



SIR C.R.REDDY COLLEGE OF PHARMACEUTICAL SCIENCES

(An ISO 9001 : 2015 Certified Institution)

(Affiliated to Andhra University, Visakhapatnam; Recognized by Dept.of Technical Education, Govt.of A.P)

(Approved by AICTE & PCI, New Delhi)

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PROGRAMME: B.PHARMACY (COURSE OUTCOMES)

**Course Name- Human Anatomy and Physiology-I (Theory) Course code: BP 101 T, I B Pharmacy,
First Semester.**

BP 101 T.1	To Understand the basic terminology, cell signaling pathways and types of tissues
BP 101 T.2	To gain Knowledge on structure & classifications of skeletal system, joints and neuromuscular functions
BP 101 T.3	To interpret the types & functions of Blood and blood cells with mechanism of blood circulation & lymphatic circulation
BP 101 T.4	To describe the Peripheral nervous system and its functions and to know about the structure and functions of Organs of special senses.
BP 101 T.5	To improve knowledge on Cardiovascular organs, functions with special emphasis on circulatory mechanism, conducting systems and diseases of cardiovascular system

Course Name: Pharmaceutical Analysis-I (Theory) Course code: BP102T, I B. Pharmacy,

First Semester.

BP102T.1	To define and differentiate terminologies in pharmaceutical analysis & understand the importance of Good laboratory Practices (GLP),
BP102T.2	To classify different types of analytical techniques, errors and limit tests.
BP102T.3	To apply various theoretical concepts and principles involved in gas analysis, moisture and alcohol content.

BP102T.4	To examine the importance of computation of analytical results, stoichiometric analytical problems and pH of buffers.
BP102T.5	To estimate various pharmaceutical compounds using acid -base, complexometric, non-aqueous, gravimetric techniques, redox, precipitation and diazotization titrations.

Course Name: Pharmaceutics (Theory) Course Code: BP 103 T, I B Pharmacy,

First Semester.

BP 103T.1	To know the historical background and profession of pharmacy and basics of pharmaceutical dosage forms.
BP 103T.2	To understand the importance of prescription and posology.
BP 103T.3	To solve pharmaceutical calculations and understand the formulation of powders and liquid dosage forms.
BP 103T.4	To develop monophasic and biphasic liquid dosage forms.
BP 103T.5	To explain the concepts of suppositories and pharmaceutical incompatibilities.
BP 103T.6	To formulate and evaluate semi solid dosage forms.

Course Name: Pharmaceutical Inorganic Chemistry (Theory) Course Code: BP

104T, I B Pharmacy, First Semester.

BP 104T.1	To understand sources of impurities and methods to determine impurities.
BP 104T.2	To understand buffers, their stability, calculations, and methods of isotonicity.
BP 104T.3	To know the medicinal and pharmaceutical importance of Inorganic chemistry
BP 104T.4	To gain knowledge in inorganic pharmaceuticals and their applications

BP 104T.5	To know about radioactivity and its isotopes applications and storage conditions
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Course Name: Remedial biology (Theory)

Course Code: BP 106 RBT, I B Pharmacy, First Semester.

BP 106 RBT.1	To understand living world and kingdoms of classification & Morphology of different parts of flowering plants
BP 106 RBT.2	To gain knowledge on human circulatory system, digestive system & respiratory system
BP 106 RBT.3	To understand basics of human excretory system, neural control, glands and hormones and human reproductive system.
BP 106 RBT.4	To gain knowledge on plants and mineral nutrition and photosynthesis
BP 106 RBT.5	To understand about plant cell, tissues, plant respiration and Phases of plant growth and development.

Course Name: Remedial Mathematics (Theory) Course Code: BP 106RMT, I B

Pharmacy, First Semester.

BP 106 RMT.1	To Know the concepts of mathematics and their application in pharmacy.
BP 106 RMT.2	To correlate the mathematical tools in wide professional views and solve problems of matrices.
BP 106 RMT.3	To apply both conventional and creative techniques to solve problems of calculus.
BP 106 RMT.4	To Know the Analytical geometry different types of problems by applying mathematics.

BP 106 RMT.5

To Know the Differential equation, Laplace transform to solving
Pharmacokinetic equations and their applications

Course Name- Human Anatomy and Physiology-I (Practical)Course code: BP

107-P, I. B.Pharm, First Semester.

BP 107 P.1	To understand the usage of compound microscope.
BP 107 P.2	To classify various tissues based on their characteristics by observing them under microscope.
BP 107 P.3	To Identify different types of bones in human skeletal system
BP 107 P.4	To estimate the physiological conditions of human body by recording heart rate, pulse rate, blood pressure, bleeding and clotting time.
BP 107 P.5	To determine the RBC and WBC in human blood.
BP 107 P.6	To estimate the DLC and ESR of human blood sample.

Course Name : Pharmaceutical Analysis-I(Practical);Course code: BP108P, I

B Pharmacy, First Semester.

BP108P.1	To choose appropriate primary and secondary standards in standardization and calibration methods.
BP108P.2	To determine the different limit tests and titrations.
BP108P.3	To experiment with acid-base, redox, complexometric and limit tests.
BP108P.4	To establish the importance of significant figures and computation of analytical data.
BP108P.5	To explain about GLP and estimate active pharmaceutical ingredient in pharmaceutical dosage forms.

Course Name: Pharmaceutics (Practical) Course Code: BP 109 P, II B

Pharmacy, First Semester.

BP 109P.1	To recall the principles used in the preparation of solid, liquid and semi solid dosage forms.
BP 109P.2	To experiment with monophasic liquid dosage forms for internal and external administration.
BP 109P.3	To prepare biphasic liquid dosage forms
BP 109P.4	To design powders and granules.
BP 109P.5	To develop semi solid dosage forms.
BP 109P.6	To formulate suppositories.

Course Name Pharmaceutical Inorganic chemistry (Practical) Course Code: BP

110P, I B Pharmacy, First Semester

BP 110P.1	To perform the limit test for a given sample.
BP110P.2	To carry out the identification tests with the given sample.
BP110P.3	To determine swelling power in bentonite.
BP110P.4	To analyze the acid neutralization capacity of aluminum hydroxide gel.
BP110P.5	To Perform a test for purity of potassium iodide by examining the presence of iodates in the sample
BP110P.6	To prepare and submit the given inorganic pharmaceuticals.

Course Name: Remedial biology (Practical)

Course Code: BP 112 RBP, I B Pharmacy, First Semester.

BP 112 RBP.1	To gain Knowledge on Microscope and its types, section cutting and preparation of permanent slide.
BP 112 RBP.2	To understand the parts and structure of the cell and its inclusions
BP 112 RBP.3	Microscopic study of tissues & different parts of the plant along with their modifications.
BP 112 RBP.4	Detailed study of frog using computer models
BP 112 RBP.5	To gain knowledge on bones and to understand principle and procedures involved in determination of blood groups, blood pressure and tidal volume.

Course Name- Human Anatomy and Physiology-II (Theory) Course code: BP 201

T, I. B. Pharmacy, Second Semester.

BP 201 T.1	To explain the Classification, types, functions of nerves, action potential, nerve impulses, reflex action.
BP 201 T.2	To describe various functions of digestive organs and its diseases, treatments
BP 201 T.3	To describe about the mechanism of respiration, organs involved and the Urinary organs functions and diseases
BP 201 T.4	To classify hormones and its functions with special emphasis on hyper and hypo secretory conditions
BP 201 T.5	To improve knowledge on male and female reproductive system & its disorders. To understand genetic factors & its inheritance.

Course Name: Pharmaceutical Organic chemistry-I (Theory) Course Code:

BP202T, I B Pharmacy, Second Semester.

BP202T.1	To be able to understand the structure, nomenclature, and isomerism of organic compounds.
BP202T.2	To learn about elimination reactions of alkanes, alkenes, and conjugated dienes and their stabilities.
BP202T.3	To understand the nucleophilic substitution reactions of alkyl halides and alcohols
BP202T.4	To learn about nucleophilic addition reactions of carbonyl compounds with mechanisms
BP202T.5	To understand the acidity of carboxylic acids, the basicity of aliphatic amines, and their identification tests.

Course Name: BIOCHEMISTRY (Theory)

Course Code: BP203 T, I B Pharmacy, Second Semester.

BP203T.1	To understand the biological role of major biomolecules, concept of bioenergetics
BP203T.2	To attain the knowledge of Carbohydrates their metabolic pathways, metabolic disorders, hormonal regulation and also to understand the mechanism involved in the ETC.
BP203T.3	To gain the knowledge of the metabolic pathways and the disorders of the lipids and amino acid metabolism, also the synthesis of biological substances.

BP203T.4	To attain the knowledge of molecular biology and the models of DNA & RNA, metabolism and synthesis of proteins.
BP203T.5	To understand the catalytic activity of the enzymes in biochemical pathways and their importance in the diagnosis of diseases and in its treatment.

Course Name: Computer Applications (Theory) Course Code: BP 205 T, I B

Pharmacy, Second Semester.

BP 205T.1	To understand the fundamentals of computers and Apply the knowledge of mathematics
BP 205T.2	To understand the Programming languages and computing fundamentals to pharmaceutical applications for any given requirement.
BP 205T.3	To know the various types of application of computers in pharmacy
BP 205T.4	To know the various types of databases
BP 205T.5	To know the various applications Preclinical development of databases in pharmacy

Course Name: Environmental Sciences (Theory) Course Code: BP 206 T, I B

Pharmacy, Second Semester.

BP 206 T.1	They able to impart knowledge about the environment and its allied problems
BP 206 T.2	They came to know the various ecosystems and its functions

BP 206 T.3

They able to understand the concept of environmental pollution

Course Name- Human Anatomy and Physiology-II (Practical) Course code: BP

207 P, I. B.Pharmacy, Second Semester.

BP 207 P.1	To understand the physiological role of special senses & reflex activity of nervous system.
BP 207 P.2	To regulate the neurological activity & hormonal secretion by endocrinesystem
BP 207 P.3	To estimate the physiological capacity of eye & involuntary reflex activity
BP 207 P.4	To understand the Tidal capacity & Vital capacity of Lungs
BP 207 P.5	To determine the RBC and WBC in human blood.
BP 207 P.6	To estimate the DLC and ESR of human blood sample.

Course Name: Pharmaceutical Organic chemistry-I (Practical) Course Code:

BP208P, I B Pharmacy, Second Semester.

BP208P.1	To gain knowledge on general procedure of systematic qualitative analysis of unknown organic compounds
BP208P.2	To determine the melting point and boiling point of organic compounds
BP208P.3	To identify the unknown organic compounds using systematic qualitative analysis
BP208P.4	To prepare and calculate the percentage yields of some organic compounds
BP208P.5	To have knowledge on molecular models

Course Name: Biochemistry (Practical)

Course Code: BP 209P, I B Pharmacy, Second Semester.

BP209P.1	To analyze the carbohydrates, and observing their structures also to identify proteins and abnormal constituents in urine.
BP209P.2	To estimate the creatinine, sugar, total cholesterol in blood.
BP209P.3	To gain practical knowledge to prepare buffers and how to measure their pH.
BP209P.4	To know the hydrolysis of starch through enzymes.
BP209P.5	To determine the activity of salivary amylase.
BP209P.6	To study the effect of temperature and substrate concentration of salivary amylase.

Course Name: Computer Applications (Practical) Course Code: BP 210 P, I B

Pharmacy, Second Semester.

BP 210 P.1	Introduction to MS word, MS excel, MS power point, etc
BP 210 P.2	Describe how to design a HTML web page
BP 210 P.3	Retrieve the information of a drug and its adverse effects using online tools

BP 210 P.4	Work with MS access
BP 210 P.5	Exporting Tables, Queries, Forms and Reports to web pages and HTML
BP 210 P.6	Creating tables, databases regarding patient information

Course Name: Pharmaceutical Organic chemistry-II (Theory) Course Code:

BP301T , II B Pharmacy, Third Semester.

BP301T.1	To understand the structural evidence for benzene, its preparation and reactions
BP301T.2	To gain knowledge on preparations and reactions of phenols, aromatic amines, and aromatic acids.
BP301T.3	To learn about the properties and analytical constants of fats and oils
BP301T.4	To obtain information on the synthesis and reactions of polynuclear hydrocarbons
BP301T.5	To be able to understand the stability of cycloalkanes and proposed theories about the stabilities.

Course Name: Physical Pharmaceutics I (Theory) Course Code: BP 302 T, II

B Pharmacy, Third Semester.

BP 302T.1	Describe the properties of solutions with different solubility expressions and determine the solubility of drugs
BP 302T.2	State the physicochemical properties of drug molecules and understand the types of states of matter relevant to pharmaceutical dosage forms
BP 302T.3	Understand the role of surface active agents, interfacial phenomena of solid-gas, solid-liquid, and liquid-liquid interface, and understand the idea of adsorption isotherm
BP 302T.4	To determine the properties of powders and apply them in formulation development.
BP 302T.5	Describe detailed ideas of complexation of drug action and drug protein binding
BP 302T.6	Understand the methods of tonicity adjustment of biological fluids and pH determinations

Course Name: Pharmaceutical Microbiology (Theory) Course Code: BP 303T, II

B Pharmacy, Third Semester.

BP 303T.1	To introduce biological evaluation and role of bacteria, classification, cultivation methods and identification of Bacteria. Quantification of bacteria
BP 303T.2	Identification of Bacteria by physical staining and biochemical properties. Sterilization methods to control microbes.
BP 303T.3	To develop disinfectant agents and its mechanism of action on bacteria and fungi
BP 303T.4	To control microbial contamination in pharmaceutical industry. To use bacteria to assess the concentration of unknown chemicals.
BP 303T.5	To evaluate microbial spoilage and methods to control spoilage and use of preservatives. To study bacteriostatic and bactericidal effects of new compounds. Use of Cell lines culture in Pharmacy

Course Name: Pharmaceutical Engineering (Theory) Course Code: BP 304 T, II

B Pharmacy, Third Semester.

BP 304T.1	Know the principle, construction, working, uses, advantages and disadvantages of pharmaceutical equipment's used for various types of unit operations.
BP 304T.2	Understand the concepts of heat transfer by conduction, convection & radiation.
BP 304T.3	Know the principle, construction, working, uses, advantages and disadvantages of drying and mixing.
BP 304T.4	Know the principle, construction, working, uses, advantages and disadvantages of filtration and centrifugation.
BP 304T.5	Know the various preventive methods used for corrosion control in pharmaceutical industries.

Course Name: Pharmaceutical Organic chemistry-II (Practical) Course Code:
BP305P , II B Pharmacy, Third Semester.

BP305P.1	To gain knowledge on laboratory purification techniques.
BP305P.2	To determine the various analytical constants of oils
BP305P.3	To prepare the various organic compounds.
BP305P.4	To calculate the percentage yield of synthesized organic compounds

Course Name: Physical Pharmaceutics I (Practical) Course Code: BP 306 T,
II B Pharmacy, Third Semester.

BP 306P.1	To understand the concept of surface tension
BP 306P.2	To understand the solubility of drugs at different temperatures
BP 306P.3	To access the HLB value and critical micellar concentration
BP 306P.4	Explain the complexation phenomena
BP 306P.5	To study the adsorption of oxalic acid on charcoal

Course Name: Pharmaceutical Microbiology (Practical) Course Code: BP 307T,

II B Pharmacy, Third Semester.

BP 307P.1	Understand the different equipments and processing used in experimental microbiology.
BP 307P.2	Determine the sterilization of glassware, preparation, sterilization of media, sub culturing of bacteria and fungus. Nutrient stabs and slants preparations
BP 307P.3	Perform the methods of Simple, Gram's staining and acid fast staining.
BP 307P.4	Isolate the pure culture of micro-organisms by multiple streak plate technique.
BP 307P.5	Determine the Microbiological assay of antibiotics by cup plate method, Motility determination by Hanging drop method

Course Name: Pharmaceutical Engineering (Practical) Course Code: BP 308 P,

II B Pharmacy, Third Semester.

BP 308P.1	To know various unit operations used in pharmaceutical industries.
BP 308P.2	To Understand the material handling techniques.
BP 308P.3	To perform various processes involved in pharmaceutical manufacturing process.
BP 308P.4	To carry out various tests to prevent environmental pollution.

BP 308P.5	To appreciate the various preventive methods used for corrosion control in pharmaceutical industries.
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PROGRAMME: B.PHARMACY (COURSE OUTCOMES)

Course Name: Pharmaceutical Organic chemistry-III (Theory) Course Code:

BP401T, II B Pharmacy, Fourth Semester.

BP401T.1	To get knowledge on stereoisomerism and asymmetric synthesis
BP401T.2	To be able to understand geometrical isomerism and its types
BP401T.3	To attain knowledge on the classification of heterocyclic compounds
BP401T.4	To obtain information on nomenclature, synthesis reactions, and medicinal uses of specific heterocyclic compounds
BP401T.5	To learn the various named reactions.

Course Name: Medicinal Chemistry-I (Theory) Course Code: BP402T, II B

Pharmacy, Fourth Semester.

BP402T.1	To understand the basics of medicinal chemistry and physicochemical properties of drugs and their metabolism
BP402T.2	To get the knowledge on classification, mechanisms, uses, and SAR of drugs acting on the autonomic nervous system

BP402T.3	To be able to classify cholinergic neurotransmitters and their mechanism and uses
BP402T.4	To obtain information on various drugs like sedatives, hypnotics, antipsychotics, and anticonvulsants belonging to the central nervous system
BP402T.5	To learn about the other drugs acting on the central nervous system like general anaesthetics, narcotic and non-narcotic analgesics, anti-inflammatory agents.

Course Name: Physical Pharmaceutics II (Theory) Course Code: BP 403 T, II B

Pharmacy, Fourth Semester.

BP 403T.1	Define the concepts of colloids and its phases and types with the application of its properties like optical, kinetic and electrical
BP 403T.2	Demonstrate the concepts and factors influencing the viscosity of liquid and explain the Rheology of fluids
BP 403T.3	Describe the settling and sedimentation theory and calculate sedimentation rates, define emulsions and its theories with formulation and stability
BP 403T.4	To determine the properties of powders and apply them in formulation development.
BP 403T.5	Calculate the expiration date of different dosage forms and describe the accelerated stability studies
BP 403T.6	To make the use of principles of kinetics in the stabilization of dosage forms.

Course Name- Pharmacology-I (Theory) Course code: BP 404-T, II.B.Pharm,

Fourth Semester.

BP 404 T-1	To understand the basic terminology of Pharmacology, Drug receptor interaction & Pharmacokinetics
BP 404 T-2	To describe the pharmacodynamics, receptor families and drug interactions
BP 404 T-3	To gain knowledge on peripheral nervous system and its functions, Mechanism of local anesthetics
BP 404 T-4	To classify types of general anesthetics & centrally acting drugs

BP 404 T-5

To improve knowledge on treatment for antipsychotics and neuronal diseases.

Course Name: Pharmacognosy and Phytochemistry I (Theory) Course Code: BP

405 T, II B Pharmacy, Fourth Semester.

BP 405T.1	Study of pharmacognosy, Scope, Source of drugs, Classification and quality control of drugs of natural origin
BP 405T.2	To Know different methods of cultivation, collection, processing & Storage of crude drugs. Knowledge on conservation of medicinal plants.
BP 405T.3	To understand the techniques involved in plant tissue culture, applications of plant tissue culture and edible vaccines.
BP 405T.4	Knowledge on Various systems of medicine, Ayurveda, Unani, siddha, Homeopathy. Secondary metabolite's, introduction and identification
BP 405T.5	To understand pharmacognosy of fibers, hallucinogens, carbohydrates, proteins, enzymes, lipids and marine drugs.

Course Name: Medicinal Chemistry-I (Practical) Course Code: BP406P, II B

Pharmacy, Fourth Semester.

BP406P.1	To prepare various drugs and intermediates
BP406P.2	To calculate the percentage yield of synthesized organic compounds
BP406P.3	To be able to do the assay of various drugs and to calculate their percentage purity
BP406P.4	To determine the partition coefficient of drugs

Course Name: Physical Pharmaceutics II (Practical) Course Code: BP 407 P, II B

Pharmacy, Fourth Semester.

BP 407P.1	Determine the Particle size and its distribution by using Optical microscopy and sieving methods
BP 407P.2	To make use of derived and flow properties of powders to ensure a stable solid formulation.
BP 407P.3	Explain and determine the Methods of sedimentation volume by using the different suspending agents and concentration of same suspending agents.
BP 407P.4	To determine the viscosity using Ostwald's and Brookfield's viscometer.
BP 407P.5	Determine the reaction rate constants by first and second order reactions by using graphical and substitution methods
BP 407P.6	Calculate the expiration date of different dosage forms and describe the accelerated stability studies.

Course Name- Pharmacology-I (Practical) Course code: BP 408-P, II

B.Pharm, Fourth Semester.

BP 408 P-1	To understand the instruments & animals used in experimental pharmacology as per CPCSEA Guidelines
BP 408 P-2	To gain knowledge on laboratory blood withdrawal techniques while using anesthetics
BP 408 P-3	To improve knowledge on routes of administration by observing the drug effect on animals
BP 408 P-4	To understand the stereotype & anti catatonic activity on mice
BP 408 P-5	To determine the local anesthetic activity by different methods

BP 408 P-6

To estimate the effect microsomal enzyme inducers

Course Name: Pharmacognosy and Phytochemistry I (Practical) Course Code: BP 409 P, II B

Pharmacy, Fourth Semester.

BP 409 P.1	To understand the techniques involved in analysis of crude drugs by chemical test
BP 409 P.2	To understand principle and procedure involved in stomatal index and vein termination number
BP 409 P.3	To gain Knowledge on determination of size of starch grains, Calcium oxalates by eyepiece micrometer. Lycopodium spore method
BP 409 P.4	To understand about Determination of fiber length & Width
BP 409 P.5	To gain Knowledge on principle and procedure involved in determination of ash value and extractive value
BP 409 P.6	To gain Knowledge on principle and procedure involved in determination of moisture content, swelling index and foaming index

Course Name: Pharmacognosy and Phytochemistry II (Theory) Course Code: BP 504 T, III B

Pharmacy, Fifth Semester.

BP 504T.1	To gain knowledge on metabolic pathways in higher plants and their determination, utilization of radioactive isotopes in investigation of biogenetic studies.
BP 504T.2	To understand about composition, chemistry, chemical classes, bio sources, therapeutic uses and commercial applications of secondary metabolites.
BP 504T.3	To know isolation, identification and analysis of phytoconstituents
BP 504T.4	To understand the techniques in Industrial production, estimation and utilization of Phytoconstituents
BP 504T.5	To gain knowledge on basics of phytochemistry like extraction methods, spectroscopy and chromatography.

Course Name: Pharmacognosy and Phytochemistry II (Practical) Course Code: BP 508 P, II B

Pharmacy, Fifth Semester.

BP 508P.1	To identify crude drugs by morphology, histology and powder characteristics of crude drugs
BP 508P.2	To isolate and detect active principles from crude drugs
BP 508P.3	To perform paper and thin layer chromatography
BP 508P.4	To Know the distillation procedures of volatile oils and their detection by TLC
BP 508P.5	To analyze crude drugs by chemical tests.

Course Name: Herbal Drug Technology (Theory) Course Code: BP 603 T, III B Pharmacy, Sixth

Semester.

BP 603T.1	To understand about herbs as raw materials their selection, identification and authentication, biodynamic agriculture & Indian systems of medicine.
BP 603T.2	To describe benefits of various nutraceuticals in ailments, study of herb-drug and herb-food interactions
BP 603T.3	To Know about preparation of herbal cosmetics, herbal excipients and herbal formulations
BP 603T.4	To describe the rules and regulations in evaluation of drugs, patenting and regulatory requirements and regulatory issues of natural origin

BP 603T.5	To explain present status and future prospects of herbal industry and components for good manufacturing practice of Indian system of medicine
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Course Name: Herbal Drug Technology (Practical) Course Code: BP 609 P, III B Pharmacy,

Sixth Semester.

BP 609P.1	To gain knowledge on preliminary phytochemical screening of crude drugs.
BP 609P.2	To know the principle and procedure involved in determination of alcohol content of asva and arista
BP 609P.3	To evaluate excipients of natural origin
BP 609P.4	To gain knowledge on Procedures involved in incorporation of herbal extract.
BP 609P.5	To describe the monograph analysis of herbal drugs from recent pharmacopoeias
BP 609P.6	To know the principle and procedure involved determination of aldehyde content, phenol and total alkaloid content.

Course Name: Medicinal Chemistry-II (Theory) Course Code: BP501T, III B Pharmacy, Fifth

Semester.

BP501T.1	To understand the anti-histaminic agents and their classification, mechanism of action, and uses.
BP501T.2	To get the knowledge on classification, mechanisms, uses, and SAR of Antineoplastic agents
BP501T.3	To attain knowledge on anti-anginal drugs, diuretics, and anti-hypertensive agents
BP501T.4	To obtain information on various drugs like anti-arrhythmic agents, antihyperlipidemic agents, coagulants, and also drugs used in congestive heart failure
BP501T.5	To learn about the drugs acting on endocrine system
BP501T.6	To understand the antidiabetic agents, local anesthetics their classification, mechanisms, and uses

Course Name: Industrial Pharmacy I (Theory) Course Code: BP 502 T, III B Pharmacy, Fifth Semester.

BP 502T.1	To outline the objectives and applications of preformulation studies in the development and stability of dosage forms
BP 502T.2	Describe tablets dosage form, physic-chemical principles, different additives used for formulation, manufacturing, evaluation and defect in tableting and tablet coating with remedies.
BP 502T.3	To review the formulation and manufacturing considerations of liquid orals.
BP 502T.4	Describe capsule dosage form. Explain the different types, additives, size selection, manufacturing, evaluation, equipment and defect of capsules.
BP 502T.5	To describe the preparation and quality control of parenterals and ophthalmic preparations.
BP 502T.6	To summarize formulation, manufacturing and evaluation of cosmetic preparations, pharmaceutical aerosols and appraise the science of packaging materials.

Course Name- Pharmacology-II (Theory) Course code: BP 503-T, III.B.Pharm, Fifth Semester

BP 503 T.1	To Understand the mechanism of drug action and its relevance in the treatment of different cardio vascular diseases
BP 503 T.2	To gain knowledge on Pharmacotherapy of shock, coagulants and anticoagulants, Plasma Volume expanders
BP 503 T.3	To describe about different autocooids & to understand the use of NSAIDs in Gout & Rheumatoid arthritis.
BP 503 T.4	To improve knowledge on different hormones, Anti- diabetic drugs & Adreno corticosteroids
BP 503 T.5	To understand the basic principle, types & applications of different bioassay procedures.

Pharmacy Fifth Semester

BP 504T.1	To gain knowledge on metabolic pathways in higher plants and their determination, utilization of radioactive isotopes in investigation of biogenetic studies.
BP 504T.2	To understand about composition, chemistry, chemical classes, bio sources, therapeutic uses and commercial applications of secondary metabolites.
BP 504T.3	To know isolation, identification and analysis of phytoconstituents
BP 504T.4	To understand the techniques in Industrial production, estimation and utilization of Phytoconstituents
BP 504T.5	To gain knowledge on basics of phytochemistry like extraction methods, spectroscopy and chromatography.

Course Name: PHARMACEUTICAL JURISPRUDENCE(Theory)

Course Code: BP 505 T, III B Pharmacy, Fifth Semester.

BP 505 T.1	They understand the concepts of drugs and cosmetics act which includes the schedules of the act, importing and manufacturing of drugs with specific licenses and various test for drugs.
BP 505 T.2	They understand the concepts of drugs and cosmetics act which includes the study of various schedules along with sales of drugs, labelling and packing of drugs and administration of the act
BP 505 T.3	They obtain the knowledge on pharmacy act; medicinal and toilet preparations act along with narcotic and psychotropic substances act

BP 505 T.4	They came to know the salient features of drugs and magic remedies act including drug price control order and prevention of cruelty to animals' act.
BP 505 T.5	They attain knowledge on pharmaceutical legislations, pharmaceutical ethics, medical termination of pregnancy act, right to information act and Intellectual property rights.

Course Name: Industrial Pharmacy I (Practical) Course Code: BP 506 P, III B Pharmacy, Fifth Semester.

BP 506 P.1	To interpret the preformulation studies on drugs.
BP 506 P.2	To explain the preparation, evaluation and coating of tablets.
BP 506 P.3	To illustrate the formulation and evaluation of capsules.
BP 506 P.4	To design parenteral and ophthalmic products.
BP 506 P.5	To describe the preparation of creams.
BP 506 P.6	To evaluate glass containers as per pharmacopeial specifications.

Course Name- Pharmacology-II (Practical) Course code: BP 507-P, III.B.Pharmacy, Fifth Semester.

BP 507 P.1	To understand the techniques involved in In-Vitro pharmacology & different types physiological salt solutions
BP 507 P.2	To study & regulate the effect of drug on heart rate of different animals
BP 507 P.3	To determine the effect of PA2 & PD2 value of drugs using isolate tissue of animal by different methods
BP 507 P.4	To study the effect of drugs on different analgesic and anti-inflammatory methods
	To gain knowledge on Different types of Multiple point bioassay techniques using tissue preparations

BP 507 P.5	
BP 507 P.6	To study the effect of spasmogens and spasmolytics on rabbit jejunum preparation

Course Name: Pharmacognosy and Phytochemistry II (Practical)

Course Code: BP 508 P III B Pharmacy Fifth Semester

BP 508P.1	To identify crude drugs by morphology, histology and powder characteristics of crude drugs
BP 508P.2	To isolate and detect active principles from crude drugs
BP 508P.3	To perform paper and thin layer chromatography
BP 508P.4	To Know the distillation procedures of volatile oils and their detection by TLC
BP 508P.5	To analyze crude drugs by chemical tests.

Course Name: Medicinal Chemistry-III (Theory) Course Code: BP601T, III B Pharmacy, Sixth Semester.

BP601T.1	To understand the antibiotics classification, mechanisms, and SARs.
BP601T.2	To get knowledge on the chemistry of drugs with respect to their biological activity
BP601T.3	To learn about antitubercular and antiviral agents and their classifications
BP601T.4	To obtain information on various drugs including antifungal agents, anthelmintics
BP601T.5	To understand the importance of drug design and different techniques of drug design.

BP601T.6

To Know the metabolism, adverse effects, and therapeutic value of drugs.

Course Name- Pharmacology-III (Theory) Course code: BP 602-T, III.B.Pharm, Sixth Semester.

BP 602 T-1	To Understand the mechanism of drug action for different drugs acting on respiratory disorders
BP 602 T-2	To improve knowledge on principles of drugs acting on treatment of Ulcer and other GIT disorders
BP 602 T-3	To describe about different general principles of Chemotherapy and treatment for different anti-infective agents.
BP 602 T-4	To improve knowledge on Anticancer treatments, Immunosuppressants, and modulators, Monoclonal antibodies
BP 602 T-5	To understand the basic principles involved in toxicological and chronopharmacological study of different drugs

Course Name: Herbal drug technology (Theory) Course Code: BP 603 T III B Pharmacy Sixth Semester

BP 603T.1	To understand about herbs as raw materials their selection, identification and authentication, biodynamic agriculture & Indian systems of medicine.
BP 603T.2	To describe benefits of various nutraceuticals in ailments, study of herb-drug and herb-food interactions
BP 603T.3	To Know about preparation of herbal cosmetics, herbal excipients and herbal formulations
BP 603T.4	To describe the rules and regulations in evaluation of drugs, patenting and regulatory requirements and regulatory issues of natural origin
BP 603T.5	To explain present status and future prospects of herbal industry and components for good manufacturing practice of Indian system of medicine

Course Name: Biopharmaceutics and pharmacokinetics (Theory) Course code: BP 604 T, B

Pharmacy, Sixth semester

BP 604T.1	Understand the concept of ADME of drug in human body.
BP 604T.2	Apply the various regulations related to developing BA-BE study protocol for the new drug molecule and understanding about the concepts of in-vitro-in-vivo correlations (IVIVC).
BP 604T.3	To apply the pharmacokinetic models for determination of various pharmacokinetic parameters.
BP 604T.4	Ability to calculate the various pharmacokinetic parameters by using various mathematical models.
BP 604T.5	To analyze the pharmacokinetic parameters of drugs that follows linear and nonlinear pharmacokinetics.

Course Name: Pharmaceutical Biotechnology (Theory) Course code: BP 605 T, B Pharmacy, Sixth semester

BP 605T.1	Role of enzymes in protein engineering and genetic engineering
BP 605T.2	Cloning and rDNA technology procedures
BP 605T.3	Role of Immunity in disease progression
BP 605T.4	Diagnostic procedure in different diseases
BP 605T.5	Industrial production of pharmaceutical products by using fermentation

Course Name: Pharmaceutical Quality Assurance (Theory) Course Code: BP 606T, III B Pharmacy, Sixth Semester.

BP 606T.1	Understand the cGMP protocol in pharmaceutical industry set up.
BP 606T.2	Have knowledge on the importance of documentation, Stability testing of drug and drug substances, Statistical approaches for quality control.
BP 606T.3	Has the knowledge of quality certifications applicable to pharmaceutical industries
BP 606T.4	Have Understood the responsibilities of QA & QC departments in Pharmaceutical Industry.
BP 606T.5	Have knowledge on ISO management systems and Tools for quality improvement
BP 606T.6	Have Understood the types of validation and importance of validation in ensuring the quality attributes.

Course Name: Medicinal Chemistry-III (Practical) Course Code: BP607P, III B Pharmacy, Sixth Semester.

BP607P.1	To prepare various drugs and intermediates
BP607P.2	To assay various drugs and to calculate their percentage purity
BP607P 3	To synthesize the drugs by microwave irradiation techniques

BP607P.4	To be able to draw the structures by chem draw software
BP607P.5	To determine the Physicochemical properties of drugs

Course Name- Pharmacology-III (Practical) Course code: BP 608-P, III.B.Pharm, Sixth Semester.

BP 608 P-1	To identify the dose calculation range in pharmacological experiments
BP 608 P-2	To study & regulate the effect of anti ulcer activity & anti allergic activity
BP 608 P-3	To determine the effect of drug by acute oral toxicity, skin irritation
BP 608 P-4	To estimate the effect of serum bio-chemical parameters by semi-auto analyzer
BP 608 P-5	To gain knowledge on biostatistics methods used in experimental pharmacology
BP 608 P-6	To study the effect of Agonist & Antagonistic drugs on different isolated tissue preparations

Course Name: Herbal drug technology (Practical) Course Code: BP 609 P III B Pharmacy Sixth Semester

BP 609P.1	To gain knowledge on preliminary phytochemical screening of crude drugs.
BP 609P.2	To know the principle and procedure involved in determination of alcohol content of asva and arista
BP 609P.3	To evaluate excipients of natural origin
BP 609P.4	To gain knowledge on Procedures involved in incorporation of herbal extract.
BP 609P.5	To describe the monograph analysis of herbal drugs from recent pharmacopoeias

BP 609P.6	To know the principle and procedure involved determination of aldehyde content, phenol and total alkaloid content.
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Course Name: Industrial Pharmacy II (Theory) Course code: BP 702T, B Pharmacy, Seventh semester

BP 702T.1	To acquire the knowledge on process of pilot plant scale up techniques used in pharmaceutical dosage forms
BP 702T.2	To understand technology transfer protocol and licensing and related issues
BP 702T.3	To have deep knowledge on regulatory aspects of drug approval, clinical research and management of clinical studies
BP 702T.4	To learn the quality management system and standards, NABL, GLP
BP 702T.5	To acquire knowledge on Indian regulatory requirements, CDSCO, COPP
BP 702T.6	To know the acts and laws that regulates pharma industry

Course Name: Pharmacy Practice (Theory) Course Code: BP 703T, IV B Pharmacy, Seventh

Semester.

BP 703T.1	Students should know about various drug distribution methods in a hospital and should have the knowledge regarding stores management and inventory control.
BP 703T.2	Students should be able to monitor drug therapy of patient through medication chart review and clinical review.
BP 703T.3	Students should be able to obtain the medication history interview and counsel the patients.
BP 703T.4	Students should be able to identify the drug related problems and must be able to assess the adverse drug reactions.
BP 703T.5	Students should be able to interpret the selected laboratory results (as monitoring parameters in therapeutics) of specific disease states.
BP 703T.6	Students should be able to understand the pharmaceutical care services.

Course Name: Novel Drug Delivery Systems (Theory) Course code: BP 704T, B

Pharmacy, Seventh semester

BP 704 T.1	Explain the principles and technology used in the design of controlled release drug delivery system and learns the criteria for selection of polymers for the development of Novel drug delivery system.
BP 704 T.2	Explain the principles and technology used in the design of Mucosal drug delivery system and Implantable drug delivery system.
BP 704 T.3	Explain the formulation and characterization of transdermal drug delivery systems. And learn the formulation and evaluation of Gastro retentive & Nano pulmonary drug delivery systems
BP 704 T.4	Discuss various approaches for the development of targeted drug delivery system.
BP 704 T.5	Explain development of ocular formulations and intra uterine devices (IUDs) and its applications.

Course Name: Instrumental methods of Analysis (Practical) Course code: BP705P,

IV. B .Pharmacy, Seventh Semester.

BP705P.1	To learn the concepts of quantitative estimation techniques.
BP705P.2	To gain knowledge of handling of the instruments like HPLC, GC.
BP705P.3	To apply the concepts of separation methods for sugars, amino acids, pigments etc.,

BP705P.4	To have a knowledge on qualitative determination of organic compounds
BP705P.5	To be able to perform assay of dosage forms by the application of UV/Vis spectrophotometry

Course Name: Pharmacovigilance (Theory) Course Code: BP 805ET, IV B

Pharmacy, Eight Semester.

BP 805ET.1	Student should able to relate the role of pharmacovigilance and its prevalence in different setups.
BP 805ET.2	Student should able to discuss the different facets of ADRs in normal as well as special populations with their relation to pharmacovigilance methods.
BP 805ET.3	Student should able to integrate the knowledge of resources of drug information, safety data and drug utilization.
BP 805ET.4	Student should able to outline the regulatory processes in pharmacovigilance.
BP 805T.5	Student should be able to know the ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning and CIOMS forms.

Course Name: Advanced Instrumentation Techniques (Theory) Course Code: BP 811ET, IV B Pharmacy, Eighth Semester.

BP 811ET.1	Have good understanding of the basic concept and instrumentation of NMR, MS, X-ray crystallography, Thermal methods, Radio immunoassays and extraction technique for identification, and characterization of compounds.
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BP 811ET.2	Possess in-depth knowledge on principles and instrumentation of hyphenated techniques like LCMS/MS, GC-MS/MS, HPTLC-MS.
BP 811ET.3	Able to perform quantitative & qualitative analysis of drugs using the above-mentioned instruments.
BP 811ET.4	Able to perform the calibration and validation of UV, IR, HPLC as per ICH guidelines
BP 811ET.5	Understand the principle and able to perform the solid phase and liquid phase extractions.
BP 811ET.6	Able to perform basic interpretation of NMR Results.