

**Course Objective Of B.Pharm ODD Semesters ( Prepared by faculty members and approved by IQAC)**

**Semester 1st**

S.No.	Course Name	Course code	Course Objective
1	Human Anatomy & Physiology-I	BP101T	CO1- Explain the gross morphology, structure and functions of various organs of the human body.
			CO2- Describe the various homeostatic mechanisms and their imbalances.
			CO3- Identify the various tissues and organs of different systems of human body.
			CO4- Perform the various experiments related to special senses and nervous system.
			CO5- Appreciate coordinated working pattern of different organs of each system.
2	Pharmaceutical analysis-I	BP102T	CO1- To understand the concept, introduction, definition and techniques of analysis with different examples.
			CO2- To understand the concept of different aqueous and non-aqueous types of titration.
			CO3- To understand and apply the different methods of titration such as precipitation, gravimetric and complexometric titration.
			CO4- To know and apply the concept Principle and application and types of redox titration.
			CO5- To know the electro-analytical methods with the understanding of different instruments for the analysis.
3	PHARMACEUTICS -I	BP103T	CO1- Know the history of profession of pharmacy
			CO2- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
			CO3- Understand the professional way of handling the prescription
			CO4- Preparation of various conventional dosage forms
			CO5- Preparation and evaluation of semi solid dosage forms
4	PHARMACEUTICAL INORGANIC CHEMISTRY	BP104T	CO1- Understand the impurities in Pharmaceutical substances and its methodologies to determine it in pharmaceuticals by various assay procedures.
			CO2- Explain Acids, Bases and Buffers, Electrolytes and Dental products.
			CO3- Describe acidifiers, antacids, cathertics and antimicrobial
			CO4- Summarize expectorants, emetics, haematinics, astringents, poisons and its antidotes
			CO5- Discuss Radiopharmaceuticals and its applications in diagnostic and therapeutic field.
5	Communication skills	BP105T	CO1- Understand the behavioural need for a pharmacist to function effectively in the areas of pharmaceutical operation.
			CO2- To Learn communication effectively (verbal and non verbal).
			CO3- To learn effectively manage the team as a team player.
			CO4- To Understand how to develop interview skills.
			CO5- To Understand how to develop leadership qualities and essentials.
6	Remedial Biology	BP106RBT	CO1- To determine the Cell biology (basic Nature of Plant cell and Animal cell
			CO2- To understand the classification System of both Plants & Animals.
			CO3- Discuss various tissue system and organ system in plant and animals
			CO4- Explain the theory of evolution.
			CO5- Distinguish anatomy and physiology of plants and animals.
7	REMEDIAL MATHEMATICS	BP106RMT	CO1- To understand the role of mathematics in pharmacy
			CO2- To know about theory and their application in pharmacy.
			CO3- To relate the mathematical tools in the wide professional views and solve problems of trigonometry, calculus and matrices.
			CO4- To solve the different types of problems by applying theory and adopt both conventional and creative techniques to the solutions of mathematical problems.
			CO5- Apply a range of techniques effectively to solve problems including theory deduction, approximation and simulation.
<b>SEMESTER 3<sup>RD</sup></b>			
1	Pharmaceutical Organic Chemistry-II	BP301T	CO1- Remember the benzene structure chemistry resonance Huckel's rule electrophilic substitution reaction. basic knowledge of cycloalkane. this will result in students developing correct strategies for involving aromatic system.
			CO2- Understand the using of principles of phenol in synthesis as well as formulation.
			CO3- Apply the nomenclature, synthesis and chemical reaction of polynuclear hydrocarbon and their importance in medicinal chemistry.

			CO4- Analyze the general principles and mechanisms involved in organic reactions and discuss the reactivity, orientation, and stability of organic reactions. CO5- Evaluate the analytical constants of fats and oils. theory of cycloalkane.
2	Physical Pharmaceutics I	BP302T	CO1- Acquire detailed knowledge on solubility of drugs. CO2- Understand various properties of matter with physicochemical properties of drug molecule. CO3- Acquire knowledge on principles and concept of surface tension. CO4- Understand various types of complexes and correlate to drug action & protein binding. CO5- Learn the methods of determine pH and able to prepare pharmaceutical buffer & isotonic solutions.
3	Pharmaceutical Microbiology	BP 303 T	CO1- Understand methods of identification, cultivation and preservation of various microorganisms. CO2- To understand the importance and implementation of sterilization in pharmaceutical processing and industry. CO3- Learn sterility testing of pharmaceutical products. CO4- Carried out microbiological standardization of Pharmaceuticals. CO5- Understand the cell culture technology and its applications in pharmaceutical industries.
4	Pharmaceutical engineering	BP 304 T	CO1- To know about various unit operations used in Pharmaceutical industries and also understand the material handling techniques. CO2- To perform various processes involved in pharmaceutical manufacturing process, and to carry out various test to prevent environmental pollution. CO3- To appreciate and comprehend significance of plant lay out design for optimum use of resources. CO4- To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries CO5- To understand various new technology used in pharmaceutical industries, and how they are effective and usefull in modern manufacturing.
5	UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS	KVE301	CO1- Understand and analyse the essentials of human values and skills, self exploration, happiness and prosperity. CO2- Evaluate coexistence of the "I" with the body. CO3- Identify and evaluate the role of harmony in family, society and universal order. CO4- Understand and associate the holistic perception of harmony at all levels of existence. CO5-Develop appropriate technologies and management patterns to create harmony in professional and personal lives.
<b>SEMESTER 5th</b>			
1	Medicinal chemistry II	BP501T	CO1- Know the development, chemistry, SAR, Mechanism of action, and synthesis of various drugs used to treat allergic responses, ulcer and cancer CO2- Learn the classification, chemistry, SAR, Mechanism of action and synthesis of cardiovascular agents. CO3- Know the chemistry, mechanism of action and synthesis and uses of drugs used to treat cardiac related disorders. CO4- Understand the chemistry, SAR, Mechanism of action and uses of drugs acting on endocrine system. CO5- Development, chemistry, SAR, Mechanism of action, synthesis and various formulations of hypoglycemic agents and local anesthetics.
2	Industrial Pharmacy-I	BP 502 T	CO1- To remember about the various preformulation studies of drugs & excipients with its physical/chemical properties. CO2- To study about the tablets dosage forms with its types, preparation methods etc. and liquid orals. CO3- To memorise about the capsules with it types, formulation and introduction to pellets. CO4- To study about the parenteral & ophthalmic products with its advantages, disadvantages, types, preparations. CO5- To remember about the materials which is used for packaging of pharmaceutical products with their quality control test.
			CO1- Discuss and Interpret about the application of various blood forming agents and their role in treatment of cardiovascular disorders. Further able to analyze the importance of Diuretics in certain Cardiovascular Diseases.

3	Pharmacology-II	BP503.T	CO2- Explain about the mechanism of drug action and its relevance in the treatment of different diseases.
			CO3- Apply the knowledge to understand and describe about the Autocoids involved in development of inflammatory disorders like Gout and Arthritis with their treatments.
			CO4- Demonstrate about Endocrine hormones and their physiological role and justify the uses of Insulin, Corticosteroids, Thyroid hormone regulators in various disorders.
			CO5- Detect the role of Sex hormones and their applications as in Oral Contraceptives. Define Bioassay types and methods for specific drug.
4	Pharmacognosy and Phytochemistry II	BP504 T	CO1- Explain basic metabolic pathways of plants and formation of different secondary metabolites through various biosynthetic pathways in plants and utilization
			CO2- Explain source, chemistry, therapeutic uses of various secondary metabolites containing drugs
			CO3- Explain source, chemistry, therapeutic uses of various secondary metabolites containing drugs
			CO4- Describe methods for industrial production, estimation and utilization of some therapeutically important phytoconstituents
			CO5- Describe various modern methods for extraction and application of latest techniques for analysis of phyto-constituents.
5	PHARMACEUTICAL JURISPRUDENCE	BP 505 T	CO1- Understand pharmaceutical legislations with its implications in development and marketing of pharmaceuticals.
			CO2- Get exposure and knowledge with its implication and regulation of various Indian pharmaceutical acts and laws.
			CO3- Study governance of manufacture and sales of pharmaceuticals along with regulatory authorities.
			CO4- Learn code of ethics during the pharmaceutical practice.
			CO5- Understand implication of harmony on professional ethics and focus on various ethical committees along with controlling authorities.
<b>SEMESTER 7th</b>			
1	INSTRUMENTAL METHODS OF ANALYSIS	BP701T.	CO1- Explain the theoretical principles of UV and IR spectroscopy.
			CO2- Learn basic principles and instrumentation of UV, IR, Fluorimeter, flame photometer.
			CO3- Learn basic principles involved in TLC, column chromatography and paper chromatography.
			CO4- Understand the separation of compounds by chromatographic techniques.
			CO5- Explain instrumentation, separation and identification of compounds by electrophoresis technique.
2	INDUSTRIAL PHARMACY II	BP 702T	CO1- Discuss the process of pilot plant scale up of pharmaceutical dosage forms.
			CO2- Demonstrate the practice and the process of technology transfer from lab scale to commercial. Discuss the guidelines for technology transfer
			CO3- Describe the approval process and regulatory requirements of drug products. Describe the role and responsibility of regulatory agencies in the approval of drugs.
			CO4- Describe the common measure use in quality. Explain the different laws and acts that regulate pharmaceutical industry
			CO5- Describe the organization and responsibilities of national and state licensing authority
3	PHARMACY PRACTICE	BP 703T	CO1- Know and understand the hospital organization and detect and assess adverse drug reactions, reporting and its management.
			CO2- Knowledge of various drug distribution methods system in the hospitals, and monitor drug therapy of patient, role of pharmacist in medication adherence and community pharmacy management, also know how to obtain medication history interview.
			CO3- Know and understand guideline of known pharmaceutical care services such therapeutic committee, drug information services, patient counseling and also able to answer the role of pharmacist in education and training program, monitor drug therapy of patient through medication chart review and clinical review.
			CO4- Able to understand the management of medication, budget preparation and its implementation, and also help in rational use of common over the counter medication.
			CO5- Able to understand the appropriate pharmacy stores and inventory control management and able to interpret selected laboratory results of specific disease states and controlling of investigational use of drugs.

<b>4</b>	<b>NOVEL DRUG DELIVERY SYSTEMS</b>	<b>BP 704T</b>	CO1- To explain the principles and technology used in the design of sustained releases and controlled release drug delivery system.
			CO2- To demonstrate the criteria for selection of drugs and polymers for the development of novel drug delivery system.
			CO3- To determine the various approaches for development of novel drug delivery systems.
			CO4- To explain the formulation and evaluation of novel drug delivery systems.
			CO5- To demonstrate the formulation characterization of transdermal drug delivery system.