

PHARM D – I YEAR (PCI)			
S.NO	Course	Course code and number	Course outcome
1	Human Anatomy and Physiology (Theory)	C <sub>(T1101)</sub> 1	<b><u>Study</u></b> the anatomy and physiology, basic anatomical terms, functions of various organs of human body and cellular level organization. The various homeostatic mechanisms and their imbalances of various systems and note on the functions of tissues ( <b>REMEMBER</b> )
		C <sub>(T1101)</sub> 2	<b><u>Recognize</u></b> bones and joints of human body, and Overview of the functions of formed elements in the blood (Haemopoietic system) ( <b>UNDERSTAND</b> )
		C <sub>(T1101)</sub> 3	<b><u>Differentiate</u></b> lymph and its role in immunity. Explain anatomy and physiology of CVS. ( <b>ANALYZE, REMEMBER</b> )
		C <sub>(T1101)</sub> 4	<b><u>Recall</u></b> Respiratory, GIT and Urinary systems and its physiological studies ( <b>REMEMBER</b> )
		C <sub>(T1101)</sub> 5	<b><u>Assess</u></b> the structure and functions of sympathetic, parasympathetic system, brain, spinal cord and cranial nerves and to and to intrept the physiology of endocrine system. ( <b>EVALUATE</b> )
		C <sub>(T1101)</sub> 6	<b><u>Explain</u></b> the physiology of reproductive system, sense organs and to discuss the physiological skeletal muscles and sports physiology. ( <b>UNDERSTAND</b> )
2	Human Anatomy and Physiology –( Practical)	C <sub>(T1108)</sub> 1	<b><u>Identify</u></b> and relate characteristics of various tissues of human body. ( <b>REMEMBER</b> )
		C <sub>(T1108)</sub> 2	<b><u>Predict</u></b> the number of RBC and WBC using hemocytometer. ( <b>EVALUATE</b> )
		C <sub>(T1108)</sub> 3	<b><u>Demonstrate</u></b> bleeding time, clotting time, blood pressure and blood group. ( <b>UNDERSTAND</b> )
		C <sub>(T1108)</sub> 4	<b><u>Recall</u></b> the functions of various organ system in human body. ( <b>REMEMBER</b> )
		C <sub>(T1108)</sub> 5	<b><u>Interpret</u></b> the mechanisms of pregnancy diagnosis tests and various family planning appliances. ( <b>UNDERSTAND</b> )
		C <sub>(T1108)</sub> 6	<b><u>Construct</u></b> and record simple curves using frog gastrocnemius sciatic nerve. ( <b>CREATE</b> )
		C <sub>(T1102)</sub> 1	<b><u>Explain</u></b> handling of prescription, posology & dose calculation of drug in children. Different types of dosage form ( <b>UNDERSTAND</b> )

3	<b>Pharmaceutics – (Theory)</b>	C <sub>(T1102)2</sub>	<b><u>Discuss</u></b> history of the profession of Pharmacy in India & Pharmacopeia and its development ( <b>UNDERSTAND</b> )
		C <sub>(T1102)3</sub>	<b><u>Explain</u></b> the different pharmaceutical calculation involved in formulation ( <b>UNDERSTAND</b> )
		C <sub>(T1102)4</sub>	<b><u>Elaborate</u></b> basic requirement and formulation of powder and liquid (monophasic & biphasic) dosages form ( <b>REMEMBER</b> )
		C <sub>(T1102)5</sub>	<b><u>Explain</u></b> different types of extraction process mainly maceration, percolation and their applications, different types of surgical aids and their application ( <b>UNDERSTAND</b> )
		C <sub>(T1102)6</sub>	<b><u>Enumerate</u></b> type of Pharmaceutical incompatibility and analyzing the incompatibilities ( <b>REMEMBER</b> )
4	<b>Pharmaceutics – (Practical)</b>	C <sub>(T1109)1</sub>	<b><u>Prepare</u></b> and label monophasic dosage forms for internal use ( <b>Remember</b> )
		C <sub>(T1109)2</sub>	<b><u>Experiment</u></b> with biphasic liquid dosage forms ( <b>Apply</b> )
		C <sub>(T1109)3</sub>	<b><u>Formulate</u></b> and dispense solid dosage forms ( <b>CREATE</b> )
		C <sub>(T1109)4</sub>	<b><u>Formulate</u></b> external liquid dosage forms ( <b>CREATE</b> )
		C <sub>(T1109)5</sub>	<b><u>Formulate</u></b> semi-solid dosage forms ( <b>CREATE</b> )
		C <sub>(T1109)6</sub>	<b><u>Appraise</u></b> the preparations of physical incompatibilities ( <b>EVALUATE</b> )
5	<b>Medicinal Biochemistry (Theory)</b>	C <sub>(T1103)1</sub>	<b><u>Recall</u></b> the structure and functions of cell and its constituents, various mechanisms for transport across membrane, catalytic activity of enzymes, enzyme action and applications of enzymes. ( <b>REMEMBER</b> )
		C <sub>(T1103)2</sub>	<b><u>Discuss</u></b> the metabolism of carbohydrates, lipids, electron transport chain and ATP formation and identify the metabolic disorders. ( <b>REMEMBER, UNDERSTAND</b> )
		C <sub>(T1103)3</sub>	<b><u>Enumerate</u></b> and <b><u>Summarize</u></b> the metabolism and disorders associated with amino acids and nucleic acids. ( <b>REMEMBER, UNDERSTAND</b> )
		C <sub>(T1103)4</sub>	<b><u>Interpret</u></b> the genetic code, describe the process of DNA replication and protein synthesis. ( <b>UNDERSTAND</b> )
		C <sub>(T1103)5</sub>	<b><u>Apply</u></b> the knowledge of clinical chemistry in diagnosis and prognosis of diseases. ( <b>APPLY</b> )

		C <sub>(T1103)</sub> 6	<b><u>Elaborate</u></b> the principles of immunochemical techniques and their applications. <b>(CREATE)</b>
6	<b>Medicinal Biochemistry – (Practical)</b>	C <sub>(T110A)</sub> 1	<b><u>Remember</u></b> the qualitative analysis of urine for normal and abnormal constituents. <b>(REMEMBER)</b>
		C <sub>(T110A)</sub> 2	<b><u>Demonstrate</u></b> the estimation and clinical significance of biological constituents such as Glucose, Creatinine, Calcium and Chlorides in urine. <b>(UNDERSTAND)</b>
		C <sub>(T110A)</sub> 3	<b><u>Describe</u></b> and <b><u>determine</u></b> the blood constituents like glucose, Creatinine, uric acid, urea, proteins and <b><u>infer</u></b> the biological condition. <b>(REMEMBER, UNDERSTAND, ANALYSE)</b>
		C <sub>(T110A)</sub> 4	<b><u>Perform</u></b> the lipid profile tests and liver function tests (SGOT, SGPT). <b>(UNDERSTAND, APPLY)</b>
		C <sub>(T110A)</sub> 5	<b><u>Determine</u></b> the starch hydrolysis by salivary amylase and <b><u>study</u></b> the effect of temperature and pH on enzyme (salivary amylase) activity. <b>(APPLY, ANALYSE)</b>
		C <sub>(T110A)</sub> 6	<b><u>Discuss</u></b> the preparation of standard buffer solutions and their pH measurements. <b>(UNDERSTAND)</b>
7	<b>Pharmaceutical Organic Chemistry-(Theory)</b>	C <sub>(T1104)</sub> 1	<b><u>Understand</u></b> Structures and Physical properties, isomerism and nomenclature of organic compounds. <b>(REMEMBER)</b>
		C <sub>(T1104)</sub> 2	<b><u>Explain</u></b> Free radicals chain reactions of alkane and Alicyclic compounds, preaparations, reactions and mechanisms <b>(REMEMBER)</b>
		C <sub>(T1104)</sub> 3	<b><u>Understand</u></b> the Nuclophilic aliphatic substitution reactions and Dehydrohalogination reactions of 1,2 halo alkanes <b>(UNDERSTAND)</b>
		C <sub>(T1104)</sub> 4	<b><u>Describe</u></b> Electrophillic and free radicals addition and Carbon-carbon double bond as substituents and free radical substitution <b>(REMEMBER)</b>
		C <sub>(T1104)</sub> 5	<b><u>Understand</u></b> Theory of resonance, and Elecrophilic aromatic substitution <b>(UNDERSTAND)</b>
		C <sub>(T1104)</sub> 6	<b><u>Explain</u></b> Nucleophilic addition reactions and mechanism and application of named reactions like, aldol condensation, claisen condensation, cannizzaro, Migration to electron deficient

			nitrogen like Hoffman's reactions (UNDERSTAND)
		C <sub>(T1104)</sub> 7	<b>Demonstrate</b> Nucleophilic aromatic substitution, Oxidation and reduction reactions (UNDERSTAND) <b>Analyze</b> structures, preparations, assay, test for purity and uses of official compounds. (ANALYSE)
8	Pharmaceutical Organic Chemistry – (Practical)	C <sub>(T110B)</sub> 1	<b>preparation</b> of organic compounds by various techniques (CREATE)
		C <sub>(T110B)</sub> 2	<b>Explain</b> and <b>understand</b> the principal, reaction mechanism and illustrate application (UNDERSTAND)
		C <sub>(T110B)</sub> 3	<b>Synthesize</b> and purification of organic compounds (CREATE)
		C <sub>(T110B)</sub> 4	<b>Perform</b> the preliminary and elemental analysis of organic compound and identify functional group of organic compounds by systematic qualitative analysis (CREATE & ANALYSE)
		C <sub>(T110B)</sub> 5	<b>Explain</b> and <b>understand</b> the principal behind various qualitative tests and analyse the given unknown organic compound having different functional groups (CREATE & ANALYSE)
		C <sub>(T110B)</sub> 6	<b>Explain</b> stereo models of some organic compounds (UNDERSTAND)
9	Pharmaceutical Inorganic Chemistry – (Theory)	C <sub>(T1105)</sub> 1	<b>Enumerate</b> errors in pharmaceutical analysis and principles of volumetric analysis (REMEMBER)
		C <sub>(T1105)</sub> 2	<b>Interpret</b> acid base titrations and limit tests for inorganic compounds. (UNDERSTAND)
		C <sub>(T1105)</sub> 3	<b>Choose</b> the appropriate titrimetric method for analysis of drugs. (APPLY)
		C <sub>(T1105)</sub> 4	<b>Characterize</b> and study method of preparation and assay of selected inorganic compounds. (Analyse)
		C <sub>(T1105)</sub> 5	<b>Demonstrate</b> the importance of inorganic pharmaceuticals in preventing and curing the disease. (UNDERSTAND)
		C <sub>(T1105)</sub> 6	<b>Illustrate</b> the Radioisotopes and applications of Radiopharmaceuticals. (UNDERSTAND)
10	Pharmaceutical Inorganic Chemistry – (Practical)	C <sub>(T110C)</sub> 1	<b>Recall</b> the glassware and apparatus used in volumetric analysis (REMEMBER)
		C <sub>(T110C)</sub> 2	<b>Demonstrate</b> the limit test for impurities in inorganic compounds (UNDERSTAND)

		C <sub>(T110C)3</sub>	<b>Apply</b> the volumetric methods for performing assays ( <b>APPLY</b> )
		C <sub>(T110C)4</sub>	<b>Evaluate</b> selected inorganic compounds by different titrimetric methods ( <b>EVALUATE</b> )
		C <sub>(T110C)5</sub>	<b>Determine</b> the compounds present in a mixture ( <b>APPLY</b> )
		C <sub>(T110C)6</sub>	<b>Justify</b> test for identity of selected inorganic compounds ( <b>EVALUATE</b> )
11	<b>Remedial Mathematics (Theory)</b>	C <sub>(T1106)1</sub>	<b>Identify</b> the importance of mathematics in pharmacy. ( <b>REMEMBER</b> )
		C <sub>(T1106)2</sub>	<b>Review</b> the various topics in mathematics. ( <b>UNDERSTAND</b> )
		C <sub>(T1106)3</sub>	<b>Formulate</b> mathematical equations in doing problems. ( <b>CREATE</b> )
		C <sub>(T1106)4</sub>	<b>Assemble</b> the different concepts in solving problems. ( <b>CREATE</b> )
		C <sub>(T1106)5</sub>	<b>Justify</b> the important applications of mathematics. ( <b>EVALUATE</b> )
		C <sub>(T1106)6</sub>	<b>Design</b> and convert elementary functions using Laplace transform. ( <b>CREATE</b> )
12	<b>Remedial Biology (Theory)</b>	C <sub>(T1107)1</sub>	<b>List</b> the organization of plants, animals and its inclusions. ( <b>REMEMBER</b> )
		C <sub>(T1107)2</sub>	<b>Differentiate</b> the functions of various types of tissues and kingdom classification in plants and animals. ( <b>UNDERSTAND</b> )
		C <sub>(T1107)3</sub>	<b>Develop</b> knowledge on structural modifications in plants and importance of plant physiology. ( <b>CREATE</b> )
		C <sub>(T1107)4</sub>	<b>Infer</b> various physiological processes in plants and animals. ( <b>ANALYSE</b> )
		C <sub>(T1107)5</sub>	<b>Enumerate</b> the various taxonomical characters of different families and micro-organisms. ( <b>REMEMBER</b> )
		C <sub>(T1107)6</sub>	<b>Differentiate</b> the detailed study of frog, its internal structure & functions. ( <b>UNDERSTAND</b> )
		C <sub>(T1107)7</sub>	<b>Demonstrate</b> the study of different kinds of phylum's includes Pisces, Reptiles, Amphibians, Aves& Mammals. ( <b>UNDERSTAND</b> )
13	<b>Remedial Biology – (Practical)</b>	C <sub>(T110D)1</sub>	<b>Explain</b> about basic concept of microscopes and permanent slides ( <b>UNDERSTAND</b> )
		C <sub>(T110D)2</sub>	<b>Appraise</b> the cell wall constituents and cell inclusions of plant parts. ( <b>EVALUATE</b> )
		C <sub>(T110D)3</sub>	<b>State</b> the different modifications of plant parts. ( <b>REMEMBER</b> )

		C <sub>(T110D)4</sub>	<b>Characterize</b> the transverse section and identification of powder characteristics of various plant products. ( <b>ANALYSE</b> )
		C <sub>(T110D)5</sub>	<b>Demonstration</b> of simple plant physiological experiments. ( <b>UNDERSTAND</b> )
		C <sub>(T110D)6</sub>	<b>Recall</b> study of frog and its identification of animal models. ( <b>REMEMBER</b> )
<b>PHARM D – II YEAR (PCI)</b>			
<b>S.NO</b>	<b>Course</b>	<b>Course code and number</b>	<b>Course outcome</b>
1	<b>Pathophysiology (Theory)</b>	C <sub>(T2101)1</sub>	<b>Describe</b> basic aspects of cell injury and adaptation, and role of chemical mediators in inflammation and healing mechanism, along with biological effects of radiation on cell. ( <b>REMEMBER</b> )
		C <sub>(T2101)2</sub>	<b>Explain</b> immune response and autoimmune diseases along with organ compatibility in transplantation ( <b>UNDERSTAND</b> )
		C <sub>(T2101)3</sub>	<b>State</b> the principles involved in pathophysiology of cancer while understanding the classification of tumours ( <b>REMEMBER</b> )
		C <sub>(T2101)4</sub>	<b>Compare</b> the types of shock that influences their mechanism and management.
		C <sub>(T2101)5</sub>	<b>Describe</b> pathophysiology and etiology involved in environmental, nutritional and infectious diseases. ( <b>REMEMBER</b> )
		C <sub>(T2101)6</sub>	<b>Identify</b> the cause and pathophysiology of common diseases associated with nervous, cardiovascular, gastrointestinal, liver, renal and respiratory system. ( <b>REMEMBER</b> )
2	<b>Pharmaceutical Microbiology (Theory)</b>	C <sub>(T102)1</sub>	<b>Describe</b> about science of microbiology, Major divisions of microbial world and Relationship among them ( <b>UNDERSTAND</b> )
		C <sub>(T2102)2</sub>	<b>Discuss</b> about Different methods of classification of microbes like Bacteria, Fungi, virus, Rickettsiae, Spirochetes, Nutritional requirements, growth and cultivation of bacteria and virus, different important media required for the growth of aerobic and anaerobic bacteria & fungi. ( <b>UNDERSTAND</b> )
		C <sub>(T2102)3</sub>	<b>Demonstrate</b> about Differential media, enriched media and selective media, maintenance of lab cultures, Different methods

			used in isolation and identification of bacteria with different staining techniques and biochemical reactions, Counting of bacteria - Total and Viable counting techniques( <b>UNDERSTAND</b> )
		C <sub>(T2102)</sub> 4	<b><u>Describe</u></b> about sterilization and Sterilization methods for all pharmaceutical products, sterility testing of different pharmaceutical preparations and Validation , Disinfectants, antiseptics, fungicidal and virucidal agents factors affecting their activation and mechanism of action, Evaluation of bactericidal, bacteristatic, , virucidal activities, evaluation of preservatives in pharmaceutical preparations( <b>REMEMBER</b> )
		C <sub>(T2102)</sub> 5	<b><u>Explain</u></b> about Immunity, Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity( active and passive ),Antigens, Antibodies, Antigen-Antibody reactions, Bacterial exotoxins and endotoxins,Significance of toxoids in active immunity, Immunization programme, and importance of booster dose and Diagnostic tests ( <b>REMEMBER</b> )
		C <sub>(T2102)</sub> 6	<b><u>Discuss</u></b> the concept of Microbial culture sensitivity Testing,Principles,methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B2 and B12, Standardization of vaccines and sera,infectious diseases like Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV ( <b>UNDERSTAND</b> )
3	<b>Pharmaceutical Microbiology</b>	C <sub>(T2107)</sub> 1	<b><u>Introduction</u></b> and discuss about different equipment used in microbiology ( <b>UNDERSTAND</b> )
		C <sub>(T2107)</sub> 2	<b><u>Analysis</u></b> of characteristics of microbial by staining techniques,isolation methods,quantitave estimation ( <b>ANALYSE</b> )

	<b>(Practical)</b>	C <sub>(T2107)</sub> 3	<b><u>Discuss</u></b> about construct standard graphs for estimating antibiotic, vitamin by using microbes( <b>UNDERSTAND</b> )
		C <sub>(T2107)</sub> 4	<b><u>Evaluation</u></b> of microbial contamination in a given sample ( <b>EVALUATE</b> )
		C <sub>(T2107)</sub> 5	<b><u>Analyse</u></b> the qualitatively and quantitatively the amount of microbes in a sample ( <b>ANALYSE</b> )
		C <sub>(T2107)</sub> 6	<b><u>Evaluation</u></b> of the microbes by serological and bacteriological methods( <b>EVALUATE</b> )
4	<b>Pharmacognosy &amp; Phytopharmaceuticals (Theory)</b>	C <sub>(T2103)</sub> 1	<b><u>Discuss</u></b> the concept of Microbial culture sensitivity Testing, Principles, methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B2 and B12, Standardization of vaccines and sera, infectious diseases like Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV ( <b>UNDERSTAND</b> )
		C <sub>(T2103)</sub> 2	<b><u>Explain</u></b> the Cultivation, collection, processing and storage of crude drugs. Detailed method of cultivation of crude drugs. ( <b>UNDERSTAND</b> )
		C <sub>(T2103)</sub> 3	<b><u>Illustrate</u></b> study of cell wall constituents and cell inclusions. Detailed study of various cell constituents. Different methods of adulteration of crude drugs. .( <b>UNDERSTAND</b> )
		C <sub>(T2103)</sub> 4	<b><u>Define</u></b> Carbohydrates and related products. Detailed study carbohydrate containing drugs.( <b>REMEMBER</b> )
		C <sub>(T2103)</sub> 5	<b><u>Define</u></b> sources, methods of extraction, chemistry and method of analysis of lipids. Detailed study of oils. ( <b>REMEMBER</b> )
		C <sub>(T2103)</sub> 6	<b><u>Define</u></b> classification, chemistry and method of analysis of protein. Study of plants fibers used in surgical dressings and related products. ( <b>REMEMBER</b> )
5	<b>Pharmacognosy &amp; Phytopharmaceuticals (Practical)</b>	C <sub>(T2108)</sub> 1	<b><u>Explain</u></b> the Introduction of Pharmacognosy laboratory and experiments. ( <b>UNDERSTAND</b> )
		C <sub>(T2108)</sub> 2	<b><u>Explain</u></b> Study of cell wall constituents and cell inclusions. ( <b>UNDERSTAND</b> )
		C <sub>(T2108)</sub> 3	<b><u>Determine</u></b> the Macro, powder and microscopic study of Datura, Senna, Cinnamon, Cinchona, ephedra, quassia, clove ( <b>APPLY</b> )
		C <sub>(T2108)</sub> 4	<b><u>Determine</u></b> Macro, powder and microscopic study of Fennel, Coriander, Isapgol, Nux



			vomica, rauwolfia , Liquorice, Podopyllum, ginger ( <b>APPLY</b> )
		C <sub>(T2108)</sub> 5	<b>Determination</b> of Iodine value, Saponification value and unsaponifiable matter ( <b>APPLY</b> )
		C <sub>(T2108)</sub> 6	<b>Determination</b> of ester value, acid value ( <b>APPLY</b> )
6	<b>Pharmacology-I(Theory)</b>	C <sub>(T2104)</sub> 1	<b>Define</b> the fundamental concepts of pharmacology and pharmacokinetics and to understand the basics of pharmacodynamics, route of administration, drug toxicity, drug interactions, adverse reactions and Pre-clinical evaluation drug discovery. ( <b>REMEMBER</b> )
		C <sub>(T2104)</sub> 2	<b>Identify</b> the role of neuro-humoral transmission and drugs acting on Autonomic nervous system and summarize the drugs acting on it. ( <b>REMEMBER</b> )
		C <sub>(T2104)</sub> 3	<b>Analyse</b> the pharmacology of drugs acting on cardiovascular system. ( <b>ANALYSE</b> )
		C <sub>(T2104)</sub> 4	<b>Summarise</b> the functions of neurotransmitters and drugs acting on central nervous system. ( <b>UNDERSTAND</b> )
		C <sub>(T2104)</sub> 5	<b>Assess</b> the drugs used in respiratory complications. ( <b>EVALUATE</b> )
		C <sub>(T2104)</sub> 6	<b>Demonstrate</b> the drugs acting on endocrine system. ( <b>UNDERSTAND</b> )
		C <sub>(T2104)</sub> 7	<b>Predict</b> the role of autacoids and related drugs. ( <b>EVALUATE</b> )
7	<b>Community Pharmacy (Theory)</b>	C <sub>(T2105)</sub> 1	<b>Describe</b> scope of community pharmacy and roles and responsibilities of community pharmacist in essential drug concept and rational drug therapy along with code of ethics. ( <b>REMEMBER</b> )
		C <sub>(T2105)</sub> 2	<b>Compute</b> designing, maintenance and legal requirements to set up a community pharmacy along with various methods involved in inventory control. ( <b>APPLY</b> )
		C <sub>(T2105)</sub> 3	<b>Enumerate</b> the various composition of prescription along with identification of medication errors. ( <b>REMEMBER</b> )
		C <sub>(T2105)</sub> 4	<b>Describe</b> the roles and responsibilities of community pharmacist in pharmaceutical care, patient counselling, medication adherence and OTC medications. ( <b>REMEMBER</b> )
		C <sub>(T2105)</sub> 5	<b>Determine</b> health screening services like Blood Pressure, blood sugar, lung function test and cholesterol testing. ( <b>APPLY</b> )

		C <sub>(T2105)</sub> 6	<b><u>Describe</u></b> on health education for communicable, nutritional deficiency diseases and family planning along with pathophysiology and treatment for minor ailment. <b>(REMEMBER)</b>
8	Pharmacotherapeutics-I (Theory)	C <sub>(T2106)</sub> 1	<b><u>Describe</u></b> the pathophysiology of cardiovascular diseases and the ability to identify therapeutic approach for management of these diseases. <b>(REMEMBER)</b>
		C <sub>(T2106)</sub> 2	<b><u>State</u></b> the various respiratory diseases and the diagnostic skills required for the assessment of such diseases to provide a suitable therapeutic plan. <b>(REMEMBER)</b>
		C <sub>(T2106)</sub> 3	<b><u>Develop</u></b> knowledge on various endocrine diseases and attain skills of diagnosis and management of these diseases. <b>(CREATE)</b>
		C <sub>(T2106)</sub> 4	<b><u>Explain</u></b> the significance of preparation of individualised therapeutic plan on paediatric patients and geriatric patients along with pregnant and lactating women. <b>(UNDERSTAND)</b>
		C <sub>(T2106)</sub> 5	<b><u>Summarise</u></b> the therapeutic approach to diseases related to ophthalmology. <b>(UNDERSTAND)</b>
		C <sub>(T2106)</sub> 6	<b><u>Demonstrate</u></b> the role of pharmacist in analysing specific parameters related to drug therapy and to provide rational drug formulations. <b>(UNDERSTAND)</b>
9	Pharmacotherapeutics-I (Practical)	C <sub>(T2109)</sub> 1	<b><u>Describe</u></b> the pathophysiology of cardiovascular diseases and the ability to identify therapeutic approach for management of these diseases. <b>(REMEMBER)</b>
		C <sub>(T2109)</sub> 2	<b><u>State</u></b> the various respiratory diseases and the diagnostic skills required for the assessment of such diseases to provide a suitable therapeutic plan. <b>(REMEMBER)</b>
		C <sub>(T2109)</sub> 3	<b><u>Develop</u></b> knowledge on various endocrine diseases and attain skills of diagnosis and management of these diseases. <b>(CREATE)</b>
		C <sub>(T2109)</sub> 4	<b><u>Explain</u></b> the significance of preparation of individualised therapeutic plan on paediatric patients and geriatric patients along with pregnant and lactating women. <b>(UNDERSTAND)</b>

		C <sub>(T2109)</sub> 5	<b><u>Summarise</u></b> the therapeutic approach to diseases related to ophthalmology. <b>(UNDERSTAND)</b>
		C <sub>(T2109)</sub> 6	<b><u>Demonstrate</u></b> the role of pharmacist in analysing specific parameters related to drug therapy and to provide rational drug formulations. <b>(UNDERSTAND)</b>
<b>PHARM D – III YEAR (PCI)</b>			
<b>S.NO</b>	<b>Course</b>	<b>Course code and number</b>	<b>Course outcome</b>
1	<b>Pharmacology-II (Theory)</b>	C <sub>(T3101)</sub> 1	<b><u>Illustrate</u></b> various agents acting on blood and treatment of blood disorders. <b>(UNDERSTAND)</b>
		C <sub>(T3101)</sub> 2	<b><u>Analyse</u></b> the drugs acting on renal system and describe the various ways of drugs action. <b>(ANALYSE)</b>
		C <sub>(T3101)</sub> 3	<b><u>Understand</u></b> and expand the knowledge on principles of chemotherapy and illustrate the mechanism of action of different antibiotics. <b>(UNDERSTAND)</b>
		C <sub>(T3101)</sub> 4	<b><u>Assess</u></b> the role of immunotherapeutic agents. <b>(EVALUATE)</b>
		C <sub>(T3101)</sub> 5	<b><u>Describe</u></b> various principles of animal toxicology. <b>(REMEMBER)</b>
		C <sub>(T3101)</sub> 6	<b><u>Determine</u></b> the role of genetic material in the synthesis of proteins. To understand gene structure and function with recombinant DNA technology. <b>(APPLY)</b>
2	<b>Pharmacology-II (Practical)</b>	C <sub>(T3107)</sub> 1	<b><u>Recollect</u></b> the different laboratory animals, equipment, and learn the importance of physiological salt solutions, routes of drug administration, and effect of anaesthetics that were utilized in experimental pharmacology. <b>(REMEMBER)</b>
		C <sub>(T3107)</sub> 2	<b><u>Appraise</u></b> the dose response relationship, effect of drugs on DRC and to construct the drug concentrations. <b>(EVALUATE)</b>
		C <sub>(T3107)</sub> 3	<b><u>Construct</u></b> bioassays using different methods. <b>(CREATE)</b>
		C <sub>(T3107)</sub> 4	<b><u>Assess</u></b> the potency of test substance and analyse the results from numerous animal investigations. <b>(EVALUATE)</b>
		C <sub>(T3107)</sub> 5	<b><u>Interpret</u></b> various screening models for analgesic, anticonvulsant, anti-depressant and

			anti- inflammatory activity of drugs. <b>(UNDERSTAND)</b>
		C <sub>(T3107)</sub> 6	<b>Analyze</b> isolated frog heart preparations to assess the cardio tonic action of drugs. <b>(ANALYSE)</b>
3	<b>Pharmaceutical Analysis (Theory)</b>	C <sub>(T3102)</sub> 1	<b>Explain</b> concepts of validation, calibration, ICH, GLP, TQM, ISO9000 and quality variation aspects. <b>(UNDERSTAND)</b>
		C <sub>(T3102)</sub> 2	<b>Discuss</b> about the definition, Introduction, Principle, instrumentation and Methodology of Various Types of Chromatography like Column, Paper, TLC, Electrophoresis, Affinity chromatography, High performance liquid chromatography, Gas chromatography. <b>(UNDERSTAND)</b>
		C <sub>(T3102)</sub> 3	<b>Illustrate</b> the theoretical aspects, Instrumentation & interpretation of data by using electrometric methods like potentiometry, conductometry, polarography, amperometry titrations. <b>(UNDERSTAND)</b>
		C <sub>(T3102)</sub> 4	<b>Demonstrate</b> and Explain the Principle, Theory, Instrumentation and Working of UV - Visible Spectroscopy and Fluorimetry along with its applications. <b>(UNDERSTAND)</b>
		C <sub>(T3102)</sub> 5	<b>Describe</b> the Introduction, Principle, Types of vibrations and factors affecting them, Instrumentation and Working of Infra-red Spectroscopy, Flame Photometry along with its applications. <b>(REMEMBER)</b>
		C <sub>(T3102)</sub> 6	<b>Enumerate</b> Introduction, Principle, along with its applications of Mass spectroscopy, NMR Spectroscopy, ESR Spectroscopy, polarimetry, X-Ray diffraction. And thermal methods like DTA, DSC. <b>(REMEMBER)</b>
4	<b>Pharmaceutical Analysis (Practical)</b>	C <sub>(T3108)</sub> 1	<b>Identify</b> and separate of mixture of compounds by paper chromatography, thin layer chromatography. <b>(REMEMBER)</b>
		C <sub>(T3108)</sub> 2	<b>Determine</b> the effect of pH, solvent, dissociation constant and comparison of given compound with its derivatives by UV-visible Spectroscopy , interpret compound from NMR and IR spectroscopy <b>(APPLY)</b>
		C <sub>(T3108)</sub> 3	<b>Demonstrate</b> the instrumentation of HPLC, HPTLC, HPLC, GC-MS, ,DSC. <b>(UNDERSTAND)</b>

		C <sub>(T3108)</sub> 4	<b>Determine</b> the compounds by using flame photometry, Nepheloturbidimetry, fluorometric, techniques( <b>APPLY</b> )
		C <sub>(T3108)</sub> 5	<b>Evaluate</b> the two drugs present in given formulation simultaneously by using UV spectrophotometer and to determine drugs using colorimetry. ( <b>EVALUATE</b> )
		C <sub>(T3108)</sub> 6	<b>Analyse</b> the mixture of acids with base by conductometric and potentiometric titrations. ( <b>ANALYSE</b> )
5	<b>Pharmacotherapeutics-II (Theory)</b>	C <sub>(T3103)</sub> 1	<b>List</b> the guidelines involved in rational use of antibiotics and surgical use of prophylaxis. ( <b>REMEMBER</b> )
		C <sub>(T3103)</sub> 2	<b>Sketch</b> the therapeutic approach based on the causative organism and the resulting pathogenesis of infectious diseases like tuberculosis, meningitis, malaria, fungal and viral infections etc. ( <b>ANALYSE</b> )
		C <sub>(T3103)</sub> 3	<b>Analyse</b> the pathophysiology involved in various musculoskeletal diseases to provide suitable therapeutic management like Osteoarthritis, Rheumatoid arthritis, Gout etc. ( <b>ANALYSE</b> )
		C <sub>(T3103)</sub> 4	<b>Sketch</b> therapeutic management on the basis of stages of renal failure along with the mechanisms involved in drug induce renal diseases. . ( <b>ANALYSE</b> )
		C <sub>(T3103)</sub> 5	<b>Enumerate</b> the principles and general aspects of chemotherapeutic agents, specifically for breast and blood cancer along with management of nausea and vomiting induced by chemotherapy. ( <b>REMEMBER</b> )
		C <sub>(T3103)</sub> 6	<b>State</b> the pathogenesis of organisms that cause dermal infections and provide suitable drug therapy. ( <b>REMEMBER</b> )
6	<b>Pharmacotherapeutics-II (Practical)</b>	C <sub>(T3109)</sub> 1	<b>Decide</b> the principles guiding the prudent use of antibiotics and surgical prophylaxis. ( <b>EVALUATE</b> )
		C <sub>(T3109)</sub> 2	<b>Interpret</b> therapy strategy based on the etiological agent and the pathogenesis of infectious diseases, such as tuberculosis, meningitis, malaria, fungal and viral infections, etc. ( <b>UNDERSTAND</b> )
		C <sub>(T3109)</sub> 3	<b>Choose</b> appropriate treatment therapy for a variety of musculoskeletal illnesses, such

			as osteoarthritis, rheumatoid arthritis, gout, etc., one must understand the pathophysiology involved. <b>(APPLY)</b>
		C <sub>(T3109)</sub> 4	<b>Analyse</b> therapeutic management based on the mechanisms underlying drug-induced renal illnesses as well as the phases of renal failure. <b>(ANALYSE)</b>
		C <sub>(T3109)</sub> 5	<b>Decide</b> the management of nausea and vomiting brought on by chemotherapy, as well as the principles and general characteristics of chemotherapeutic drugs, specifically for breast and blood cancer. <b>(EVALUATE)</b>
		C <sub>(T3109)</sub> 6	<b>Interpret</b> the pathophysiology of the microbes that cause skin infections and to offer effective medication therapy. <b>(UNDERSTAND)</b>
7	<b>Pharmaceutical Jurisprudence (Theory)</b>	C <sub>(T3104)</sub> 1	<b>Recall</b> the concepts of pharmaceutical legislations in India and code of pharmaceutical ethics <b>(REMEMBER)</b>
		C <sub>(T3104)</sub> 2	<b>Demonstrate</b> the schedules and provisions given under Drugs and Cosmetics act 1940 and its rules 1945 <b>(UNDERSTAND)</b>
		C <sub>(T3104)</sub> 3	<b>Determine</b> the provisions of Pharmacy act 1948 and procedure for registration of pharmacist and to describe constitution and functions of PCI and State Pharmacy councils <b>(APPLY)</b>
		C <sub>(T3104)</sub> 4	<b>List</b> out the provisions under medicinal and toilet preparations act, narcotic drugs and psychotropic substances act and rules, drugs and magic remedies act and rules <b>(REMEMBER)</b>
		C <sub>(T3104)</sub> 5	<b>Discuss</b> the importance of Essential commodities act, and National drug policy and to outline the procedure to get a patent under the Patents and design act 1970 <b>(UNDERSTAND)</b>
		C <sub>(T3104)</sub> 6	<b>Explain</b> the salient features of Prevention of cruelty to animals act and to summarize the list of prescription and nonprescription drugs, DPCO act <b>(UNDERSTAND)</b>
8	<b>Medicinal Chemistry – (Theory)</b>	C <sub>(T3105)</sub> 1	<b>Describe</b> brief introduction of modern concept of drug design: QSAR, CADD, Combinatorial chemistry, Prodrug, anti sense drugs. <b>(REMEMBER)</b>

		C <sub>(T3105)</sub> 2	<b><u>Explain</u></b> in detail about drugs, and their structure, M.o.A, Classification, synthesis, SAR of local anti infectives and Sulphonamides ( <b>UNDERSTAND</b> )
		C <sub>(T3105)</sub> 3	<b><u>Discuss</u></b> history, development, degradation reactions, structure, SAR, M.o.a., synthesise and uses of antibiotics, antimalarials, antineoplastics. ( <b>CREATE &amp; UNDERSTAND</b> )
		C <sub>(T3105)</sub> 4	<b><u>Explain</u></b> in detail about structure, M.O.A, adverse effects and uses of cardiovascular drugs, oral hypoglycaemics. ( <b>UNDERSTAND</b> )
		C <sub>(T3105)</sub> 5	<b><u>Define</u></b> thyroid, antithyroid drugs, diagnostic agents and write in detail their M.O.A, synthesis and uses. ( <b>REMEMBER</b> )
		C <sub>(T3105)</sub> 6	<b><u>Explain</u></b> in detail about diuretics, steroidal hormones and adrenocortical drugs. ( <b>UNDERSTAND</b> )
9	<b>Medicinal Chemistry – (Practical)</b>	C <sub>(T3110)</sub> 1	<b><u>Recall</u></b> the various techniques of medicinal compounds ( <b>REMEMBER</b> )
		C <sub>(T3110)</sub> 2	<b><u>Synthesize</u></b> and understand the principle, mechanism of various preparations ( <b>CREATE</b> )
		C <sub>(T3110)</sub> 3	<b><u>Prepare</u></b> and explain purification of medicinal compounds ( <b>UNDERSTAND</b> )
		C <sub>(T3110)</sub> 4	<b><u>Perform</u></b> assay and calculate percentage purity of medicinal compounds ( <b>ANALYSE</b> )
		C <sub>(T3110)</sub> 5	<b><u>Determine</u></b> percentage purity of medicinal compounds by Various techniques ( <b>APPLY</b> )
		C <sub>(T3110)</sub> 6	<b><u>Identification</u></b> of medicinal compounds ( <b>REMEMBER</b> )
10	<b>Pharmaceutical Formulations (Theory)</b>	C <sub>(T3106)</sub> 1	<b><u>Remember</u></b> the types of tablets & describe the granulation techniques ( <b>REMEMBER</b> )
		C <sub>(T3106)</sub> 2	<b><u>Determine</u></b> the quality control test and apply evaluation of uncoated as well as coated tablets. ( <b>APPLY</b> )
		C <sub>(T3106)</sub> 3	<b><u>Explain</u></b> production and filling of hard & soft gelatine capsules. Quality control tests for capsules. ( <b>UNDERSTAND</b> )
		C <sub>(T3106)</sub> 4	<b><u>Formulate</u></b> and evaluate the semisolid preparation such as ointments, gels ( <b>CREATE</b> )
		C <sub>(T3106)</sub> 5	<b><u>Describe</u></b> the formulation concepts of pharmaceutical suspensions and remember the emulsions and their stability problems ( <b>REMEMBER</b> )

		C <sub>(T3106)</sub> 6	<b>Understand</b> the production facilities of Parenterals and Summarize various controlled and novel drug delivery systems (UNDERSTAND)
11	<b>Pharmaceutical Formulations (Practical)</b>	C <sub>(T3111)</sub> 1	<b>Formulate</b> and develop different types of tablets (CREATE)
		C <sub>(T3111)</sub> 2	<b>Explain</b> and formulate the manufacture of hard gelatin capsule (UNDERSTAND)
		C <sub>(T3111)</sub> 3	<b>Understand</b> and review preparation of parenterals (UNDERSTAND)
		C <sub>(T3111)</sub> 4	<b>Appraise</b> and evaluatedifferent liquid orals formulations (EVALUATE)
		C <sub>(T3111)</sub> 5	<b>Asses</b> and evaluate semisolid preparations (EVALUATE)
		C <sub>(T3111)</sub> 6	<b>Preparation</b> of cosmetics (CREATE)
<b>PHARM D – IV YEAR (PCI)</b>			
<b>S.NO</b>	<b>Course</b>	<b>Course code and number</b>	<b>Course outcome</b>
1	<b>Pharmacotherapeutics-III (Theory)</b>	C <sub>(T4101)</sub> 1	<b>Recognize</b> the pathophysiology of gastrointestinal and liver diseases and the ability to identify therapeutic approach for management ofthese diseases. (UNDERSTAND)
		C <sub>(T4101)</sub> 2	<b>Differentiate</b> the various haematological diseases and the diagnosticskills required for the assessment of such diseases to provide a suitable therapeutic plan. (UNDERSTAND)
		C <sub>(T4101)</sub> 3	<b>Describe</b> various diseases associated with nervous system and attain skills of diagnosis and management of these diseases. (REMEMBER)
		C <sub>(T4101)</sub> 4	<b>Summarise</b> the therapeutic approach to psychiatry disorders like schizophrenia, affective disorders, anxiety disorders, sleep disorders and obsessive compulsive disorders. (UNDERSTAND)
		C <sub>(T4101)</sub> 5	<b>Describe</b> the various pain pathways in order to provide pain management in neuralgias and headaches. (REMEMBER)
		C <sub>(T4101)</sub> 6	<b>Determine</b> judicious use of current best evidence available for a drug therapy. (APPLY)
2	<b>Pharmacotherapeutics-III (Practical)</b>	C <sub>(T4107)</sub> 1	<b>Recognize</b> the pathophysiology of gastrointestinal and liver diseases and the ability to identify therapeutic approach for



			management of these diseases. <b>(UNDERSTAND)</b>
		C <sub>(T4107)2</sub>	<b><u>Differentiate</u></b> the various haematological diseases and the diagnostic skills required for the assessment of such diseases to provide a suitable therapeutic plan. <b>(UNDERSTAND)</b>
		C <sub>(T4107)3</sub>	<b><u>Describe</u></b> various diseases associated with nervous system and attain skills of diagnosis and management of these diseases. <b>(REMEMBER)</b>
		C <sub>(T4107)4</sub>	<b><u>Summarise</u></b> the therapeutic approach to psychiatry disorders like schizophrenia, affective disorders, anxiety disorders, sleep disorders and obsessive compulsive disorders. <b>(UNDERSTAND)</b>
		C <sub>(T4107)5</sub>	<b><u>Describe</u></b> the various pain pathways in order to provide pain management in neuralgias and headaches. <b>(REMEMBER)</b>
		C <sub>(T4107)6</sub>	<b><u>Determine</u></b> judicious use of current best evidence available for a drug therapy. <b>(APPLY)</b>
3	<b>Hospital Pharmacy (Theory)</b>	C <sub>(T4102)1</sub>	<b><u>Define</u></b> the structure, organisation and functions of hospital and hospital pharmacist <b>(REMEMBER)</b>
		C <sub>(T4102)2</sub>	<b><u>Preparation</u></b> and implementation of budget, inventory control and various drug policies <b>(CREATE)</b>
		C <sub>(T4102)3</sub>	<b><u>Interpret</u></b> various hospital committees to develop hospital pharmacy and news letters <b>(UNDERSTAND)</b>
		C <sub>(T4102)4</sub>	<b><u>Explain</u></b> the sterile services, various drug distribution methods or inpatients and outpatients including narcotic and controlled drugs <b>(UNDERSTAND)</b>
		C <sub>(T4102)5</sub>	<b><u>Describe</u></b> procurement, manufacturing and storage process various formulations and handling of radio pharmaceuticals <b>(REMEMBER)</b>
		C <sub>(T4102)6</sub>	<b><u>Develop</u></b> programmes for professional upraising continuously and to build inter professional <b>(CREATE)</b>
4	<b>Hospital Pharmacy (Practical)</b>	C <sub>(T4108)1</sub>	<b><u>Describe</u></b> drug profiles and drug distribution systems and various committees in hospitals <b>(REMEMBER)</b>
		C <sub>(T4108)2</sub>	<b><u>Evaluate</u></b> the rationality of prescriptions <b>(EVALUATE)</b>

		C <sub>(T4108)</sub> 3	<b><u>Design</u></b> various methods for the preparation and labelling of pharmaceutical products such as powders and intravenous solutions ( <b>CREATE</b> )
		C <sub>(T4108)</sub> 4	<b><u>Write</u></b> the solutions to overcome the drug interactions and adverse drug reactions ( <b>REMEMBER</b> )
		C <sub>(T4108)</sub> 5	<b><u>Describe</u></b> various store management and inventory control ( <b>REMEMBER</b> )
		C <sub>(T4108)</sub> 6	Explain drug information queries through the systematic approach ( <b>UNDERSTAND</b> )
5	<b>Clinical Pharmacy(Theory)</b>	C <sub>(T4103)</sub> 1	<b><u>Understand</u></b> and explain scope and development of clinical Pharmacy the daily activities and roles of clinical pharmacist and to monitor the patient drug therapy through medication chart review and clinical review ( <b>UNDERSTAND</b> )
		C <sub>(T4103)</sub> 2	<b><u>Describe</u></b> medication history interview and counsel the patients on various diseases and life style modifications by applying communication skills ( <b>REMEMBER</b> )
		C <sub>(T4103)</sub> 3	<b><u>Assess</u></b> the response to DUE, drug information queries using systematic approach and to establish a drug information and poison information center ( <b>EVALUATE</b> )
		C <sub>(T4103)</sub> 4	<b><u>Interpret</u></b> selected laboratory results of specific diseases status mentioned and report ADRs, drug related problems and medication errors understand the pharmacovigilance ( <b>UNDERSTAND</b> )
		C <sub>(T4103)</sub> 5	<b><u>Understand</u></b> the concept pharmacovigilance ( <b>UNDERSTAND</b> )
		C <sub>(T4103)</sub> 6	<b><u>Evaluate</u></b> biomedical literature in order to get an unbiased clinical evidence to develop individualised pharmaceutical care plan ( <b>EVALUATE</b> )
6	<b>Clinical Pharmacy (Practical)</b>	C <sub>(T4109)</sub> 1	<b><u>Describe</u></b> drug profiles, Ward rounds and counseling techniques various laboratory tests. ( <b>REMEMBER</b> )
		C <sub>(T4109)</sub> 2	<b><u>Explain</u></b> and respond to drug information queries using modified systematic approach by critically appraising the biomedical literature ( <b>UNDERSTAND</b> )
		C <sub>(T4109)</sub> 3	<b><u>Create</u></b> awareness in patients by counselling them on various diseases using clinical knowledge and communication skills ( <b>CREATE</b> )

		C <sub>(T4109)4</sub>	<b>Create</b> awareness in patients by counselling them on various drugs using clinical knowledge and communication skills ( <b>CREATE</b> )
		C <sub>(T4109)5</sub>	<b>Interpret</b> laboratory results of specific disease while monitoring disease progression ( <b>UNDERSTAND</b> )
		C <sub>(T4109)6</sub>	<b>Develop</b> comprehensive and meticulous medication history interview for the preparation of individualized pharmaceutical care plan ( <b>CREATE</b> )
7	<b>Biostatistics &amp; Research Methodology (Theory)</b>	C <sub>(T4104)1</sub>	<b>Demonstrate</b> the importance of biostatistics in pharmacy ( <b>UNDERSTAND</b> )
		C <sub>(T4104)2</sub>	<b>Explain</b> the importance of research methods in the design of pharmacoepidemiological study.( <b>UNDERSTAND</b> )
		C <sub>(T4104)3</sub>	<b>Determine</b> appropriate statistical methods for data analysis and choose the methods of collection of data and its analysis and interpretation( <b>APPLY</b> )
		C <sub>(T4104)4</sub>	<b>Discuss</b> and evaluate various software for statistical analysis of data( <b>UNDERSTAND</b> )
		C <sub>(T4104)5</sub>	<b>Explain</b> various methods of testing hypothesisC
		C <sub>(T4104)6</sub>	<b>List</b> the importance and procedures for using computers in pharmacy( <b>REMEMBER</b> )
8	<b>Biopharmaceutics &amp; Pharmacokinetics (Theory)</b>	C <sub>(T4105)1</sub>	<b>Recall</b> the basic concepts of absorption, distribution, metabolism and excretion of drugs.( <b>REMEMBER</b> )
		C <sub>(T4105)2</sub>	<b>Describe</b> the mechanisms, interpret various factors affecting drug absorption, distribution, metabolism and excretion of drugs.( <b>REMEMBER</b> )
		C <sub>(T4105)3</sub>	<b>Apply</b> the pharmacokinetic models for the determination of pharmacokinetic parameters.( <b>APPLY</b> )
		C <sub>(T4105)4</sub>	<b>Assess</b> multiple dosage regimens based on pharmacokinetic parameters for maximizing therapeutic effectiveness and patient compliance ( <b>EVALUATE</b> )
		C <sub>(T4105)5</sub>	<b>Choose</b> various pharmacokinetic parameters for the drugs exhibiting saturation kinetics.( <b>ANALYSE</b> )
		C <sub>(T4105)6</sub>	<b>Design</b> the bioavailability testing protocol of a drug and compare the bioequivalence between marketed products.( <b>CREATE</b> )

9	Biopharmaceutics & Pharmacokinetics (Practical)	C <sub>(T4110)</sub> 1	<u>Recall</u> the concepts in biopharmaceutics, basic pharmacokinetic parameters and their significance.(REMEMBER)
		C <sub>(T4110)</sub> 2	<u>Interpret</u> the effect of surfactant, diluents, lubricant and Polymorphism on rate of drug dissolution.(UNDERSTAND)
		C <sub>(T4110)</sub> 3	<u>Solve</u> bioavailability parameters of drugs by using plasma data and methods to improve bioavailability.(APPLY)
		C <sub>(T4110)</sub> 4	<u>Analyze</u> absorption rate constant, KE, biological half-life, mean residence time and mean absorption time for the given data.(ANALYZE)
		C <sub>(T4110)</sub> 5	<u>Enumerate</u> the extent of protein biding by equilibrium dialysis or dynamic dialysis methods.(REMEMBER)
		C <sub>(T4110)</sub> 6	<u>Predict</u> the pharmacokinetic parameters for the given data as per one compartment and two compartment models.(EVALUATE)
10	Clinical Toxicology (Theory)	C <sub>(T4106)</sub> 1	<u>State</u> the general aspects of management of poisoning along with antidotes for specific application. .(REMEMBER)
		C <sub>(T4106)</sub> 2	<u>Describe</u> supportive cares like Airway Breathing Circulation in case of poisoning and also methods of gut decontamination for elimination of such poisons. .(REMEMBER)
		C <sub>(T4106)</sub> 3	<u>Enumerate</u> the toxicokinetics of the poison and application of extracorporeal methods for elimination of toxins. (REMEMBER)
		C <sub>(T4106)</sub> 4	<u>State</u> management of acute poisoning based on symptoms due to caustics, neurotoxins, irritants, pesticides, hydrocarbons, NSAIDs and radiation .(REMEMBER)
		C <sub>(T4106)</sub> 5	<u>Explain</u> therapeutic management for chronic poisoning of heavy metals based on the diagnostic investigations.(UNDERSTAND)
		C <sub>(T4106)</sub> 6	<u>Demonstrate</u> management plans for food poisoning, snake bites and arthropod bites and stings.(UNDERSTAND)
PHARM.D – V YEAR			
S.NO	Course	Course code and number	Course outcome
1	Clinical research (Theory)	C <sub>(T5101)</sub> 1	<u>Explain</u> developmental process of new chemical entity discovered via pharmacological approach,

			toxicological approach, Investigational New Drug Application, drug characterization and dosage form. <b>(REMEMBER)</b>
		C <sub>(T5101)</sub> 2	<b><u>Interpret</u></b> the different phases of trial and to evaluate the safety and efficacy of the drug from pre-clinical trials to post marketing surveillance. <b>(UNDERSTAND)</b>
		C <sub>(T5101)</sub> 3	<b><u>Describe</u></b> regulatory authorities (ICH, CDSCO) responsibilities for monitoring clinical trial process, lay guidelines and address to its challenges in implementation. <b>(REMEMBER)</b>
		C <sub>(T5101)</sub> 4	<b><u>Identify</u></b> guidelines followed for the countries USA, India and Europe along with roles and responsibilities of clinical trial personnel. <b>(UNDERSTAND)</b>
		C <sub>(T5101)</sub> 5	<b><u>Tabulate</u></b> the ethical guidelines in clinical research along with composition and functions of institutional review board. <b>(REMEMBER)</b>
		C <sub>(T5101)</sub> 6	<b><u>Assemble</u></b> essential clinical study documents needed in clinical trial, like case report forms, informed consent form, participant identification centers etc. are involved. <b>(CREATE)</b>
		C <sub>(T5101)</sub> 7	<b><u>Describe</u></b> role of computers in data management along with safety monitoring in clinical trials. <b>(REMEMBER)</b>
2	Pharmacoepidemiology & Pharmacoeconomics  (Theory)	C <sub>(T5102)</sub> 1	<b><u>Explain</u></b> the origin, scope and applications of Pharmacoepidemiology and Pharmacoeconomics in clinical settings and <b><u>discuss</u></b> the various Pharmacoepidemiologic outcome measures. <b>(UNDERSTAND)</b>
		C <sub>(T5102)</sub> 2	<b><u>Choose</u></b> the tools effectively in evaluating risk and benefit of therapy and <b><u>determine</u></b> the concept of risk in pharmacoepidemiology and different methods of measurement of risk. <b>(APPLY)</b>

		C <sub>(T5102)</sub> 3	<b><u>Explain</u></b> various pharmacoepidemiology studies and evaluate the outcomes of measures using case studies. Understand the Pharmacoepidemiologic databases and <u>illustrate</u> the sources of data for Pharmacoepidemiologic studies. (UNDERSTAND)
		C <sub>(T5102)</sub> 4	<b><u>Describe</u></b> the selected special applications of pharmacoepidemiology. (REMEMBER)
		C <sub>(T5102)</sub> 5	<b><u>Explain</u></b> pharmacoeconomic outcome measures and <u>discuss</u> the various methods to measure outcomes in pharmacoeconomic studies. (UNDERSTAND)
		C <sub>(T5102)</sub> 6	<b><u>Select</u></b> the various types of software and its applications in Pharmacoeconomic analysis using case studies. (ANALYSE)
3	Clinical Pharmacokinetics and Pharmacotherapeutic Drug Monitoring (T5103)	C <sub>(T5103)</sub> 1	<b><u>Understand</u></b> the basics of pharmacokinetics, nomograms, tabulations and their applications and design the dosage regimen and therapy of a drug based on the pharmacokinetic principles and route of administration. (UNDERSTAND)
		C <sub>(T5103)</sub> 2	<b><u>Describe</u></b> the individualization the dosage regimen for the patients who are obese, pediatrics, geriatrics and patients with impaired renal and hepatic functions. (REMEMBER)
		C <sub>(T5103)</sub> 3	<b><u>Evaluate</u></b> the patient case where they find potential drug-drug, drug-food, drug-disease interactions with appropriate recommendations for drug dosage and food adjustments. (EVALUATE)
		C <sub>(T5103)</sub> 4	<b><u>Develop</u></b> knowledge about population pharmacokinetics data, Bayesian theory, adaptive method, and dosing with feedback. (CREATE)
		C <sub>(T5103)</sub> 5	<b><u>Analyse</u></b> the plasma drug concentration with patient's therapeutic outcome in

			cardiovascular disease, seizure disorders, psychiatric disorders, organ transplantation, to formulate protocol of TDM and correlate TDM with drug therapy. (ANALYSE)
		C <sub>(T5103)</sub> 6	<b>Develop</b> knowledge about pharmacogenetics and find the genetic polymorphisms in drug metabolism, drug transport & drug target in the patients, if any with the clinical outcomes in the patients. (CREATE)
4	Clerkship (T5104)	C <sub>(T5104)</sub> 1	<b>Analyse</b> patient case sheet and classify the patient's illness, chief complaints, social history, family history, past and present medical history, occupational history, diagnosis, treatment and lifestyle modifications. (ANALYSE)
		C <sub>(T5104)</sub> 2	<b>Evaluate</b> the diagnosis by observing all the laboratory investigations closely in chronological order and correlating it with the disease condition of the patient. (EVALUATE)
		C <sub>(T5104)</sub> 3	<b>Set-up</b> patient counselling for the in-patients and OPD patients regarding medications, life style modifications and precautions. (CREATE)
		C <sub>(T5104)</sub> 4	<b>Identify</b> any adverse drug reactions in any patient by closely monitoring and interviewing the patients.(REMEMBER)
		C <sub>(T5104)</sub> 5	<b>Identify</b> any potential evidence of drug-drug, drug-food and drug-disease interactions and do interventions wherever required in consultations with the duty doctors. (REMEMBER)
		C <sub>(T5104)</sub> 6	<b>Choose</b> evidence-based drug information to doctors, nurses, pharmacists and patients for their drug related queries and documenting it properly. (APPLY)
5	Project Work (T5105)	C <sub>(T5105)</sub> 1	<b>Describe</b> the Aim and Objectives of the project by identifying the issues related to use of pharmaceuticals and health in community population or

			hospital epidemiology. <b>(REMEMBER)</b>
		<b>C<sub>(T5105)2</sub></b>	<b><u>Review</u></b> literatures on the selected project topic to have understanding of current project work before starting new investigation on the work. <b>(UNDERSTAND)</b>
		<b>C<sub>(T5105)3</sub></b>	<b><u>Design</u></b> the protocol comprising of aim, objectives, plan of the study, study duration, study site, materials and methods, statistical tools, data collection forms, etc. <b>(CREATE)</b>
		<b>C<sub>(T5105)4</sub></b>	<b><u>Evaluate</u></b> the protocol by the ethical committee and head of the department and get it approved. <b>(EVALUATE)</b>
		<b>C<sub>(T5105)5</sub></b>	<b><u>Generate</u></b> the data collection, analyse the data based upon the decided parameters, perform statistical analysis, draw the results and conclusion. <b>(CREATE)</b>
		<b>C<sub>(T5105)6</sub></b>	<b><u>Analyse</u></b> the outcomes of the project work and its future scope in the given field of study. <b>(ANALYSE)</b>

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S.NO	Course	Course code and number	Course outcome
1	Internship	<b>C<sub>(Internship)1</sub></b>	<b><u>Analyse</u></b> the case sheet of patients during ward round participation with the duty doctors by utilising their clinical, pharmacological, pathological, therapeutical knowledge and correlate the findings. <b>(ANALYSE)</b>
		<b>C<sub>(Internship)2</sub></b>	<b><u>Infer</u></b> the diagnosis of the patients by analysing their laboratory, radiology and other reports. <b>(ANALYSE)</b>
		<b>C<sub>(Internship)3</sub></b>	<b><u>Design</u></b> dose in paediatrics, geriatrics, and in patients with renal and hepatic impairment. <b>(CREATE)</b>
		<b>C<sub>(Internship)4</sub></b>	<b><u>Set-up</u></b> patient counselling regarding their disease/disorder, medications, lifestyle modifications, adverse drug reactions, precautions and contraindications. <b>(CREATE)</b>



		<b>C<sub>(Internship)</sub>5</b>	<b><u>Evaluate</u></b> and <b><u>analyse</u></b> each case closely to find and report any drug-drug and drug-food interactions and do interventions if required. <b>(EVALUATE, ANALYSE)</b>
		<b>C<sub>(Internship)</sub>6</b>	<b><u>Identify</u></b> and provide evidence-based drug/poison information to doctors, nurses, pharmacists, patients for their drug/poison related queries. <b>(REMEMBER)</b>