



Sri Vasavi Institute of Pharmaceutical Sciences

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Co's FOR B.PHARM

BP 101 T	Course Title: Human Anatomy and Physiology-I (BP101T)
Code No	Year:1 Semester :1
Code No	Course outcome
CO101T.1	To recognize/describe the various hemostatic mechanisms, basic anatomy terms and cellular level organization
CO101T.2	To identify the characteristics of different types of tissues and their location in various organs
CO101T.3	To organize the structure and functions of skins, bones and joints of human body
CO101T.4	To analyze the importance of blood, lymphatic system and immunity in human body
CO101T.5	To relate the physiology of sympathetic, parasympathetic, spinal/cranial nerves and organization of special senses
CO101T.6	To adapt the anatomy and physiology of heart and blood vessels

BP 102 T	Course Title: Pharmaceutical analysis-I (BP102T)
CO Code No	Year:1 Semester :1
CO Code No	Course outcome
CO102T.1	To apply the basic principles and types of volumetric analysis for expressing concentrations
CO102T.2	To explain the different concepts of acid base and non-aqueous titrations
CO102T.3	To explain fundamental steps involved in precipitation and complexometric titrations
CO102T.4	To illustrate the principle, procedure, applications of gravimetry and Diazotization titrations
CO102T.5	To summarize the different types of redox titrations
CO102T.6	To outline the different concepts of electrochemical analytical methods

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BP 103 T	Course Title: Pharmaceutics-I (BP103T) Year:1 Semester :1
CO Code No	Course outcome
CO103T.1	To explain fundamental knowledge about development for pharmacy profession, Pharmacopoeia and various types of dosage form and garner skills to interpret the physician Prescription and designing of dose
CO103T.2	To understand the basic concepts in fundamental pharmaceutical calculation and their application in designing of dosage forms and to develop power dosage forms
CO103T.3	To classify different liquid dosage forms and develop formulation skills to design stable liquid dosage forms
CO103T.4	To utilize the knowledge in classifying different suppository types of dosage forms and apply the principles of pharmaceutical science in formulation and along with the significant incompatibilities that influence the stability of dosage forms.
CO103T.5	To Classify different semisolid dosage forms and practice the principles of pharmaceutical science in formulation and dispensing
CO103T.6	To apply the knowledge on preparatory pharmacy with different conventional dosage forms

BP 104 T	Course Title: Pharmaceutical inorganic chemistry (BP104T) Year:1 Semester :1
CO Code No	Course outcome
CO104T.1	The student should be able to know the impurities and their sources & to determine impurities in the inorganic drugs & pharmaceuticals
CO104T.2	The student should be able to understand medicinal & pharmaceutical importance of Acids, Bases, Buffers, Intracellular & extracellular Electrolytes & Dental products
CO104T.3	The student should be able to understand GI agents like Acidifiers, Antacids, Cathartics, Antimicrobial agents & their significance in pharmaceutical field
CO104T.4	The student should be able to understand hematinics, poison & Antidotes Expectoants & Emetics & their significance.
CO104T.5	The student should be able to understand Radiopharmaceuticals, their applications along with their storage conditions
CO104T.6	The student should be able to understand the concept of pharmacopoeia & its usage to get information

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BP 105 T	Course Title: Communication skills (BP105T)
CO Code No	Course outcome
CO105T.1	Apply the process of communication effectively
CO105T.2	Infer the barriers of communication to achieve success
CO105T.3	Prioritize the elements of communication and the importance of written communication
CO105T.4	Interpret active listening skills to be a successful leader.
CO105T.5	Evaluate the standardized techniques for Email communication, Oral and Written communication, Group discussions and presentation skills to ace interview
CO105T.6	Formulate their own ideologies okra activities to persuade discussions and make life worthwhile through professional and Social ethics

BP 106RBT	Course Title: Remedial Biology (BP106RBT)
CO Code No	Course outcome
CO106RBT.1	To outline the basic concept of five kingdoms of life.
CO106RBT.2	To understand the basic components of anatomy and physiology of plants
CO106RBT.3	To understand the basic components of anatomy & physiology of animal
CO106RBT.4	To know the different biological systems with reference to human
CO106RBT.5	To know the classification & salient features of 5 kingdoms of life.
CO106RBT.6	To understand the nutrition of the plants

BP 106RMT	Course Title: Remedial Mathematics (BP106RMT)
CO Code No	Course outcome
CO106RMT.1	Solve distance and angles using trigonometric ratios
CO106RMT.2	Compare partial fractions of different rational functions
CO106RMT.3	Analyze distance between points and area of triangle
CO106RMT.4	Evaluate the derivations of standard & composite functions
CO106RMT.5	Assess the integration of functions
CO106RMT.6	Determine an appropriate method in solving differential equations

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BP 107 P	Course Title: Human Anatomy and Physiology -I (BP107P)
CO Code No	Course outcome
CO107P.1	To recall handling of compound microscope and to memorize various animal tissues
CO107P.2	To summarize the characteristics of different bones (skeletal system)
CO107P.3	To identify the bleeding/clotting time and blood group
CO107P.4	To analyze the blood cells using haemocytometry
CO107P.5	To predict or determine the erythrocyte sedimentation rate of human blood, blood pressure, and heart rate/pulse rate

BP 108 P	Course Title: Pharmaceutical analysis -I (BP108P)
CO Code No	Course outcome
CO108P.1	To compare the purity of analyte with standard solution by limit tests
CO108P.2	To demonstrate the limit test for arsenic
CO108P.3	To identify the concentration of different solutions by using different titrations
CO108P.4	To analyze the percentage purity of different analytes by using different titrations
CO108P.5	To identify the end point by using electrochemical methods of analysis

BP 109 P	Course Title: Pharmaceutics -I (BP109P)
CO Code No	Course outcome
CO109P.1	To recall the principles used in the preparation of solid, liquid and semi solid dosage forms.
CO109P.2	To experiment with monophasic liquid dosage forms for internal and external administration
CO109P.3	To prepare biphasic liquid dosage forms
CO109P.4	To design powders and granules
CO109P.5	To develop semi solid dosage forms and formulate suppositories

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BP 110 P	Course Title: Pharmaceutical inorganic chemistry (BP110P)
CO Code No	Course outcome
	Year:1 Semester :1
CO110P.1	To outline preventive measures for overcoming the chemical laboratory accidents
CO110P.2	To apply the principles of limit tests in the determination of impurities in various inorganic compounds such as chlorides, sulphates, iron, heavy metals and arsenic.
CO110P.3	To plan and prepare various inorganic compounds like potash alum, boric acid, ferrous sulphate based on their therapeutic interest.
CO110P.4	To evaluate antacid property of aluminium hydroxide gel and adsorption property of bentonite
CO110P.5	To perform the identification test for different inorganic compounds like ferrous sulphate, calcium gluconate, sodium bicarbonate..

BP 111 P	Course Title: Communication skills (BP111P)
CO Code No	Course outcome
	Year:1 Semester :1
CO111P.1	Articulate the concept of basic greeting and communication etiquettes
CO111P.2	Analyze good pronunciation and presentation techniques
CO111P.3	Assess written communication with strong grammatical skills
CO111P.4	Create and compose ideas for effective written communication with socio ethical values for successful career
CO111P.5	Create and compose ideas for effective oral communication with socio ethical values for successful career

BP 112RBP	Course Title: Remedial Biology (BP112RBP)
CO Code No	Course outcome
	Year:1 Semester :1
CO112RBP.1	To demonstrate the study of microscope.
CO112RBP.2	To study different parts of the plant and their modifications
CO112RBP.3	To perform detail study of frog by using computer models
CO112RBP.4	To identify the skeletal system in human body
CO112RBP.5	To determine different components in blood

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BP 201T	Course Title: Human Anatomy and Physiology -II (BP201T) Year:1 Semester :II
CO Code No	Course outcome
CO201T.1	To Explain the gross anatomy and physiology of Central Nervous System
CO201T.2	To Illustrate the different structure and function of digestive system
CO201T.3	To discuss about urinary, respiratory systems and disorders.
CO201T.4	To understand about endocrine system and disorders.
CO201T.5	To Distinguish anatomy and physiology of Reproductive system and introduction to genetics

BP 202T	Course Title: Pharmaceutical organic chemistry-I (BP202T) Year:1 Semester :II
CO Code No	Course outcome
CO202T.1	The student should be able to understand the classification and nomenclature, isomerism of organic compounds. The student should be able to identify the type and types of isomers of an organic compound and should be able to write the name of the organic compound
CO202T.2	The student should be able to understand the preparation, properties and uses of alkanes, alkenes and conjugated dienes along with their hybridisation type. Should be able to understand the concept of E1 and E2 Reactions and allylic rearrangement
CO202T.3	The student should be able to understand the concept of alkyl halides and alcohols preparation, properties and uses. Should be able to understand the SN1 and SN2 reactions kinetics and stereochemistry concept of these reactions.
CO202T.4	The student should be able to understand the concept of reactions of carbonyl compounds like electrophilic addition, aldol and crossed aldol condensation, perkin condensation, crossed Cannizzaro reaction and should apply the qualitative test for carbonyl compounds in the laboratory.
CO202T.5	The student should be able to understand the concept of carboxylic acids with respect to their acidity and effect of different effects like inductive effect on acidity and should be able to apply the qualitative tests for carboxylic acids.
CO202T.6	The student should be able to understand the basicity and effects of substituents on basicity of aliphatic amines and identification tests for amines

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BP 203T	Course Title: Biochemistry (BP203T)
CO Code No	Course outcome
CO203T.1	To understand the chemical and biological role of different Bio-molecules. To know the concepts of different energies and the relation between them.
CO203T.2	To know about different carbohydrate metabolism pathways with energetics and special emphasis on hormonal regulation of glucose.
CO203T.3	To learn the principles and mechanism of lipid metabolism with special emphasis on their metabolic disorders
CO203T.4	To learn the principles and mechanism of amino acid metabolism with special emphasis on their metabolic disorders
CO203T.5	To know about metabolism of Nucleic acids and their associated disorders with special emphasis on DNA/RNA Replication.
CO203T.6	To study about properties, therapeutic and diagnostic application of enzymes with enzyme inhibition mechanism.

BP 204T	Course Title: Pathophysiology (BP204T)
CO Code No	Course outcome
CO204T.1	To Examine Basic principles of cell injury and adaptation and mechanism involved in inflammation and repair.
CO204T.2	To Describe the pathophysiology of Cardiovascular system, respiratory system and renal system.
CO204T.3	To discuss about various haematological diseases
CO204T.4	To Explain different systems i.e, Endocrine, nervous and Gastrointestinal systems.



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BP 205T	Course Title: Computer Applications in Pharmacy (BP205T) Year:1 Semester :II
CO Code No	Course outcome
CO205T.1	Outline the fundamentals and Principles of number system and information system software
CO205T.2	Develop pharmacy drug databases using proper web technologies
CO205T.3	Apply the knowledge of computers in community pharmacy
CO205T.4	Choose a relevant bioinformatics database in vaccine discovery
CO205T.5	Select an appropriate computing tool for data analysis in preclinical development

BP 206T	Course Title: Environmental Sciences (BP206T) Year:1 Semester :II
CO Code No	Course outcome
CO206T.1	To extend basic knowledge on environment and its allied problems.
CO206T.2	To compare the natural, renewable and non renewable resources and the problems associated with them.
CO206T.3	To motivate the learners to participate in environment protection and improvement
CO206T.4	To analyze the concepts of eco system including structure and functions.
CO206T.5	To adopt skills in identifying and solving environmental problems.
CO206T.6	To develop an attitude of concern for the environment

BP 207P	Course Title: Human Anatomy and Physiology -II (BP207P) Year:1 Semester :II
CO Code No	Course outcome
CO207P.1	To Study Integumentary, Nervous system, endocrine system, using specimen, models.
CO207P.2	To Demonstrate the general neurological examination and the functions of olfactory nerve.
CO207P.3	To Examine different types of taste and To demonstrate the visual activity and reflex activity.
CO207P.4	To understand the study of digestive , respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
CO207P.5	To Distinguish tidal volume and vital capacity , study of body temperature recording and Recording of basal mass index.

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CO207P.6	To Demonstrate the total blood count by cell analyser and permanent slides of vital organs and gonads. To study of family planning devices and pregnancy diagnosis test.
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BP 208P	Course Title: Pharmaceutical organic chemistry-I (BP208P) Year:1 Semester :II
CO Code No	Course outcome
CO208P.1	To outline the students regarding preventive measures to overcome chemical laboratory accidents
CO208P.2	To determine the melting point and boiling point of organic compounds by using the thiers tube
CO208P.3	To make use of different purification techniques like crystallisation, distillation, sublimation for purifying organic compound.
CO208P.4	To make use of chemical reaction mechanism for the preparation of various organic compound
CO208P.5	To plan the systematic qualitative analysis of organic compounds.

BP 209P	Course Title: Biochemistry (BP209P) Year:1 Semester :II
CO Code No	Course outcome
CO209P.1	To demonstrate and apply the qualitative methods for identification of carbohydrates and proteins
CO209P.2	To analyze the amount of sugar and creatinine present in blood
CO209P.3	To demonstrate the preparation of buffer solution and measurement of pH
CO209P.4	To analyze the salivary amylase activity
CO209P.5	To examine the enzymatic hydrolysis of starch and salivary amylase

BP 210P	Course Title: Computer Applications in Pharmacy (BP210P) Year:1 Semester :II
CO Code No	Course outcome
CO210P.1	Make use of computing fundamentals in pharmaceutical sciences
CO210P.2	Apply efficiently the online tools to all pharmaceutical related activities
CO210P.3	Develop solutions for pharmaceutical related problems using computer applications
CO210P.4	Create HTML webpages to export patient database
CO210P.5	XML pages to export patient database

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BP 301T	Course Title: Pharmaceutical organic chemistry-II (BP301T) Year:II Semester :I
CO Code No	Course outcome
CO301T.1	To know the Illustrate structure of benzene & its resonance, Aromaticity & Huckels rule
CO301T.2	To Explain Electrophilic substitution reactions with various examples & the role of substituents in its orientation & activity
CO301T.3	To Outline the preparations & reactions of phenol, aromatic amines, aromatic acids & also know about the acidity of phenol aromatic carboxylic acids & basicity of amines
CO301T.4	To define Fats & oils with its preparations, reactions along with its analytical parameters
CO301T.5	To Explain poly nuclear hydrocarbons & their derivatives along with its structure, preparation, reactions & medicinal use
CO301T.6	To explain preparation, reactions of cycloalkanes and identify its strain by various theories in terms of stability.

BP 302T	Course Title: Physical pharmaceutics-I (BP302T) Year:II Semester :I
CO Code No	Course outcome
CO302T.1	To explain different concepts of solubility studies and their application in development of delivery system
CO302T.2	To summarize the pharmaceutical relevance of different states of matter to drug delivery systems
CO302T.3	To apply the underlying principles of adsorption, solubilisation to differentiate types of interfaces with relevant examples in pharmaceutical sciences
CO302T.4	To analyze the types of complexes and correlate to drug action and protein binding
CO302T.5	To explain methods for the determination of p H and able to prepare pharmaceutical buffers and isotonic solutions
CO302T.6	To apply knowledge of the subject which helps the students to get better insight into various areas of formulation, research and development and stability studies of pharmaceutical dosage forms

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BP 303T	Course Title: Pharmaceutical Microbiology (BP303T) Year:II Semester :I
CO Code No	Course outcome
CO303T.1	Ability To Understand Methods Of Identification, Cultivation And Preservation Of Various Microorganisms
CO303T.2	ability to apply various microscopes in various applications
CO303T.3	Ability To Understand The Importance And Implementation Of Sterlization In Pharmaceutical Processing And Industry
CO303T.4	Ability To apply Sterility Testing Of Pharmaceutical Products
CO303T.5	Ability To Carried Out Microbiological Standardization Of Pharmaceuticals
CO303T.6	Ability To Understand The Cell Culture Technology And Its Applications In Pharmaceutical Industries

BP 304T	Course Title: Pharmaceutical engineering (BP304T) Year:II Semester :I
CO Code No	Course outcome
CO304T.1	To classify and explain various unit operations involved in manufacturing of pharmaceuticals.
CO304T.2	To understand the concepts of flow of fluids, size reduction and size separation
CO304T.3	To summarize different mechanisms of heat transfer
CO304T.4	To compare and contrast different types of evaporation and distillation process
CO304T.5	To determine the factors influencing mixing, filtration and centrifugation
CO304T.6	To elaborate various preventive methods used for corrosion control in pharmaceutical industries.

BP 305P	Course Title: Pharmaceutical organic chemistry-II (BP305P) Year:II Semester :I
CO Code No	Course outcome
CO305P.1	To apply the principle & process of recrystallization in the purification of organic compounds
CO305P.2	To make use of Electrophilic substitution reactions in the preparation of some organic compounds
CO305P.3	To utilize the concept of oxidation & diazotization in the synthesis of some organic compounds
CO305P.4	To apply the concepts of esterification & acetylation in the preparation of

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	some organic compounds
CO305P.5	To determine the quality of fats & oils by applying various analytical parameters like Acid value saponification value & iodine value.

BP 306P	Course Title: Physical Pharmaceutics-I (BP306P)
CO Code No	Course outcome
	Year:II Semester :I
CO306P.1	To understand the significance of physical properties such as solubility, surface tension, partition coefficient and pKa in the design of dosage forms.
CO306P.2	To explain adsorption isotherms and determine Freundlich-Langmuir constant using activated charcoal
CO306P.3	To apply Handerson – Hasselbalch equation for interpretation of pKa value of drugs.
CO306P.4	To determine the surface tension of sample liquids by drop count and drop weight methods
CO306P.5	To deduce the HLB value and critical micelle concentration of a surfactant

BP 307P	Course Title: Pharmaceutical Microbiology (BP307P)
CO Code No	Course outcome
	Year:II Semester :I
CO307P.1	able to understand equipment in microbiology
CO307P.2	ability to apply various sterilisation procedures and media for cultivation of bacteria
CO307P.3	able to analyse bacteria basing on staining
CO307P.4	able to apply various isolation techniques for pure cultures
CO307P.5	able to evaluate the motility of bacteria

BP 308P	Course Title: Pharmaceutical Engineering (BP308P)
CO Code No	Course outcome
	Year:II Semester :I
CO308P.1	To understand the basic principles involved in unit operations such as size reduction, sizeseparation, distillation and drying.
CO308P.2	To demonstrate and explain about the construction, working and applications of pharmaceutical equipments such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer

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CO308P.3	To experiment with the process variables of filtration, evaporation and infer the same.
CO308P.4	To determine radiation constant of brass, iron, unpainted and painted glass.
CO308P.5	To determine overall heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation

BP 401T	Course Title: Pharmaceutical Organic chemistry-III (BP401T) Year:II Semester :II
CO Code No	Course outcome
CO401T.1	To understand and learn the meaning of enantiomers, diastereomers, chiral and achiral molecules and distinguish its therapeutic importance in medicinal chemistry
CO401T.2	To learn the importance of geometrical isomerism and conformational isomerism and its function therapeutic significance in medicinal chemistry
CO401T.3	To impart a knowledge about optical activity towards atropisomerism, stereospecific and stereoselective reactions to identify its significance in various chemical reactions.
CO401T.4	To learn the nomenclature, synthesis, reactions, and medicinal uses of various hetero cyclic compounds to make use of its principles for learning chemical structures in mc.
CO401T.5	To learn various examples of reduction reactions in terms of its synthetic Importance by emphasizing its mechanism.
CO401T.6	To learn various examples of rearrangement reactions in terms of its synthetic Importance by emphasizing its mechanism.

BP 402T	Course Title: Medicinal chemistry-I (BP402T) Year:II Semester :II
CO Code No	Course outcome
CO402T.1	Make outline the history & development of Medicinal chemistry
CO402T.2	Ability to understand physicochemical properties & relate it to its biological action
CO402T.3	To Explain principles & factors effecting drug metabolism
CO402T.4	To understand the chemistry of drugs & categorize it with respect to pharmacological action which belong to ANS,CNS,& Analgesics.
CO402T.5	To distinguish the metabolic pathways ,adverse effects & therapeutic value of drugs which belong to ANS,CNS,& Analgesics.
CO402T.6	To explain the SAR & chemical synthesis of specified drugs which belong to ANS,CNS,& Analgesics.

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BP 403T	Course Title: Physical pharmaceutics-II (BP403T) Year:II Semester :II
CO Code No	Course outcome
CO403T.1	To explain different concepts of solubility studies and their application in development of delivery system.
CO403T.2	To summarize the pharmaceutical relevance of different states of matter to drug delivery systems
CO403T.3	To apply the underlying principles of adsorption, solubilisation to differentiate types of interfaces with relevant examples in pharmaceutical sciences.
CO403T.4	To analyze the types of complexes and correlate to drug action and protein binding
CO403T.5	To explain methods for the determination of p H and able to prepare pharmaceutical buffers and isotonic solutions
CO403T.6	To illustrate various Physico- chemical properties of drug molecule in designing of dosage forms

BP 404T	Course Title: Pharma cology -I (BP404T) Year:II Semester :II
CO Code No	Course outcome
CO404T.1	Able to understand on the basic knowledge about pharmacokinetics & dynamic principles of drugs.
CO404T.2	To outline the ADR & drug interactions
CO404T.3	To apply basic physiological knowledge to understand ANS Pharmacology and its disorders.
CO404T.4	To apply basic physiological knowledge to understand CNS Pharmacology and its disorders.
CO404T.5	To Compare and contrast various drugs mechanisms and uses
CO404T.6	To elaborate regarding the steps involved in drug discovery.

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BP 405T	Course Title:Pharma cognosy and phyto chemistry -I (BP405T) Year:II Semester :II
CO Code No	Course outcome
CO405T.1	To know the techniques in cultivation and production in crude drugs
CO405T.2	To know the crude drugs , their uses and chemical nature.
CO405T.3	To understand plant tissue culture techniques and edible vaccines.
CO405T.4	To know the evaluation techniques for herbal drugs
CO405T.5	To know the various systems of medicines.
CO405T.6	To know about the primary and secondary metabolites with examples

BP 406P	Course Title:Medicinal chemistry -I (BP406P) Year:II Semester :II
CO Code No	Course outcome
CO406P.1	To apply the principles of condensation & cyclization in the preparation of certain Heterocyclic intermediates
CO406P .2	To utilize the concepts of diazotization & nucleophilic addition reactions in the preparation of certain organic drug molecules
CO406P.3	To apply the concepts of rearrangement & esterification in the synthesis of certain medicinal agents
CO406P.4	Make use of acid base titrations in the estimation of various aromatic organic acids.
CO406P.5	To determine the partition co-efficient of drugs.

BP 407P	Course Title:Physical pharmaceutics II (BP407P) Year:II Semester :II
CO Code No	Course outcome
CO407P.1	To choose a good suspending agent to formulate a stable suspension.
CO407P .2	To interpret the shelf life of a given formulation by accelerated stability studies
CO407P.3	To make use of derived and flow properties of powders to ensure a stable solid formulation
CO407P.4	To distinguish the rate constants as per the chemical reaction
CO407P.5	To determine the viscosity using Ostwald's and Brookfield's viscometer

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BP 408P	Course Title: Pharmacology I (BP408P) Year:II Semester :II
CO Code No	Course outcome
CO408P.1	To understand the basics of Pharmacological experiments , Animal & Guidelines
CO408P .2	To apply basic pharmacological knowledge to understand the experimental techniques.
CO408P.3	To infer different Pharmacological effect of drugs by various experimental methods
CO408P.4	To identify the effect of different drugs on Animals by Simulated experiments.
CO408P.5	To gain practical knowledge of experiments in animals with rational effect of drugs
CO408P.6	To implement the knowledge of instruments in understanding the Effect of CNS drugs.

BP 409P	Course Title: Pharma cognosy and phyto chemistry -I (BP409P) Year:II Semester :II
CO Code No	Course outcome
CO409P.1	To perform the chemical evaluation of crude drugs.
CO409P .2	To determine the microscopical evaluation of crude drugs
CO409P.3	To study the physical evaluation of powdered drugs.
CO409P.4	To know the morphological evaluation of crude drugs
CO409P.5	To perform the calibration of eyepiece micrometer

BP 501T	Course Title: Medicinal chemistry-II (BP501T) Year:III Semester :I
CO Code No	Course outcome
CO501T.1	Ability to understand the distribution OF histamine receptors in the human body and extend its inhibitory action of certain drugs toward its therapeutic action
CO501T.2	To illustrate the structure and molecular mechanism of certain anti metabolites and alkylating agents in terms of its anti neoplastic activity
CO501T.3	With an aim to outline the structure, nomenclature, synthesis, mechanism and structure activity relationship of diuretics, calcium channel blockers and vasodilators in terms of its antianginal activity and Cardio vascular function.

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CO501.4	To outline the structure nomenclature, synthesis, mechanism and structure activity relationship of anti hyperlipidemic agents, coagulants and anti coagulants and the drugs used in CHF for its importance in cardio vascular function
CO501.5	To explain endocrine system and steroids with an intention to construct its importance as sex hormones, oral contraceptives and corticosteroids
CO501T.6	To explain the importance of insulin and extend with synthetic antidiabetic agents interms of of its therapeutic activity

BP 502T	Course Title: Industrial pharmacy-I (BP502T) Year:III Semester :I
CO Code No	Course outcome
CO502T.1	To outline the objectives and applications of preformulation studies in the development and stability of dosage forms
CO502T.2	To discuss the formulation, manufacturing, coating and quality control tests of tablets.
CO502T.3	To review the formulation and manufacturing considerations of liquid orals
CO502T.4	To illustrate the pharmaceutical aspects of capsules and pellets.
CO502T.5	To describe the preparation and quality control of parenterals and ophthalmic preparations
CO502T.6	To summarize formulation, manufacturing and evaluation of cosmetic preparations, pharmaceutical aerosols and appraise the science of packaging materials.

BP 503T	Course Title: Pharma cology-II (BP503T) Year:II Semester :II
CO Code No	Course outcome
CO503T.1	Able to understand hemodynamic and electrophysiology of heart and physiology of urine formation.
CO503T.2	To apply basic physiological knowledge to understand CVS Pharmacology and its disorders.
CO503T.3	To Interpret the relationship of one class of drug to other class of drugs and their common effects.
CO503T.4	To apply basic physiological knowledge to understand drugs acting on urinary system and their diverse use.
CO503T.5	To Relate endogenous hormones with drugs acting on hormonessystem.
CO503T.6	To Compare various methods of bioassays



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BP 504T	Course Title: Pharmacognosy and phyto chemistry -II (BP504T) Year:III Semester :I
CO Code No	Course outcome
CO504T.1	To know the modern extraction techniques of herbal drugs.
CO504T.2	To understand the preparation and development of herbal formulation
CO504T.3	To understand the herbal drug interactions
CO504T.4	To carryout isolation and identification of phytoconstituents
CO504T.5	To understand metabolic pathways in higher plants.
CO504T.6	To know the characterisation and uses identification of secondary metabolites.

BP 505T	Course Title: Pharmaceutical jurisprudence cology-II (BP505T) Year:III Semester :I
CO Code No	Course outcome
CO505T.1	Able to understand the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
CO505T.2	Able to understand Various Indian pharmaceutical Acts and Laws
CO505T.3	Able to remember shcedules according to drugs and cosmetic act 1940
CO505T.4	Able to understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
CO505T.5	Able to understand prevetion of cruelty to animals act
CO505T.6	Able to understand the code of ethics during the pharmaceutical practice

BP 506P	Course Title: Industrial pharmacy-I(BP506P) Year:III Semester :I
CO Code No	Course outcome
CO506P.1	To interpret the preformulation studies on drugs
CO506P.2	To explain the preparation, evaluation and coating of tablets
CO506P.3	To illustrate the formulation and evaluation of capsules
CO506P.4	To describe the preparation of creams
CO506P.5	To evaluate glass containers as per pharmacopeial specifications

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BP 507P	Course Title: Pharma cology-II (BP507P) Year:III Semester :I
CO Code No	Course outcome
CO507P.1	To understand the basics <i>in vitro</i> Pharmacological experiments, their equipments and importance
CO507P.2	To examine the Anti-inflammatory and analgesic effect of drugs on suitable animal models
CO507P.3	To Compare and Contrast the agonist and antagonist effects on DRC.
CO507P.4	To Estimate potency of agonist and antagonist by <i>in vitro</i> methods.
CO507P.5	To Compare the results of various types of bioassays.
CO507P.6	To Evaluate various drugs effects on isolate heart and BP and heart rate of dog.

BP 508P	Course Title: Pharma cognosy and phyto chemistry -II (BP508P) Year:III Semester :I
CO Code No	Course outcome
CO508P.1	To perform isolation and detection of active principles.
CO508P.2	To perform chromatography techniques
CO508P.3	To perform seperation of volatile oils by distillation methods
CO508P.4	To perform the chemical evaluation of crude drugs
CO508P.5	To exercise the pharmacognostic study of crude drugs

BP 601T	Course Title: Medicinal chemistryIII(BP601T) Year:III Semester :II
CO Code No	Course outcome
CO601T.1	Ability to understand certain number of drug molecules, with its chemistry , degradation and application.
CO601T.2	To outline the structures of the drug molecules and its pharmacophores , which enables to know its importance in drug design and pharmacological action.
CO601T.3	Ability to make use of the knowledge of prodrugs with its types,functions and its significance for further applications
CO601T.4	To apply the way how the drug molecules are synthesized by the pertinent substrate molecules and reactants for further study
CO601T.5	With an aim to simply and learn the details of drug design ,how it involves in generating new drug molecules with a target of decreased side effects and an improved potency.

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CO601T.6	Ability to outline the principle, methods and future perspective in research of combinatorial chemistry.
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BP 602T	Course Title: Pharmacology III (BP602T) Year: III Semester: II
CO Code No	Course outcome
CO602T.1	Able to understand on the basic knowledge about various respiratory and GIT disorders with drug treatment
CO602T.2	To understand and outline pathogenesis of cancer and infective diseases.
CO602T.3	To understand the basic knowledge of immunopharmacology, toxicology.
CO602T.4	To understand the general principles of management and treatment of poisoning
CO602T.5	Appreciate the correlation of antimicrobial treatment with respect to infections.
CO602T.6	To understand the basic knowledge of biosimilars and chronopharmacology.

BP 603T	Course Title: Herbal Drug Technology (BP603T) Year: III Semester: II
CO Code No	Course outcome
CO603T.1	To understand the raw material as source of herbal drugs from cultivation to herbal drug product.
CO603T.2	To know the WHO and ICH guidelines for evaluation of herbal drugs.
CO603T.3	To outline the herbal cosmetics and herbal formulations
CO603T.4	To understand the patenting of herbal drugs and GMP
CO603T.5	To know herb-food; herb-drug interactions
CO603T.6	To know the importance of nutraceuticals in disease management.

BP 604T	Course Title: Biopharmaceutics and pharmacokinetics (BP604T) Year: III Semester: II
CO Code No	Course outcome
CO604T.1	To recall and understand basic concepts of absorption, distribution, metabolism and excretion of drugs.
CO604T.2	To understand the mechanisms, interpret various factors affecting drug absorption, distribution, metabolism and excretion of drugs
CO604T.3	To utilize the pharmacokinetic models for the determination of pharmacokinetic parameters

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CO604T.4	To analyze the bioavailability of a drug and to compare the bioequivalence between drug products
CO604T.5	To evaluate various pharmacokinetic parameters for the drugs exhibiting saturation kinetics
CO604T.6	To design multiple dosage regimens based on pharmacokinetic parameters for maximizing patient compliance and therapeutic effectiveness

BP 605T	Course Title: Pharmaceutical Biotechnology(BP605T) Year:III Semester :II
CO Code No	Course outcome
CO605T.1	Ability to Understand the importance of Immobilized enzymes in Pharmaceutical Industries
CO605T.2	Able to get basic knowledge on bio-sensors and Protein Engineering
CO605T.3	Ability To Understand Genetic engineering process
CO605T.4	Able to understand the production of compounds by genetic engineering
CO605T.5	Ability To Learn. Importance of Monoclonal antibodies in Industries
CO605T.6	Ability To Appreciate the use of microorganisms in fermentation technology

BP 606T	Course Title: Quality Assurance(BP606T) Year:III Semester :II
CO Code No	Course outcome
CO606T.1	To outline the various concepts of quality systems and principles of accreditation
CO606T.2	To define about the organization hierarchy and handling of raw materials and equipments
CO606T.3	To explain about the quality control of packaging materials following GLP
CO606T.4	To define documentation and valuation of complaints in pharmaceutical industry
CO606T.5	To summarize the concepts of validation and calibration of various analytical equipments
CO606T.6	To tell about various aspects of warehousing management

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BP 607P	Course Title: Medicinal chemistry III (BP607P) Year: III Semester : II
CO Code No	Course outcome
CO607P.1	Make use of chemdraw in an attempt to demonstrate the structures and reactions .
CO607P.2	To apply the mechanism of nucleophilic addition reaction in the synthesis of 7-Hydroxy 4- Methyl coumarin, sulfacetamide and chlorbutanol
CO607P.3	To apply diazotization in the estimation of dapsone present in the given tablets
CO607P.4	Make use of aqueous titration in carrying out the estimation of metranidazole in the given tablets
CO607P.5	Make use of non-aqueous titration in carrying out the estimation of chloroquine in the given tablets

BP 608P	Course Title: Pharma cology III (BP608PT) Year: III Semester : II
CO Code No	Course outcome
CO608P.1	Calculate animal doses for experiments in pharmacology.
CO608P.2	Examine the biochemical investigations.
CO608P.3	Record the effect of drugs on isolated preparations by using computerized simulated software
CO608P.4	Define OECD guidelines and ethical principles in acute and chronic oral toxicity study
CO608P.5	Understand various Biostatistics methods in experimental pharmacology
CO608P.6	To correlate experiments with real time simulations.

BP 609P	Course Title: Herbal Drug Technology (BP609P) Year: III Semester : II
CO Code No	Course outcome
CO609P.1	To demonstrate the monograph analysis of herbal drugs from pharmacopoeias.
CO609P.2	To determine the alcohol content in asvas and aristas
CO609P.3	To perform priliminary photochemical screening of crude drugs.
CO609P.4	To perform the Standardisation of herbal cosmetics and formulations
CO609P.5	To determine aldehyde, phenol , total alkaloid content in formulations

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BP 701T	Course Title: Instrumental Methods Of Analysis(BP701T) Year:IV Semester :I
CO Code No	Course outcome
CO701T.1	To explain the principle, instrumentation, applications of UV and fluorimetric techniques
CO701T.2	To make use of principle, instrumentation, applications of IR spectroscopy for the determination of functional groups
CO701T.3	To illustrate the principle, instrumentation, applications of flame photometry, AAS and Nepheloturbidometric techniques
CO701T.4	To explain planar, column chromatographic techniques and electrophoresis for the separation and analysis of drugs
CO701T.5	To utilize the concepts of GC and HPLC chromatographic techniques for qualitative and quantitative analysis of drugs
CO701T.6	To outline fundamental principles of ion-exchange, gel and affinity chromatographic techniques

BP 702T	Course Title: Industrial PharmacyII(BP702T) Year:IV Semester :I
CO Code No	Course outcome
CO702T.1	To explain pilot plant scale up techniques and SUPAC guidelines
CO702T.2	To outline various aspects of technology transfer involved from R & D to productions
CO702T.3	To choose and to apply various responsibilities and regulatory requirements for drug approval
CO702T.4	To analyze and study various quality management systems in pharmacy field
CO702T.5	To determine the requirements and approval procedures for new drugs by Indian Regulatory.
CO702T.6	To discuss about approval process and regulatory requirements for drug products

BP 703T	Course Title: Pharmacy Practice(BP703T) Year:IV Semester :I
CO Code No	Course outcome
CO703T.1	Make use of drug distribution systems in hospital
CO703T.2	Appreciate drug store, inventory control and rational drug therapy
CO703T.3	Identify drug related problems and ADRs in the prescription

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CO703T.4	Execute medication history interview and interpret the lab parameters with disease state
CO703T.5	Perform patient counseling and provide utmost pharmaceutical care

BP 704T	Course Title: Novel Drug Delivery System (BP704T)
CO Code No	Course outcome
CO704T.1	To understand and rationalize fundamentals and polymers used in the design of controlled drug delivery systems.
CO704T.2	To outline the concepts of formulation and evaluation of oral, mucosal and implantable drug delivery system.
CO704T.3	To develop and study oral, mucosal, dermal, pulmonary and Nasal drug delivery systems over conventional dosage forms for prolonged action.
CO704T.4	To illustrate the principles and fundamentals of drug targeting in the design of site specific drug delivery system.
CO704T.5	To study the importance of site specific drug delivery systems or devices for ocular and intra uterine routes
CO704T.6	To predict the rate and maximize therapeutic compliance of site specific drug delivery systems by modifying conventional dosage forms.

BP 705P	Course Title: Instrumental Methods Of Analysis (BP705P)
CO Code No	Course outcome
CO705P.1	To identify the absorption maxima and plot the calibration curve for different compounds by using colorimetry, UV spectroscopy
CO705P.2	To identify the concentration of different ions by flame photometry and nephelometry
CO705P.3	To examine the quenching of quinine sulphate using potassium iodide by fluorimetry
CO705P.4	To identify and separate different compounds using paper and thin layer chromatography
CO705P.5	To demonstrate the working of HPLC



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BP 706PS	Course Title: Practice School (BP706PS) Year:IV Semester :I
CO Code No	Course outcome
CO706PS.1	Acquire knowledge and hands-on experience on the latest technologies and research domains beyond the syllabus
CO706PS.2	Practically apply the knowledge and skills previously learned through conventional classroom teaching and laboratory requirements
CO706PS.3	Develop the ability to adapt to rapidly changing requirements and challenges of a professional workplace in the real world
CO706PS.4	Exhibit the acquired professional skills in unfamiliar and open-ended real-life situations that the student is not exposed to in a conventional classroom
CO706PS.5	Improve their employability and establish a professional network before graduation

BP 801T	Course Title: Biostatistics And Research Methodology (BP801T) Year:IV Semester :II
CO Code No	Course outcome
CO801T.1	Understand the applications of biostatistics in pharmacy
CO801T.2	Make use of various statistical techniques to solve statistical problems
CO801T.3	Apply the statistical techniques in analysing statistical data
CO801T.4	Select various statistical softwares in designing the experiments and in treatment of clinical study data
CO801T.5	To know the operation of M.S.Excel, SPSS, R and minitab statistical software
CO801T.6	Able to know design of experiment (DoE)

BP 802T	Course Title: Social and Preventive Pharmacy (BP802T) Year:IV Semester :II
CO Code No	Course outcome
CO802T.1	To Explain concept of health and disease, health education and sociology.
CO802T.2	To Give Detailed Information on Preventive medicine for diseases.
CO802T.3	To discuss National health programs, its objectives, functioning and outcomes.
CO802T.4	To understand National family welfare, disease prevention programs.
CO802T.5	To Distinguish community services in rural, urban and improvement in rural sanitation, national urban health mission.

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BP 803ET	Course Title: Pharmaceutical Marketing Management (BP803ET) Year:IV Semester :II
CO Code No	Course outcome
CO803ET.1	Understand the general concepts of marketing and selling
CO803ET.2	Explain the quantitative and qualitative aspects of market
CO803ET.3	Summarize the principles of product lifecycle and product management in pharmaceutical industry
CO803ET.4	Develop the Concepts in Organization- Distribution- Marketing-Functions-strategies-Factors- Sales-Sale promotions
CO803ET.5	Contrast Pharma industry distribution management and tasks. Roles of professional sales representative
CO803ET.6	Analyze determinants of price and pricing methods, DPCO, NPPA

BP 804ET	Course Title: Pharmaceutical Regulatory Science (BP804ET) Year:IV Semester :II
CO Code No	Course outcome
CO804ET.1	Recall the concepts of Drug discovery, development process, clinical studies, generic drug product development
CO804ET.2	Perceive the regulatory approval process and timelines for IND, NDA, and ANDA and to know about changes to an approved NDA/ANDA
CO804ET.3	Familiar with regulatory authorities and agencies like India, USA, Europe, Australia, Japan and Canada
CO804ET.4	Assess the regulatory registration process of Indian drugs in overseas market which include to understand about technical documents like DMF, CTD, Ectd, and ACTD
CO804ET.5	Assimilate the process of clinical trials and pharmacovigilance as well as to understand obligations of GCP in clinical trials
CO804ET.6	Understand the concepts of regulatory science in pharmaceutical industry as well as to make use of regulatory authorities, laws, acts, orange and purple book



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BP 805ET	Course Title: Pharmacovigilance (BP805ET) Year:IV Semester :II
CO Code No	Course outcome
CO805ET.1	Understand drug safety monitoring , history and development of pharmacovigilance
CO805ET.2	Take part in establishment of pharmacovigilance centers in hospitals
CO805ET.3	Make use of dictionaries used in pharmacovigilance and ICD classification of diseases
CO805ET.4	Appreciate drug evaluation, ICH guidelines CIOMS requirements for ADR reporting

BP 806ET	Course Title: Quality control and standardisation of herbals (BP806ET) Year:IV Semester :II
CO Code No	Course outcome
CO806ET.1	Recall the basic tests and quality control(QC) tests as per World Health Organization(WHO) guidelines for evaluating commercial herbal medicines
CO806ET.2	Expalin Cgmp,GLP,GAP,GACP, for quality assurance in herbal industry as per WHO
CO806ET.3	Outline research methods as per EU or ICH guidelines for assessing safety,efficacy and QC of herbal medicines
CO806ET.4	Apply the knowledge of chromatography for standardisation of herbal medicines
CO806ET.5	Design stability testing protocol and documents for export registration of new drug application (NDA) common technical document
CO806ET.6	Assess and improve the safety of herbal medicines by markers, Pharmacovigilance, herbal pharmacopoeias, and other regulatory bodies



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BP 807ET	Course Title: Computer Aided Drug Design (BP807ET) Year:IV Semester :II
CO Code No	Course outcome
CO807ET.1	Apply the CADD techniques in various stages of drug discovery
CO807ET.2	Examine the role of CADD in drug discovery
CO807ET.3	Analyze the physicochemical properties and the techniques involved in QSAR
CO807ET.4	Execute various structure based drug design methods (Molecular Docking, Denovo drug design)
CO807ET.5	Evaluate various techniques in virtual screening

BP 808ET	Course Title: Cell and Molecular Biology (BP808ET) Year:IV Semester :II
CO Code No	Course outcome
CO808ET.1	Make use of microbial or mammalian cellular properties in drug discovery
CO808ET.2	Apply molecular information in genetic engineering
CO808ET.3	Categorize regulatory proteins that regulate genes
CO808ET.4	Choose an appropriate molecular genetics mechanism in the development of transgenics
CO808ET.5	Assess cellular communication in regulating cellular activities

BP 809ET	Course Title: Cosmetic Science (BP809ET) Year:IV Semester :II
CO Code No	Course outcome
CO809ET.1	Understand the concepts of various classes of cosmetics and cosmeceutical products
CO809ET.2	Make use of drug absorption, drug distribution and protein binding with an emphasis on factors influencing each process
CO809ET.3	Apply the formulation principles in building various skincare, hair care and oral care products
CO809ET.4	Distinguish role of herbs in formulating various skin care hair care and oral care products
CO809ET.5	Evaluate various skin care hair care and oral care products
CO809ET.6	Able to understand principles of formulation, building blocks hair care products

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BP 810ET	Course Title: Experimental Pharmacology (BP810ET)
CO Code No	Course outcome
CO810ET.1	Recall the CPCSEA/OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals and to demonstrate different laboratory/transgenic/mutant animals, various routes of administration, techniques of blood collection and euthanasia
CO810ET.2	Outline various preclinical screening models for diuretics, nootropics, anti-asthmatic and drugs acting on CNS
CO810ET.3	Construct preclinical screening models for drugs acting on ANS, eye and local anesthetics
CO810ET.4	Analyze the preclinical screening models for drugs acting on CVS
CO810ET.5	Appraise the preclinical screening models for drugs like antiulcer, antidiabetic and anticancer agents
CO810ET.6	Compile research methodology and biostatistics

BP 811ET	Course Title: Advanced Instrumentation Techniques (BP811ET)
CO Code No	Course outcome
CO811ET.1	To utilize the principles of NMR and Mass spectroscopy for understanding structure of chemical compounds
CO811ET.2	To explain basic principles and working of thermal methods of analysis
CO811ET.3	To outline basic principles and working of X-ray diffraction for studying crystal properties
CO811ET.4	To tell about ICH and USFDA guidelines for calibration and validation of different analytical instruments
CO811ET.5	To tell about principles of Radio immuno assay and its applications in pharmacy
CO811ET.6	To make use of extraction techniques and hyphenated methods for quantitative and qualitative analysis of pharmaceutical dosage forms



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BP 812ET	Course Title: Dietary Supplements and Nutraceuticals (BP812ET) Year:IV Semester :II
CO Code No	Course outcome
CO812ET.1	Able to understand the need of supplements by the different group of people to maintain healthy life
CO812ET.2	Able to understand different phytochemicals as nutraceuticals
CO812ET.3	Able to understand the outcome of deficiencies in dietary supplements
CO812ET.4	Able to appreciate the components in dietary supplements
CO812ET.5	Able to understand the regulatory affairs of dietary supplements including healthcare
CO812ET.6	Able to understand the commercial aspects of dietary supplements including healthcare

BP 813ET	Course Title: Project Work (BP813PW) Year:IV Semester :II
CO Code No	Course outcome
CO813PW.1	Understand the basic concept on project work, Literature survey of various research & review articles
CO813PW.2	Explain aim, objectives & plan of work of present investigation
CO813PW.3	Describe the materials and equipment used in project work
CO813PW.4	Excipient profiles used in preparation of dosage form. Drug analysis determining absorption maxima
CO813PW.5	Apply their knowledge, skill related to a current trend research topic and develops a project towards research area
CO813PW.6	Assemble the obtained results, summary & references and able to write thesis and present to panel/examiners.

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Co's FOR M.PHARM (Analysis)

MPA 101T	Course Title: Modern pharmaceutical Analytical techniques (MPA 101T) Year:1 Semester :I
CO Code No	Course outcome
CO101T.1	Illustrate the UV -visible spectroscopy, IR, flame, and atomic absorption spectroscopy.
CO101T.2	Know the Principles of the NMR spectroscopy, instrumentation and applications.
CO101T.3	Illustrate the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy
CO101T.4	Illustrate the different chromatographic techniques like paper, ion-exchange, gas, HPLC, etc
CO101T.5	Know the principles and procedures of paper and capillary electrophoresis.
CO101T.6	Illustrate the principles and procedures of potentiometry and thermal analytical techniques like DSC and TGA.

MPA 102T	Course Title: Advanced instrumental analysis (MPA 102T) Year:1 Semester :I
CO Code No	Course outcome
CO102T.1	Describe about impurities classification, residual solvents classification and limits.
CO102T.2	Explain the classification of elemental impurities, residual solvents classificational limits.
CO102T.3	Interpret accelerated stability studies, stability zones, photo stability testing and stability of biological products.
CO102T.4	Explain regulatory requirements and HPTLC fingerprinting.
CO102T.5	Understand bio assays of vaccines and PCR instrument.
CO102T.6	Illustrate the principles and procedures of different immunoassay.

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MPA 103T	Course Title: Pharmaceutical validation (MPA 103T) Year:1 Semester :I
CO Code No	Course outcome
CO103T.1	Explain introduction of qualification and validation involving validation master plan, DQ, IQ, OQ, PQ, RQ, FAT, SAT.
CO103T.2	Describe qualification of analytical instruments and glass ware
CO103T.3	Understand advanced validation of utility systems (water, HVAC, compressed air and nitrogen) and cleaning validation.
CO103T.4	Describe analytical method validation according to USP and ICH guidelines.
CO103T.5	Illustrate rigorous detailing of general principles of intellectual property.

MPA 104T	Course Title: Food analysis (MPA 104T) Year:1 Semester :I
CO Code No	Course outcome
CO104T.1	Learn about the flavour studies and to detect spoilage of food.
CO104T.2	Understand the advanced analytical methods for estimation of concentration of carbohydrates, vitamins, fats, amino acids, proteins in food.
CO104T.3	Understand the process of determining nutritional quality.
CO104T.4	Know very well about chromatographic techniques GC – MS, LC – MS, Electrophoresis, HPLC, HPTLC, SFC, HPCPC, RIA, ELISA in analysis of food adulterants.
CO104T.5	Understand how to select a suitable analytical method for quality don't quantity analysis of a pesticide residue food substance.
CO104T.6	Know about the use of BIS MARK, AGMARK on food substances



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MPA 105P	Course Title: Pharmaceutical analysis practical-1 (MPA 105P) Year:1 Semester :I
CO Code No	Course outcome
CO105P.1	Calibration of glassware and pH meter
CO105P.2	Calibration of UV-VISIBLE Spectrophotometer and FTIR spectrophotometer
CO105P.3	Calibration of GC and HPLC
CO105P.4	Cleaning validation of any one equipment and impurity profiling of drugs
CO105P.5	Assay of official compounds by different titrations and instrumental techniques
CO105P.6	Estimation of Riboflavin/quinine sulphate by fluorimetry; Estimation of sodium/ potassium by flame photometry

MPA 106P	Course Title: Pharmaceutical analysis practical-2 (MPA 106P) Year:1 Semester :I
CO Code No	Course outcome
CO106P.1	Learn about the determination of total reducing sugar, proteins, vitamins content in foods
CO106P.2	Illustrate the saponification value, iodine value, peroxide value, acid value of food products
CO106P.3	Understand the selection of analytical methods for analysis of synthetic colours in food products
CO106P.4	Know very well about determination of concentration of preservatives and pesticide residue in food products
CO106P.5	Understand the selection of various analytical methods for determining food additives
CO106P.6	Determine density and specific gravity of food substance



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MPA 107	Course Title: Seminar/assignments (MPA 107) Year:1 Semester :I
CO Code No	Course outcome
CO107.1	Improve oral and written communication skills
CO107.2	Explore and appreciation of the self in relation to its larger diverse social and academic contexts
CO107.3	Introduce to different types of scholarly sources and how access them
CO107.4	Provide the preliminary skills to do further research in the field of international relations
CO107.5	Give the opportunity to read in depth on a topic and understand how different pieces if scholarships are engaged in conversation with one another

MPA 201T	Course Title: Advanced instrumental analysis (MPA 201T) Year:1 Semester :II
CO Code No	Course outcome
CO201T.1	Explain the basic principles of HPLC and applications of HPLC
CO201.T.2	Illustrate the chromatographic techniques like size exclusion, ion exchange, ion pair, affinity, gas and HPTLC
CO201T.3	Know basic concepts about SFC, CE and CE-MS hyphenation
CO201.T.4	Understand the principles of mass spectroscopy, different ionization techniques, mass analysers and MS/MS systems
CO201.T.5	Illustrate the NMR spectroscopy, 2D NMR techniques and LC-NMR hyphenation



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MPA 202T	Course Title: Modern bio analytical techniques (MPA 202T) Year:1 Semester :II
CO Code No	Course outcome
CO202T.1	Perform extraction of drugs and metabolites from biological samples and validation of bio analytical methods
CO202.T.2	Know factors affecting bio availability, transport models and permeability methods
CO202T.3	Explain drug interactions, microsomal assays and toxicokinetic; and applications of LC-MS in bio activity screening and proteomics
CO202.T.4	Know cell culture techniques, cell viability assays and flow cytometry
CO202.T.5	Explain metabolite identification by microsomal approaches and drug product performance

MPA 203T	Course Title: Quality control and Quality assurance (MPA 203T) Year:1 Semester :II
CO Code No	Course outcome
CO203T.1	Understand concept of QC/QA, GLP, ICH guidelines Q-series. Purchase specifications, selection of vendors and maintenance of stores
CO203.T.2	No CGMP guidelines in accordance to USFDA including CDER, CBER, PIC, WHO, EMEA for industrial management and CPCSEA guidelines
CO203T.3	Understand detail analysis of raw materials, IPQC ,finisher products and under developing specifications according to Ich Q6 and Q3
CO203.T.4	Know characteristic documentation in pharmaceutical industry
CO203.T.5	Understand clear perspective of manufacturing operations and controls



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MPA 204T	Course Title: Herbal and cosmetic analysis (MPA 204T) Year:1 Semester :II
CO Code No	Course outcome
CO204T.1	Learn about the quality control of crude drugs
CO204.T.2	illustrate the advanced analytical methods For estimation of adulterants and deterioration of herbal drugs
CO204T.3	Understand the process of detection of herbal drugs and monographs of herbal drugs
CO204.T.4	know very well about Herbal drug -drug interactions
CO204.T.5	Know about the evolution of cosmetic products

MPA 205P	Course Title: Pharmaceutical analysis practical 3 (MPA 205P) Year:1 Semester :II
CO Code No	Course outcome
CO205P.1	Know comparison of absorption spectra by UV and Woodward - Feisire rule and interpretation of organic compounds by FT-IR
CO205P.2	Know interpretation of Organic compounds by NMR and MS
CO205P.3	To perform Quality control tests for tablets, capsules and creams
CO205P.4	To perform Quality control tests for primary and secondary packaging materials
CO205P.5	To perform Determination of foam height and SLS content of shampoo



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MRM 301T	Course Title: Research methodology and biostatistics (MRM 301T) Year:II Semester :III
CO Code No	Course outcome
CO301T.1	Identify the concept of medical research and values in medical ethics, CPCSEA guidelines
CO301.T.2	Describe the Declaration of Helsinki and basic principles for medical research
CO301T.3	Understand basic statistical methods which are used in collecting data study and analyze. Observe errors relating experimentation
CO301.T.4	Know testing of the hypothesis and understand how far population parameter significant based on estimator with the help of parametric tests. Nonparametric tests can also observe
CO301.T.5	Define Analysis of variance helps in study total variation

MPA 302T	Course Title: Journal club (MPA 302) Year:II Semester :III
CO Code No	Course outcome
CO302.1	Critically a price the research article after specialization published in computer journals. Students are trained for inquiry based learning and critical thinking skills
CO302.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment



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MPA 303	Course Title: Discussion/ presentation (MPA 303) Year:II Semester :III
CO Code No	Course outcome
CO303.1	Select the topic for carrying out the research work and collection of literature on the circuit topic
CO303.2	Plan the work to be performed systematically and present it in a need way

MPA 305	Course Title: Research work (MPA 305) Year:II Semester :III
CO Code No	Course outcome
CO305.1	Generate the topic for the project and collect the information from the relevant sources
CO305.2	Assemble the information into a more realistic draft ethically and conclude the contents.
CO305.3	Prepare the presentation and explain outcome of their project along with further scope for research. This develops their oratory and leadership skills

MPA 401	Course Title: Journal club (MPA 401) Year:II Semester :IV
CO Code No	Course outcome
CO401.1	Critically appraised research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills
CO401.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment



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MPA 402	Course Title: Research work/Thesis evaluation (MPA 402) Year:II Semester :IV
CO Code No	Course outcome
CO402.1	Perform the work in the innovative and systemic way
CO402.2	Assemble the information into a more realistic draft ethically and conclude the contents
CO402.3	Prepare the thesis by arranging the contents in a orderly manner and preparation of the research manuscript.

MPA 403	Course Title: Discussion/ Final presentation /Thesis viva (MPA 403) Year:II Semester :IV
CO Code No	Course outcome
CO403.1	Prepare the presentation based on the results obtained in the research work
CO403.2	Explain outcome of their project along with further scope for research. This develops their oratory and leadership skills



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Pharmacology

MPL 101T	Course Title: Modern pharmaceutical Analytical techniques (MPL 101T) Year:I Semester :I
CO Code No	Course outcome
CO101T.1	Illustrate the UV -visible spectroscopy, IR, flame, and atomic absorption spectroscopy.
CO101T.2	Know the Principles of the NMR spectroscopy, instrumentation and applications.
CO101T.3	Illustrate the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy
CO101T.4	Illustrate the different chromatographic techniques like paper, ion-exchange, gas, HPLC, etc
CO101T.5	Know the principles and procedures of paper and capillary electrophoresis.
CO101T.6	Illustrate the principles and procedures of potentiometry and thermal analytical techniques like DSC and TGA.

MPAL102T	Course Title: ADVANCED PHARMACOLOGY-I (MPL 102T) Year:I Semester :I
CO Code No	Course outcome
CO102T.1	Understand the pharmacodynamics and Pharmacokinetics of a drug and its correlation in pharmacotherapy.
CO102T.2	Able to understand Neurotransmission of ANS & CNS, including Mechanism of action & treatment of different category of drugs in Pharmacology.
CO102T.3	Grasp the knowledge of drugs involved in CNS Pharmacology with its Actions & ADR.
CO102T.4	Illustrate the drugs acting on CVS with proper understanding about the action & ADR of drugs acting as Antihypertensive, Antianginal & Antiarrhythmic effects.
CO102T.5	Categorize different drugs used as Autacoids with their Receptor classification including role in body
CO102T.6	Understand the Pharmacology of Neurodegenerative disorder and its Pharmacotherapy.

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MPL 103T	Course Title: PHARMACOKINETICS AND DRUG METABOLISM (MPL 103T) Year:I Semester :I
CO Code No	Course outcome
CO103T.1	Understand the concepts of basic Pharmacokinetics of absorption through biological membranes and correlate the kinetics of drug absorption.
CO103T.2	Describe phases of biotransformation of drugs and understand the factors affecting metabolism.
CO103T.3	To contrast the role of Microsomal and non-microsomal enzyme in body & P-450 cytochrome effects.
CO103T.4	To understand the factors affecting Drug excretion through Renal & non-renal routes.
CO103T.5	Understand Clinical Pharmacokinetics concept with reference to compartment modelling & its applications
	Illustrate the importance & application of Toxicokinetic studies & alternative Methods.

MPL 104T	Course Title: CELLULAR AND MOLECULAR PHARMACOLOGY (MPL 104T) Year:I Semester :I
CO Code No	Course outcome
CO104T.1	To learn basic structure and function of genome in the living organism and the importance of siRNA and microRNA
CO104T.2	To summarize various phases of cell cycle, apoptosis, necrosis and autophagy
CO104T.3	To construct the role of receptors and secondary messengers in cell signaling pathways
CO104T.4	To analyse the principles and applications of genomic and proteomic tools DNA electronics, PCR, SDS page, ELISA, western blotting, Recombinant DNA technology and gene therapy
CO104T.5	To evaluate significance of Pharmacogenomics and immunotherapeutic
CO104T.6	To construct the various cell culture techniques, Principles and influx. applications of cell viability/ glucose uptake/ Calcium assays, flow cytometry and biosimilar

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MPL 105P	Course Title: PHARMACOLOGY PRACTICAL – I (MPL 105P) Year:1 Semester :I
CO Code No	Course outcome
CO105P.1	Estimate the activity of Enzyme based <i>in vitro</i> assays (MPO, AChEs, α amylase, α glucosidase)
CO105P.2	Demonstrate the Handling of laboratory animals
CO105P.3	Demonstrate the Various routes of drug administration.
CO105P.4	Demonstrate the enzyme inhibition and induction activity
CO105P.5	Predictions of drug - drug interactions & estimate pharmacokinetic parameters from given data using software

MPL 106P	Course Title: PHARMACOLOGY PRACTICAL – II (MPL 106P) Year:1 Semester :I
CO Code No	Course outcome
CO106P.1	Learn about behavioural animal test eg. Irwin's test
CO106P.2	Evaluate CNS stimulant, depressants, anxiogenic and anxiolytic activity through screening models.
CO106P.3	Evaluation of analgesic & anti-inflammatory, Antiulcer & Diuretic activity by different screening models.
CO106P.4	Estimate glucose & lipid parameters in serum & tissue.

MPL 107	Course Title: Seminar/assignments (MPL 107) Year:1 Semester :I
CO Code No	Course outcome
CO107.1	Improve oral and written communication skills
CO107.2	Explore and appreciation of the self in relation to its larger diverse social and academic contexts
CO107.3	Introduce to different types of scholarly sources and how access them
CO107.4	Provide the preliminary skills to do further research in the field of international relations

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CO107.5	Give the opportunity to read in depth on a topic and understand how different pieces if scholarships are engaged in conversation with one another
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MPL 201T	Course Title: ADVANCED PHARMACOLOGY – II (MPL 201T) Year:1 Semester :II
CO Code No	Course outcome
CO201T.1	To relate functions of hormones and to list out drugs acting on endocrine system.
CO201.T.2	To outline the principles of chemotherapy and illustrate the mechanism of action of antibiotics, antifungals, antivirals and Anti-TB drugs
CO201T.3	To identify the chemotherapeutic agents for Protozoal infections & cancer.
CO201.T.4	To Categorize the inflammatory mediators ,allergic/hypersensitive reactions and simplify pharmacotherapy of Asthma & COPD.
CO201.T.5	To assess the mechanism of drugs acting on GIT and applications of Chronopharmacology to treat disorders.

MPL 202T	Course Title: PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS (MPL 202T) Year:1 Semester :II
CO Code No	Course outcome
CO202T.1	Perform extraction of drugs and metabolites from biological samples and validation of bio analytical methods
CO202.T.2	Know factors affecting bio availability, transport models and permeability methods
CO202T.3	Explain drug interactions, microsomal assays and toxicokinetic; and applications of LC-MS in bio activity screening and proteomics
CO202.T.4	Know cell culture techniques, cell viability assays and flow cytometry
CO202.T.5	Explain metabolite identification by microsomal approaches and drug product performance



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MPL 203T	Course Title: PRINCIPLES OF DRUG DISCOVERY (MPL 203T) Year:1 Semester :II
CO Code No	Course outcome
CO203T.1	To understand the modern Drug Discovery process, target discovery validation and role of transgenic animals in Validation
CO203.T.2	To correlate the concepts of Genomics, Proteomics, Protein microarray and antisense technology along with combinatorial chemistry ,high-throughput screening in silico lead discovery techniques & Lead Identification.
CO203T.3	To establish a correlation between Drug designing with novel tools & techniques.
CO203.T.4	To understand lead identification & optimization techniques in drug designing
CO203.T.5	To appreciate the importance of pro-drug designing in improving the Patient acceptability

MPL 204T	Course Title: CLINICAL RESEARCH AND PHARMACOVIGILANCE (MPL 204T) Year:1 Semester :II
CO Code No	Course outcome
CO204T.1	To understand regulatory requirements for conducting Clinical Trials with ethical considerations.
CO204.T.2	To study and perform Experimental design and understand the role & responsibilities of Clinical Investigator.
CO204T.3	To execute safety monitoring Trials and Prepare documentation of ADR
CO204.T.4	To detect new Adverse Effects and its assessment in clinical Perspective.
CO204.T.5	To measure the outcomes of applied Pharmacovigilance and evaluate its applications



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MPL 205P	Course Title: PHARMACOLOGY PRACTICAL – III (MPL 205P) Year:1 Semester :II
CO Code No	Course outcome
CO205P.1	To identify the effects of various drugs on isolated heart preparations and understand the effects of drugs on Rat BP ,Heart rate& ECG.
CO205P.2	To Outline The Acute, Subacute & Chronic Toxicity Studies As Per OECD Guidelines.
CO205P.3	To perform Dose relationship effect of drugs on isolated animal tissues.
CO205P.4	To perform bioassay by suitable tissue preparation and record effects of Agonist & antagonists
CO205P.5	To conduct repeated dose toxicity study of different biochemical Parameters of body fluids.

MRM 301T	Course Title: Research methodology and biostatistics (MRM 301T) Year:II Semester :III
CO Code No	Course outcome
CO301T.1	Identify the concept of medical research and values in medical ethics, CPCSEA guidelines
CO301.T.2	Describe the Declaration of Helsinki and basic principles for medical research
CO301T.3	Understand basic statistical methods which are used in collecting data study and analyze. Observe errors relating experimentation
CO301.T.4	Know testing of the hypothesis and understand how far population parameter significant based on estimator with the help of parametric tests. Nonparametric tests can also observe
CO301.T.5	Define Analysis of variance helps in study total variation



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MPL 302T	Course Title: Journal club (MPL 302) Year:II Semester :III
CO Code No	Course outcome
CO302.1	Critically appraise the research article after specialization published in computer journals. Students are trained for inquiry based learning and critical thinking skills
CO302.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment

MPL 303	Course Title: Discussion/ presentation (MPL 303) Year:II Semester :III
CO Code No	Course outcome
CO303.1	Select the topic for carrying out the research work and collection of literature on the circuit topic
CO303.2	Plan the work to be performed systematically and present it in a need way

MPL 305	Course Title: Research work (MPL 305) Year:II Semester :III
CO Code No	Course outcome
CO305.1	Generate the topic for the project and collect the information from the relevant sources
CO305.2	Assemble the information into a more realistic draft ethically and conclude the contents.
CO305.3	Prepare the presentation and explain outcome of their project along with further scope for research. This develops their oratory and leadership skills

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MPL 401	Course Title: Journal club (MPL 401) Year:II Semester :IV
CO Code No	Course outcome
CO401.1	Critically appraised research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills
CO401.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment

MPL 402	Course Title: Research work/Thesis evaluation (MPL 402) Year:II Semester :IV
CO Code No	Course outcome
CO402.1	Perform the work in the innovative and systemic way
CO402.2	Assemble the information into a more realistic draft ethically and conclude the contents
CO402.3	Prepare the thesis by arranging the contents in a orderly manner and preparation of the research manuscript.

MPL 403	Course Title: Discussion/ Final presentation /Thesis viva (MPL 403) Year:II Semester :IV
CO Code No	Course outcome
CO403.1	Prepare the presentation based on the results obtained in the research work
CO403.2	Explain outcome of their project along with further scope for research. This develops their oratory and leadership skills

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Pharmaceutics

MPH 101T	Course Title: Modern pharmaceutical Analytical techniques (MPH 101T) Year:1 Semester :I
CO Code No	Course outcome
CO101T.1	Illustrate the UV -visible spectroscopy, IR, flame, and atomic absorption spectroscopy.
CO101T.2	Know the Principles of the NMR spectroscopy, instrumentation and applications.
CO101T.3	Illustrate the principles of mass spectroscopy, different ionization techniques and applications of mass spectroscopy
CO101T.4	Illustrate the different chromatographic techniques like paper, ion-exchange, gas, HPLC, etc
CO101T.5	Know the principles and procedures of paper and capillary electrophoresis.
CO101T.6	Illustrate the principles and procedures of potentiometry and thermal analytical techniques like DSC and TGA.

MPH 102T	Course Title: Drug Delivery System (MPH 102T) Year:1 Semester :I
CO Code No	Course outcome
CO102T.1	Learn the concepts of sustained and controlled release
CO102T.2	Learn the concepts of polymer science and personalized medicine.
CO102T.3	Discuss the underlying ideas and concepts of vaccination, protein-peptide, and controlled drug delivery systems.
CO102T.4	Develop product formulations for drug delivery systems like ophthalmic, transdermal, venous, protein-peptide, and vaccine-based.
CO102T.5	Create vaccine drug delivery methods, transdermal drug delivery systems, and protein-peptide drug delivery systems.

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MPH 103T	Course Title: Modern Pharmaceutics (MPH 103T) Year:1 Semester :I
CO Code No	Course outcome
CO103T.1	List the components of studies that have been preformulated.
CO103T.2	Design generic drugs and active pharmaceutical components.
CO103T.3	Recognise and adjust to GMP and industrial management considerations, optimisation strategies, and pilot plant scale-up strategies.
CO103T.4	Suggest Stability Testing, Sterilisation Procedures, and Dosage Form Packaging

MPH 104T	Course Title: Regulatory Affair (MPH 104T) Year:1 Semester :I
CO Code No	Course outcome
CO104T.1	Keep in mind the ideas behind medication master files, innovator and generic product development, and innovation in pharmaceutical products.
CO104T.2	Describe the outsourcing of bioavailability studies to cro, post-marketing surveillance, and scale-up post-approval modifications.
CO104T.3	Use regulatory organisations such as the FDA, EU, MHRA, and TGA. Understand the CTD and eCTD formats for medical devices and combination products.
CO104T.4	Compare the IND, NDA, and APA submission processes with the creation of a clinical trial protocol and the preparation of a medicinal products dossier, Clinical trial safety monitoring and pharmacovigilance

MPH 105P	Course Title: Pharmaceutical Practical -I (MPH 105P) Year:1 Semester :I
CO Code No	Course outcome
CO105P.1	Analyse drugs by UV spectrophotometer and their simultaneous estimation
CO105P.2	Arrange and evaluate a range of analytical techniques for estimating pharmaceuticals in various formulations.

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MPH 106P	Course Title: Pharmaceutical Practical -I I (MPH 106P) Year:1 Semester :I
CO Code No	Course outcome
CO106P.1	Evaluate the effect of various excipients on dissolution of drug
CO106P.2	Design and assess various conventional and novel drug delivery systems
CO106P.3	Create Pharmacokinetic plots and determine various parameters

MPH 107	Course Title: Seminar/assignments (MPH 107) Year:1 Semester :I
CO Code No	Course outcome
CO107.1	Improve oral and written communication skills
CO107.2	Explore and appreciation of the self in relation to its larger diverse social and academic contexts
CO107.3	Introduce to different types of scholarly sources and how access them
CO107.4	Provide the preliminary skills to do further research in the field of international relations
CO107.5	Give the opportunity to read in depth on a topic and understand how different pieces if scholarships are engaged in conversation with one another

MPH 201T	Course Title: Molecular pharmaceuticals (Nanotechnology and targeted DDS) (MPH 201T) Year:1 Semester :II
CO Code No	Course outcome
CO201T.1	Define the concepts involved in targeting drug delivery to specific sites like tumor and brain
CO201.T.2	Outline the formulation, optimization, development and evaluation of different novel drug delivery systems like nanoparticles, liposomes and multiparticulate drug carrier systems.
CO201T.3	Study the formulation and evaluation of pulmonary drug delivery systems.
CO201.T.4	Simplify different concepts of gene therapy and liposomal gene Delivery.

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CO201.T.5	Describe various concepts of therapeutic antisense molecules.
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MPH 202T	Course Title: Advanced biopharmaceutics and pharmacokinetics (MPH 202T) Year:1 Semester :II
CO Code No	Course outcome
CO202T.1	Study the basic concepts of absorption, distribution, Metabolism and excretion of drugs.
CO202.T.2	Understand different mechanisms and factors influencing Drug absorption, distribution, metabolism and excretion of drugs and determine the Pharmacokinetic parameters by applying the pharmacokinetic models.
CO202T.3	Drug product performance should be analyzed by in-vitro, in-vivo and in-situ models.
CO202.T.4	Determine the drug bioavailability and Compare it with the bioequivalence of marketed products.
CO202.T.5	Evaluate the pharmacokinetic and pharmacodynamic drug Interactions.

MPH 203T	Course Title: Computer aided drug development (MPH 203T) Year:1 Semester :II
CO Code No	Course outcome
CO203T.1	Discover the fundamentals of computer use in pharmaceutical development and research.
CO203.T.2	Describe the drug disposition computational modelling in detail.
CO203T.3	Apply the concepts for computer aided drug development.
CO203.T.4	Understand the pharmacokinetic and pharmacodynamic characteristics of drugs by simulations
CO203.T.5	Investigate how computers are used in the handling of clinical data.
CO203.T.6	Explain about the effects of robotics, computational fluid dynamics, and artificial intelligence.



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MPH 204T	Course Title: Formulation development of pharmaceutical and cosmetic products (MPH 204T) Year:1 Semester :II
CO Code No	Course outcome
CO204T.1	Study the regulatory requirements of manufacture, sale, import and labeling of cosmetics in India.
CO204.T.2	Recognise the biological components of makeup, its general composition and purposes, and the typical issues pertaining to the skin, hair, and mouth cavity.
CO204T.3	Apply the building blocks of formulation to various cosmetic and cosmeceutical products.
CO204.T.4	List contentious elements which are included in the cosmetic preparation.
CO204.T.5	Justify the use of cosmeceutical products to treat issues with the skin, hair, and oral cavity, and provide further information on the regulations governing herbal cosmetics.

MPH 205P	Course Title: Pharmaceutical Practical -III (MPH 205PA) Year:1 Semester :II
CO Code No	Course outcome
CO205PA.1	Various preparation methods of microspheres, liposomes, niosomes and solid dispersions.
CO205PA.2	Comparison of dissolution studies of various marketed products with prepared products
CO205PA.3	Design various novel drug delivery systems.

MPH 205P	Course Title: Pharmaceutical Practical -IV (MPH 205PB) Year:1 Semester :II
CO Code No	Course outcome
CO205PB.1	Check the bioavailability, cell penetration, and drug binding properties of various formulations.
CO205PB.2	Evaluation of novel drug delivery systems
CO205PB.3	Design formulations by QbD concept, use simulations for estimation of PKPD parameters.

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MRM 301T	Course Title: Research methodology and biostatistics (MRM 301T) Year:II Semester :III
CO Code No	Course outcome
CO301T.1	Identify the concept of medical research and values in medical ethics, CPCSEA guidelines
CO301.T.2	Describe the Declaration of Helsinki and basic principles for medical research
CO301T.3	Understand basic statistical methods which are used in collecting data study and analyze. Observe errors relating experimentation
CO301.T.4	Know testing of the hypothesis and understand how far population parameter significant based on estimator with the help of parametric tests. Nonparametric tests can also observe
CO301.T.5	Define Analysis of variance helps in study total variation

MPH 302T	Course Title: Journal club (MPH 302) Year:II Semester :III
CO Code No	Course outcome
CO302.1	Critically a price the research article after specialization published in computer journals. Students are trained for inquiry based learning and critical thinking skills
CO302.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment



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MPH 303	Course Title: Discussion/ presentation (MPH 303) Year:II Semester :III
CO Code No	Course outcome
CO303.1	Select the topic for carrying out the research work and collection of literature on the circuit topic
CO303.2	Plan the work to be performed systematically and present it in a need way

MPH 305	Course Title: Research work (MPH 305) Year:II Semester :III
CO Code No	Course outcome
CO305.1	Generate the topic for the project and collect the information from the relevant sources
CO305.2	Assemble the information into a more realistic draft ethically and conclude the contents.
CO305.3	Prepare the presentation and explain outcome of their project along with further scope for research. This develops their oratory and leadership skills

MPH 401	Course Title: Journal club (MPH 401) Year:II Semester :IV
CO Code No	Course outcome
CO401.1	Critically appraised research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills
CO401.2	Access journals by adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment



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MPH 402	Course Title: Research work/Thesis evaluation (MPH 402) Year:II Semester :IV
CO Code No	Course outcome
CO402.1	Perform the work in the innovative and systemic way
CO402.2	Assemble the information into a more realistic draft ethically and conclude the contents
CO402.3	Prepare the thesis by arranging the contents in a orderly manner and preparation of the research manuscript.

MPH 403	Course Title: Discussion/ Final presentation /Thesis viva (MPH 403) Year:II Semester :IV
CO Code No	Course outcome
CO403.1	Prepare the presentation based on the results obtained in the research work
CO403.2	Explain outcome of their project along with further scope for research. This develops their oratory and leadership skills