Pharm D Programme Outcomes:

PO1 : 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.

PO2 : Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

PO3 : 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.

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.

PO5 : 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 wellbeing.

PO6 : Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

PO7 : Honor 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.

PO8 : 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.

PO9 : 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.

PO10 : Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO11 : 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.

Course Outcomes:

First Year

Subject code: PD101T

Title of the course: HUMAN ANATOMY & PHYSIOLOGY – I (Theory)

Course outcomes:

CO1. describe the structure (gross and histology) and functions of various organs of the human body.

CO2. describe the various homeostatic mechanisms and their imbalances of various systems;

CO3. identify the various tissues and organs of the different systems of the human body.

CO4. perform the hematological tests and also record blood pressure, heart rate, pulse and Respiratory volumes.

CO5. appreciate coordinated working pattern of different organs of each system.

CO6. appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Subject code: PD102T

Title of the course: PHARMACEUTICS (Theory)

Course outcomes:

CO1. know the formulation aspects of different dosage forms;

CO2. do different pharmaceutical calculations involved in formulation;

CO3. formulate different types of dosage forms; and

CO4. appreciate the importance of good formulation for effectiveness.

Subject code: PD103T

Title of the course: MEDICINAL BIOCHEMISTRY (Theory)

Course outcomes:

CO1. understand the catalytic activity of enzymes and importance of isoenzymes in diagnosis of diseases;

CO2. know the metabolic process of biomolecules in health and illness (metabolic disorders);

CO3. understand the genetic organization of mammalian genome; protein synthesis; replication; mutation and repair mechanism;

CO4. know the biochemical principles of organ function tests of kidney, liver and endocrine gland; and

CO5. do the qualitative analysis and determination of biomolecules in the body fluids.

Subject code: PD104T

Title of the course: PHARMACEUTICAL ORGANIC CHEMISTRY (Theory)

Course outcomes:

CO1. Facilitates the fellow pupil to predict the sources of errors and methods to determine impurities in inorganic drugs and pharmaceuticals.

CO2. Develop the fundamentals of volumetric analytical skills. It constructs the fundamental methodology to prepare different strength of solutions.

CO3. Acquires knowledge on acids, bases, buffers, methods of adjusting isotonicity.

CO4. Associate the concept of standardization by oxidation – reduction methods.

CO5. Gain knowledge on various non - aqueous solvents and different types of titrations.

CO6. Develop an idea that standardization can be done for some compounds by precipitation titrations.

Subject code: PD105T

Title of the course: PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

Course outcomes:

CO1. understand the principles and procedures of analysis of drugs and also regarding the application of inorganic pharmaceuticals;

CO2. know the analysis of the inorganic pharmaceuticals their applications; and

CO3. appreciate the importance of inorganic pharmaceuticals in preventing and curing the disease.

Subject code: PD106T

Title of the course: REMEDIAL MATHEMATICS/BIOLOGY (Theory)

Remedial Mathematics:

Course outcomes:

CO1. Know Trignometry, Analytical geometry, Matrices, Determinant, Integration, Differential equation, Laplace transform and their applications;

CO2. solve the problems of different types by applying theory; and

CO3. appreciate the important applications of mathematics in pharmacy

Biology:

Course outcomes:

CO1. Get knowledge on composition of plant cell and its importance.

CO2. Get knowledge on different cellular composition and its functions of different parts of plant and their modifications.

CO3. Know classification of plants based on its taxonomical characters.

Second Year

Subject code: PD201T

Title of the course: PATHOPHYSIOLOGY (Theory)

Course outcomes:

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.

Subject code: PD202T

Title of the course: PHARMACEUTICAL MICROBIOLOGY (Theory)

Course outcomes:

CO1. know the anatomy, identification, growth factors and sterilization of microorganisms;

CO2. know the mode of transmission of disease causing microorganism, symptoms of disease, and treatment aspect;

CO3. do estimation of RNA and DNA and there by identifying the source;

CO4. do cultivation and identification of the microorganisms in the laboratory;

CO5. do identification of diseases by performing the diagnostic tests; and

CO6. appreciate the behavior of motility and behavioral characteristics of microorganisms.

Subject code: PD203T

Title of the course: PHARMACOGNOSY & PHYTOPHARMACEUTICALS (Theory)

Course outcomes:

CO1. understand the basic principles of cultivation, collection and storage of crude drugs;

CO2. know the source, active constituents and uses of crude drugs; and

CO3. appreciate the applications of primary and secondary metabolites of the plant.

Subject code: PD204T

Title of the course: PHARMACOLOGY I (Theory)

Course outcomes:

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

CO4. correlate and apply the knowledge therapeutically.

Subject code: PD205T

Title of the course: COMMUNITY PHARMACY (Theory)

Course outcomes:

CO1. know pharmaceutical care services;

CO2. know the business and professional practice management skills in community pharmacies;

CO3. do patient counselling & provide health screening services to public in community pharmacy;

CO4. respond to minor ailments and provide appropriate medication;

CO5. show empathy and sympathy to patients; and

CO6. appreciate the concept of Rational drug therapy.

Subject code: PD206T

Title of the course: PHARMACOTHERAPEUTICS-I (Theory)

Course outcomes:

CO1. the pathophysiology of selected disease states and the rationale for drug therapy;

CO2. the therapeutic approach to management of these diseases;

CO3. the controversies in drug therapy;

CO4. the importance of preparation of individualised therapeutic plans based on diagnosis;

CO5. 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);

CO6. describe the pathophysiology of selected disease states and explain the rationale for drug therapy;

CO7. summarise the therapeutic approach to management of these diseases including reference to the latest available evidence;

CO8. discuss the controversies in drug therapy;

CO9. discuss the preparation of individualised therapeutic plans based on diagnosis; and

CO10. 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)

Third Year

Subject code: PD301T

Title of the course: PHARMACOLOGY II (Theory)

Course outcomes:

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

CO4. correlate and apply the knowledge therapeutically.

Subject code: PD302T

Title of the course: PHARMACEUTICAL ANALYSIS (Theory)

Course outcomes:

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

CO4. correlate and apply the knowledge therapeutically

Subject code: PD303T

Title of the course: PHARMACOTHERAPEUTICS-II (Theory)

Course outcomes:

CO1. know the pathophysiology of selected disease states and the rationale for drug therapy

CO2. know the therapeutic approach to management of these diseases;

CO3. know the controversies in drug therapy;

CO4. know the importance of preparation of individualised therapeutic plans based on diagnosis; and

CO5. 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).

Subject code: PD304T

Title of the course: PHARMACEUTICAL JURISPRUDENCE (Theory)

Course outcomes:

CO1. practice the Professional ethics;

CO2. understand the various concepts of the pharmaceutical legislation in India;

CO3. know the various parameters in the Drug and Cosmetic Act and rules;

CO4. know the Drug policy, DPCO, Patent and design act;

CO5. understand the labeling requirements and packaging guidelines for drugs and cosmetics;

CO6. be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act; and

CO7. other laws as prescribed by the Pharmacy Council of India from time to time including International Laws. CO5. 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).

Subject code: PD305T

Title of the course: MEDICINAL CHEMISTRY (Theory)

Course outcomes:

CO1.Understand the concept of advanced techniques in the drug discovery, CADD, QSAR and combinatorial chemistry.

CO2. Gain knowledge in the medicinal chemistry of Anti-infective agents.

CO3. Acquire knowledge about sulphonamides, classification, structures, SAR, therapeutic uses and synthesis.

CO4. Acquire knowledge in the classification, structures, SAR, therapeutic uses and synthesis of anti-malarial, and antibacterial.

CO5. Acquire knowledge in the classification, structures, SAR, therapeutic uses and synthesis of antibiotics.

Subject code: PD306T

Title of the course: PHARMACEUTICAL FORMULATIONS (Theory)

Course outcomes:

CO1.understand the principle involved in formulation of various pharmaceutical dosage forms;

CO2. prepare various pharmaceutical formulation;

CO3. perform evaluation of pharmaceutical dosage forms; and

CO4. understand and appreciate the concept of bioavailability and bioequivalence, their role in clinical situations.

Fourth Year

Subject code: PD401T

Title of the course: PHARMACOTHERAPEUTICS – III (Theory)

Course outcomes:

CO1. the pathophysiology of selected disease states and the rationale for drug therapy;

CO2. the therapeutic approach to management of these diseases;

CO3. the controversies in drug therapy;

CO4. the importance of preparation of individualised therapeutic plans based on diagnosis;

CO5. 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);

CO6. describe the pathophysiology of selected disease states and explain the rationale for drug therapy;

CO7. to summarize the therapeutic approach to management of these diseases including reference to the latest available evidence;

CO8. to discuss the controversies in drug therapy;

CO9. to discuss the preparation of individualised therapeutic plans based on diagnosis; and

CO10. 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).

Subject code: PD402T

Title of the course: HOSPITAL PHARMACY (Theory)

Course outcomes:

CO1. know various drug distribution methods;

CO2. know the professional practice management skills in hospital pharmacies;

CO3. provide unbiased drug information to the doctors;

CO4. know the manufacturing practices of various formulations in hospital set up;

CO5. appreciate the practice based research methods; and f. appreciate the stores management and inventory control.

Subject code: PD403T

Title of the course: CLINICAL PHARMACY (Theory)

Course outcomes:

CO1. monitor drug therapy of patient through medication chart review and clinical review;

CO2. obtain medication history interview and counsel the patients;

CO3. identify and resolve drug related problems;

CO4. detect, assess and monitor adverse drug reaction;

CO5. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and

CO6. retrieve, analyse, interpret and formulate drug or medicine information.

Subject code: PD404T

Title of the course: BIOSTATISTICS AND RESEARCH METHODOLOGY (Theory)

Course outcomes:

CO1. Know basic research methods which are used in clinical study design that relates to experimental and observational studies, collecting data, study and analyze. Observe Errors relating experimentation

CO2. Observe relation between components also measure and study linearly. We can observe one component influence with multiple factors.

CO3. Understand Testing the hypothesis, how far population parameter significant based on estimator with the help of parametric tests. Non parametric tests can also observed

CO4. Understand analysis of variance helps in study total variation observational data

CO5. Know application of analysis in field or lab experimental to design. Factorial experiments.

CO6. Know research objects about reliability and validity experimental and clinical study.

Subject code: PD405T

Title of the course: BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory)

Course outcomes:

CO1. Know basic concepts and factors influencing absorption, distribution and elimination of drugs.

CO2. Understand various pharmacokinetic models used in calculating various pharmacokinetic parameters

CO3. Study the pharmacokinetic parameters of drugs administered through intravenous bolus and infusion routes that follows one compartment open model

CO4. Determine the pharmacokinetic parameters of drugs administered through intravenous bolus and infusion routes that follows two compartment open model.

CO5. Understand the concept of multiple dosage regimen and determine pharmacokinetic parameters of drugs administered through intravenous bolus, infusion and oral routes.

Subject code: PD406T

Title of the course: CLINICAL TOXICOLOGY (Theory)

Course outcomes:

CO1. Demonstrate an understanding of the roles of various health care personnel in the prevention and management of poisonings

CO2. Demonstrate an understanding of the health and economic implications of toxic exposures

CO3. Demonstrate and apply an understanding of general toxicology principles and clinical management practice

CO4. Demonstrate and apply an understanding of the history, assessment, and therapy considerations associated with the management of a toxic exposure

CO5. Demonstrate and apply an understanding of the characteristics of and treatment guidelines for specific toxic substances.

Fourth Year

Subject code: PD501T

Title of the course: CLINICAL RESEARCH (Theory)

Course outcomes:

CO1. Understand new drug development process

CO2. Understand clinical studies scenario in Indian and other countries

CO3. Understand the regulatory and ethical requirement in clinical trails

CO4. Know the role and responsibilities of clinical trial personnel

CO5. Know the designing of clinical trial documents

Subject code: PD502T

Title of the course: PHARMACOEPIDEMIOLOGY AND PHARMACOECONOMICS (Theory)

Course outcomes:

CO1. Compare and contrasts different study designs.

CO2. Distinguish methods of data collection and recording.

CO3. Understand issues involved in selecting sample and recruiting participants.

CO4. Discuss threats to validity and issues of interpretations

CO5. Discuss applications of pharmacoepidemiological concepts and methods to pharmacy practice.

Subject code: PD503T

Title of the course: CLINICAL PHARMACOKINETICS AND PHARMACOTHERAPEUTIC DRUG MONITORING (Theory)

Course outcomes:

CO1. Apply PK-PD principles in cases using patient data to optimize pharmacotherapy and drug dosing for maximal efficacy and minimal toxicity.

CO2. Recognise, document and manage drug dosing in cases involving significant patient pharmacokinetic variability due to physiology or disease (eg age, obesity, pregnancy, malabsorption, organ dysfunction, critical illness, therapeutic target site).

CO3. Recognize, characterize and manage cases with clinically significant PK-PD drug interactions.

CO4. Demonstrate appropriate therapeutic drug management (TDM) in cases with medications for which concentrations can be measured or predicted from available PK research data.

Subject code: PD504T

Title of the course: CLERKSHIP

Course outcomes:

CO1. Discuss the role of Pharmacist in clinical pharmacy services

CO2. Demonstrate the skills of a clinical Pharmacist

CO3. Discuss the available therapeutic options in the management of diseases

CO4. Prepare a pharmaceutical care plan for a given case

CO5. Detect, Interpret and report medication errors and drug interactions

Subject code: PD505T

Title of the course: Project Work

Course outcomes:

CO1. Address a problem related to Pharmacy practice in hospital, community service or clinical set up with a wider perspective and generality

CO2. Address a problem related to Pharmacy practice in hospital, community service or clinical set up with a wider perspective and generality

CO3. Define the problem to be addressed and translate it into a statement of aim, objectives, scope and plan for the project

CO4. Carry out and report an information survey and take account of findings in executing project

CO5. Evaluate, select and apply relevant theories and techniques from the full range of courses studied using conceptual models and frameworks to enhance depth of understanding

Sixth Year

Internship

CO1. To provide patient care in cooperation with patients, prescribers and other members of an inter-professional health care team based health care team based upon sound therapeutic principles and evidence based data, taking into account relevant legal, ethical, social cultural, economic and professional issues, emerging technologies and evolving biomedical, pharmaceutical, social or behavioural or administrative and clinical sciences that may impact therapeutic outcomes.

CO2. To manage and use resources of the health care system in cooperation with patients, prescribers, other health care providers, administrative and supportive personnel to promote health, to provide, assess and coordinate safe, accurate and time sensitive medication distribution and to improve therapeutic outcome of medication use.

CO3. To promote health improvement, wellness and prevention in co-operation with patients, communities, at risk population, and other members of inter professional team of health care providers. 4. To demonstrate skills in monitoring of the national health programmes and schemes oriented to provide preventive and promotive health care services to the community.

CO5. To develop leadership qualities to function effectively as a member of the health care team organised to deliver the health and family welfare services in existing socio- economic, political and cultural environment.

CO6. To communicate effectively with patients and the community.