="list-style-type: none">• measurement, blood cells counting
	BP102T	Pharmaceutical Analysis I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To develop the fundamentals of volumetric and instrumental analytical skills.• Understand the fundamental methodology to prepare different strength of solutions.• To understand and develop skill to minimize the sources of mistakes and errors in Analytical chemistry.• Understand the principle of




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				<p>fundamental of analytical chemistry and its scope in Pharmaceutical field.</p> <ul style="list-style-type: none">• Understand the principles and application of electrochemical analytical techniques in pharmacy.• Understand to improve skills by the course content in terms of selection analytical Techniques to perform the estimation of different class of drugs.
	BP103T	Pharmaceutics I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To know the historical background and profession of pharmacy and basics of Pharmaceutical dosage forms.• To understand the importance of prescription and posology.• To solve pharmaceutical calculations and understand the formulation of powders and Liquid dosage forms.• To develop monophasic and biphasic liquid dosage forms.• To explain the concepts of suppositories and pharmaceutical in compatibilities.• To Formulate and Evaluate semi solid dosage form
	BP 104T	Pharmaceutical Inorganic Chemistry	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the history of Pharmaceutical Inorganic Chemistry, principles of limit Tests and introduction & handling of Indian





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				<p>Pharmacopoeia.</p> <ul style="list-style-type: none">• Understand introduction, properties, preparation and uses of inorganic Pharmaceuticals.• Understand introduction, sources and identification tests for impurities in inorganic Pharmaceuticals.• Understand introduction and applications of pharmaceutical drugs used in different Classes.• Understand the medicinal and pharmaceutical importance of radiopharmaceuticals.• Learnt principles and preparation procedures of inorganic drugs.
	BP105T	Communication skills	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation.• Understand to communicate effectively-Verbal and Nonverbal.• Understand effectively manage the team as a team member.• Understand interview skills.• Understand Leadership qualities.• Learnt planning, preparation and delivering techniques of presentations.
	BP106RMT	Remedial Mathematics	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand to apply Computations for




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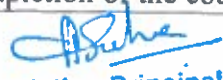
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				<p>pharmaceutical sciences.</p> <ul style="list-style-type: none">• Know the applications of mathematical concepts for pharmacy• Understand to create, use and analyze mathematical representations and Mathematical relationships• Understand to communicate mathematical knowledge and understanding to help In the field of clinical pharmacy• Understand to perform abstract mathematical reasoning• Understand to solve the different types of problems by applying theory
	BP201T	Human Anatomy and Physiology II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the gross morphology, structure and functions of various organs of the human body.• Learnt details about various tissues and organs of different systems of human body.• Understand to elaborate coordinated working pattern of different organs of each system.• Learnt interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human.• Understand some hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
	BP202T	Pharmaceutical	2021-22	Upon completion of the course the




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B.Pharm Semester II		Organic Chemistry I		<p>student shall be able to</p> <ul style="list-style-type: none">• To Know and recall the fundamental principles of organic chemistry that include nomenclature, structural isomerism, stereochemistry, chemical reactions and mechanism.• Name the functional groups and different class of organic compounds.• To know the reaction of various of alkane, alcohol, carbonyl compound, amines and carboxylic acid.• Understand the reactivity and stability of organic compounds.• To know the name, structure of organic compound and its use in pharmacy.• Illustrate stereochemistry of organic reaction.
	BP203T	Biochemistry	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand history of Biochemistry and introduction, classification, chemical nature & biological role of Biomolecules.• Understand introduction, classification, preparation and importance of the bioenergetics molecules.• Understand the electron transport chain and biological oxidation process.• Understand the introduction, metabolism and catabolism of




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				<p>nutrient molecules & Biomolecules in physiological and pathological conditions.</p> <ul style="list-style-type: none">• Understand the different disorders related to Biomolecules in which involve introduction, precautions and treatment.• Understand the genetic information of mammalian genome and introduction & functions of DNA, RNA, proteins and enzymes.
	BP204T	Pathophysiology	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand mechanism of cell injury and process of inflammation and repair.• Learnt the sign and symptoms of the disease.• Understand the etiology and complications of disease.• Know most commonly encountered path physiological state.• Know the disease mechanism and clinical testing requirements.• Understand the importance of systems working in human body.
	BP205T	Computer Applications in Pharmacy	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know the various types of application of computers in pharmacy• Know the various types of databases• Know the various applications




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				<p>of databases in pharmacy</p> <ul style="list-style-type: none">• Understand to solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to pharmacy• Understand to integrate and apply efficiently the contemporary IT tools to all pharmaceutical related activities• Understand to design and develop solutions to analyze pharmaceutical problems using computers
	BP206T	Environmental sciences	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand to create the awareness about environmental problems among learners• Understand to develop basic knowledge about the environment and its allied problems• Understand to develop an attitude of concern for the environment• Learn participation in environment protection and environment improvement• Acquire skills to help the concerned individuals in identifying and solving environmental problems• Strive to attain harmony with Nature
	BP301T	Pharmaceutical Organic Chemistry II	2021-22	<p>Upon completion of the course the student shall be able to</p>




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				<ul style="list-style-type: none">• Understand basic knowledge about common methods of preparation of organic compounds.• Understand the reactions of organic compounds.• Understand the reactivity and orientation in organic chemistry.• Understand the mechanism of organic reactions.• To acquire knowledge about electrophilic substitution reactions of aromatic compounds.• Understand the reactions and methods of analysis of fats and oils.
B.Pharm Semester III	BP302T	Physical Pharmaceutics I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the descriptive terms for solubility, their meaning and various type of solution.• Understand the role of surfactants, interfacial phenomenon and thermodynamics.• Understand the role of state of matter and change in the state of matter• Understand the properties of matter including liquid crystal, crystalline and amorphous• Understand the physical properties of solutions, buffers, isotonicity, disperse systems and principle of relative humidity, glass transition




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				temperature <ul style="list-style-type: none">Understand various physicochemical properties of drugs molecules in the designing the dosage form
	BP303T	Pharmaceutical Microbiology	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Understand structure of bacteria and different types of microscopes.Understand methods of identification, cultivation and preservation of various microorganisms.Understand the importance and implementation of sterilization in pharmaceutical processing and industry.Learn sterility testing of pharmaceutical products.Carried out microbiological standardization of Pharmaceuticals.Understand the cell culture technology and its applications in pharmaceutical industries.
	BP304T	Pharmaceutical Engineering	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Know about the various unit operation processes used in pharmaceutical industry.Comprehend the various materials handling technique.Carry out the various processes involved in pharmaceutical manufacturing process.Understand the various tests for preventing the environmental pollution.Appreciate and understand the significance of plant lay out design for optimal uses of resources.Know about the various



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				preventive methods for corrosion control used in pharmaceutical industries.
B.Pharm Semester IV	BP401T	Pharmaceutical Organic Chemistry III	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the various nomenclature systems in stereochemistry and its application.• Understand the various stereochemical aspects of organic compounds.• Understand the detail mechanism of some useful organic reactions.• To acquire knowledge about structures of different heterocyclic compounds.• Understand the nomenclature rules in heterocyclic chemistry.• Understand preparations, reactions and medicinal uses of various heterocyclic compounds.
	BP402T	Medicinal Chemistry I	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the history of Medicinal Chemistry and introduction & importance of physicochemical properties related to biological actions of drugs.• Understand the phases present in drug metabolism with chemical reactions.• Understand different classes of drugs according to mechanism of action of drugs.• Understand synthetic




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				<p>procedures of drug molecules with chemical reactions.</p> <ul style="list-style-type: none">• Understand structure, nomenclature, mode of action and uses of drug molecules.• Understand structure activity relationship of selective class of drugs.
	BP403T	Physical Pharmaceutics II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand various physicochemical properties of drug molecules in the designing the dosage forms.• Understand the principles of colloidal dispersion, deformation of solids and coarse dispersion.• Understand the physical properties of solutions, buffers, isotonicity, disperse systems, colloidal and rheology.• Understand the chemical stability of various drug products.• Understand the role of optical, kinetic & electrical properties.• Understand the principles of chemical kinetics and to used them for stability testing and determination of expiry date of formulation
	BP404T	Pharmacology I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the pharmacological actions of different categories of drugs.• Understand the mechanism of drug action at organ system/sub cellular/ macromolecular levels.• Understand how to apply the




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				<p>basic pharmacological knowledge in the prevention and treatment of various diseases.</p> <ul style="list-style-type: none">• Understand the adverse drug reactions and drug interactions.• Understand correlation of pharmacology with other bio medical sciences• Understand the signal transduction mechanism of various receptors
	BP405T	Pharmacognosy and Phytochemistry I	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Know techniques in the cultivation and production of crude drugs• Know the crude drugs, their uses and chemical nature.• Know evaluation techniques for evaluation of drugs.• Understand microscopic & morphological evaluation of crude drugs.• Understanding traditional system of medicine along primary & secondary metabolite.• Understand recognition of medicinal plants, identification of adulteration & contamination
	BP501T	Medicinal Chemistry II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the structure of various drugs and their IUPAC names.• To acquire basic knowledge about different diseases.




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B.Pharm Semester V	BP502T	Industrial Pharmacy I	2021-22	<ul style="list-style-type: none">To acquire knowledge about synthesis of some drugs.To know the structure activity relationship of different classes of drugs.To understand the mode of action of medicinal compounds.To acquire knowledge about uses of different medicinal agents.
	BP503T	Pharmacology II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">Understand the various drug delivery system and its mechanisms.Students will learn advanced drug delivery system early stage.Developing a preparation of the drug which is both stable and acceptable to the patient.They know very well about orally administered drugs, injectable, aerosol and semisolid preparations with standard protocols.Formulated drugs are stored in a suitable container closure system for extended periods of time.Also they know the stability study and its standard evaluation procedure for better storage conditions.




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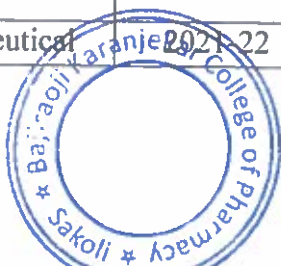
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				<p>diseases.</p> <ul style="list-style-type: none">• Understand isolation of different organs and tissues from the laboratory animals by simulated experiments.• Understand the various receptor actions using isolated tissue preparation.• Understand correlation of pharmacology with related medical sciences.• Understand the cell communication mechanism.• Understand the newer targets of several disease conditions for treatment.
	BP504T	Pharmacognosy and Phytochemistry II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To outline the metabolic pathway in higher plants and their biogenetic studies.• To the Pharmacognostical study of secondary metabolites like alkaloids, glycosides, tannins, volatile oils etc.• To demonstrate the different types and steps involved in isolation, identification and analysis of Phytoconstituents like terpenoids, glycosides, alkaloids and resins.• To plan the industrial production, estimation and utilization of Phytoconstituents• To assess the crude drug by modern methods of extraction, spectroscopy, chromatography, isolation and purification.• Understand Ethno botany and Ethno pharmacology in drug discovery process
	BP505T	Pharmaceutical	2021-22	Upon completion of the course the




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		Jurisprudence		student shall be able to <ul style="list-style-type: none">• Know the Pharmaceutical legislations and their implications in the development and marketing• Know various Indian pharmaceutical Acts, Laws and schedule• Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals• Know code of ethics during the pharmaceutical practice• Understand the knowledge of IPR.• Know the narcotic drugs and psychotropic substances act-1985 and rules
B.Pharm Semester VI	BP601T	Medicinal Chemistry III	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• To acquire knowledge about microbial and parasitic diseases.• Understand the structure of various drugs and their IUPAC names.• Understand the SAR and mode of action of various drugs used in the treatment of different microbial and parasitic diseases.• To acquire knowledge about synthesis of some drugs.• Understand physicochemical properties of drugs and different techniques for development of drugs.• To acquire knowledge about uses of different medicinal




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	BP602T	Pharmacology III	2021-22	<p>agents.</p> <p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand mechanism of drug action and its relevance in the treatment of different infectious diseases.• Understand the principles of toxicology and treatment of various poisonings• Understand the methods of toxicity studies.• Understand study about symptoms of several poisonings• Understand the toxicity profile of each drugs• Understand the classification of each drug used in the treatment of cancer and compare and contrast the mechanisms of action, uses, and adverse effects.
	BP603T	Herbal Drug Technology	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• To recall the fundamental concepts of herbal raw materials and biodynamic agriculture techniques.• To understand the concept of nutraceutical and herbal food interactions.• To apply the knowledge for evaluation and preparation of herbal formulations.• To remember the regulatory guidelines for the assessment of herbal drugs and patenting.• To illustrate the scope and future prospects of the herbal drug industry.• To establish and follow the




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				SOP's, infrastructure of industries as per GMP.
	BP604T	Biopharmaceutics and Pharmacokinetics	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Basic understanding about the concepts of Biopharmaceutics and pharmacokinetics and their significance.• Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug and also describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.• Understand about the concepts of bioavailability and bioequivalence of drug products and their significance.• Ability to calculate the various pharmacokinetic parameters, their significance and applications• Understand the various multi component models.• To know the Knowledge about nonlinear pharmacokinetics.
	BP605T	Pharmaceutical Biotechnology	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the various techniques used in modern biotechnology.• Design research strategy with step by step instructions to address a research problem• Provide examples of current applications of biotechnology




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				<p>and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic</p> <ul style="list-style-type: none">• Explain the concept and application of monoclonal antibody technology• Demonstrate and Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products• Explain the general principles of generating transgenic plants, animals and microbes
	BP606T	Quality Assurance	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the importance of quality in pharmaceutical products.• Explored into importance of Good practices such as GMP, GLP• The factors affecting the quality of pharmaceuticals• Understands the regulatory aspects of pharmaceutical taught to the student• Process involved in manufacturing of pharmaceuticals different section/department and activity is learnt.• Understand the various documentation processes is highlighted to the student.
B.Pharm Semester VII	BP701T	Instrumental Methods of Analysis	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the basic



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				<p>principles and instrumentation of UV, fluorimeter, flame Photometer and atomic absorption spectroscopy.</p> <ul style="list-style-type: none">• Understand the basic principles involved in TLC, column chromatography and paper Chromatography.• To know the theory and instrumentation of GC, HPLC, gel chromatography, ion Exchange chromatography and affinity chromatography.• Learn separation and identification of compounds by various chromatographic techniques.• Learn applications of various chromatographic techniques for organic, inorganic and Natural products.• To know Instrumentation, separation and identification of compounds by Electrophoresis technique.
	BP702T	Industrial Pharmacy II	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the process of pilot plant and scale up of pharmaceutical dosage forms.• Know the various pharmaceutical dosage forms and their manufacturing techniques.• Understand the process of technology transfer from lab scale to commercial batch.• Know different Laws and Acts that regulate pharmaceutical industry.




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				<ul style="list-style-type: none">• Understand the approval process and regulatory requirements for drug products.• Understand the process of Quality management systems and Indian Regulatory Requirement.
	BP703T	Pharmacy Practice	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects, health policy and legal issues in the practice of pharmacy.• Use knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy.• Effectively apply principles of drugs to remanagement and inventory control to Medication use.• Provide patient-centered care to diverse patients using the best available evidence and monitor drug therapy of patient through medication chart review, obtain medication history interview and counsel the patients, identify drug related problems.• Engage in innovative activities by making use of the knowledge of clinical trials• Exhibit professional ethics by




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				producing safe and appropriate medication use throughout society
	BP704T	Novel Drug Delivery System	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand various approaches used for development to novel drug delivery systems.• To know the criteria for selection of drugs and polymers used in the development process of Novel drug delivery systems.• Understand the various criteria for formulation and evaluation of Novel drug delivery systems.• To know about the various microencapsulation methods.• The students will know the latest drug delivery knowledge and think to develop new formulation based on the individual Requirement.• Understand the information for ADME of Drug compound in the body as needed to safely achieve its desired therapeutic effect.
	BP706PS	Practice School	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">• Understand the basic theoretical knowledge on document compilation.• Understand the practical skills using various instrumentation techniques.• To make analysis and report the results in defined formats to learn documentation and express the observations with




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				<p>conclusion.</p> <ul style="list-style-type: none"> • Understand the GMP procedures for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases. • Upon completion of practice school the student will know all the aspects of GLP to do different pharmaceutical procedures involved in formulation, preparation and evaluation of different dosage forms. • Student will able to develop skills by increasing the knowledge which helps in successful completion of project working B Pharm Final year.
B.Pharm Semester VIII	BP801T	Biostatistics and Research Methodology	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none"> • Know the various statistical methods to solve different types of problems • Understand the importance of computer in Hospital and Community Pharmacy • Know the principles of statistics, biostatistics and frequency distribution • Understand the process of measures of central tendency, regression and probability • Understand the principles measures of dispersion- dispersion, range, standard deviation • Understand the role of




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				correlation, multiple correlation and parametric test
	BP802T	Social and Preventive Pharmacy	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Acquire high consciousness / realization of current issues related to health and pharmaceutical problems within the country and worldwide• Understand critical way of thinking based on current health care development• Evaluate alternative ways of solving problems related to health and pharmaceutical issues• Knowledge about national health programme• Understand community services• Understand importance of national health programme to pharmacy field
	BP805ET	Pharmacovigilance	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Writing case narratives of adverse events and their quality• ICH Guidelines for ICSR, PSUR, expedited reporting and Pharmacovigilance Planning• Pharmacovigilance program in India• Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation• Adverse drug reaction reporting system and communication in




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				Pharmacovigilance <ul style="list-style-type: none">International standards for classification of drugs and diseases
	BP806ET	Quality Control and Standardization of Herbals	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">To recall the WHO guidelines for the quality control of herbal drugs.To illustrate and outline the quality assurance in traditional system of medicine including CGMP, GMP and GLP.To compare the quality control parameters of drugs according to European union andICH guidelines.To make use of research guidelines for evaluation of safety and efficacy of herbal medicine.To apply the knowledge of chromatography in standardization of herbal drugs and to perform the stability studies.To improve the knowledge on regulatory issues for herbal medicine including GMP,WHO guidelines on safety monitoring of herbal medicine in Pharmacovigilance.
	BP809ET	Cosmetic Science	2021-22	Upon completion of the course the student shall be able to <ul style="list-style-type: none">Basic understand the classification of cosmetic and cosmeceuticals products.Understand the principles and




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				<p>building blocks of skin care products and there formulations.</p> <ul style="list-style-type: none">• To know the role of herbs used in cosmetics.• Know the principles of Cosmetic Evaluation.• Understand the various cosmetic problems.• Understand the manufacturing procedure used in formulation of cosmetic products.
	BP811ET	Advanced Instrumentation Techniques	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• Understand the calibration and validation of various analytical instruments like electronic balance, UV-Visible spectrophotometer, Fluorimeter, Flame Photometer, HPLC and GC.• To understand the analysis of drugs using various analytical instruments.• To understand principle and application of hyphenated techniques-LC-MS/MS,GC-MS/MS, HPTLC-MS.in pharmacy.• To know the general principle and procedure involved in the solid phase extraction and liquid-liquid extraction.• To know the instrumentation of various method of Thermal Methods of Analysis.• To know the basics instrumentation and application of NMR and mass spectroscopy.




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	BP813PW	Project Work	2021-22	<p>Upon completion of the course the student shall be able to</p> <ul style="list-style-type: none">• The basic theoretical knowledge on document compilation created on small project work.• Practical skills for the Analysis of drugs and excipients using various Instrumentation techniques.• To make accurate analysis and report the results in defined formats to learn Documentation and express the observations with conclusion.• The pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients and new chemical entities for the drug development phases.• Upon completion of project work the student will know the formulation aspects of different dosage forms to do different pharmaceutical calculations involved in formulation and appreciate the importance of good formulation for effectiveness.• Student will able to develop dynamics of motivation and concept development by increasing the knowledge to handle the challenges in project work.
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