B.Pharm I Year			
Semester I			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**
BPT101	Human Anatomy & Physiology I (Theory)	BPT101.1	After completion students should be able to understand basic terminologies used in Anatomy and Physiology, structure of and function of cell parts, transport across plasma membrane and types of tissue
		BPT101.2	To understand anatomy and physiology of Integumentary system, Skeletal system with joints
		BPT101.3	After completion students should be able to describe physiology of lymphatic system and blood with its disorders.
		BPT101.4	To understand structure and function of special sense organ and peripheral nervous system
		BPT101.5	The students should be able to understand anatomy and physiology of cardiovascular system and associated disorders.
BPP107	Human Anatomy & Physiology I (Practical)	BPP107.1	Upon the completion students should be able to identify different types of tissue and bones
		BPP107.2	Upon the completion students should be able to determine different haematological and cardiovascular parameters
BPT102	Pharmaceutical Analysis (Theory)	BPT102.1	Students should be able to explain concept and types of pharmaceutical Analysis along with methods of expressions, methods of preparations and standardisations of different Molar and Normal solutions.
		BPT102.2	Student should be able to explain concepts of Errors, Accuracy, Precision and sources of Impurities in Pharmaceutical Analysis. Also should be able to explain methods and purpose of limit tests.
		BPT102.3	Students should be able to explain theories of Acid Base Indicators, classify types of Acid Based titrations, interpret and identify neutralization curves and explain non-aqueous titrations.
		BPT102.4	Students should be able to explain techniques and applications of precipitation, complexometric, Gravimetric, Redox and Analytical techniques.
		BPT102.5	Students should be able to understand and explain Electrochemical Methods of Analysis like Conductometry, Potentiometry, and Polarography.
BPP108	Pharmaceutical Analysis (Practical)	BPP108.1	Student should be able to understand, explain and perform concepts of limit test.
		BPP108.2	Student should be able to understand and perform methods of preparations and standardisations of different solutions.
		BPP108.3	Students should be able to perform Assays of different chemicals.
		BPP108.4	Student should be able to understand and perform Electrochemical Analytical methods like Conductometry & Potentiometry.

BPT103	Pharmaceutics I (Theory)	BPT103.1	After completion students should be able to understand the history of profession of pharmacy, basic of different dosage forms, way of handling prescription and calculate dose calculations.
		BPT103.2	To understand pharmaceutical calculations, classification of powders, liquid dosage forms.
		BPT103.3	After completion students should be able to understand preparation of monophasic liquid dosage forms, suspension and emulsions.
		BPT103.4	To understand formulation and evaluation of suppositories, basics of pharmaceutical incompatibilities.
		BPT103.5	The students should be able to prepare and evaluate semisolid dosage forms.
BPP109	Pharmaceutics I (Practical)	BPP109.1	After completion students should be able to Understand and Carry out the formulation of dosage forms like syrups,elixirs,linctuses,solutions.powders,Gargles and Mouthwashes.
		BPP109.2	To understand and Carry out the formulation and evaluation of dosage forms like suspensions, emulsions, suppositories and semisolids.
BPT104	Pharma Inorganic Chemistry I (Theory)	BPT104.1	Student shall be able to know the sources of impurities and methods to determine the
		BPT104.2	Students shall well acquaint with principles and procedures of limit test of different impurities.
		BPT104.3	Student shall familiar with different classes of inorganic pharmaceuticals and their
		BPT104.4	Student shall understand medicinal and pharmaceutical importance of inorganic compounds.
		BPT104.5	Student shall be identify different anions, cations and know their role in physiological acid base balance and also familiar with uses of different inorganic compounds.
BPP110	Pharma Inorganic Chemistry I (Practical)	BPP110.1	Student should able to know principles of limit tests and perform limit test and detect impurities of various ions like chloride, sulfate, iron, lead and arsenic.
		BPP110.2	Student will able to identify various inorganic substances by performing various identification tests.
		BPP110.3	Students will be able to perform various tests for purity of inorganic substances.
		BPP110.4	Student will able to prepare inorganic pharmaceuticals by different preparation reactions.
		BPP110.5	Student will able to know advantages of inorganic substances as pharmaceuticals.
BPT105	Communication Skill (Theory)	BPT105.1	Upon completion students should understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation through effective communication (Verbal and Non Verbal)
		BPT105.2	After completion students should manage the team as a team player & Know the elements, styles and barriers of communication.
		BPT105.3	Upon completion student should Know the importance of good listening skills, and be a good listener.

		BPT105.4	After completion students should know the essentials of good writing skills and know the dos and don'ts of formal written communication.
		BPT105.5	Upon Completion student should develop interview skills, Leadership qualities and essentials of group discussions.
BPP111	Communication Skill (Practical)	BPP111.1	To become a good communicator in real life situations, and have a command over ones languages through forming grammatically correct sentences and prefect pronunciations.
		BPP111.2	To have good and effective writing skills, know the proper communication etiquettes and excellent presentation skills.
BPRBT106	Remedial Biology (Theory)	BPRBT106.1	Upon completion of subject studentswill beable to know the classification and salient features of five kingdoms of life.
		BPRBT106.2	Upon completion of subject students will beable to understand the basic components of anatomy & physiology of plant.
		BPRBT106.3	Upon completion of subject students will beable to know understand the basic components of anatomy & physiology of animal with special reference to human.
BPRBP112	Remedial Biology (Practical)	BPMTP112.1	Upon completion of subject students will beable to understand microscopic study and identification of tissues of plant, cell and its inclusions, detailed study of frog by using computer models.
		BPMTP112.2	Upon completion students will beable to identify different types of bones and determine different haematological and cardiovascular parameters.
BPRMT106	Remedial Math (Theory)	BPRMT106.1	Student should understand the theory and applications of partial fraction, logarithms, function, limits and continuity in pharmacy.
		BPRMT106.2	Student should be able to solve the problems related to matrices and ddeterminants.
		BPRMT106.3	Student should be able to solve the problems related to derivative and it's functions.
		BPRMT106.4	Student should be able to apply concepts of analytical geometry.
		BPRMT106.5	Student should be able to solve the problems related to differential equations and laplace transform.
B.Pharm I Year			
Semester II			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**
BPT201	Human Anatomy & Physiology II (Theory)	BPT201.1	After completion students should be able to understand the gross morphology of endocrine, digestive, nervous, respiratory, urinary and reproductive system.
		BPT201.2	Upon completion students should understand physiology of endocrine, nervous, digestive, respiratory, urinary and reproductive system.
		BPT201.3	Upon completion students should be able to explain basics of Energetics.

		BPT201.4	Upon completion students should be able to explain basics of genetics.
BPP207	Human Anatomy & Physiology II (Practical)	BPP207.1	Upon the completion students should be able to determine vital capacity, tidal volume, body temperature and basal mass index.
		BPP207.2	Upon the completion students should be able to demonstrate general neurological examinations and feedback mechanisms
BPT202	Pharmaceutical Organic Chemistry I (Theory)	BPT202.1	understand the nomenclature, classification and isomerism.
		BPT202.2	write the methods of preparation of alkane. alkene, dienes , alkyl halides ,alcohol , carbonyl compounds ,carboxylic acids and aliphatic amines
		BPT202.3	Will be able to explain the reactions ,name the reactions orientation and reactivity shown by alkane. alkene, dienes , alkyl halides , alcohol , carbonyl compounds ,carboxylic acids and aliphatic amines.
		BPT202.4	write the structure and uses of important reagents from the following categories of organic compounds like alkane. alkene, dienes , alkyl halides , alcohol , carbonyl compounds ,carboxylic acids and aliphatic amines
		BPT202.5	will be able to understand qualitative tests for alcohol and amines
BPP208	Pharmaceutical Organic Chemistry I (Practical)	BPP208.1	perform systematic qualitative analysis of unknown organic compounds
		BPP208.2	Will be able to prepare the solid derivatives from organic compounds
		BPP208.3	Do the construction of molecular models.
BPT203	Biochemistry II (Theory)	BPT203.1	Students should be able to understand chemical nature and biological roles of Biomolecules and concepts of Bioenergetics.
		BPT203.2	Students should be able to understand and explain Carbohydrate Metabolism and Biological Oxidation.
		BPT203.3	Students should be able to understand and explain Lipid Metabolism and Amino Acid Metabolism.
		BPT203.4	Students should be able to understand and explain Concepts of Nucleic Acid Metabolism and Genetics Information Transfer.
		BPT203.5	Students should be able to understand and explain Concepts of Enzymes.
BPP209	Biochemistry II (Practical)	BPP209.1	Students should be able to understand and perform Qualitative Analysis of Carbohydrates, Identifications of proteins and Quantitative analysis of reducing sugars and proteins.
		BPP209.2	Students should be able to understand andperform Qualitative analysis of abnormal urine constituents and determination of blood components like creatinine, sugar, cholesterol etc.
		BPP209.3	Students should be able to understand and perform preparation of buffer solution, enzymatic hydrolysis of starch.
		BPP209.4	Students should be able to understand and perform study of salivary amylase activity.

BPT204	Pathophysiology (Theory)	BPT204.1	Upon completion of subject studentswill beable to explain mechanisms involved in the process of inflammation and infectious diseses.
		BPT204.2	Upon completion of subject students will beable to explain basic principal of cell injury and adaptation.
		BPT204.3	Upon the completion of subject students will beable to explain pathophysiology of diseases of cardiovascular, respiratory, renal, endocrine, nervous and gastrointestinal sysrem.
		BPT204.4	Upon the completion of subject students will beable to explain principal of cancer, pathophysiology of haematological diseases, sexually transmitted diseses and diseses of bones and joints, Inflammatory bowel diseases, jaundice and liver disease.
BPT205	Computer Application in Pharmacy (Theory)	BPT205.1	To know the number systems, its conversion, calculations and the concept of the information systems and software's used in different field and its processes.
		BPT205.2	To know the various types of application of computers in pharmacy
		BPT205.3	To understand the various web technologies and the different databases and various applications of databases in pharmacy.
		BPT205.4	To know the Bioinformatics Databases, Concept and Impact of Bioinformatics in Vaccine Discovery and know the Computers as data analysis in Preclinical development like CDS, LIMS, TIMS etc.
BPP210	Computer Application in Pharmacy (Practical)	BPP210.1	To Design questionnaires, invoice tables, drug information storage and its retrival and its side effects. using word process
		BPP210.2	To Create a personal HTML webpage, create invoice tables, Generate reports from patients database, and Exporting Tables, Queries, Forms and Reports to web pages and to XML pages.
BPT206	Environmental Studies (Theory)	BPT206.1	After completion students should be able to understand our environment, renewable and non-renewable natural resources and the multidisciplinary nature of studies.
		BPT206.2	The students should be able to know, understand and explain about the natural resources like forest, water, minerals, food, energy and land, the problems associated with them and role of an individual in their conservation.
		BPT206.3	The students should be able to understand and explain the concept of an ecosystem, different types of ecosystems like forest, grassland, desert and aquatic, their structure, functions and characteristics.
		BPT206.4	The students should be able to know, understand and explain about various environmental pollutions like soil, water and air and preventive measures for them.
B.Pharm II Year			
Semester III			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**

BPT301	Pharma. Organic Chemistry II (Theory)	BPT301.1	write the structures ,names and types of isomerism of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloakanes
		BPT301.2	write the methods of preparation of benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloakanes
		BPT301.3	Will be able to explain reactivity ,orientation and theories regarding stability of the reactions shown by benzene ,phenols ,aromatic amines ,aromatic acids ,fats and oils polynuclear hydrocarbons and cycloakanes.
		BPT301.4	write the structure and uses of DDT,Saccharine ,BHC,Chloramine ,phenols,cresols,resorcinol,naphthols,aryl diazonium salts ,diphenyl methane,triphenylmethane.
		BPT301.5	will be able to understand analytical tests for phenols and fats and oils
BPP305	Pharma. Organic Chemistry II (Theory)	BPP305.1	do the experiments on recrystallization and steam distillation
		BPP305.2	determine the oil values and perform standardization of reagents
		BPP305.3	Will be able to do the synthesis of various organic compounds
BPT302	Physical Pharmaceutics I (Theory)	BPT302.1	Upon completion of syllabusstudents will be able toUnderstand various physicochemical properties of drug molecule, able to identify state and all basic phenomenon related to drug.
		BPT302.2	Upon completion of syllabus students will be able to Apply their knowledge related to basics of drug by simple methods and demonstration.
		BPT302.3	Upon completion of syllabusstudents will be able to Understand different principles and laws related to basic characteristics of drugs.
		BPT302.4	Upon completion of syllabus students will be able to Understand different phenomenon's and structure and nature of drugs.
		BPT302.5	Upon completion of syllabus students will be able to Get better insight in to various areas of formulations, research and development.
BPP306	Physical Pharmaceutics I (Practical)	BPP306.1	Upon completion of syllabus students will be able to demonstrate the concept of Ph, Pka, solubility density, viscosity, etc
		BPP306.2	Upon completion of syllabus students will be able to demonstrate miscible, partially miscible liquid and all practical aspect regarding solubility of liquid.
		BPP306.3	Upon completion of syllabus students will be able to demonstrate different equations regarding Ph, Pka and solubility.
		BPP306.4	Upon completion of syllabus students will be able to demonstrate CMC of various surfactants.
		BPT303.1	Explain classification, identification, nutritional requirement, isolation and preservation methods for pure culture of bacteria including quantitative measurement of bacerial growth. Summarize various types of microscope.
		BPT303.2	Explain methods, evaluation, equipment required and testing of pharmaceutical products for sterilization.

BPT303	Pharmaceutical Microbiology (Theory)	BPT303.3	Understand morphology, classification, reproduction/replication and cultivation of fungi and virus.
		BPT303.4	Explain classification, mode of action, factors influencing and evaluation of disinfection.
		BPT303.5	Understand laminar flow equipment, sources, methods and classification of aseptic area including general aspects related environment cleanliness. Explain principles and methods of various microbiological assays also Assesment and testing of new antibiotics.
		BPT303.6	To Know types, factors, sources and assesment of microbial contamination and spoilage. Preservation and evaluation of formaulation containing antimicrobial agents. To study growth and procedure for cell culture and its applications.
BPP307	Pharmaceutical Microbiology (Practical)	BPP307.1	Study and describe equipment's,sterilization of glassware, preparation and culturemedia, sub culturing, nutrient stabs and slants, multiple streak plate and other techniques also microbiological assay.
		BPP307.2	Identify the bacterial morphology using staining techniques and acquire knowledge on the principles of biochemical tests.
BPT304	Pharmaceutical Engineering (Theory)	BPT304.1	Understand importance of various unit operations used in pharmaceutical industries, importance of size reduction, powder size and size separation, principle, construction and working of equipments used in size reduction and size separations.
		BPT304.2	Understand the various processes involved in pharmaceutical manufacturing processes like evaporation, distillation and drying
		BPT304.3	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.
		BPT304.4	Comprehend significance of various equipments used in manufacturing processes like filtration and centrifugation
		BPT304.5	Appreciate the various preventive methods used for corrosion control in pharmaceutical Industries. Also factors affecting material selection.
BPP308	Pharmaceutical Engineering (Practical)	BPP308.1	Build up skill and ability to analyze; particle size distribution, effect of filter aid on filtration rate.
		BPP308.2	Determination of radiation constant of brass, iron, unpainted and painted glass, heat transfer coefficient, moisture content and loss on drying, humidity of air.
		BPP308.3	Demonstration of various mills.
		BPP308.4	Construction of drying curves.
B.Pharm II Year			
Semester IV			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**

BPT401	Pharma. Organic Chemistry III (Theory)	BPT401.1	write the stereochemical aspects of organic compounds and write stereochemical reactions including optical and geometric isomerism
		BPT401.2	write the structures ,names and classifications of heterocyclic compounds
		BPT401.3	Will be able to explain reactivity ,orientation and theories regarding stability of the reactions shown by heterocyclic compounds
		BPT401.4	write the methods of preparation of of heterocyclic compounds
		BPT401.5	understand the and uses of heterocyclic compounds
		BPT401.6	will be able to understand reactions of synthetic importance
BPT402	Medicinal Chemistry I (Theory)	BPT402.1	Students should be able to explain the effects of physicochemical properties on drug actions
		BPT402.2	Students should be able to explain the process of metabolism, influence of metabolic profile of drug and their impact on biological system.
		BPT402.3	Students Should be able to explain synthetic procedure for selective compounds of different categories.
		BPT402.4	Students should be able to classify different categories of agents based on their chemical natures.
		BPT402.5	Students should be able to explain Physicochemical properties, SAR, Metabolism and Mechanism of Action of Adrenergic, Cholinergic, and CNS agents.
BPP406	Medicinal Chemistry I (Practical)	BPP406.1	Students should be able to understand and explain methods of synthesis for intermediates and drugs.
		BPP406.2	Students should be able to explain physicochemical characterisation and recrystallisation methods for intermediates and drugs.
		BPP406.3	Students should be able to understand and perform the principle and procedure of quantitative determination of drugs in different dosage forms.
		BPP406.4	Students should be able to understand the principle and procedure of determination of partition co-efficient of drugs.
BPT403	Physical Pharmaceutics II (Theory)	BPT403.1	Upon completion of syllabus students will be able to deal with the concept of various physical, physicochemical properties and principal involved in dosageform formulation.
		BPT403.2	Upon completion of syllabus students will be able to get better insight in to various areas of formulation research and development.
		BPT403.3	Upon completion of syllabus students will be able to demonstrate use of formulation of various dosage form.
		BPT403.4	Upon completion of syllabus students will be able to describe the fundamental and derived properties of various dosage form.
		BPT403.5	Upon completion of syllabus students will be able to understand stability and shelflife, calculate expiry of various dosage form.
		BPP407.1	Upon completion of syllabus students will be able to demonstrate concept of particle3 size, and its use in formulation of various dosage form.

BPP407	Physical Pharmaceutics II (Practical)	BPP407.2	Upon completion of syllabus students will be able to demonstrate microscopic and micromeritic characteristic of dosage form.
		BPP407.3	Upon completion of syllabus students will be able to demonstrate stability testing of various dosage form.
		BPP407.4	Upon completion of syllabus students will be able to demonstrate HLB value, order of reaction and Handel various equipment like Brookfied viscometer, stability chamber etc.
BPT404	Pharmacology I (Theory)	BPT404.1	Upon completion studentswill beable to Describe the scope of pharmacology and signify routes of drug administration.
		BPT404.2	Upon completion studentswill beable to Explain the Principles of absorption, distribution, metabolism and excretion of a drug, enzyme induction, enzyme inhibition and kinetics of elimination and the relationship between drug and its receptors, mechanism of action, therapeutic effect, drug interaction and adverse drug reaction.
		BPT404.3	Upon completion studentswill beable to explain Drug discovery and clinical evaluation of new drugs, preclinical evaluation phase, phases of clinical trials and pharmacovigilance.
		BPT404.4	Upon completion students will be able to Understand organization and function of ANS Parasympathomimetics,parasympatholytics, Sympathomimetics, sympatholytics, Neuromuscular blocking agents and skeletal muscle relaxants, Local anesthetic agents and Drugs used in myasthenia gravis and glaucoma.
		BPT404.5	Upon completion studentswill beable to explain Neurohumoral transmission in the C.N.S. and various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine. Pharmacology of anesthetics, Sedatives, hypnotics and centrally acting muscle relaxants, Anti-epileptics, Alcohols and disulfiram
		BPT404.6	Upon completion studentswill be able to explain Psychopharmacological knowledge in prevention and treatment of varipus diseases like antipsychotic, antidepressant, anti-anxiety, anti-manics and hallucinogens, drugs used in Parkinsons and Alzheimer's disease, CNS stimulants and nootropics, Opioid analgesics and antagonists, drug addiction, drug abuse, tolerance and dependence.
BPP408	Pharmacology I (Practical)	BPP408.1	Introduction to experimental pharmacological instruments, laboratory animals as per CPCSEA guidelines. Demonstration of different routes of drug administrationin rats and mice and techniques of blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies
		BPP408.2	Demonstration of stereotype and anti-catatonic activity, anxiolytic activity of drugs using rats/mice, local anesthetics by different methods and effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
		BPP408.3	Demonstration of Effect of drugs on ciliary motility of frog oesophagus, rabbit eye, skeletal muscle relaxants using rota-rod apparatus, locomotor activity using actophotometer, Anticonvulsant effect by MES and PTZ method.

BPT405	Pharmacognosy & Phytochemistry-I (Theory)	BPT405.1	My student should understand definition, history, development and scope of pharmacognosy along with the sources, classification and quality control of drugs obtained from natural sources.
		BPT405.2	My student should be able to explain cultivation, collection, processing and storage of crude drugs along with methods of improving crop variety and the conservation of medicinal plants.
		BPT405.3	My student should understand different aspects of plant tissue culture along with application of plant tissue culture in pharmacognosy.
		BPT405.4	My student should be able to describe role of pharmacognosy in allopathic as well as traditional systems of medicine and able to explain different aspects of secondary metabolites along with its classification and eamples.
		BPT405.5	My student should know some of the specialized plant products like allergens, fibres, hallucinogens and teratogens, along with different aspects of primary metabolites, its classification and examples.
BPP409	Pharmacognosy & Phytochemistry-I (Practical)	BPP409.1	My student should be able to analyse and identify unorganised crude drugs of natural origin by means of chemical tests.
		BPP409.2	My student should be able to determine different types of leaf constants.
		BPP409.3	My student should be able to evaluate quantitative microscopical characteristics of crude drugs.
		BPP409.4	My student should be able to determine different physical constants of crude drugs.
		BPP409.5	My student should be able to evaluate crude drugs by official methods.
B.Pharm III Year			
Semester V			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**
BPT501	Medicinal Chemistry II (Theory)	BPT501.1	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-histaminic, Proton Pump Inhibitors, Anti-neoplastic agents and anti metabolites.
		BPT501.2	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Anginals, Diuretics and Anti-hypertensive.
		BPT501.3	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-Arrhythmic, Anti-hyper lipidemics, Co-agulants and Anti-coagulants, Drugs used in CHF.
		BPT501.4	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Drugs Acting on Endocrine System.
		BPT501.5	Students should be able to understand and explain Development, Classification, Mechanism of Action, Uses and SAR of Anti-diabetics and local anaesthetics.

BPT502	Industrial Pharmacy I (Theory)	BPT502.1	Explain and demonstrate various preformulation parameters including Physical and Chemical properties of drug substance required for formulation
		BPT502.2	Describe classification, formulation, processing problems, Equipment, required for tablets and tablet coating and their evaluation
		BPT502.3	Explain formulation, manufacturing considerations, Filling , packaging, and evaluation of syrups, elixiers, suspensions, emulsions
		BPT502.4	Explain and summarize,formulation, Filling, packaging , storage and Evaluation of hard and Soft capsules
		BPT502.5	Understand and describe types, formulation, filling, sealing, evaluation of various types of parenterals and Opthalmic dosage forms
		BPT502.6	Understand formulation of various types of cosmetic preparations
		BPT502.7	Explain and understand formulation , containers, evaluation, stability study, and Quality control of aerosols
		BPT502.8	Understand materials for containers, study of factors, legal and official requirements, stability aspects and quality control of packaging material
BPP506	Industrial Pharmacy I (Practical)	BPP506.1	To carry out preformulation study various drugs
			To prepare and evaluate Paracetamol/ Aspirin tablet/ Tetracycline capsules/Calcium Gluconate injection/ Ascorbic acid injection
			To formulate and evaluate Eye drop/ Eye ointment
			To formulate cold cream/ vanishing cream
			To carry out evaluation of glass containers
			To evaluate marketed tablets / capsules
BPT503	Pharmacology II (Theory)	BPT503.1	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses for the treatment of cardiovascular diseases and haemopoeitic system/disoders.
		BPT503.2	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of drugs acting on renal system.
		BPT503.3	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of hormones/drugs acting on endocrine system/disorders.
		BPT503.4	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of autacoids, its analogue and blockers.
		BPT503.5	Definition of bioassay, its principle, applications, types and standard bioassay methods for some pharmacological agents
BPP507	Pharmacology II (Practical)	BPP507.1	Describe thecomposition of physiological salt solutions used in experimental pharmacology.
		BPP507.2	Understand basic principles of bioassay, bioassay of various drugs.

BPT507	Pharmacology II (Practical)	BPP507.3	Understand performance of isolated experiments using various isolated preparation and the effect of different drugs on the concentration response curves.
		BPP507.4	Study the preclinical screening of various drugs.
BPT504	Pharmacognosy & Phytochemistry II (Theory)	BPT504.1	My student should understand basics of metabolic pathways and formation of secondary metabolites through those pathways.
		BPT504.2	My student should be able to describe different aspects of secondary metabolites along with pharmacognostic details of crude drugs from which they obtained.
		BPT504.3	My student should be able to explain isolation, identification and analysis of secondary metabolites obtained from crude drugs.
		BPT504.4	My student should understand industrial production, estimation and utilization of phytoconstituents.
		BPT504.5	My student should know modern methods for extraction of crude drugs along with latest techniques for its isolation, purification and identification.
BPP508	Pharmacognosy & Phytochemistry II (Practical)	BPP508.1	My student should be able to examine morphological, histological and powder characteristics of organized crude drugs.
		BPP508.2	My student should be able to carry out extraction, isolation and detection of active constituents from crude drugs.
		BPP508.3	My student should be able to apply thin layer and paper chromatographic technique in separation and evaluation of phytoconstituents.
		BPP508.4	My student should be able to carry out distillation of volatile oil from crude drugs and its evaluation by thin layer chromatographic technique.
		BPP508.5	My student should be able to evaluate and identify unorganized crude drugs by chemical tests.
BPT505	Pharmaceutical Jurisprudence (Theory)	BPT505.1	To know and understand pharmaceutical legislations and their implicatins in development and marketting along with code of ethics during phamaceutical practice.
		BPT505.2	To know and understand the rules and regulations framed and amendments made under drugs and cosmetics act 1940
		BPT505.3	To know and understand the rules and regulations framed and amendments made under pharmacy act 1948.
		BPT505.4	To know and understand the rules and regulations framed and amendments made under medicinal and toilet preparations (excise duties) act 1955, rules 1976, narcotic drugs and psychotropic substances act, and rules there under,drugs and magic remedies (objectionable advertisements) act 1954, prevention of cruelty to animals act 1960, drug price control order,medical termination of pregnancy act 1970 and rules 1975 and right to inforation act along with intellectual property rights (IPR)
B.Pharm III Year			
Semester VI			

Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2017-18)
BPT601	Medicinal Chemistry-III (Theory)	BPT601.1	Students should be able to understand chemical aspects (Nomenclature, Stereochemistry, SAR, Classification etc.) and Biological Activities of β-Lactams and Tetracyclins.
		BPT601.2	Students should be able to understand chemical aspects and Biological Activities of Different Macrolide, Miscellaneous Antibiotics and of different categories of drugs like Antimalarial, Quinolones, Biguanides along with the aspect of Pro-Drug Designing.
		BPT601.3	Students should be able to understand chemical aspects and Biological Activities of Anti T. B. and Anti-Viral Agents.
		BPT601.4	Students should be able to understand chemical aspects and Biological Activities ofAnti Fungal, Anti- Protozoal, Anthelminthic and Sulphonamides.
		BPT601.5	Students should be able to understand different techniques of drug designing like QSAR, Docking and Combinatorial chemistry.
BPP607	Medicinal Chemistry-III (Practical)	BPP607.1	Students should be able to understand and perform synthesis of intermediates like Sulphonamides, Chlorobutanol, Tolbutamide etc.
		BPP607.2	Students should be able to understand and perform assay of drugs like, Isonicotinic acid hydrazide, Chloroquine, Metronidazole, Depsone, Chlorepheniramine Maleate, Benzyl Penicilline etc.
		BPP607.3	Students should be able to understand aspects of Microwave Irradiation Techniques.
		BPP607.4	Students should be able to understand how to draw structures and reactions using Chem Draw and to find out physicochemical Properties using Drug Designing Softwares.
BPT602	Pharmacology III (Theory)	BPT602.1	Classification, mechanism of action, therapeutic uses, adverse effects and contraindications of various agents used in the treatment of respiratory and gastrointestinal tract diseases.
		BPT602.2	Classification, mechanism of action, antimicrobial spectrum, resistance, therapeutic uses, adverse effects and contraindications of various antimicrobial agents used in the treatment of infectious diseases.
		BPT602.3	Knowledge of immunopharmacology, including Immunostimulants, immunosuppressants, their uses/applications
		BPT602.4	Definition, principle of toxicology, types of toxicity, clinical symptoms, general principles of treatment and management of poisoning by different chemicals.
		BPT602.5	Definition of rhythm and cycles, knowledge of biological and their significance treatment of various diseases
BPP608	Pharmacology III (Practical)	BPP608.1	Calculation of dose for pharmacological experiment
		BPP608.2	Study the preclinical screening of various drugs.
		BPP608.3	Determination of LD50; Toxicity testing by using different methods

		BPP608.4	Calculation of pharmacokinetic parameters
		BPP608.5	Knowledge of Biostatistics methods used in experimental pharmacology
BPT603	Herbal Drug Technology (Theory)	BPT603.1	My student should understand basics of Indian systems of medicine, biodynamic agriculture of medicinal plants and different aspects of herbs as raw material for herbal medicine.
		BPT603.2	My student should be able to explain different aspects of neutraceuticals and health food and its utilization; along with herb-drug and herb-food interactions.
		BPT603.3	My student should be able to describe herbal cosmetics and its related aspects, herbal excipients and herbal formulations.
		BPT603.4	My student should understand guidelines for evaluation of herbal drugs as per international authorities like WHO and ICH along with intellectual property rights and regulatory issues with respect to herbal drugs.
		BPT603.5	My student should know general aspects related to herbal industry and institutions involved in work on medicinal plants along with GMP requirements under schedule-T for herbal industry involved in production of formulations belonging to Indian systems of medicine.
BPP609	Herbal Drug Technology (Practical)	BPP609.1	My student should be able to perform preliminary phytochemical screening of crude drugs.
		BPP609.2	My student should be able to determine alcohol content of asava and arista.
		BPP609.3	My student should be able to carry out evaluation of excipients of natural origin along with incorporation of prepared and standardized extracts in cosmetic formulations and their evaluation.
		BPP609.4	My student should be able to carry out monograph analysis of herbal drugs along with incorporation of prepared and standardized extracts in pharmaceutical formulations and their evaluation as per pharmacopoeial requirements.
		BPP609.5	My student should be able to determine physical constants like aldehyde content, phenol content, total alkaloids content etc. of crude drugs.
BPT604	Biopharmaceutics and P'cokinetics (Theory)	BPT604.1	Explain various mechanism, factors influencing drug absorption and Distribution , and protein binding of drugs
		BPT604.2	Discuss and understand basics of drug metabolizing pathways, factors affecting renal and non-renal excretion of drugs
		BPT604.3	Understand concept of bioavailability and bioequivalence of drug product and their significance
		BPT604.4	Explain use of plasma drug concentration-time data to calculate the p'cokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism , Excretion, Elimination ,significance, and study of various models.
		BPT604.5	Understand various P'cokinetic parameters, their significance and applications
		BPT604.6	Understand the concept of non-linear P'cokinetics, factors, and kinetics.

BPT605	Pharmaceutical Biotechnology (Theory)	BPT605.1	Student should understand the importance of immobilized enzymes in Pharmaceutical industries
		BPT605.2	Student should be able to explain Genetic engineering applications in relation to production of Pharmaceuticals
		BPT605.3	Student should understand the types of immunity and its related technology
		BPT605.4	Student should understand importance of Monoclonal antibodies in industries
		BPT605.5	Student should appreciate the use of microorganisms in fermentation technology
BPT606	Pharmaceutical Quality Assurance (Theory)	BPT606.1	Student should understand the cGMP aspects in a pharmaceutical industry
		BPT606.2	Student should appreciate the imortance of documentation
		BPT606.3	Student should understand the scope of quality certifications applicable to pharmaeutical industries
		BPT606.4	Student should understand the responsibilities of QA & QC departments
B.Pharm VI Year			
Semester VII			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome (Old Syllabus)**
BPT-7.1	Pharmaceutics V (Theory)	BPT-7.1.1	Know and understand the need, application, formulation and evaluation of solid dosage form such as tablets, and capsules
		BPT-7.1.2	Know and Explain process of tablet coating including formulation of coating solution, Equipments, and Evaluation
		BPT-7.1.3	Know , understand and Explain Preformulation factors, formulation, Packaging , and Evaluation of various types of Parenterals
		BPT-7.1.4	Explain various types of packaging materials, their evaluation
		BPT-7.1.5	Understand Good manufacturing practices and regulations
BPP-7.1	Pharmaceutics V (Practical)	BPP-7.1.1	Understand and carry out experiments for physical, biological evaluation of powders,capsules, tablets,parenterals etc
		BPP-7.1.2	Carry out practicals based on sugar coating and film coating
		BPP-7.1.3	To carry out Evaluation of packaging materials
		BPP-7.1.4	To study effect of pH, salt form and P'ceutical excipients on dissolution of drugs
		BPP-7.1.5	To carry out evaluation of containers and closures
		BPT-7.2.1	Students should be able to understand and explain Development, Classification, Mode of Action, SAR, IUPAC Nomenclature and Synthesis of Cardio tonics, Antiarrhythmics, Anticoagulants, Thrombolytics, Anti-anginals and Coronar Vasodilators.
		BPT-7.2.2	Students should be able to understand and explain Development, Classification, Mode of Action, SAR, IUPAC Nomenclature and Synthesis of Hypo-lipoproteinemics and Anti-diuretics.

BPT-7.2	Medicinal Chemistry III (Theory)	BPT-7.2.3	Students should be able to understand and explain Development, Classification, Mode of Action, SAR, IUPAC Nomenclature and Synthesis of Local Anaesthetics, Sedatives and Hypnotics.
		BPT-7.2.4	Students should be able to understand and explain Development, Classification, Mode of Action, SAR, IUPAC Nomenclature and Synthesis of Anti-epileptics, Antipsychotics, anti-anxiety, CNS Stimulants and Psychodelics.
		BPT-7.2.5	Students should be able to understand and explain Development, Classification, Mode of Action, SAR, IUPAC Nomenclature and Synthesis of Steroids related drugs and Immunomodulators.
BPP-7.2	Medicinal Chemistry III (Practical)	BPP-7.2.1	Students should be able to understand and perform laboratory scale synthesis and characterisation of selected drugs.
		BPP-7.2.2	Students should be able to establish pharmaceutical standards of synthesized drugs.
BPT-7.3	Pharmacology III (Theory)	BPT-7.3.1	Student should be able to understand the mechanism of action of drugs and their application in treatment of diseases
		BPT-7.3.2	Student should able to understand principles of toxicology and treatment of poisoning, methids of toxicity studies.
		BPT-7.3.3	Student should able to understand signs & symptoms, etiology, diagnosis and treatment measures of the diseases
		BPT-7.3.4	Student should able to understand pharamcokinetics and pharmacodynamics of drug i.e. ADME, ADRs, drug-drug interactions, doses and frequency of drugs etc.
BPP-7.3	Pharmacology III (Practical)	BPP-7.3.1	Student should able to study the pharmacological screening of drug by In-vitro study
		BPP-7.3.2	Student should able to study pharmacological screening of drug by In-vivo study
		BPP-7.3.3	Student should able to evaluate the potency of an unknown compound with reference to standard compound using animal model
		BPP-7.3.4	Student should able to study various surgical techniques in rats.
BPT-7.4	Pharmacognosy V (Theory)	BPT-7.4.1	My student should understand different chromatographic techniques for isolation of pharmaceuticals and their application in evaluation of herbal drugs.
		BPT-7.4.2	My student should be able to describe general methods used for isolation and characterization of different phytoconstituents.
		BPT-7.4.3	My student should understand different aspects of plant tissue culture like history, types, nutritional requirements, growth and maintenance along with production of secondary metabolites, biotransformation, immobilization of cells and enzymes, gene transfer in plants and application of plant biotechnology and plant tissue culture in pharmacognosy.

BPT-7.4	Pharmacognosy V (Theory)	BPT-7.4.4	My student should be able to describe various aspects about enzymes from biological sources, natural allergens, photosensitising agents and fungal toxins along with various medicinal plants used in management of various diseases and disorders.
		BPT-7.4.5	My student should know about worldwide trade of crude drugs and volatile oils, plant based industries and research institutes, intellectual property rights with special reference to phytoconstituents, regulation pertaining to trade drugs along with WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants.
BPP-7.4	Pharmacognosy V (Practical)	BPP-7.4.1	My student should be able to evaluate crude drug macroscopically, microscopically and quantitative microscopically and as per WHO guidelines as well as systematic analysis of crude drugs of natural origin.
		BPP-7.4.2	My student should be able to extract and isolate volatile oil and other types of phytoconstituents.
		BPP-7.4.3	My student should be able to apply chromatographical methods for the phytochemical evaluation of crude drugs, isolation of marker compounds and herbal formulations.
		BPP-7.4.4	My student should be able to estimate phytoconstituents and secondary metabolites by different methods including modern methods as well as chemically evaluate powered drugs and enzymes.
		BPP-7.4.5	My student should be able to carry out review recent literatures appearing on phytopharmaceuticals used for different categories and understand plant tissue culture techniques.
BPT-7.5	Pharmaceutical Analysis III (Theory)	BPT-7.5.1	The student should be able to explain theory working, principle and instrumentation of instrumental techniques such as Infrared spectroscopy, FTIR and Raman spectroscopy
		BPT-7.5.2	Understand, remember and explain principle basic concept and application of Polarimetry, Refractometry and Nephelo-turbidometry methods.
		BPT-7.5.3	Explain and define the differences and various concepts, advantages and disadvantages of various techniques
		BPT-7.5.4	Apply the theoretical consideration of, Electrochemical methods and thermo-analytical method.
		BPT-7.5.5	Elaborate applications of various instrumental techniques
BPP-7.5	Pharmaceutical Analysis III (Practical)	BPP-7.5.1	Independently operate and calibrate various analytical instruments such as conductometer, pH meter, potentiometer,Abbes Refractometer for the separation/isolation and assay of various APIs and formulations as per Pharmacopoeial standards.
		BPP-7.5.2	Independently process, interpret the data obtained through experimentation and report the results as per regulatory requirements.

		BPP-7.5.3	Practical aspects of IR, to record IR spectrum, to prepare KBr pallet.
		BPP-7.5.4	To identify the functional group of compounds using IR.
BPT-7.6	Pharmaceutical Jurisprudence (Theory)	BPT-7.6.1	Student should understand pharmaceutical lagislation and ethics in India.
		BPT-7.6.2	Student should be able to describe various acts, rules and schedules related to Pharmacy education, Drugs and Cosmetics including DPCO.
		BPT-7.6.3	Student should understand concept of management including different aspects of production management.
		BPT-7.6.4	Student should be able to explain various aspects of pharmaceutical marketing.

B.Pharm VI Year

Semester VIII

Course Code	Course Name	Course Outcome No.	Course Outcome (Old Syllabus)
BPT-8.1	Pharmaceutics VI (Theory)	BPT-8.1.1	Know and understand the concept, types, Benefits, limitations, formulation and evaluation of Prolonged action dosage forms.
		BPT-8.1.2	Know and Explain concept, types, importance and different techniques of formulation and evaluation of microencapsules.
		BPT-8.1.3	Know , understand and Explain various novel drug delivery systems such as Transdermal, osmotic, Liposomes, Nanospheres, Resealed Erythrocytes
		BPT-8.1.4	Understand design, development and Process validation methods for tablets and suspensions.
		BPT-8.1.5	Explain types, applications of polymers in different formulations
		BPT-8.1.6	Know and understand stabilization and stability testing protocol for various p'ceutical products.
BPP-8.1	Pharmaceutics VI (Practical)	BPP-8.1.1	To carry out formulation and Evaluation of oral SR products
		BPP-8.1.2	To carry out formulation and Evaluation microcapsules by using various techniques.
		BPP-8.1.3	To determine stability evaluation of various dosage forms and Expiration dating
		BPP-8.1.4	To carry out formulation and Evaluation of Transdermal patches, Osmotic drug delivery system, Liposomes, Nanospheres etc and different novel drug delivery systems
BPT-8.2	Medicinal Chemistry IV (Theory)	BPT-8.2.1	Students should be able to understandand explain principles of Direct and Indirect Drug Designing and methods of target selection lead identifications.
		BPT-8.2.2	Students should be able to understand and explain concepts of QSAR
		BPT-8.2.3	Students should be able to understand and explain concepts of Enzyme Peptides used in drug designing.
		BPT-8.2.4	Students should be able to understand and explain concepts of Molecular Modeling like, Molecular Mechanics, Energy Minimizations and Conformational Analysis.

		BPT-8.2.5	Students should be able to understand and explain designing of ligand based on 3D structure of receptor and concepts of gene therapy and genetic engineering.
BPP-8.2	Medicinal Chemistry IV (Practical)	BPP-8.2.1	Students should be able to understandand perform laboratory scale preparations and characterisation of selected drugs.
		BPP-8.2.2	Students should be able to establish pharmaceutical standards of drug synthesized.
		BPP-8.2.3	Students should be able to determine physicochemical properties for QSAR Analysis.
BPT-8.3	Pharmaceutical Analysis IV (Theory)	BPT-8.3.1	Explain,define various terms and interpretation of analytical data in statistics, GMP, CGMP, GLP,TQM, ISO-9000, WHO.
		BPT-8.3.2	The student should be able to explain theory working, principle and instrumentation of instrumental techniques such as Chromatography, Thin layer chromatography, column chromatography, gas Chromatography, HPLC.
		BPT-8.3.3	Understand, remember and explain principle basic concept and application of Nuclear magnetic resonance, Electron spin resonance, mass spectroscopy methods.
		BPT-8.3.4	Apply the theoretical consideration of, X-ray diffraction, Radio-immuno assay, NMR, ESR, mass spectroscopy, chromatography method.
		BPT-8.3.5	Elaborate applications of various instrumental techniques such as Chromatography,HPLC, NMR. Mass spectroscopy, ESR, X-ray diffraction, Radioimmunoassay.
BPP-8.3	Pharmaceutical Analysis IV (Practical)	BPP-8.3.1	Practical aspects of analysis of various API and pharmaceutical dosage forms using analytical instrument such as UV spectrophotometer and thin layer chromatography and perform validation as per ICH and USP guidelines.
		BPP-8.3.2	Perform analysis of APIs and excipients as per I.P.
		BPP-8.3.3	To perform evaluation test of glass containers and other packaging materials.
		BPP-8.3.4	To perform demonstration of HPLC and GC.
BPT-8.4	Pharmacognosy VI (Theory)	BPT-8.4.1	My student should understand different aspects of quality control and standardization of herbal drugs along with newer industrial analytical techniques, quantitative microscopy and heavy metal and alcohol content determinations.
		BPT-8.4.2	My student should be able to describe basic principles of alternative systems of medicine and their preparation along with different aspects of herbal formulation, herbal cosmetics neutraceuticals, health foods, plant bitters and plant sweetners.
		BPT-8.4.3	My student should know cultivation, utilization and industrial production of herbal drugs along with their commercial significance, role in economy and plant based industries and institutions involved in work on medicinal and aromatic plants.
		BPT-8.4.4	My student should be able to describe general methods of screening natural products for various biological activities.

		BPT-8.4.5	My student should understand WHO guidelines for assessment of quality and purity of crude drugs, extracts and medicines as well as WHO guidelines for GMP's of herbal medicines.
BPP-8.4	Pharmacognosy VI (Practical)	BPP-8.4.1	My student should be able to evaluate crude drug macroscopically, microscopically and quantitative microscopically and as per WHO guidelines as well as systematic analysis of crude drugs of natural origin.
		BPP-8.4.2	My student should be able to carry out extraction and isolation of volatile oils and other types of phytoconstituents.
		BPP-8.4.3	My student should be able to apply chromatographical methods for the phytochemical evaluation of crude drugs, isolation of marker compounds and herbal formulations.
		BPP-8.4.4	My student should be able to estimate phytoconstituents and secondary metabolites by different methods including modern methods as well as chemically evaluate powered drugs and enzymes.
		BPP-8.4.5	My student should be able to carry out review recent literatures appearing on phytopharmaceuticals used for different categories and understand plant tissue culture techniques.
BPT-8.5	Clinical Pharmacotherapeutics (Theory)	BPT-8.5.1	Student should able to describe the pathophysiology and management of cardiovascular, respiratory and endocrine diseases.
		BPT-8.5.2	Student should able to describe the quality use of medicines issues surrounding the therapeutic agents in the treatment of these diseases.
		BPT-8.5.3	Student should able to develop clinical skills in the therapeutic management of these conditions.
		BPT-8.5.4	Student should able to provide patient – centered care to diverse patients using the evidence based medicine.
BPP-8.5	Clinical Pharmacotherapeutics (Practical)	BPP-8.5.1	Student should able to initiate drug therapy and the anticipated therapeutic goals by therapeutic intervention
		BPP-8.5.2	Student should able to know the effective use of non pharmacological therapeutic interventions in the treatment of specific diseases, conditions and symptoms.
		BPP-8.5.3	Student should able to demonstrate the ability to effectively communicate and work collaboratively together with others in the small group
		BPP-8.5.4	Student should able to have moral reasoning, ethical judgment and professionalism.
BPT-8.6	Communication Skill (Theory)	BPT-8.6.1	Student should be able to comprehend over an unseen passage
		BPT-8.6.2	Student should understand principles of communications
		BPT-8.6.3	Student should be able to various aspects of professional communication
M.Pharm I Year			
Semester I			

Course Code	Course Name	Course Outcome No.	Course Outcome Description (as per New Syllabus introduced from Session 2017-18)
Branch: Pharmaceutics			
MPPT-101	Modern Pharmaceutical Analytical Techniques	MPPT-101.1	Understanding and demostrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		MPPT-101.2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		MPPT-101.3	Analysis of Various single and in combination dosage form.
		MPPT-101.4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		MPPT-101.5	Able to understand theoreotical and Practical Skill of the instruments
MPPT-102	Drug Delivery systems (Theory)	MPPT-102.1	Understand and Explain basic concepts , factors and mechanism of drug delivery from SR/ CR formulations
		MPPT-102.2	Summarize and explain types,advantages, disadvantages, principle, fundamentals of rate controlled drug delivery , Gastroretentive DDS,Buccal, Mucoadhesive DDS
		MPPT-102.3	Describe formulation and evaluation of Ocular and Transdermal DDs
		MPPT-102.4	Explain Protein and peptide drug delivery system
		MPPT-102.5	Summarize vaccine delivery system
MPPT-103	Modern Pharmaceutics (Theory)	MPPT-103.1	Upon completion of syllabus students will be able to understandprinciples of various preformulations and formulation aspect for different dosage form.
		MPPT-103.2	Upon completion of syllabus students will be able to understandthe concept of active pharmaceutical ingredients and generic product development.
		MPPT-103.3	Upon completion of syllabus students will be able togain advanced knowledge and adopt various skills required for formulation concepts at pharmaceutical industry.
		MPPT-103.4	Upon completion of syllabus students will be able to understandindustrial management, GMP and optimization techniques.
		MPPT-103.5	Upon completion of syllabus students will be able to Understand construction of pilotplant techniques, stability testing, sterilization process, packaging and various software's and it's handling.
		MPPT-104.1	understand, the concepts of innovator and generic drugs, drug development process,
		MPPT-104.2	Regulatory guidance's and guidelines for filing and approval process and documentation in pharmaceutical industry

MPPT-104	Regulatory Affairs (Theory)	MPPT-104.3	Develop the knowledge of Preparation of dossiers and their submission to regulatory agencies in different countries
		MPPT-104.4	Know about the post approval regulatory requirements for actives and drug products and submission of global documents in CTD/ eCTD formats
		MPPT-104.5	Know about the clinical trials requirements for approvals for conducting clinical trials pharmacovigilence and process of monitoring in clinical trials
MPPP-105	Pharmaceutics Practical-I	MPPP-105.1	To carry out Analysis of pharmacopoeial compounds and their formulations by UV-Vis spectrophotometer/ HPLC/ Gas Chromatography
		MPPP-105.2	To carry out formulation and evaluation of matrix tablet/ Floating DDS/Mucoadhesive DDS/ Transdermal patches/ Osmotic DDS
		MPPP-105.3	To carry out Experiments based on Flame photometry/ Fluorimetry
		MPPP-105.4	To study effect of compressional force/ particle size/ binders/ on tablet formulation and its properties
		MPPP-105.5	To carry out Preformulation studies of tablet/ micromeritical properties of powders and granules
Branch: Pharmaceutical Chemistry			
MPCT-101	Modern Pharmaceutical Analytical Techniques (Theory)	MPCT-101.1	Understanding and demostrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		MPCT-101.2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		MPCT-101.3	Analysis of Various single and in combination dosage form.
		MPCT-101.4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		MPCT-101.5	Able to understand theoreotical and Practical Skill of the instruments
MPCT-102	Advanced Organic Chemistry I (Theory)	MPCT-102.1	Upon completion of the course the student shall be able to Explain organic intermediates like carbocation ,carbanions,free radicles, carbenes and nitrenes
		MPCT-102.2	Upon completion of the course the student shall be able to Explain mechanism of addition ,substitution and rearrangement reactions
		MPCT-102.3	understand various named reactions , their stereochemical considerations and synthetic applications
		MPCT-102.4	Will be able to explain role of reagents and protecting groups
		MPCT-102.5	understand chemistry of heteroaromatic compounds and synthesis of medicinal compounds
		MPCT-102.6	explain principles and applications of retrosynthesis and develop synthetic routes for small target molecules

MPCT-103	Advanced Medicinal Chemistry (Theory)	MPCT-103.1	Upon completion of this course student should know different stages of drug discovery
		MPCT-103.2	Upon completion of this course student should know the role of medicinal chemistry in drug research
		MPCT-103.3	Upon completion of this course student should know various strategies to design and develop new drug like molecules for biological targets
		MPCT-103.4	Upon completion of this course student should know Peptidomimetics
MPCT-104	Chemistry of Natural Product (Theory)	MPCT-104.1	Upon completion of this course student should know the importance of natural compounds and their chemistry and medicinal importance
		MPCT-104.2	Upon completion of this course student should know the importance of natural compounds as lead molecules for new drug discovery
		MPCT-104.3	Upon completion of this course student should know the concept of rDNA technology tool for new drug discovery
		MPCT-104.4	Upon completion of this course student should know the general methods of structural elucidation of compounds of natural origin
		MPCT-104.5	Upon completion of this course student should know the isolation, purification and characterization of simple chemical constituents from natural origin
MPCT-105	Pharmaceutical Chemistry Practical I	MPCT-105.1	At completion of this course student should be able to perform analysis and estimation of pharmacopoeial compounds
		MPCT-105.2	At completion of this course student should know principles and procedures of synthetic reactions of various drugs
		MPCT-105.3	Upon completion of this course student should be able to perform synthesis of various organic compounds by rearrangement reactions
		MPCT-105.4	At completion of this course student should perform synthesis of drugs and organic compounds by two or more steps
		MPCT-105.5	At completion of this course student should be able to perform identification, characterization of drugs and organic compounds
MPCP-101	Modern Pharmaceutical Analytical Techniques (Theory)	MPCP-101.1	Understanding and demostrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		MPCP-101.2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		MPCP-101.3	Analysis of Various single and in combination dosage form.
		MPCP-101.4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		MPCP-101.5	Able to understand theoreotical and Practical Skill of the instruments

Branch: Pharmaology			
MPLT-102	Advanced Pharmacology-I (Theory)	MPLT-102.1	Understand the basic concept pharmacology. Adverse effects, contraindications and clinical uses of certain diseases and Explain the mechanism of drug actions at cellular and molecular level
		MPLT-102.2	Understand the Anatomy and Physiology of human nervous system and the common disorders affecting the human nervous system.
		MPLT-102.3	Classification, mechanism of drug actions, adverse effects and contraindications of drugs used in the management of CNS disorders
		MPLT-102.4	Understand the Anatomy and Physiology of human cardiovascular system and the common disorders affecting the human cardiovascular system
		MPLT-102.5	Understand the basic concept of autocoids, regulation and its importance in pathogenesis and pharmacotherapy
MPLT-103	Pharmacological And Toxicological Screening Methods- I (Theory)	MPLT-103.1	Student shall be able understand the maintenance of laboratory animals as per the guidelines
		MPLT-103.2	Student shall have basic knowledge of various in-vitro and in-vivo preclinical evaluation models
		MPLT-103.3	Student shall be able gain the knowledge on preclinical evaluation of drugs.
		MPLT-103.4	Student shall gain recent experimental techniques in the drug discovery and development
		MPLT-103.5	Student shall know the good laboratory practices
		MPLT-103.6	Student shall gain the knowledge of various newer screening methods involved in the drug discovery process
		MPLT-103.7	Student shall be able to extrapolate in vitro data to preclinical and preclinical to humans
		MPLT-103.8	Student should be able to understand Limitations of animal experimentation and alternate animal experiments
MPLT-104	Cellular and Molecular Pharmacology (Theory)	MPLT-104.1	The students would have understood the fundamental knowledge on the structure and functions of cellular components.
		MPLT-104.2	The students would appreciate the interaction of these components with drugs. This would enable them to apply the knowledge in drug discovery process.
		MPLT-104.3	The students would have learnt to explain the receptor signal transduction processes.
		MPLT-104.4	The students would have learnt to explain the molecular pathways affected by drugs.
		MPLT-104.5	The students would appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process
MPLP-105	Pharmacology Practical- I	MPLP-105.1	The students would be able to understand the concept and methodology of basic bio analysis using sophisticated instruments
		MPLP-105.2	The students would be able to assess and evaluate behavioral experiments in animals.

MPLP-105	Pharmacology Practical- I	MPLP-105.3	The students would be able to understand the concept and methodology of biotechnology in pharmacogical analysis
		MPLP-105.4	The students would be able to understand pharmacokinetic studies and data analysis of drugs given by different routes of administration using software
Branch: Quality Assurance			
MPQT-101	Modern Pharmaceutical Analytical Techniques (Theory)	MPQT-101.1	Understanding and demostrate working principles of different analytical techniques along with instrumentation and applications. It includes UV Visible spectscopy, Infrared Spectroscopy, spectroflurimetry, FES, AAS, Nuclear Magnetic Resonance (NMR) Spectroscopy and Mass spectrometry.
		MPQT-101.2	Explain principles, instrumentation and applications of Gas Chromatography, GC-MS, HPLC, UPLC, TLC, HPTLC, Ion-exchange, Column Chromatography, Affinity and Gel Chromatography.
		MPQT-101.3	Analysis of Various single and in combination dosage form.
		MPQT-101.4	Understand principles, instrumentation and applications of Electrophoresis, Potentiometry and thermal analysis like TGA, DTA and DSC.
		MPQT-101.5	Able to understand theoreotical and Practical Skill of the instruments
MPQT-102	Quality Management System (Theory)	MPQT-102.1	Upon completion of this course it is expected that students will be able to understand the importance of quality
		MPQT-102.2	Upon completion of this course it is expected that students will be able to understand ISO management systems
		MPQT-102.3	Upon completion of this course it is expected that students will be able to understand tools for quality improvement and analysis of issues in quality
		MPQT-102.4	Upon completion of this course it is expected that students will be able to understand Quality evaluation of pharmaceuticals, Stability testing of drug and drug substances
		MPQT-102.5	Upon completion of this course it is expected that students will be able to understand Statistical approaches for quality
MPQT-103	Quality Control & Quality Assurance (Theory)	MPQT-103.1	Students should be able to understand concepts of Quality Control and Quality Assurance with respect to different sets of guidelines.
		MPQT-103.2	Students should be able to understand aspects of cGMP
		MPQT-103.3	Students should be able to understand guidelines adopted for analysis of raw material and finished products and in process quality control
		MPQT-103.4	Students should be able to understand and explain importance of documentation in pharmaceutical industry
		MPQT-103.5	Students should be able to understand and explain different aspects of Manufacturing Operations and Controls
		MPQT-104.1	Student shall be able to understand new product development process.

MPQT-104	Product Development and Technology Transfer (Theory)	MPQT-104.2	Students shall be able to understand necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R & D.
		MPQT-104.3	Student shall be able to elucidate necessary information to transfer technology of existing products between various manufacturing places.
		MPQT-104.4	Student shall be able to understand principles and importance of quality control tests
		MPQT-104.5	Student shall be able to understand about documentation procedure in technology transfer.
MPQP-105	Pharmaceutical Quality Assurance (Practical)	MPQP-105.1	Analyze Pharmaceutical Formulations by UV Visible Spectrophotometer. Understand principle and working of HPLC,Gas Chromatography,Flourimetery, and Flame Photometery
		MPQP-105.2	Understand Application of Various Quality concepts as TQM,Six Sigma,Change Control,Deviations,OOS,OOT,CAPA.Elucidate various Parameters for Stability Testing and Accelerated Stability Testing.
		MPQP-105.3	Parameters for In process and Finshed Product Quality Evaluation.
		MPQP-105.4	Perform Preformulation oF Tablet and Parenteral Dosage form.Perform testing of Raw Material as per Official Monograph.
M.Pharm I Year			
Semester II			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**
Branch: Pharmaceutics			
MPPT-201	Molecular Pharmaceutics (Theory)	MPPT-201.1	Upon completion of syllabus students will be able to gain knowledge and understand various approaches for development of novel drug delivery system
		MPPT-201.2	Upon completion of syllabus students will be able to understand the criteria for selection of drug and polymers for development of Novel targeted drug delivery system.
		MPPT-201.3	Upon completion of syllabus students will be able to understand formulation and evaluation of Novel and targeted drug delivery system.
		MPPT-201.4	Upon completion of syllabus students will be able to understand the concept of nucleic acid based therapeutic delivery system.
		MPPT-201.5	Upon completion of syllabus students will be able to understand the concept of formulation and evaluation of microcapsules and microsphers.
		MPPT-202.1	Explain mechanisms, physicochemical, Formulation, dosage form related, and patient related factors affecting absorption including dissolution models and corelatio between In vitro –In vivo data

MPPT-202	Advanced Biopharmaceutics and Pharmacokinetics (Theory)	MPPT-202.2	Understand Biopharmaceutic considerations in drug product design and in vitro drug product performance
		MPPT-202.3	Understand basis of P'cokinetics, various models, Non –linear p'cokinetics, drug interactions
		MPPT-202.4	Understand Bioavailability and Bioequivalence, designs, and evaluation, BCS system
		MPPT-202.5	Understand applications of P'cokinetics, modified release drug products, targeted DDS, biotechnology products, Proteins, peptides, monoclonal antibodies
MPPT-203	Computer-aided Drug Delivery System (Theory)	MPPT-203.1	Upon completion of syllabus students will be able to gain knowledge and skills necessary for computer applications in pharmaceutical research and development.
		MPPT-203.2	Upon completion of syllabus students will be able to understand the application of computer across the entire drug research and development process.
		MPPT-203.3	Upon completion of syllabus students will be able to understand the principal of integrated and coherent use of computerize information in the drug development process.
		MPPT-203.4	Upon completion of syllabus students will be able to understand use of computer in preclinical and clinical development, optimization technique in pharmaceutical formulation and in market analysis.
		MPPT-203.5	Upon completion of syllabus students will be able to understand use of computer in artificial intelligence and robotics, and in computational fluid dynamics.
MPPT-204	Cosmetics and Cosmeceuticals (Theory)	MPPT-204.1	To understand, regulatory requirement of cosmetics product and biological aspects of skin, hair and oral cavity with their problems and remedial formulation.
		MPPT-204.2	Develop the knowledge of Key ingredients used in cosmetics and cosmeceuticals and key building blocks for various formulations.
		MPPT-204.3	Analyze the current technologies in the market and various key ingredients and basic science to develop and design cosmetics and cosmeceuticals
		MPPT-204.4	Develop the scientific knowledge to design herbal cosmetics and cosmeceuticals with desired safety,stability, and efficacy
MPPT-205	Pharmaceutics Practical-II	MPPT-205.1	Understand and Carry out the formulation and evaluation of novel drug delivery systems such as: Alginate beads/ liposomes/Niosomes/Spherules/Microspheres
		MPPT-205.2	Understand and Carry out the Solubility studies, Protein binding study, Bioavailability studies, Permeability study of many drugs .
		MPPT-205.3	Understand and carry out the Formulation data analysis Using Design Expert® Software and Computer Simulations studies
		MPPT-205.4	Understand and carry out the development and evaluation of cosmetic formulations such as: Creams/ Shampoo and Toothpaste etc and also by using herbals
		MPPT-205.5	Understand Quality by design in P'ceutical development

Branch: Pharmaceutical Chemistry			
MPCT-201	Advaced Spectral Analysis (Theory)	MPCT-201.1	At completion of this course student should know principles and theory of various analytical hypanated instrumental techniques
		MPCT-201.2	Upon completion of this course student should know construction and working of hypanated instruments like GC-MS, LC-MS
		MPCT-201.3	Upon completion of this course student should be able to interpretate NMR, Mass and IR Spectra of various organic compounds
		MPCT-201.4	Upon completion of this course student should be able to acquire theortical and practical skills of hypanated instruments
		MPCT-201.5	At completion of this course student should be able to perform identification, characterization and quantification of drugs and organic compounds
MPCT-202	Advanced Organic Chemistry-II (Theory)	MPCT-202.1	This subject will explain green chemistry CO2 will be able chemistry of peptides
		MPCT-202.2	understand chemistry of photochemistry CO4: understand chemistry of pericyclic reactions
		MPCT-202.3	It also includes chemistry and details about catalysis
		MPCT-202.4	will be able to understand concepts of stereochemistry
MPCT-203	Computer Aided Drug Design (Theory)	MPCT-203.1	Upon completion of this course student should know the role of CADD in drug discovery
		MPCT-203.2	Upon completion of this course student should know different CADD techniques and their applications
		MPCT-203.3	Upon completion of this course student should know various strategies to design and develop new drug like molecule
		MPCT-203.4	Upon completion of this course student should know the working with molecular modeling softwares to design new drug molecules
		MPCT-203.5	Upon completion of this course student should know the in silico virtual screening protocol
MPCT-204	Pharmaceutical Process Chemistry (Theory)	MPCT-204.1	Upon completion of this course student should know the strtegies of scale up process of apis and intermediates
		MPCT-204.2	Upon completion of this course student should know the various unit operations and various reactions in process chemistry
		MPCT-204.3	Upon completion of this course student should know the industrial saftey
		MPCT-204.4	Upon completion of this course student should know the Aerobic and anaerobic fermentation
		MPCT-204.5	Upon completion of this course student should know the reaction progress kinetic analysis
		MPCP-205.1	At completion of this course student should know principles and procedures of synthetic reactions of various drugs
		MPCP-205.2	Upon completion of this course student should be able to interpretate NMR, Mass and IR Spectra of various organic compounds

MPCP-205	Pharmaceutical Chemistry Practical-II	MPCP-205.3	At completion of this course student should know methods of preparation of various organic compounds by organic reactions like oxidation, reduction and nitration
		MPCP-205.4	Upon completion of this course student should be able to perform QSAR based experiments
		MPCP-205.5	At completion of this course student should be able to perform identification, characterization of drugs and organic compounds
Branch: Pharmacology			
MPLT-201	Advanced Pharmacology-II (Theory)	MPLT-201.1	Classification of drugs along with their mechanism of action, receptor, adverse effect, drug interaction, contraindication and therapeutic uses of hormones/drugs acting on endocrine system/disorders
		MPLT-201.2	Classification, mechanism of action, antimicrobial spectrum, resistance, therapeutic uses, adverse effects and contraindications of various antimicrobial agents used in the treatment of infectious diseases.
		MPLT-201.3	Knowledge of immunopharmacology, including Immunostimulants, immunosuppressants, their uses/applications. Etiopathogenesis, symptom and management of disorders related GIT
		MPLT-201.4	Definition of rhythm and cycles, knowledge of biological and their significance treatment of various diseases
		MPLT-201.5	Concept of free radicals and its role in various diseases. Antioxidants and its role.
MPLT-202	Pharmacological And Toxicological Screening Methods- II (Theory)	MPLT-202.1	Student shall be able to explain the various types of toxicity studies.
		MPLT-202.2	Student shall appreciate the importance of ethical and regulatory guidelines for toxicity studies
		MPLT-202.3	Student shall be able to demonstrate the practical skills required to conduct the preclinical toxicity studies
		MPLT-202.4	Student shall understand OECD guidelines.
		MPLT-202.5	Student shall know the IND enabling studies.
		MPLT-202.6	Student shall explain the concept & importance of safety pharmacological studies (TIER I & TIER II)
		MPLT-202.7	Student should be able to understand alternative methods to animal toxicity testing
MPLT-203	Principles of Drug Discovery (Theory)	MPLT-203.1	The students would be able to understand the knowledge on the basics of drug discovery.
		MPLT-203.2	The students would be able to understand various stages of drug discovery.
		MPLT-203.3	The students would be able to understand the importance of the role of genomics, proteomics and bioinformatics in drug discovery.
		MPLT-203.4	The students would be able to understand the lead seeking method and lead optimization.
		MPLT-203.5	The students would be able to understand the importance of the role of computer aided drug design in drug discovery

MPLT-204	Clinical Reserch And Pharmacovigilance (Theory)	MPLT-204.1	After completion students should be able to explain the regulatory requirements for conducting clinical trial
		MPLT-204.2	Upon Completion students can demonstrate the types of clinical trial design and explain the responsibilities of key players involved in clinical trials
		MPLT-204.3	Upon Completion students can explain basic aspects, terminologies and establishment of Pharmacovigilance
		MPLT-204.4	After completion students can understand tools used in Pharmacovigilance, Adverse drug reaction with its reporting
		MPLT-204.5	Upon completion students can understand basics of Pharmacoepidemiology, pharmacoeconomics and safety pharmacology
MPLP-205	Pharmacological Practical – II	MPLP-205.1	The students would be able to understand the concept and methodology of different bioassays.
		MPLP-205.2	The students would be able to assess PA2 values of various antagonists using suitable isolated tissue preparations.
		MPLP-205.3	The students would be able to evaluate drug absorption by averted rat ileum preparation.
		MPLP-205.4	The students would be able to understand the concept of toxicology and OECD guidelines
Branch: Quality Assurance			
MPQT-201	Hazards and Saftey Management (Theory)	MPQT-201.1	students should be able to Understand about environmental problems among learners
		MPQT-201.2	Students should be able to impart basic knowledge about the environment and its allied problems and develop an attitude of concern for the industry environment
		MPQT-201.3	Students should be able to ensure safety standards in pharmaceutical industry and Provide comprehensive knowledge on the safety management
		MPQT-201.4	Students should be able to empower ideas to clear mechanism and management in different kinds of hazard management system
		MPQT-201.5	Students should be able to teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere
MPQT-202	Pharmaceutical Validation (Theory)	MPQT-202.1	To Understand about validation and how to apply in industry and thus improve the Quality of Products.
		MPQT-202.2	Execute the complete information about validation, types, Methodology and Applications.
		MPQT-202.3	Compare and contrast various approaches to validation and qualification. Understanding and demostrate working principles of validation of different equipment like Dry Powder Mixers, Fluid Bed and Tray dryers, Tablet Compression, Dry Heat Sterilization/Tunnels, Autoclaves, Capsule filling machines.

		MPQT-202.4	Calibrate and validate various pharmaceutical equipment's and analytical instruments. Organize validation process of analytical instruments and euitpments of Tablet, Capsules, Ampoules & Vials, Ointment/Creams and Liquid Orals
		MPQT-202.5	Validate analytical method for estimation of drugs.Organize plan for cleaning validation of equipments employed in the manufacture of pharmaceuticals. Comprehend the regulatory guidelines (ICH, USP) to be used for validation process.Understand the General Principles of Intellectual Properties.
MPQT-203	Audits and Regulatory Compliance (Theory)	MPQT-203.1	Upon completion of this course the student should be able to understand the importance of auditing
		MPQT-203.2	Upon completion of this course the student should be able to understand the methodology of auditing
		MPQT-203.3	Upon completion of this course the student should be able to know how to carry out the audit process
		MPQT-203.4	Upon completion of this course the student should be able to know how to prepare the auditing report
		MPQT-203.5	Upon completion of this course the student should be able to know how to prepare the check list for auditing
MPQT-204	Pharmaceutical Manufacturing Technology (Theory)	MPQT-204.1	Upon completion of this course the student should be able to understand the common practice in the pharmaceutical industry developments, plant layout and planning
		MPQT-204.2	Upon completion of this course the student should be familiar with the principles and practices of aseptic process technology, nonsterile manufacturing technology and packaging technology.
		MPQT-204.3	Upon completion of this course the student should be able to understand the principles and implementation of quality by design(QbD) and process analytical technology(PAT) in pharmaceutical manufacturing
		MPQT-204.4	Upon completion of this course the student should be know containers and closures for pharmaceuticals
MPQP-205	Pharmaceutical Quality Assurance (Practical)	MPQP-205.1	Perform Qualification of Pharmaceutical Equipments, and Analytical Instruments
		MPQP-205.2	Perform Validation of Analytical method and Cleaning Validation of Equipment
		MPQP-205.3	Perform Qualification of Pharmaceutical Testing Equipment. Prepare Check list for vendors, non sterile and sterile production area and WFI
		MPQP-205.4	Layout of Pharmaceutical Plant for sterile and Non sterile manufacturing. Apply QbD and PAT for formulation optimization
M.Pharm II Year			
Semester III			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description (as per New Syllabus introduced from Session 2017-18)**

MRMT-301	Research Methodology & Biostatistics (Theory)	MRMT-301.1	Student shall be able to understand the basic concepts, terms and definitions used in health research methodology
		MRMT-301.2	Student shall be able to describe the appropriate statistical methods required for a particular research design and develop appropriate research hypothesis for a research project
		MRMT-301.3	Student shall understand various guidelines of medical research
		MRMT-301.4	Student shall understand various CPCSEA guidelines for laboratory animal facility
		MRMT-301.5	Student shall know the principles for all medical research including Declaration of Helsinki

D.Pharm I Year

Course Code	Course Name	Course Outcome No.	Course Outcome Description
DPT-0805	Pharmaceutics I (Theory)	DPT-0805.1	Lerner will be able to understand Introduction of different dosage forms. Their classification with examples-their relative applications. Familiarization with new drug delivery systems. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia.
		DPT-0805.2	Lerner will be able to understand Metrology-System of weights and measures. Calculations including conversion from one to another system. Percentage calculations and adjustment of products .Use of alligation method in calculations.Isotonic solutions.
		DPT-0805.3	Lerner will be able to understand Packaging of pharmaceuticals-Desirable features of a container and types of containers. Study of glass & plastics as materials for containers and rubber as a material for closure-their merits and demerits.
		DPT-0805.4	Lerner will be able to understand Size reduction, objectives, and factors affecting size reduction, methods of size reduction-
		DPT-0805.5	Lerner will be able to understand Size separation-size separation by sifting. Official standards for powders. Sedimentation methods of size separation. Construction and working of Cyclone separator.
		DPT-0805.6	Lerner will be able to understand Mixing and Homogenization-Liquid mixing and powder mixing, Mixing of semisolids. Study of silverson
		DPT-0805.7	Lerner will be able to understand Clarification and Filtration-Theory of filtration, Filter media; Filter aids and selection of filters. Study of the following filtration equipments-Filter Press, sintered filters, Filter candles, Metafilter.
		DPT-0805.8	Lerner will be able to understand Extraction and Galenicals- Study of percolation and maceration and their modification, continuous hot extraction-Application
DPP-0805	Pharmaceutics I (Practical)	DPP-0805.1	Lerner will be able to understand Preparation various formulations illustrating different techniques involved.

DPT-0806	Pharmaceutical Chemistry-I (Theory)	DPT-0806.1	Lerner will be able to describe various inorganic compounds including important physical and chemical properties, medicinal and pharmaceutical uses, storage conditions and chemical incompatibility.
		DPT-0806.2	Lerner will be able to understand Radio pharmaceuticals, Radiations, Storage and precautions with special reference to the official preparations and Radio opaque contrast media.
		DPT-0806.3	Lerner will be able to understand Quality control of Drugs and pharmaceuticals and Limit tests.
		DPT-0806.4	Lerner will be able to understand Identification tests for cations and anions as per Indian Pharmacopoeia
DPP-0806	Pharmaceutical Chemistry-I (Practical)	DPP-0806.1	Lerner will be able to understand meaning of inorganic chemistry and its concept, application of inorganic chemistry, standard operating procedure of instrumentation and analytical balance.
		DPP-0806.2	Lerner will be able to understand concept of laboratory equipment, glassware, construction and application of laboratory equipment.
		DPP-0806.3	Lerner will be able to understand concept of impurities, source of impurities, type of impurities and perform limit test for chloride, sulphate, iron, heavy metal , arsenic by observe turbidity in Nesslers cylinder and compare with standard.
		DPP-0806.4	Lerner will be able to understand concept of acids, bases, titration, neutralization, normality and Arrhenius acid base, assay, titrate in titration, factor calculation and percentage purity of sodium bicarbonate, boric acid, zinc oxide, ferrous sulphate, iodine, hydrogen peroxide, magneshium sulphate, calcium gluconate, sodium chloride, ammonium chloride.
		DPP-0806.5	Lerner will be able to understand concept of identification test, standard, category, solubility, and physical test of sodium chloride, sodium bicarbonate ,magneshium sulphate, Ferrous sulphate, sodium acetate, hydrogen peroxide, boric acid, ammonium chloride
DPT-0807	Pharmacognosy (Theory)	DPT-0807.1	Lerner will be able to understand Definition, history and scope of Pharmacogonosy including indigenous system of medicine.
		DPT-0807.2	Lerner will be able to understand Various systems of classification of drugs and natural origin.
		DPT-0807.3	Lerner will be able to understand Adulteration and drug evaluation; significance of pharmacopoeial standards.
		DPT-0807.4	Lerner will be able to understand Brief outline of occurrence, distribution, outline of isolation, identification tests, therapeutic
		DPT-0807.5	Lerner will be able to understand effects and pharmaceutical application of alkaloids, terpenoids, glycosides, volatile oils, tannins
		DPT-0807.6	Lerner will be able to understand Occurrence, distribution, organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of various categories of drugs.

DPP-0807	Pharmacognosy (Practical)	DPP-0807.1	Lerner will be able to understand Identification of drugs by morphological characters. Physical and chemical tests for evaluation of drugs wherever applicable.
		DPP-0807.2	Lerner will be able to understand Gross anatomical studies(t.s.)of the following drugs :Senna, Datura, cinnamon, cinchona, coriander, fennel , clove, Ginger, Nux-vomica, Ipecacuanha.
		DPP-0807.3	Lerner will be able to understand Identification of fibers and surgical dressing.
DPT-0808	Biochemistry & Clinical Pathology (Theory)	DPT-0808.1	Learner will able to understand the various term biochemistry and animal and plant cell with their organells with their importance, functions.
		DPT-0808.2	Students will able to understand what is the proteins, amino acids with their classification structure,types of amino acids; physical and chemical properties ; structure of proteins ;qualitative tests for identification of proteins with their deficiency diseases.
		DPT-0808.3	Lerner will able to understand the carbohydrate with their classification, structure, physical chemical properties of carbohydrates, qualitative test for carbohydrates, diseases related to carbohydrate metabolism with biochemical importance of carbohydrates.
		DPT-0808.4	Learner will able to understand the lipid, with their function, importance, classification with physical, chemical properties, qualitative tests.
		DPT-0808.5	Learner will able to understand what is the vitamins their classification and coenzyme.
		DPT-0808.6	Students will be able to understand metabolism of various minerals and related disorders.
		DPT-0808.7	Learner will able to understand the enzymes their classification, specificity, active sites of enzymes. Factors affecting enzymes reaction and inhibition with their pharmaceutical importance.
		DPT-0808.8	Learner will able to say the various process of metabolism for different subastances with energy utilisation and energy synthesis.
		DPT-0808.9	Learner will be able to say what is the blood their composition, classification of blood cell, importance of lymphocytes and their role in health and diseases, disorder of wbc, platelets, composition of urine (normal and abnormal) their significance in diseases.
DPP-0808	Biochemistry & Clinical Pathology (Practical)	DPP-0808.1	Lerner will be able to understand Detection and identification of proteins. Amino acids, carbohydrates and lipids.
		DPP-0808.2	Lerner will be able to understand analysis of normal and abnormal constituents of Blood and Urine.
		DPP-0808.3	Lerner will be able to understand Examination of sputum and faeces (microscopic & staining).
		DPP-0808.4	Lerner will be able to understand Practice in injecting drugs by intramuscular, subcutaneous and intravenous routes, withdrawal of blood samples.

DPT-0809	Human Anatomy & Physiology I (Theory)	DPT-0809.1	Learners will be able to understand scope of anatomy and physiology.
		DPT-0809.2	Learners will be able to understand elementary tissues of human body.
		DPT-0809.3	Learners will be able to understand blood.
		DPT-0809.4	Learners will be able to understand various systems of human body.
DPP-0809	Human Anatomy & Physiology I (Practical)	DPP-0809.1	Introduction to Human Anatomy & Physiology laboratory & work.
		DPP-0809.2	Haematology section
		DPP-0809.3	Physiological parameter
		DPP-0809.4	Study of systems
		DPP-0809.5	Study of sense organs
		DPP-0809.6	To study human organs & their T.S.
DPT-0810	Health Education & Community Pharmacy (Theory)	DPT-0810.1	Lerner will be able to understand Concept of health.
		DPT-0810.2	Lerner will be able to understand Nutrition and health.
		DPT-0810.3	Lerner will be able to understand First aid.
		DPT-0810.4	Lerner will be able to understand Environment and health.
		DPT-0810.5	Lerner will be able to understand Fundamental principles of microbiology
		DPT-0810.6	Lerner will be able to understand Communicable diseases.
		DPT-0810.7	Lerner will be able to understand Intestinal infections.
		DPT-0810.8	Lerner will be able to understand Arthropod borne infections.
		DPT-0810.9	Lerner will be able to understand Surface infections.
		DPT-0810.10	Lerner will be able to understand Sexually transmitted diseases.
		DPT-0810.11	Lerner will be able to understand Non-communicable diseases.
		DPT-0810.12	Lerner will be able to understand Epidemiology.
D.Pharm II Year			
Course Code	**Course Name**	**Course Outcome No.**	**Course Outcome Description**
DPT-0811	Pharmaceutics II (Theory)	DPT-0811.1	Lerner will be able to understand various formulations of different dosage forms their evaluation parameter, details regarding prescription and incompatibility in it & the latin term present in prescription, calculation of dose of drugs with the factors affecting dose of drug.
DPP-0811	Pharmaceutics II (Practical)	DPP-0811.1	Learner will be able to understand various apparatus used in the lab as well as various Latin terms regularly used in prescriptions, calculations based on various formulations.
		DPP-0811.2	Learner will be able to compound various preparations of different dosage forms.
		DPP-0811.3	Learner will be able to maintain the retail drug store, maintaining of documents for smooth running of drug store.

		DPP-0811.4	Learner will be able to various functions of hospitals, different department in hospital and their requirements.
		DPP-0811.5	Learner will be able to find out various incompatibility in prescriptions and how to dispence such prescriptions.
DPT-0812	Pharmaceutical Chemistry-II (Theory)	DPT-0812.1	Learner will be able tounderstand nomenclature of organic chemical systems.
		DPT-0812.2	Learner will be able to understand physical and chemical properties with classification and chemical structure of various categories of drugs.
DPP-0812	Pharmaceutical Chemistry-II (Practical)	DPP-0812.1	Lerner will be able to understand Systematic qualitative testing of organic drugs involving solubility determination, melting point and/ or boiling point, detection of elements and functional groups (10 compounds).
		DPP-0812.2	Lerner will be able to understand Official identification tests for certain groups of drugs included in the I.P. like barbiturates, sulfonamides, Phenothiazines, Antibiotics etc.(8 compounds).
		DPP-0812.3	Lerner will be able to understand Preparation of three simple organic preparations.
DPT-0813	Pharmacology & Toxicology (Theory)	DPT-0813.1	The learner will be able to understand: Introduction to pharmacology & scope of pharmacology.
		DPT-0813.2	The learner will be able to understand: Routes of administration of drugs with their advantages and disadvantages.
		DPT-0813.3	The learner will be able to understand: Concept of Pharmacokinetics & Pharmacodynamics.
		DPT-0813.4	The learner will be able to evaluate the drug activity and able to describe drug effect in clinical practice.
DPP-0813	Pharmacology & Toxicology (Practical)	DPP-0813.1	Introduction to Pharmacology & Toxicology laboratory & animal house.
		DPP-0813.2	Introduction to computers.
		DPP-0813.3	To select animals for experimental use in Pharmacology. To observe & confirm effect of anesthesia on animals.
		DPP-0813.4	To study the common instruments & equipments used in experimental pharmacology.
		DPP-0813.5	To study various laboratory techniques used in experimental pharmacology.
		DPP-0813.6	To prepare the physiological salt solution.
		DPP-0813.7	The learner will be able to evaluate the drug activity and able to describe drug effect in pre-clinical & clinical practice.
		DPP-0813.8	To understand various departments of hospital & adverse drug reaction (ADR) in patient.
DPT-0814	Pharmaceutical Jurisprudence (Theory)	DPT-0814.1	Student should understand pharmaceutical lagislation and ethics in India.
		DPT-0814.2	Student should be able to describe various acts, rules and schedules related to Pharmacy education, Drugs and Cosmetics including DPCO.

DPT-0815	Drug Store and Business Management (Theory)	DPT-0815.1	Students should understand industry and commerce, economics for management, business organizations and channels of destribution.
		DPT-0815.2	Students should understand drug house management
		DPT-0815.3	Students should be able to explain sales and related aspects.
		DPT-0815.4	Students should understand recruitment, training, evaluation and compensation of the pharmacist.
		DPT-0815.5	Students should be able to describe banking and finance.
		DPT-0815.6	Students should understand concepts and conventions of accounting, balance sheets financial statements and budgeting.
DPT-0816	Hospital & Clinical Pharmacy (Theory)	DPT-0816.1	Lerner will be able to understand Hospital-Definition, Function, classifications based on various criteria, organization, Management
		DPT-0816.2	Lerner will be able to understand Hospital Pharmacy: Definition Functions and objectives of Hospital pharmaceutical services. Location,
		DPT-0816.3	Lerner will be able to understand Drug Distribution system in Hospitals. Out-patient service, In-patient services- types of services detailed discussion of unit Dose system, Floor ward stock system
		DPT-0816.4	Lerner will be able to understand Manufacturing: Economical considerations, estimation of demand.
		DPT-0816.5	Lerner will be able to understand Sterile manufacture-Large and small volume parenterals, facilities, requirements, layout production
		DPT-0816.6	Lerner will be able to understand Non-sterile manufacture-Liquid orals, externals, Bulk concentrates. Procurement of stores and testing
		DPT-0816.7	Lerner will be able to understand P.T.C.(pharmacy Therapeutic Committee)
		DPT-0816.8	Lerner will be able to understand Hospital Formulary system and their organization, functioning, composition.
		DPT-0816.9	Lerner will be able to understand Drug Information service and Drug Information Bulletin.
		DPT-0816.10	Lerner will be able to understand Surgical dressing like cotton, gauze, bandages and adhesive tapes including their pharmacopoeial tests
		DPT-0816.11	Lerner will be able to understand Application of computers in maintenance of records, inventory control, medication monitoring, drug