PROGRAMME OUTCOMES

1. **PO1: Pharmacy Knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2. **PO2: Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3. **PO3: Problem Analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4. **PO4: Modern Tool Usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5. **PO5: Leadership Skills:** Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well- being.
6. **PO6: Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
7. **PO7: Pharmaceutical Ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8. **PO8: Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

9. **PO9: The Pharmacist and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10. **PO10: Environment and Sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11. **PO11: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

(Dr. V. U. Baig)
Coordinator

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Course Outcomes F. Y. B. Pharm (Semester-I)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course student will be able to
1.	Human Anatomy and Physiology-I (2019 Pattern)	BP101T	BP101T1	Define and explain the anatomy and physiology, various levels oforganizations basic homeostatic mechanism.
			BP101T2	Explain the morphology, physiology of skeletal system along with the physiology of muscle contraction in co-ordination with the joints, their articulation and skin.
			BP101T3	Explain and describe the composition, function of various bodyfluids like blood and lymph, their significance and related disorders.
			BP101T4	Classify the peripheral nervous system, nerves and morphology ofspecial senses.
			BP101T5	Explain the anatomy and physiology and parameters related to CVS and related disorders.
2.	Human Anatomy and Physiology-I (2019 Pattern)	BP107P	BP107P1	Utilize effectively the microscope for microscopic study of varioustissues.
			BP107P2	Identify axial and appendicular bones of human skeleton.
			BP107P3	Explain the gross morphology, structure and functions of variousorgans of human body.
			BP107P4	Identify different tissues and organs of different systems of human body.
			BP107P5	Perform the haematological tests like blood cell count, haemoglobin estimation, bleeding/clotting time, etc.
			BP107P6	Record the blood pressure, heart rate, pulse rate and respiratory volume.
3.	Pharmaceutical Analysis I (2019 Pattern)	BP102T	BP102T1	Understand fundamentals of analytical chemistry, principles of volumetric and electrochemical analysis. Carry out various volumetric and electrochemical titrations. Develop analytical skills.
			BP102T2	Differentiate between various types of volumetric titrations like acid base titration, precipitation titration, complexometric titration,

				redox titration as well as able to perform Gravimetric quantitative determination method.
			BP102T3	Illustrate about different electro chemical methods of analysis like conductometry, potentiometry, polarography, refractometry.
4.	Pharmaceutical Analysis I (2019 Pattern)	BP108P	BP108P1	Acquire knowledge about how to carry out various volumetric and electrochemical titrations.
			BP108P2	Perform standardization of various secondary standard substances
			BP108P3	Perform assays of compounds based on different types of volumetric titrations.
			BP108P4	Utilize equipments like conductivity meter, potentiometer, refractometer etc. for the determination of normality and refractive index.
5.	Pharmaceutics I (2019 Pattern)	BP103T	BP103T1	Know the history of profession of pharmacy.
			BP103T2	Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.
			BP103T3	Understand the professional way of handling the prescription.
			BP103T4	Prepare various conventional dosage forms.
6.	Pharmaceutics I (2019 Pattern)	BP109P	BP109P1	State the correct use of various equipments in Pharmaceutics laboratory relevant to practicals.
			BP109P2	Explain formulation, evaluation and labelling of aromatic water, glycerides, syrups, elixirs and powder preparations.
			BP109P3	Perform pharmaceutical calculations to determine evaluation parameters like density, viscosity, specific gravity, angle of repose, Carr's index, Hausner ratio of preparations.
			BP109P4	Describe use of ingredients in formulation and category of formulation & Perform pharmaceutical calculations.
			BP109P5	Use equipments and apparatus needed for the preparation as per SOP, select the suitable packaging material (container-closure) for the preparation and draw the labels in neat way including all the component/parts.
			BP109P6	Summarize the principles of formulation and evaluation, predict the special requirements of preparations regarding the use, handling and storage conditions.
7.	Pharmaceutical Inorganic Chemistry	BP104T	BP104T1	Understand sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.

	(2019 Pattern)		BP104T2	Understand the basic concepts of acidity /basicity, buffers and tonicity applicable in pharmaceuticals.
			BP104T3	Understand the medicinal and pharmaceutical applications of inorganic compounds.
			BP104T4	Understand the concepts and principles of radiopharmaceuticals.
8	Pharmaceutical Inorganic Chemistry (2019 Pattern)	BP110P	BP110P1	Develop skills to perform limit test and for given sample.
			BP110P2	Perform identification of different inorganic compounds through various qualitative tests.
			BP110P3	Perform tests for purity for different compounds as per official compendia.
			BP110P4	Acquire knowledge and skills to prepare inorganic salts such as boric acid, potash alum and ferrous sulphate.
9	Communication Skills (2019 Pattern)	BP105T	BP105T1	Understand the behavioural needs for a Pharmacist to function effectively in the areas of pharmaceutical operation.
			BP105T2	Communicate effectively (Verbal and Non Verbal).
			BP105T3	Effectively manage the team as a team player.
			BP105T4	Develop interview skills.
			BP105T5	Develop Leadership qualities and essentials.
11.	Remedial Biology (2019 Pattern)	BP106 RBT	BP106RBT1	Understand the components of living world.
			BP106RBT2	Know the classification and salient features of five kingdoms of life.
			BP106RBT3	Understand the basic components of anatomy & physiology of plant.
			BP106RBT4	Illustrate the basic components of anatomy & physiology animal with special reference to
12	Remedial Biology (2019 Pattern)	BP112RBP	BP112RBP1	Understand the components of living Cell.
			BP112RBP2	Know the classification and salient features of cell and its types.
			BP112RBP3	Understand the basic components of anatomy & physiology of plant.
			BP112RBP4	Illustrate the basic components of anatomy & physiology animal with special reference to human.
13.	Remedial Mathematics (2019 Pattern)	BP106RMT	BP106RMT1	Know the theory and their application in Pharmacy.
			BP106RMT2	Solve the different types of problems by applying theory.
			BP106RMT3	Appreciate the important application of mathematics in Pharmacy.

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Course Outcomes F. Y. B. Pharm (Semester-II)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course student will be able to
1	Human Anatomy and Physiology-II (2019 Pattern)	BP201T	BP201T1	Explain the anatomy and physiology and parameters related to digestive system and related disorders.
			BP201T2	Explain the anatomy and physiology and parameters related to nervous system and ANS.
			BP201T3	Explain the anatomy and physiology and parameters related to Urinary system.
			BP201T4	Explain the anatomy and physiology and parameters related Endocrine system.
			BP201T5	Explain the anatomy and physiology and parameters related Reproductive system.
			BP201T6	Explain the anatomy and physiology and parameters related Respiratory system.
2	Human Anatomy and Physiology-II (2019 Pattern)	BP207P	BP207P1	Record the body temperature and Basal Mass Index.
			BP207P2	Explain Reflex and Visual activity.
			BP207P3	Explain positive and negative feedback mechanism.
			BP207P4	Explain the gross morphology, structure and functions of various organs system of human body.
			BP207P5	Perform the hematological test like total blood count.
			BP207P6	Perform the tidal volume and vital capacity.
3	Pharmaceutical Organic Chemistry-I (2019 Pattern)	BP202T	BP202T1	Understand the basic principles of organic chemistry and Classification, IUPAC Nomenclature of organic compounds and Structural Isomerism
			BP202T2	Gain knowledge about different types of elimination and substitution reactions of alkenes, alkyl halides and conjugated dienes
			BP202T3	Gain the knowledge about reactivity & stability of different organic compounds

			BP202T4	Understand qualitative tests, structure, and uses of different organic compounds like alcohols, aldehydes, ketones, carboxylic acids and amines.
4	Pharmaceutical Organic Chemistry-I (2019 Pattern)	BP208P	BP208P1	Understand safety measures in an organic chemistry laboratory.
			BP208P2	Differentiate in between techniques like M.P, B.P determination, crystallization and various types of distillation.
			BP208P3	Perform the qualitative analysis of given organic compound.
			BP208P4	Perform synthesis of the selected organic compounds and understand the reaction mechanism involved in it.
			BP208P5	Understand the concept of building of molecular models of structures containing various functional groups.
5	Biochemistry (2019 Pattern)	BP203T	BP203T1	Understand classification, chemical nature, biological role and metabolism of biomolecules.
			BP203T2	Understand the metabolism of nutrient molecules in physiological and pathological conditions.
			BP203T3	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
			BP203T4	Understand the catalytic role of enzymes and importance of enzyme in biochemical process
6	Biochemistry (2019 Pattern)	BP209P	BP208P1	Learn quantitative analysis test of carbohydrates, amino acids and proteins
			BP208P2	Understand qualitative analysis of urine for normal and abnormal constituents.
			BP208P3	Study procedure and principle for determination of serum total cholesterol, blood sugar and blood creatinine.
			BP208P4	Understand preparation of buffer solution and measurement of pH.
			BP208P5	Understand the effect of temperature and substrate concentration on salivary amylase activity.
7	Pathophysiology (2019 Pattern)	BP204T	BP204T1	Describe the etiology and pathogenesis of disease.
			BP204T2	Understand the sign and symptoms of disease with its pathophysiological mechanism.
			BP204T3	Understand the pharmacological treatment of disease.
			BP204T4	Discuss about laboratory techniques and diagnostic test.
8	Computer Applications in Pharmacy	BP205T	BP205T1	Know the various types of application of computers in pharmacy.
			BP205T2	Know the various types of databases.

	(2019 Pattern)		BP205T3	Know the various applications of databases in pharmacy.
9.	Computer Applications in Pharmacy (2019 Pattern)	BP210P	BP210P1	Create a HTML web page to show personal information.
			BP210P2	Design a form in MS Access to view, add, delete and modify the patient record in the data base.
			BP210P3	Create and work with the queries in MS Access and export tables, queries, forms and reports to web pages.
10	Environmental Sciences (2019 Pattern)	BP206T	BP206T1	Elaborate the natural resources available, their advantages and disadvantages on the human and animal health and plants.
			BP206T2	Explain the ecology, energy flow and various ecosystems in the environment describing the biodiversity of state and India.
			BP206T3	Describe various environmental pollution, roll of individual in the pollution and disaster management.

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Course Outcomes S. Y. B. Pharm (Semester-III)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Pharmaceutical Organic Chemistry-II (2019 Pattern)	BP301T	BP301T1	Write the structure, name and the type of isomerism of the organic compound.
			BP301T2	Write the reaction, name the reaction and orientation of reactions
			BP301T3	Account for reactivity/stability of compounds.
			BP301T4	Prepare small organic compounds.
2	Pharmaceutical Organic Chemistry-II (2019 Pattern)	BP305P	BP305P1	Recall the various laboratory techniques involved in the synthesis process.
			BP305P2	Perform experiment with the separation of organic binary mixture.
			BP305P3	Determine the saponification value of oils.
			BP305P4	Perform synthesis, recrystallization and understand reaction mechanisms involved in synthesis of important organic compounds such as Benzanilide, Benzil etc.
3	Physical Pharmaceutics I (2019 Pattern)	BP302T	BP302T1	Ability to apply the knowledge of solubility, diffusion and distribution in pharmaceutical preparations.
			BP302T2	Investigate and apply various theories, laws and equations related to different states of matter.
			BP302T3	Demonstrate use of physicochemical properties of drugs in the formulation development and evaluation of dosage forms.
			BP302T4	Apply the concept of interfacial phenomena in pharmaceutical preparations.
			BP302T5	Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant.
			BP302T6	Understand the importance of pH, buffers and tonicity in pharmaceutical and biological system.
4	Physical Pharmaceutics I (2019 Pattern)	BP306P	BP306P1	Determine physicochemical properties of drugs in the formulation development and evaluation of dosage forms.
			BP306P2	Determine and apply the concept of interfacial phenomena in pharmaceutical preparations.

			BP306P3	Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant.
			BP306P4	Determine thermodynamic parameters using solubility studies.
5	Pharmaceutical Microbiology (2019 Pattern)	BP303T	BP303T1	Understand methods of identification, cultivation and preservation of various microorganisms.
			BP303T2	Understand the importance and implementation of sterilization in pharmaceutical processing and industry.
			BP303T3	Learn sterility testing of pharmaceutical products.
			BP303T4	Perform microbiological standardization of Pharmaceuticals.
			BP303T5	Understand the cell culture technology and its applications in pharmaceutical industries.
6	Pharmaceutical Microbiology (2019 Pattern)	BP307P	BP307P1	Understand mechanism of equipments.
			BP307P2	Students will be able to formulate culture media.
			BP307P3	Students will be able to identify bacteria by staining method.
			BP307P4	Students will be able to isolate bacteria along with motility determination and assay of antibiotics.
7	Pharmaceutical Engineering (2019 Pattern)	BP304T	BP304T1	Know various unit operations used in pharmaceutical industries.
			BP304T2	Understand the material handling techniques.
			BP304T3	Perform various processes involved in the pharmaceutical manufacturing process.
			BP304T4	Carry out various test to prevent environmental pollution, appreciate and comprehend significance of plant lay out design for optimum use of resources.
			BP304T5	Appreciate the various preventive methods used for corrosion control in pharmaceutical industries.
8	Pharmaceutical Engineering (2019 Pattern)	BP308P	BP308P1	Understand the overall heat transfer coefficient, efficiency of steam distillation.
			BP308P2	Perform construction of drying rate curve, determination of moisture content and loss on drying.
			BP308P3	Perform tablet analysis, (size analysis) by sieving method.
			BP308P4	Understand the construction, working, application of pharmaceutical machinery such as Rotary tablet machine, Autoclave, Hot Air Oven.

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Course Outcomes S. Y. B. Pharm (Semester-IV)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course student will be able to
1	Pharmaceutical organic chemistry-III (2019 Pattern)	BP401T	BP401T1	Understand the concept of stereoisomerism, resolution of racemic mixture and asymmetric synthesis
			BP401T2	Elaborate principle of geometrical isomerism, stereospecific and stereoselective reactions.
			BP401T3	Explain the synthesis, reactions and medicinal uses pyrrole, furan, and thiophene derivatives
			BP401T4	Explain the synthesis, reactions and medicinal Pyrazole, Imidazole, Oxazole and Thiazole Pyridine, Quinoline, Isoquinoline, Acridine and Indole derivatives.
			BP401T5	Explain the principle and pharmaceutical application of metal hydride reduction, Clemmensen reduction, Birch reduction, Wolff Kishner reduction, Oppenauer-oxidation, Dakin, Beckmanns rearrangement, Schmidt rearrangement and Claisen-Schmidt condensation reactions.
2	Medicinal Chemistry-I (2019 Pattern)	BP402T	BP402T1	Understand and relate the physicochemical properties of drug molecules with drug activity.
			BP402T2	Explain the concept of Drug Metabolism.
			BP402T3	Discuss biosynthesis of Adrenaline and Acetyl choline, ANS agonist and antagonist with respect to their structure, IUPAC nomenclature, SAR, mode of action, metabolism, synthesis and rational development.
			BP402T4	Know rational development of various categories of drugs like CNS stimulants and depressant, psychotherapeutic drugs and General anaesthetic agents.
			BP402T5	Acquire knowledge about centrally acting analgesics (Narcotic, non-narcotic, anti-inflammatory agents) with respect to structure, IUPAC nomenclature, SAR, mode of action, metabolism, synthesis and rational development.
3	Medicinal Chemistry-I	BP406P	BP406P1	Develop skills in various purification techniques of solvents/liquids used in synthesis.

	(2019 Pattern)		BP406P2	Perform synthesis, recrystallization and understand reaction mechanisms involved in synthesis of medicinally important organic compounds such as Benzocaine, Phenytoin etc.
			BP406P3	Perform the Purification of synthesized compounds by Column chromatography.
			BP406P4	Determine the partition coefficient and Ionisation constant of medicinal compounds.
4	Physical Pharmaceutics II (2019 Pattern)	BP403T	BP403T1	Relate various physicochemical properties of drug and excipient molecules in designing the dosage forms.
			BP403T2	Apply the concept of rheology and deformation in pharmaceutical formulation.
			BP403T3	Distinguish the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.
			BP403T4	Investigate and apply micromeritic in pharmaceutical dosage forms.
5	Physical Pharmaceutics II (2019 Pattern)	BP407P	BP407P1	Investigate and apply micromeritic in pharmaceutical dosage forms.
			BP407P2	Determine and apply the concept of rheology in pharmaceutical preparations.
			BP407P3	Study rate of reaction for stability testing and determination of expiry date of formulations.
			BP407P4	Determine physiochemical properties and stability of excipients and drug for preparation dosage form.
6	Pharmacology- I (2019 Pattern)	BP404T	BP404T1	Define the fundamental concepts of pharmacology and pharmacokinetics.
			BP404T2	Understand the basics of pharmacodynamics, adverse reactions, drug interactions and drug discovery.
			BP404T3	Identify the role of neurohumoral transmission and drugs acting on peripheral nervous system.
			BP404T4	Analyse the functions of neurotransmitters and drugs acting on central nervous system.
			BP404T5	Appraise the pharmacology of Psychopharmacological agents.
			BP404T6	Predict the effects of drugs against neurodegenerative disorders and to elaborate the concepts of drug addiction/abuse/tolerance/ dependence.
7	Pharmacology- I (2019 Pattern)	BP408P	BP408P1	Learn about basic instruments, common laboratory animals used in experimental pharmacology and to organize animal house as per the CPCSEA guidelines.
			BP408P2	Demonstrate the common laboratory techniques like routes of administration, blood withdrawal, anaesthetics and euthanasia used for animal studies.

			BP408P3	Interpret the effects of various drugs on rabbit eye and ciliary motility of frog oesophagus in correlation with humans.
			BP408P4	Analyse the effect of drugs acting as enzyme inducers, skeletal muscle relaxants and affecting locomotor activity in laboratory animals.
			BP408P5	Evaluate the stereotype and anticatatonic activity of drugs in rats/mice.
			BP408P6	Predict various screening models for anticonvulsant and anxiolytic activity.
8	Pharmacognosy and Phytochemistry-I (2019 Pattern)	BP405T	BP405T1	Understand fundamentals of Pharmacognosy like scope, classification of crude drugs.
			BP405T2	Describe techniques in the cultivation and production of crude drugs.
			BP405T3	Identify crude drugs and explain their uses and chemical nature.
			BP405T4	Understand evaluation techniques for the herbal drugs.
9	Pharmacognosy and Phytochemistry-I (2019 Pattern)	BP409P	BP409P1	Understand fundamentals of Pharmacognosy with the evaluation techniques for the herbal drugs.
			BP409P2	Carry out the microscopic and morphological evaluation of crude drugs.
			BP409P3	Explain concept of adulteration of crude drugs and its identification.
			BP409P4	Illustrate handling and uses of instruments required for evaluation of the herbal drugs.

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Course Outcomes T. Y. B. Pharm (Semester-V)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course student will be able to
1	Medicinal Chemistry-II (2019 Pattern)	BP501T	BP501T1	Understand the chemistry of drugs with respect to their pharmacological activity.
			BP501T2	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs.
			BP501T3	Know the Structural Activity Relationship of different class of drugs.
			BP501T4	Study the chemical synthesis of selected drugs.
2	Formulative Pharmacy (2019 Pattern)	BP502T	BP502T1	Describe various factors to be considered in development of pharmaceutical dosage forms
			BP502T2	Formulate solid, liquid, semisolid dosage forms and evaluate them for their quality.
			BP502T3	Formulate cosmetic preparations, Pharmaceutical Aerosols and evaluate them for their quality.
			BP502T4	Describe stability aspects and quality control tests of packaging materials.
3	Formulative Pharmacy (2019 Pattern)	BP506 P	BP506P1	Illustrate various pharmaceutical dosage forms and their manufacturing techniques.
			BP506P2	Describe various factors to be considered in development of pharmaceutical dosage forms.
			BP506P3	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.
			BP506P4	Formulate cosmetics and evaluate them for their quality.
4	Pharmacology- II (2019 Pattern)	BP503T	BP503T1	Explain the pharmacology of drugs acting on Cardiovascular system for various conditions.
			BP503T2	Explain the pharmacology of drugs acting on Urinary System.
			BP503T3	Explain the various autocoids and drugs acting on endocrine system.
			BP503T4	Explain Bioassays.
5	Pharmacology- II (2019 Pattern)	BP507P	BP507P1	Handle the laboratory equipment's and apply techniques used in experimental pharmacology. N=Introduction to Physiological Salt Solution
			BP507P2	Understand the Effect of drugs on isolated frog heart, blood pressure and heart rate of dog and diuretic activity of drugs using rats/mice.

			BP507P3	Perform recording of CRC/DRC of Acetylcholine/Histamine on suitable isolated tissue preparation.
			BP507P4	Explain and perform matching point, bracketing and interpolation bioassay to find unknown concentration of Acetylcholine/histamine.
			BP507P5	Explain Clinical Case study.
6	Pharmacognosy and Phytochemistry-II (2019 Pattern)	BP504T	BP504T1	Understand the concept of Biosynthesis in formation of secondary metabolites and Radioactive tracer techniques used in plants for determining the Process of formation of secondary metabolites.
			BP504T2	Study chemistry, classification, and uses of secondary metabolites along with the medicinal plants associated with it.
			BP504T3	Know the modern techniques associated with extraction, characterization and identification of phytoconstituents.
			BP504T4	Study different methods of isolation, separation and spectroscopically methods used for the structural elucidation of the phytoconstituents.
7	Pharmacognosy and Phytochemistry-II (2019 Pattern)	BP508P	BP508P1	Evaluate crude drugs by its Morphological, Microscopical and powder Characteristics.
			BP508P2	Study different methods of Extraction of phytoconstituents and volatile oil.
			BP508P3	Study the principle and procedure for separation and isolation of phytoconstituents by chromatography.
			BP508P4	Study the principle and procedure for separation and isolation of phytoconstituents by non-chromatography methods.
8	Pharm. Jurisprudence (2019 Pattern)	BP505T	BP505T1	Understand pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
			BP505T2	Study various Indian pharmaceutical Acts and Laws.
			BP505T3	Acquire knowledge of regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
			BP505T4	Follow code of ethics during the pharmaceutical practice.

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Course Outcomes T. Y. B. Pharm (Semester-VI)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Medicinal Chemistry-III (2019 Pattern)	BP601T	BP601T1	Explain the Drugs used for various infectious diseases caused by pathogens.
			BP601T2	Explain the Drugs used for the treatment of cancer.
			BP601T3	Explain physicochemical properties related to QSAR.
			BP601T4	Describe various approaches and designing of drug molecules including prodrug and Combinatorial chemistry.
2	Medicinal Chemistry-III (2019 Pattern)	BP607P	BP607P1	Perform synthesis, recrystallization understand reaction mechanisms involved in the synthesis of medicinally important compounds.
			BP607P2	Comprehend the techniques of microwave-assisted synthesis and explain applications of microwave-assisted synthesis in pharmaceutical research.
			BP607P3	Draw structures and reactions using Chem draw.
			BP607P4	Determine physicochemical properties such as logP, clogP, MR, Molecular weight.
			BP607P5	Handle drug design software.
3	Pharmacology-III (2019 Pattern)	BP602T	BP602T1	Understand the essential pharmacotherapy and pharmacological features of common and important drugs used in respiratory disorders.
			BP602T2	Explain pharmacology of various drugs used in treatment of GI disorders.
			BP602T3	Explain pharmacology of drugs used in the treatment of various infectious diseases and Immunopharmacology.
			BP602T4	Discuss the various principles and management of toxicology, and concept of Chrono pharmacology.
4	Pharmacology-III (2019 Pattern)	BP608P	BP608P1	Recall the dose calculations in pharmacological experiments, and to relate the antiallergic activity / anti-ulcer activity in rat models.
			BP608P2	Demonstrate of effect of drugs on gastrointestinal motility and the effect of agonists/antagonists on guinea pig ileum.

			BP608P3	Construct serum biochemical parameters by using semi auto analyzer.
			BP608P4	Analyze effect of saline purgative on frog intestine, insulin hypoglycemic effect and test for pyrogens using rabbit method.
			BP608P5	Evaluate acute oral toxicity (LD50), acute skin irritation / corrosion and acute eye irritation/corrosion of a test substance.
			BP608P6	Predict the pharmacokinetic parameters and adapt the biostatistics methods in experimental pharmacology.
5	Herbal Drug Technology (2019 Pattern)	BP603T	BP603T1	Understand the concept of herbs as a source of raw materials, concept of Biodynamic farming and principals involved in different traditional systems of Medicines.
			BP603T2	Gain knowledge about Herbal cosmetics, Natural sweeteners and Nutraceuticals.
			BP603T3	Acquaint with guidelines framed by W.H.O., I.C.H, and G.M.P for evaluation herbal drugs.
			BP603T4	Gain knowledge about herbal Industry and understand the importance of patenting of herbal drugs.
6	Herbal Drug Technology (2019 Pattern)	BP609P	BP609P1	Understand concept of extraction and preliminary phytochemical screening of Phytoconstituents.
			BP609P2	Understand concept for extraction and preliminary phytochemical screening of Phytoconstituents.
			BP609P3	Evaluate and standardize herbal formulation.
			BP609P4	Acquire primary knowledge about structural elucidation by analyzing and studying of drug monographs from natural origin.
7	Biopharmaceutics and Pharmacokinetics (2019 Pattern)	BP604T	BP604T1	Understand the basic concepts in biopharmaceutics and pharmacokinetics and their Significance.
			BP604T2	Use plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, climination.
			BP604T3	Understand the concepts of bioavailability and bioequivalence of drug products and their Significance.
			BP604T4	Understand the concept of dissolution and application of in vitro in vivo correlation in drug product development.
8	Pharmaceutical Biotechnology (2019 Pattern)	BP605T	BP605T1	Explain Brief introduction of Biotechnology, Enzyme Biotechnology, Biosensor, Protein Engineering, Basic principles of genetic engineering.
			BP605T2	Tell Cloning vectors, Recombinant DNA technology, Application of genetic engineering and r DNA technology, PCR139.
			BP605T3	Describe Types of immunity, Structure Immunoglobulins and MHC, Preparation methods of vaccines, antitoxins, serum, Hybridoma technology, Storage condition and stability of official vaccines.

			BP605T4	Explain Immuno blotting techniques- ELISA, Western blotting, Southern blotting, Microbial genetics Transformation, transduction, conjugation, plasmid, transposons. Types of Mutation/mutants.
			BP605T5	Describe Fermentation methods and general requirements, large scale fermenter design and various controls, Study of production of Penicillin, Vit.B12, Glutamic acid. Blood products.
9	Quality Assurance (2019 Pattern)	BP606T	BP606T1	Understand The CGMP Aspects in the Pharmaceutical Industry.
			BP606T2	Appreciate The Importance of Documentation.
			BP606T3	Understand The Scope of Quality Certifications Applicable to Pharmaceutical Industries.
			BP606T4	Understand The Responsibilities of QA and QC Departments.
			BP606T5	Understand The CGMP Aspects in Pharmaceutical Industry.

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Course Outcomes Final Y. B. Pharm (Semester-VII)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Instrumental Methods of Analysis (2019 Pattern)	BP701T	BP701T1	Illustrate the basic principle, instrumentation and applications of UV Visible Spectroscopy, Fluorimetry.
			BP701T2	Demonstrate understanding of principles, instrumentation and application of Infra-red spectroscopy, FTIR, Flame Photometry, Atomic Absorption Spectroscopy, Nepheloturbidimetry.
			BP701T3	Understand principle, theory, instrumentation and applications of Adsorption and Partition Column Chromatography, Paper Chromatography, Thin Layer Chromatography, High Performance Thin Layer Chromatography, Ion Exchange Chromatography, Gel Chromatography.
			BP701T4	Differentiate between principles, theory, instrumentation and applications of Gas Chromatography and High Performance Liquid Chromatography.
2	Instrumental Methods of Analysis (2019 Pattern)	BP705 P	BP705P1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
			BP705P2	Understand the chromatographic separation and analysis of drugs.
			BP705P3	Perform quantitative & qualitative analysis of drugs/API using various analytical instruments.
			BP705P4	Take appropriate safety measures while handling instruments, chemicals and apparatus.
3	Industrial Pharmacy-II (2019 Pattern)	BP702T	BP702T1	Know the process of pilot plant and scale up of pharmaceutical dosage forms.
			BP702T2	Classify the process of technology transfer from lab scale to commercial batch.
			BP702T3	Explain different Laws and Acts that regulate pharmaceutical industry.
			BP702T4	Understand the approval process and regulatory requirements for drug products.
4	Pharmacy Practice (2019 Pattern)	BP703T	BP703T1	Demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behaviour, social and administrative

				aspects, health policy and legal issues in the practice of pharmacy.
			BP703T2	Use knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy.
			BP703T3	Apply principles of drug store management and inventory control to medication use.
			BP703T4	Provide patient-centered care to diverse patients using the best available evidence and monitor drug therapy of patient through medication chart review, obtain medication history interview and counsel the patients, identify drug related problems.
			BP703T5	Engage in innovative activities by making use of the knowledge of clinical trials.
			BP703T6	Exhibit professional ethics by producing safe and appropriate medication use throughout society.
5	Novel Drug Delivery System (2019 Pattern)	BP704T	BP704T1	Explain the principles and technology used in the design of sustained release and controlled release drug delivery systems.
			BP704T2	Learn the criteria for selection of a drugs and polymers for the development of Novel drug delivery systems.
			BP704T3	Learn the various approaches for development of novel drug delivery systems.
			BP704T4	Explain the formulation and characterization of Microencapsulation, Implementable and Mucosal Drug Delivery system.
			BP704T5	Explain the formulation and characterization of transdermal drug Delivery systems.
			BP704T6	Learn the formulation and evaluation of Gastroretentive and Nasopulmonary drug delivery systems.
			BP704T7	Discuss various approaches for the development of targeted drug Delivery systems.
			BP704T8	Explain development of ocular formulations and intra uterine devices (IUDs) and it's applications.
6	Practice School (2019 Pattern)	BP706PS	BP706T1	Recognize the significance of practical training through experience in a variety of fields, including formulation development and evaluation, analytical method development and validation, clinical research, pharmacovigilance and isolation and characterization of natural product phytoconstituents.
			BP706T2	Advance technical and planning skills through hands-on training in a chosen field.
			BP706T3	Assess the issues encountered during practical training and to suggest theoretical knowledge to address those issues.
			BP706T4	Utilize the knowledge they gained through hands-on training while working in various fields.

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Course Outcomes Final Y. B. Pharm (Semester-VIII)
Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course student will be able to
1	Biostatistics and Research Methodology (2019 Pattern)	BP801T	BP801T1	Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment).
			BP801T2	Know the various statistical techniques to solve statistical problems.
			BP801T3	Understand meaning and applications of correlation regression, probability, parametric and non-parametric tests, blocking and confounding.
2	Social and Preventive Pharmacy (2019 Pattern)	BP802T	BP802T1	Understand the concept of Health and prevention and control of disease, social causes of diseases, impact of urbanization on health and disease, Poverty and health, Personal hygiene and health care
			BP802T2	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
			BP802T3	Develop a critical way of thinking based on current healthcare development.
			BP802T4	Know about National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program.
			BP802T5	Evaluate alternative ways of solving problems related to health and pharmaceutical issues.
3	Pharmacovigilance (2019 Pattern)	BP805ET	BP805T1	Understand history and development of pharmacovigilance.
			BP805T2	Understand Dictionaries, coding and

				terminologies used in pharmacovigilance.
			BP805T3	Acquire knowledge of detection of new adverse drug reactions and their assessment.
			BP805T4	Know adverse drug reaction reporting systems and communication in pharmacovigilance.
			BP805T5	Know Pharmacovigilance Program of India, requirement for ADR reporting in India.
			BP806T6	Understand ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning.
4	Cosmetic Science (2019 Pattern)	BP809ET	BP809ET1	Understand the concepts of cosmetics, anatomy of skin and hair.
			BP809ET2	Explain the concept of cosmeceuticals, history, difference between cosmetics and cosmeceutical agents.
			BP809ET3	Know different Laws and Acts that regulate pharmaceutical industry
			BP809ET4	Understand the approval process and regulatory requirements for drug products.
5	Project Work (2019 Pattern)	BP812PW	BP812PW1	Determine their areas of interest and acquire literature survey skills.
			BP812PW2	Plan and execute necessary experimental procedures.
			BP812PW3	Communicate and defend their findings in the form of thesis and seminar.

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Course Outcomes

F. Y. M. Pharm (Semester-I)

Pharmaceutics

Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Modern Pharmaceutical Analytical Techniques (2019 Pattern)	MPAT101T	MPAT101T1	Understand the basic principle, theory and applications of various analytical techniques and the fundamentals on conventional analytical methods of drug analysis used in laboratories.
			MPAT101T2	Acquire knowledge about instrumentation and sufficient skills in handling of equipments or procedures for estimation of pharmaceuticals.
			MPAT101T3	Comprehend analytical techniques for identification, characterization and quantification of drugs.
			MPAT101T4	Utilize/Develop new technology and method for qualitative and quantitative analysis of pharmaceutical compound from organic, inorganic and herbal origin with cost effective approach.
			MPAT101T5	Elucidate structure of organic compounds using spectroscopic tools.
2	Drug Delivery System (2019 Pattern)	MPH102T	MPH102T1	Understand the various approaches for development of novel drug delivery systems.
			MPH102T2	Acquire knowledge of criteria for selection of drugs and polymers for the development of delivering system.
			MPH102T3	Understand the formulation and evaluation of Novel drug delivery systems.
3	Modern Pharmaceutics (2019 Pattern)	MPH103T	MPH103T1	Understand the elements of preformulation studies.
			MPH103T2	Understand the Active Pharmaceutical Ingredients and Generic Drug Product development.
			MPH103T3	Know Industrial Management and GMP Considerations.
			MPH103T4	Learn Optimization Techniques & Pilot Plant Scale Up Techniques
			MPH103T5	Perform Stability Testing, sterilization process & packaging of dosage forms.
4	Regulatory Affair	MPH104T	MPH104T1	Understand the Concepts of innovator and generic drugs, drug development process.

	(2019 Pattern)		MPH104T2	Understand The Regulatory guidance's and guidelines for filing and approval process.
			MPH104T3	Understand Preparation of Dossiers and their submission to regulatory agencies in different countries.
			MPH104T4	Recognize the Post approval regulatory requirements for actives and drug products and submission of global documents in CTD/ eCTD formats.
			MPH104T5	Know the Submission of global documents in CTD/ eCTD formats. And clinical trials requirements for approvals for conducting clinical trials.
5	Pharmaceutics Practical I (2019 Pattern)	MPH105P	MPH105P1	Analyze various drugs in single and combination dosage forms for development of theoretical and practical skills of the analytical instruments.
			MPH105P2	Understand various approaches for development and evaluation of novel drug delivery systems.
			MPH105P3	Know the criteria for selection of drugs and polymers for the development of drug delivering system.
			MPH105P4	Investigate and apply micromeritic in pharmaceutical dosage forms.

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Course Outcomes

F. Y. M. Pharm (Semester-II)

Pharmaceutics

Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Molecular Pharmaceutics (Nano Tech and Targeted DDS) (2019 Pattern)	MPH201T	MPH201T1	The various approaches for development of novel drug delivery systems.
			MPH201T2	The criteria for selection of drugs and polymers for the development of NTDS.
			MPH201T3	The formulation and evaluation of novel drug delivery systems.
2	Advanced Biopharmaceutics & Pharmacokinetics (2019 Pattern)	MPH202T	MPH202T1	Explain mechanism of drug absorption &various factors affecting drug absorption.
			MPH202T2	Learn various biopharmaceutic factors affecting drug bioavailability.
			MPH202T3	Understand basic considerations of pharmacokinetic models.
			MPH202T4	Explain the design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
			MPH202T5	Learn different types of drug interactions which alter the pharmacokinetics of such as drug-protein /drug-tissue binding interactions
3	Computer Aided Drug Delivery System	MPH203T	MPH203T1	Explain Computers in Pharmaceutical Research and Development.
			MPH203T2	Understand and operate Computers in Preclinical Development, Clinical Development and Market Analysis.
			MPH203T3	Create Optimization Techniques in Pharmaceutical Formulation.
			MPH203T4	Understand and apply artificial intelligence (AI) and robotics computational fluid dynamics (CFD) in pharmaceutical preparation.
4	Cosmetic and Cosmeceuticals (2019 Pattern)	MPH204T	MPH204T1	Acquire knowledge about key ingredients used in cosmetics and cosmeceuticals.
			MPH204T2	Acquire knowledge about key building blocks for various formulations.

			MPH204T3	Learn current technologies in the market.
			MPH204T4	Understand use of various key ingredients and basic science to develop cosmetics and cosmeceuticals.
			MPH204T5	Acquire scientific knowledge to develop cosmetics and cosmeceuticals with desired safety, stability, and efficacy.
5	Pharmaceutics Practical II (2019 Pattern)	MPH205P	MPH205P1	Acquire scientific knowledge to develop and evaluate the various cosmetics and cosmeceuticals formulations with desired safety, stability, and efficacy.
			MPH205P2	Perform formulation and evaluation of various novel drug delivery system with desired safety, stability, and efficacy.
			MPH205P3	Understand various case studies of bioavailability, pharmacokinetic, in vitro cell studies, computer simulations in pharmacokinetics and pharmacodynamics, sensitivity analysis, population modeling and computational modeling of drug disposition.
			MPH205P4	Understand the concept of dissolution kinetics, improvement of dissolution by solid dispersion technique, comparison of dissolution of two different marketed products & protein binding studies.
			MPH205P5	Acquire scientific knowledge of design of experiment for any formulation using and formulation data analysis using design expert® software and use of quality-by-design in pharmaceutical development.

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Course Outcomes

F. Y. M. Pharm (Semester-I)

Pharmaceutical Quality Assurance

Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome Number	Course Outcome
				Upon completion of the course, student will be able to
1	Modern Pharmaceutical Analytical Techniques (2019 Pattern)	MQA101 T	MPAT101T1	Understand the basic principle, theory and applications of various analytical techniques and the fundamentals on conventional analytical methods of drug analysis used in laboratories.
			MPAT101T2	Acquire knowledge about instrumentation and sufficient skills in handling of equipments or procedures for estimation of pharmaceuticals.
			MPAT101T3	Comprehend analytical techniques for identification, characterization and quantification of drugs.
			MPAT101T4	Utilize/Develop new technology and method for qualitative and quantitative analysis of pharmaceutical compound from organic, inorganic and herbal origin with cost effective approach.
			MPAT101T5	Elucidate structure of organic compounds using spectroscopic tools.
2	Quality Management System (2019 Pattern)	MQA102 T	MQA 102T1	Understand the importance of quality.
			MQA 102T2	Explain ISO management system.
			MQA 102T3	Know tools for quality improvement.
			MQA 102T4	Understand analysis of issues in quality.
			MQA 102T5	Discuss quality evaluation of pharmaceuticals.
			MQA 102T6	Understand stability testing of drug and drug substances.
			MQA 102T7	Understand statistical approaches for quality.
3	Quality Control and Quality Assurance (2019 Pattern)	MQA103 T	MQA103 T1	Understand the cGMP aspects in a pharmaceutical industry.
			MQA103 T2	Understand GLP and regulatory Affairs.
			MQA103 T3	Appreciate the importance of documentation.
			MQA103 T4	Understand the responsibilities of QA and QC departments.
			MQA103 T5	Appreciate the importance of documentation.

4	Product Development and Technology Transfer (2019 Pattern)	MQA104 T	MQA 104T1	Acquire knowledge about new product development process, Development and informational content for INDA, NDA, ANDA, SNDA, SUPAC and BACPAC, Product registration guidelines – CDSCO, USFDA.
			MQA 104T2	Acquire knowledge about preformulation study, solubility & methods to improve solubility of drugs.
			MQA 104T3	Understand concept, significance, design, layout of pilot plant, scale up study, large scale manufacturing techniques and different types of pharmaceutical packaging materials available along with quality control tests for the same.
			MQA 104T4	Understand Development of technology by R & D, Technology transfer from R & D to production and documentation involved in technology transfer.
5	Pharmaceutical Quality Assurance Practical I (2019 Pattern)	MQA105P	MQA105P1	Understand principles, instrumentation, working of UV-VIS Spectrophotometry, Fluorimetry, Atomic absorption Spectrophotometry, Flame Photometry, their applications for analysis of pharmaceutical compounds, raw materials, related and foreign substances in drugs and will have practical skills of instrument handling.
			MQA105P2	Acquire knowledge of safety measures while handling instruments, chemicals and apparatus.
			MQA105P3	Comprehend Six Sigma, Total Quality management etc. after performing case studies.
			MQA105P4	Perform preformulation study for tablets, parenterals as per regulatory requirements and in process and finished product quality control tests for various pharmaceutical dosage forms and their packaging materials.
			MQA 105P5	Understand stability study protocol, accelerated stability studies, factors affecting solubility and problem solving skills related to solubility, determination of pKa and Log P values of drugs.

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Course Outcomes

F. Y. M. Pharm (Semester-II)

Pharmaceutical Quality Assurance

Academic Year 2023-24

Sr. No.	Course	Course Code	Course Outcome No.	Course Outcome
				Upon completion of the course student will be able to
1	Hazards and Safety Management (2019 Pattern)	MQA201T	MQA 201T1	Understand basic knowledge about the environment and its allied problems and also develop an attitude of concern for the industry environment.
			MQA 201T2	Demonstrate safety standards in pharmaceutical industry and knowledge on the safety management.
			MQA 201T3	Understand the knowledge of mechanism and management in different kinds of hazards like Air based hazards, chemical based hazards, Fire & explosion etc.
			MQA 201T4	Illustrate ICH guidelines on risk assessment and risk management methods and Tools, safety programme and safety management, Physicochemical measurements of effluents, BOD, COD, Effluent treatment procedure.
2	Pharmaceutical Validation (2019 Pattern)	MQA202T	MQA 202T1	Explain the concept of Calibration, Qualification and Validation.
			MQA 202T2	Apply the qualification concepts for various equipments and instruments.
			MQA 202T3	Examine the process validation of different dosage forms.
			MQA 202T4	Demonstrate the validation of analytical methods for estimation of drugs.
			MQA 202T5	Describe the cleaning validation of equipments employed in the manufacture of pharmaceuticals and general principles of Intellectual Property.

3	Audits and Regulatory Compliance (2019 Pattern)	MQA203T	MQA203T1	Understand the importance of auditing in pharmaceuticals.
			MQA203T2	Understand the methodology of auditing for pharmaceutical industry.
			MQA203T3	Prepare the check list for auditing.
			MQA203T4	Carry out the audit process.
4	Pharmaceutical Manufacturing Technology (2019 Pattern)	MQA204T	MQA204T1	Understand the common practice in the pharmaceutical industry developments, plant layout and production planning.
			MQA204T2	Be familiar with the principles and practices of aseptic process technology, advanced sterile and nonsterile manufacturing process technology.
			MQA204T3	Comprehend the practices of packaging technology.
			MQA204T4	Acquire knowledge of principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing.
5	Pharmaceutical Quality Assurance Practical II (2019 Pattern)	MQA205P	MQA205P1	Analyse contaminant residue, poisonous gas, chemical weapon (disinfectant) in work environment using analytical instrument and will have gained the knowledge of safety measures while handling instruments, chemicals and apparatus.
			MQA205P2	Validate/Qualify various pharmaceutical testing and analytical equipments.
			MQA205P3	Design plant layout and perform validation of processing area, process validation of pharmaceutical dosage form and cleaning validation of equipment.
			MQA205P4	Qualify bulk pharmaceutical vendors, tableting production, sterile production area and water for injection.
			MQA205P5	Comprehend applications of QbD and PAT after performing case studies.

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