Subject: Pharmaceutics I (Theory) **Subject Code: 805 (T)**
Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C805T.1	List reasons for the incorporation of drugs into various dosage forms.
C805T.2	Describes the history of pharmacopoeias and development of pharmacopoeias in India.
C805T.3	Solves the problem through the application of fundamental principles of pharmaceutical metrology and concludes the decision
C805T.4	Select proper containers for packaging of pharmaceutical preparations.
C805T.5	Studying techniques and unit process used in formulation of dosage form like size reduction, size separation, mixing, filtration and extraction, heat process and distillation.
C805T.6	Describe the application of sterilization in parental preparation.
C805T.7	Describe role of additives in preparation of tablet and capsule and preparation of immunological products.

Subject: Pharmaceutics I (Practical) **Subject code: 805 (P)**
Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C805P.1	To understand the concept of labelling, solubility and dissolution
C805P.2	Demonstrate skill in the operation for extraction
C805P.3	Describe formulation and evaluation aspects of creams, lotion, shampoos, tooth pastes, gel and lipsticks
C805P.4	To understand the different techniques involve in filling of capsule and concept of microencapsulation.
C805P.5	Describe role of additive in table formulation, the different granulation process and identify defects in tablets.
C805P.6	To understand the concept of manufacturing parental and ophthalmic preparation.

Subject: Pharmaceutical Chemistry 1 **Subject Code: 806 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C806T.1 Discuss basic concept of Pharmaceutical Chemistry and Recall the basic concepts of Inorganic chemistry and Compounds.

C806T.2 Explain concept of method of preparation, physical and chemical properties and uses of various inorganic compounds.

C806T.3 Describe role of various Electrolytes in body and its mechanisms in the body.

C806T.4 Demonstrate Identification tests for various ions and Inorganic official compounds.

C806T.5 Review on Quality control of drugs and Radio Pharmaceuticals and their applications

Subject: Pharmaceutical Chemistry I (Practical) **Subject Code: 806 (P)**

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C806P.1 Understand concept of Pharmaceutical laboratory.

C806P.2 Develop the ability to identify various chemical compounds used in inorganic chemistry.

C806P.3 Identify impurities in various pharmaceuticals by performing Limit tests.

C806P.4 Identify various inorganic compounds by performing qualitative tests.

C806P.5 Study the concept of assay and calculation of percentage purity of Pharmaceuticals.

Subject: Pharmacognosy (Theory) **Subject Code: 807 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C807T.1 Explain the history and scope of Pharmacognosy.

C807T.2 Compare between various systems of classification of crude drugs.

C807T.3 Describe the fundamental principles with examples on cultivation, collection and for preparation market of crud drugs and fibers.

C807T.4 Demonstrate various pharmacognostic parameters along with gross anatomical study for various therapeutic categories of crude drugs.

C807T.5 Review Chemistry, tests, occurrence distribution, isolation and extraction of terpenoids, alkaloids, glycosides, volatile oils, tannins and resins with their medicinal utility.

C807T.6 Identify and classify adulteration and drug evaluation and state significance of pharmaceutical standards.

Subject: Pharmacognosy (Practical) **Subject Code: 807 (P)**

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C807P.1 Acquire skill of operating compound microscope

C807P.2 Develop creativity in section cutting, staining and mounting techniques and observe the section under microscope and discriminate different components of the section.

C807P.3 Develop the ability to identify crude drugs with the help of morphological characters.

C807P.4 Develop the sensory response (Characters) and to perform chemical test according to said procedure.

Subject: Biochemistry and Clinical Pathology **Subject Code: 808 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C808T.1 Discus basic concept of Biochemistry and Recall the biochemical organization of the cell.

C808T.2 Explain the metabolism of carbohydrate, lipid, protein and their role in our body.

C808T.3 Describe enzymes and isoenzymes in the field of clinical diagnosis.

C808T.4 Demonstrate Minerals and Vitamins as co-enzymes and their significance in human body.

C808T.5 Review normal, abnormal constituent and pathology of blood and urine

Subject: Biochemistry and Clinical Pathology (Practical) Subject Code: 808 (P)

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C808P.1	Understand concept of biochemistry and clinical pathology laboratory.
C808P.2	Develop the ability to identify natural products by qualitative analysis
C808P.3	Identify normal and abnormal constituent of urine and blood.
C808P.4	Identify and describe various pathogenic microorganisms present in sputum and feces by microscopic examination.
C808P.5	Study various techniques of blood withdrawal and Injections.

Subject: Human Anatomy and Physiology (Theory) Subject Code: 809 (T)
Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C809T.1	Recall the basics of the anatomy, physiology and the cell.
C809T.2	Explain the different types of tissues and importance of the blood.
C809T.3	Describe the cardiovascular system and Urinary system.
C809T.4	Describe the Respiratory system and digestive system.
C809T.5	Identify types of bones and their structure and type of muscle along with their position.
C809T.6	Explain nervous system and various Glands involve in endocrine system.
C809T.7	Elementary knowledge of structure and functions of the organs of taste, smell, ear, eye and skin. Physiology of pain and Explain reproductive system.

Subject: Human Anatomy and Physiology (Practical) Subject Code: 809 (P)

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C809P.1	To understand the concept of Anatomy and Physiology, To know various body cavities and body system.
C809P.2	Gain basic knowledge of human body and various illnesses, disorders.
C809P.3	To observe and understand various models, charts for study of Human anatomy like Heart, Bones, Kidney, Respiratory System, Nervous system, Eye, Skin, Ear, Digestive system, Reproductive system.

C809P.4 To determine the Haemoglobin content, R.B.C., W.B.C. , platelets , blood group, E.S.R., D.L.C., Malarial Parasites, Bleeding time and Clotting Time in Human blood.

C809P.5 To record the Pulse rate, Heart Rate, Blood Pressure, Body temperature.

C809P.6 To study the microscopic structure of human tissue and T.S. of Human Organ.

Subject: Health Education and Community Pharmacy (Theory) Subject Code: 810 (T)

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C810T.1 Discuss the concept of health and health related factors in environment.

C810T.2 Explain various aspects of first aid.

C810T.3 Describe various communicable and non-communicable diseases.

C810T.4 Demonstrate fundamentals about microbiology.

C810T.5 Review on microbiological concepts and epidemiological concepts.

Second Year D. Pharm

Subject: Pharmaceutics-II (Theory) **Subject Code: 811 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C811T.1	Read, judge, interpret, and translate into english any prescription or medication order written in latin or other.
C811T.2	Apply basic mathematical calculations in the compounding and dispensing.
C811T.3	Review basic requirements in the compounding and dispensing of pharmaceutical products.
C811T.4	Generates accurate and appropriate drug information and provides consultation to patients and other health care professionals.
C811T.5	Defines and describes the physical characteristics of pharmaceutical solution, suspensions, emulsions, semi-solid dosage forms, dental and cosmetic preparations.

Subject: Pharmaceutics-II (Practical) **Subject Code: 811 (P)**

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C811P.1	To understand the prescription and identify the type of formulation
C811P.2	To understand method of preparation
C811P.3	To select the suitable container
C811P.4	To decide the general and special instructions to be given on the label

Subject: Pharmaceutical Chemistry II (Theory) Subject Code: 812 (T)

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C812T.1	Discuss basic concept of Pharmaceutical Chemistry and Recall the basic concepts of organic chemistry and compounds.
C812T.2	Introduction to the nomenclature of organic chemical systems with particular reference to Hetero-cyclic system containing up to 3 rings.
C812T.3	The chemistry of pharmaceutical organic compounds covering their nomenclature, Chemical structure, uses and the important physical and chemical properties, Stability and storage conditions.
C812T.4	To discuss about stability and storage conditions and pharmaceutical formulations of discussed organic drugs.
C812T.5	To learn some popular brand names of discussed drugs.

Subject: Pharmaceutical Chemistry-II (Practical) Subject Code: 812 (P)

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C812P.1	Discuss introduction to laboratory and determination of physical constants
C812P.2	Explain systematic qualitative analysis of organic drugs.
C812P.3	Discuss identification test of the official drugs included in IP.
C812P.4	Discuss preparation of organic samples.

Subject: Pharmacology and Toxicology (Theory) Subject Code: 813 (T)

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C813T.1	Recall the basics of Pharmacology including Pharmacokinetics and Pharmacodynamics
C813T.2	Discuss some drugs acting on central nervous system and autonomic nervous system.
C813T.3	Discuss drugs acting on cardiovascular system including respiratory, digestive system, diuretics and eye.
C813T.4	Discuss some chemotherapeutic agents used for various diseases.

Subject: Pharmacology and Toxicology (Practical) **Subject Code: 813 (P)**

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C813P.1	Acquired skills of care and handling of laboratory animal including some techniques viz. anesthesia, euthanasia, route of administration and body fluid collection.
C813P.2	Discuss commonly used instrument in experimental pharmacology including some experiments using computer simulated software programme.
C813P.3	To interpret from the graph by observing the effect of some drug on heart rate and force of contraction on isolated heart of a frog by using the CD of MSBTE.
C813P.4	To interpret from the graph by observing the effect of some drugs on ileum and muscle tissue. (using the CD of MSBTE.).
C813P.5	Develop laboratory discipline, organize the work in the laboratory follow the instructions given in the laboratory.

Subject: Pharmaceutical Jurisprudence (Theory) **Subject Code: 814 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C814T.1	Brief about Origin and nature of pharmaceutical legislation decided by government of India.
C814T.2	Explain Principles and significance of professional ethics required in pharmaceutical industry.
C814T.3	Discuss Drugs and Cosmetics act which details on regulations on retail and whole sale,distribution of drugs and powers provided to governing body by this act.
C814T.4	Explain various acts detailing Advertisement of medicines, Registration process required in pharma industry along with of introduction to acts guiding on Price control, Medicinal and Toilet preparations and Medical Terminations.
C814T.5	Brief about the punishable offences made by violating the guidelines mentioned by these acts.

Subject: Drug Store & Business Management (Theory) **Subject Code: 815 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C815T.1	Explain trade, industry and commerce and forms of business organization.
C815T.2	Discuss channels of distribution and space lay-out and legal requirements to start drug store.
C815T.3	Describe importance and objectives of purchasing along with codification.
C815T.4	Explain methods of inventory control and sales promotion techniques.
C815T.5	Describe sales promotion techniques and recruitment and training of pharmacist.
C815T.6	Discuss service and functions of bank and introduction to accounting concepts.
C815T.7	Explain cash book, general ledger, trial balance and profit and loss accounts.

Subject: Hospital and Clinical Pharmacy (Theory) **Subject Code: 816 (T)**

Course learning objectives related to knowledge and cognitive skills: Upon the completion of theory topics, learner should be able to:

C816T.1	Discuss in detail about Hospital, Hospital pharmacy and determine the role, requirements and abilities of the pharmacist practicing in the hospital
C816T.2	Know various drug distribution systems, manufacturing practices & explain briefly the methods followed dispensing to out- patient & in-patient.
C816T.3	Understand Pharmacy Therapeutic Committee and Hospital Formulary system; discuss drug information services and application of computer in hospital and clinical pharmacy.
C816T.4	Demonstrate and explain surgical dressing, surgical equipments and health accessories.
C816T.5	Describe clinical pharmacy, patient counselling and discuss common daily terminology used in the practice of medicines and physiological parameters.
C816T.6	Identify drug interactions, adverse drug reactions, drug dependence and drug toxicity; recognize the disease, clinical manifestations, pathophysiology of selected hospital clinical disorders.
C816T.7	Predict the clinical significance of bioavailability and bioequivalence.

Subject: Hospital and Clinical Pharmacy (Practical) **Subject Code: 816 (P)**

Course learning objectives related to knowledge, skill and attitude: on completion of laboratory experiments, learner should be able to:

C816P.1	Describe evaluation aspects of raw material and surgical dressings.
C816P.2	Understand the concept of preparation of transfusion fluids.
C816P.3	Demonstration on sterilization of hospital supplies.
C816P.4	Describe handling and uses of data processing equipments.
C816P.5	Understand the role of Pharmacist in first aid treatment, patient counselling and family planning.