

**SRI AUROBINDO INSTITUTE OF PHARMACY, INDORE (M.P.)**

**COURSE OUTCOME**

**PHARM.D**

<b>PHARM. D. I YEAR</b>	
<b>COURSE NAME &amp; CODE</b>	<b>COURSE OUTCOME (COs)</b>
<b>1.1 HUMAN ANATOMY &amp; PHYSIOLOGY (THEORY)</b>	CO1. This course is designed to impart a fundamental knowledge on the structure and functions of the human body.
	CO2. It also helps in understanding both homeostasis mechanisms and homeostatic imbalances of various body systems.
	CO3. Since a medicament, which is produced by pharmacist, is used to correct the deviations in human body, it enhances the understanding of how the drugs act on the various body systems in correcting the disease state of the organs.
<b>1.2 PHARMACEUTICS (THEORY)</b>	CO1. This course is designed to impart a fundamental knowledge on the art and science of formulating different dosage forms.
	CO2. It prepares the students for most basics of the applied field of pharmacy.
<b>1.3 MEDICINAL BIOCHEMISTRY (THEORY)</b>	CO1. The objective of the present course is providing biochemical facts and the principles to the students of pharmacy.
	CO2. Understand the catalytic activity of enzymes and importance of isoenzymes in diagnosis of diseases.
	CO3. Know the metabolic process of enzymes.
	CO4. Understand the genetic organization of mammalian genome and protein synthesis, replication, mutation and repair mechanism.
<b>1.4 PHARMACEUTICAL ORGANIC CHEMISTRY (THEORY)</b>	CO1. This course is designed to impart a very good knowledge about IUPAC/Common system of nomenclature of simple organic compounds belonging to different classes of organic compounds.
	CO2. Some important physical properties of organic compounds.
	CO4. Free radical/ nucleophilic [alkyl/ acyl/ aryl] /electrophilic substitution, free radical/ nucleophilic / electrophilic addition, elimination, oxidation and reduction reactions with mechanism, orientation of the reaction, order of reactivity, stability of compounds;
	CO5. Some named organic reactions with mechanisms.
	CO1. This course mainly deals with fundamentals of Analytical chemistry and also the study of inorganic pharmaceuticals regarding their monographs and also the course deals with basic knowledge of analysis of various pharmaceuticals.
<b>1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (THEORY)</b>	CO2. To know the analysis of inorganic pharmaceuticals and their applications.
	CO3. To use and identify different methods for inorganic pharmaceuticals.
	CO4. Knowledge of performing limit test as per Indian Pharmacopoeia.
	CO1. This is an introductory course in mathematics. This subject deals with the introduction to matrices, determinants, trigonometry, analytical geometry, differential calculus, integral calculus, differential equations, laplace transform.
<b>1.6 REMEDIAL MATHEMATICS</b>	CO1. This is an introductory course in Biology, which gives detailed study of natural sources such as plant and animal origin. This subject has been introduced to the pharmacy course in order to make the student aware of various naturally occurring drugs and its history, sources, classification, distribution and the characters of the plants and animals. This subject gives basic foundation to
<b>1.6 REMEDIAL BIOLOGY (THEORY)</b>	

Pharmacognosy.

<b>Pharm D. II Year</b>	
<b>COURSE NAME &amp; CODE</b>	<b>COURSE OUTCOME (COs)</b>
<b>2.1 PATHOPHYSIOLOGY (THEORY)</b>	CO1. Describe the etiology and pathogenesis of the selected disease states.
	CO2. Name the signs and symptoms of the diseases; and
	CO3. Mention the complications of the diseases.
<b>2.2 PHARMACEUTICAL MICROBIOLOGY (THEORY)</b>	CO1. Upon completion of the subject student shall be able to under the morphology of bacteria and viruses.
	CO2. Know the anatomy, identification, growth factors and sterilization of microorganisms.
	CO3. Know the mode of transmission of disease causing microorganism, symptoms of disease.
	CO4. Do estimation of RNA and DNA and there by identifying the source;and appreciate the behavior of motility and behavioral characteristics of microorganisms.
<b>2.3 PHARMACOGNOSY &amp; PHYTOPHARMACEUTICALS (THEORY)</b>	CO1. This subject has been introduced for the pharmacy course in order to make the student aware of medicinal uses of various naturally occurring drugs its history, sources, distribution, method of cultivation, active constituents, medicinal uses, identification tests, preservation methods, substitutes and adulterants.
<b>2.4 PHARMACOLOGY – I (THEORY)</b>	CO1. Understand the pharmacological aspects of drugs falling under the above mentioned chapters;
	CO2. Handle and carry out the animal experiments;
	CO3. Appreciate the importance of pharmacology subject as a basis of therapeutics; and correlate and apply the knowledge therapeutically.
<b>2.5 COMMUNITY PHARMACY (THEORY)</b>	CO1. Know pharmaceutical care services and know the business and professional practice management skills in community pharmacies.
	CO2. Do patient counselling & provide health screening services to public in community pharmacy, respond to minor ailments and provide appropriate medication, show empathy and sympathy to patients; and appreciate the concept of Rational drug therapy.
<b>2.6 PHARMACOTHERAPEUTICS - I (THEORY)</b>	CO1. The pathophysiology of selected disease states and the rationale for drug therapy.
	CO2. The therapeutic approach to management of these diseases, the controversies in drug therapy and the importance of preparation of individualized therapeutic plans based on diagnosis.
	CO3. Needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).
	CO4. Describe the pathophysiology of selected disease states and explain the rationale for drug therapy, discuss the controversies in drug therapy; and discuss the preparation of individualized therapeutic plans based on diagnosis.

<b>Pharm D. III Year</b>	
<b>COURSE NAME &amp; CODE</b>	<b>COURSE OUTCOME (COs)</b>
<b>3.1</b> <b>PHARMACOLOGY – II</b> <b>(THEORY)</b>	CO1. Understand the pharmacological aspects of drugs falling under the above mentioned chapters.
	CO2. Carry out the animal experiments confidently.
	CO3. Appreciate the importance of pharmacology subject as a basis of therapeutics, and correlate and apply the knowledge therapeutically.
<b>3.2</b> <b>PHARMACEUTICAL ANALYSIS</b> <b>(THEORY)</b>	CO1. Discuss fundamental principles and instrumentation of different analytical techniques.
	CO2. Enumerate the basics of instrumental analysis in estimating drug substances and products.
	CO3. Carrying out the separation and identification of a mixture of compounds by different instrumental techniques.
	CO4. Discuss theoretical concepts and applications of Mass Spectroscopy, NMR and X-Ray diffraction.
<b>3.3</b> <b>PHARMACOTHERAPEUTICS – II</b> <b>(THEORY)</b>	CO1. To know the pathophysiology of selected disease states and the rationale for drug therapy.
	CO2. To know the therapeutic approach to management of these diseases.
	CO3. To know the controversies in drug therapy.
	CO4. To know the importance of preparation of individualised therapeutic plans based on diagnosis; and
	CO5. To appreciate the needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).
<b>3.4</b> <b>PHARMACEUTICAL JURISPRUDENCE</b> <b>(THEORY)</b>	CO1. To practice the Professional ethics, understand the various concepts of the pharmaceutical legislation in India and know the various parameters in the Drug and Cosmetic Act and rules.
	CO2. To know the Drug policy, DPCO, Patent and design act, understand the labeling requirements and packaging guidelines for drugs.
<b>3.5</b> <b>MEDICINAL CHEMISTRY</b> <b>(THEORY)</b>	CO1. The course is intended for students who have a background in chemistry and interested in the process of drug discovery.
	CO2. The intended outcome is to train students on various aspects of new drug discovery/development, drug screening, target identification, lead discovery, optimization and the molecular basis of drug design and drug action.
<b>3.6</b> <b>PHARMACEUTICAL FORMULATIONS</b> <b>(THEORY)</b>	CO1. To well understand the principle involved in formulation of various pharmaceutical dosage forms.
	CO2. To prepare various pharmaceutical formulation.
	CO3. To perform evaluation of pharmaceutical dosage forms.
	CO4. To understand and appreciate the concept of bioavailability and bioequivalence and their role in clinical situations.

<b>Pharm D. IV Year</b>	
<b>COURSE NAME &amp; CODE</b>	<b>COURSE OUTCOME (COs)</b>
<b>4.1</b> <b>PHARMACOTHERAPEUTICS-III</b> <b>(THEORY)</b>	CO1. To understand the pathophysiology of selected disease states and the rationale for drug therapy.
	CO2. For understanding the therapeutic approach to the management of these diseases, the controversies in drug therapy, and the importance of preparation of individualized therapeutic plans based on diagnosis.
	CO3. Needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).
	CO4. To be able to describe the pathophysiology of selected disease states and explain the rationale for drug therapy.
	CO5. To summarize the therapeutic approach to management of these diseases including reference to the latest available evidence; to discuss the controversies in drug therapy.
<b>4.2</b> <b>HOSPITAL PHARMACY</b> <b>(THEORY)</b>	CO1. To understand know various drug distribution methods.
	CO2. To know the professional practice management skills in hospital pharmacies.
	CO3. To be able to provide unbiased drug information to the doctors.
	CO4. To know the manufacturing practices of various formulations in hospital set up, appreciate the practice based research methods; and appreciate the stores management and inventory control.
<b>4.3</b> <b>CLINICAL PHARMACY</b> <b>(THEORY)</b>	CO1. For monitoring drug therapy of patient through medication chart review and clinical review.
	CO2. To obtain medication history interview and counsel the patients.
	CO3. To identify and resolve drug related problems; detect, assess and monitor adverse drug reaction, interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and retrieve, analyse, interpret and formulate drug or medicine information.
<b>4.4</b> <b>BIOSTATISTICS AND RESEARCH</b> <b>METHODOLOGY</b> <b>(THEORY)</b>	CO1. To develop the ability to apply the methods while working on a research project work.
	CO2. To describe the appropriate statistical methods required for a particular research design.
	CO3. For choosing the appropriate research design and develop appropriate research hypothesis for a research project.
	CO4. To develop a appropriate framework for research studies.
<b>4.5</b> <b>BIOPHARMACEUTICS AND</b> <b>PHARMACOKINETICS</b> <b>(THEORY)</b>	CO1. The subject knowledge will impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications for pharmaceutical development, design of dose and dosage regimen.
	CO2. Solving the problems arisen therein. Understand the basic concepts in biopharmaceutics and pharmacokinetics.
<b>4.6</b> <b>CLINICAL TOXICOLOGY</b> <b>(THEORY)</b>	CO1. It will educate students about the toxicological causes of various substances so that they become capable of diagnosing any surgical or medical emergencies that may arise out of them

	CO2. The clinical toxicology graduate is able to evaluate a poisoned patient and intervene immediately by picking up his critical conditions.
	CO3. To be able to identify the possible toxicological cause(s) behind the case and decide on the further treatment protocol.
<b>Pharm D. V Year</b>	
<b>COURSE NAME &amp; CODE</b>	<b>COURSE OUTCOME (COs)</b>
<b>5.1 CLINICAL RESEARCH (THEORY)</b>	CO1. The subject knowledge will help in understanding understand clinical phenomena.
	CO2. Will provide the explanations for findings within the context of what is already known from the successes and failures of previous investigations.
<b>5.2 PHARMACOEPIDEMIOLOGY AND PHARMACOECONOMICS (THEORY)</b>	CO1. Identify the applications of pharmacoepidemiology and pharmaco-economics in clinical settings.
	CO2. Discuss the various pharmaco-epidemiological outcome measures.
	CO3. Describe the concept of risk in pharmacoepidemiology and different methods of measuring risk.
	CO4. Explain the various pharmaco-epidemiological methods.
<b>5.3 CLINICAL PHARMACOKINETICS AND PHARMACOTHERAPEUTIC (THEORY)</b>	CO1. Formulate and design a dosage regimen for individual patients.
	CO2. Interpret and correlate the plasma drug concentration with patient's therapeutic outcomes.
	CO3. Recommend dosage adjustment in renal and hepatic disease.
	CO4. Recommend dosage adjustment for paediatrics, geriatrics and obese patients.
	CO5. Analyze and resolve pharmaco-kinetic drug interactions