

## **SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA**

(Sponsored by The Exhibition Society), Tarnaka, Secunderabad

Approved by AICTE & PCI, Affiliated to Osmania University

### **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL INORGANIC CHEMISTRY THEORY

**Subject Code :** PY.05.881.1.1.T

*Upon completion of this course the student should be able to*

CO1: Knowledge about various inorganic impurities which may enter the pharmaceutical inorganic compounds and their potential hazards.

CO2: Knowledge about various pharmaceutical inorganic compounds with reference to their pharmaceutical category, method of their quality test, assay and uses. (GI reagent and electrolytes dialysis fluids).

CO3: Explain the definitions preparation and tests for purity of assay methods and uses mineral, nutritional, pharmaceutical aids.

CO4: Explain the definitions, preparation and tests for purity and assay methods and uses of expectorant and emollient.

CO5: Acquire knowledge on dental agents and dialogue agents.

**Subject Name:** PHARMACEUTICAL INORGANIC CHEMISTRY PRACTICAL

**Subject Code :** PY.05.881.1.6.P

*Upon completion of this course the student should be able to*

CO1. Able to analyse cations & anions through systematic qualitative analysis.

CO2. Evaluate the impurities present in inorganic pharmaceuticals & drugs and find their pharmacopoeia limits.

CO3. Create the method of preparation of inorganic pharmaceuticals & memorize their uses.

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### **COURSE OUTCOMES**

**Subject Name:** BASIC COMPUTER APPLICATIONS-I THEORY

**Subject Code :** PY.05.881.1.2.T

*Upon completion of this course the student should be able to*

CO1. This course comprises of evolution, History, structure of computer. It helps to acquire knowledge about computer & explains the architecture of it. Also gives insight about types of printer's principles of flow charting & operating systems like MS Dos, UNIX & windows.

CO2. This course helps to learn & practice the MS Office which includes MS word & MS Excel. This helps to organize data through different commands & MS Excel functions. Helps to make good documentation & formatting text.

CO3. This course focuses on learning Ms-Office which includes Ms-power point and Ms-Access. This teaches to how effectively data can be presented through MS Power point and also how data can be solved and accessed through MS Access. It helps to understand & write effective reports.

CO4. This course makes to understand the concept of internet, browser search engines, www. Email. Com. Which helps to communicate with people around the world.

CO5. This course teaches how to create and design Web pages through HTML using different formatting tags.

**Subject Name:** BASIC COMPUTER APPLICATIONS-I PRACTICAL

**Subject Code :** PY.05.881.1.7.P

*Upon completion of this course the student should be able to*

CO1 • The students will gain hands on experience on the computer system for various kinds applications studied in theory.

CO2• the students will gain hands on experience on the computer system for writing simple programs

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## **COURSE OUTCOMES**

**Subject Name:** GENERAL PHARMACY THEORY

**Subject Code :** PY.05.881.1.3.T

Upon completion of this course the student should be able to

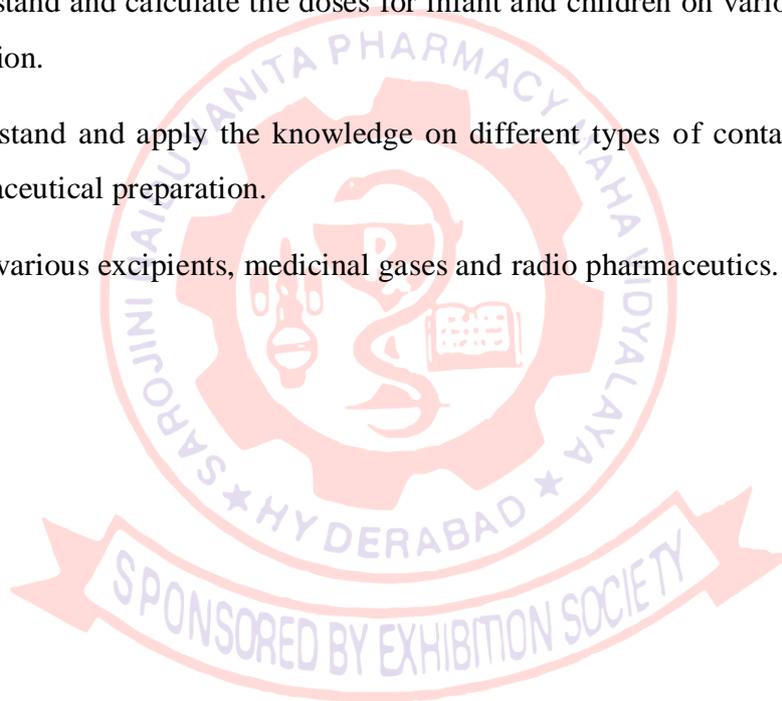
CO1: To get an exposure and a comprehensive knowledge on the history of pharmaceutical abduction and to make aware of various pharmacopoeias.

CO2: To gain knowledge and understand various types of simple calculations involved in preparation and dispensing of dosage forms and excipients used.

CO3: To understand and calculate the doses for infant and children on various factors and to get on prescription.

CO4: To understand and apply the knowledge on different types of containers and dosage used for pharmaceutical preparation.

CO5: To study various excipients, medicinal gases and radio pharmaceuticals.



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**COURSE OUTCOMES**

**Subject Name:** HUMAN ANATOMY AND PHYSIOLOGY –I THEORY

**Subject Code :** PY.05.881.1.4.T

*Upon completion of this course the student should be able to*

CO1. Recall the structure & functions of cell and various tissues of human body.

CO2. Classify & Understand the Anatomy & Physiology of Skeletal system along with the muscle associated with it.

CO3. Explain Anatomy & Physiology of Circulatory system of human body.

CO4. Describe the important aspects of anatomy & Physiology in Cardiovascular system.

CO5. Recognize the importance of various Sense organs

**Subject Name:** HUMAN ANATOMY AND PHYSIOLOGY –I

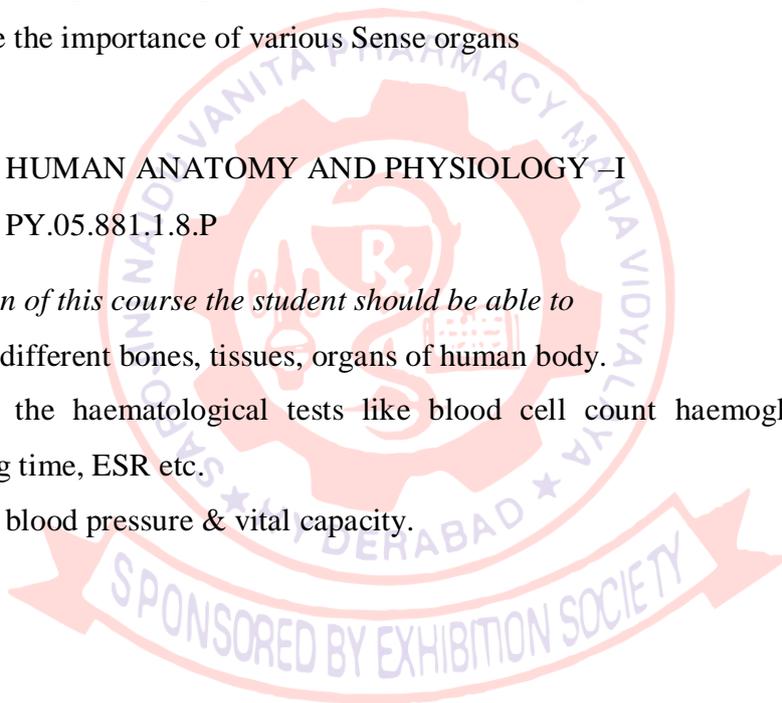
**Subject Code :** PY.05.881.1.8.P

*Upon completion of this course the student should be able to*

CO1. Identify different bones, tissues, organs of human body.

CO2. Analyze the haematological tests like blood cell count haemoglobin estimation, bleeding/clotting time, ESR etc.

CO3. Analyze blood pressure & vital capacity.



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### **COURSE OUTCOMES**

**Subject Name:** MATHEMATICS THEORY

**Subject Code :** PY.05.881.1.5.T

*Upon completion of this course the student should be able to*

CO1. Learn the definitions of logarithm to understand & apply to solve the problems.

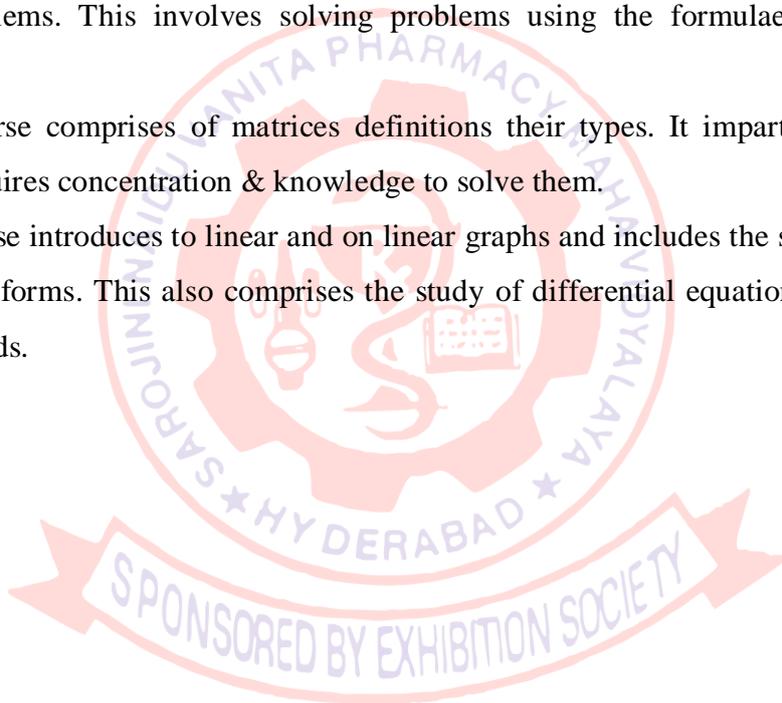
Different formulae to memorize & apply to different examples.

CO2. Provides knowledge on differential calculus. It requires to apply the methods to solve the problems and also to memorize & recite them to effectively use for solution of problems.

CO3. This course comprises of Integral calculus. It has to interpreted properly to apply to solve the problems. This involves solving problems using the formulae which have to memorize.

CO4. This course comprises of matrices definitions their types. It imparts knowledge on matrices. It requires concentration & knowledge to solve them.

CO5. This course introduces to linear and on linear graphs and includes the study of equation of lines and its forms. This also comprises the study of differential equations their by using different methods.



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**COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL ORGANIC CHEMISTRY -I THEORY

**Subject Code :** PY.05.881.2.1.T

*Upon completion of this course the student should be able to*

CO1: Knowledge on structural and reactivity of inorganic molecule, electron displacements, general nature of organic reactions.

CO2: Understand and explain the mechanisms involved in the alkenes, alkane, alkynes, free radical reaction, electrophilics addition reaction.

CO3: Explain the mechanism involved in nucleophilic substitution reaction and eliminating reaction

CO4: Understand the mechanism involved in named reactions.

CO5: Knowledge on acidity of carboxylic acids.

**Subject Name:** PHARMACEUTICAL ORGANIC CHEMISTRY-I PRACTICAL

**Subject Code :** PY.05.881.2.6.P

*Upon completion of this course the student should be able to*

CO1. To understand & acknowledge various laboratory techniques of organic chemistry lab.

CO2. To perform systemic qualitative analysis of unknown organic compounds.

CO3. To understand reaction mechanisms involved in synthesis of various organic compounds.

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### **COURSE OUTCOMES**

**Subject Name:** INTRODUCTION TO DOSAGE FORMS THEORY

**Subject Code :** PY.05.881.2.2.T

*Upon completion of this course the student should be able to*

CO1: To classify the various dosage forms on the basis of formulation and routes of administration. To understand and acquire knowledge on liquid preparation, their general method of preparation

CO2: To understand an exposure on the solid dosage forms, their general methods of preparation.

CO3: To understand and acquire knowledge on semisolid and their preparation methods, calculation of displacement methods, calculations of displacement values for suppositories.

CO4: To know the importance of sterility, type of sterilization method and exposure on parenteral products, their general method of preparation.

CO5: To understand the concept of Incompatibilities types methods of overcoming and handling of Incompatible prescription.

**Subject Name:** INTRODUCTION TO DOSAGE FORMS PRACTICAL

**Subject Code :** PY.05.881.2.7.P

*Upon completion of this course the student should be able to*

CO1: Impart the knowledge about the principle, Procedure involving pharmaceutical calculations, dosage calculations for pediatric and geriatric patients.

CO2: Understand the incompatibility studies in few simple dosage forms

CO3: Impact the knowledge about the principle and procedure regarding the liquid dosage forms including labeling & packing procedure as well as containers.

CO4: Impact the knowledge about the principle and procedure regarding the semi-solids including labeling & packaging procedure as well as containers.

CO5: Impact the knowledge about the principle and procedure regarding the solids (effervescent granules) including labeling & packaging procedure as well as containers.

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## **COURSE OUTCOMES**

**Subject Name:** HUMAN ANATOMY AND PHYSIOLOGY-II THEORY

**Subject Code :** PY.05.881.2.3.T

*Upon completion of this course the student should be able to*

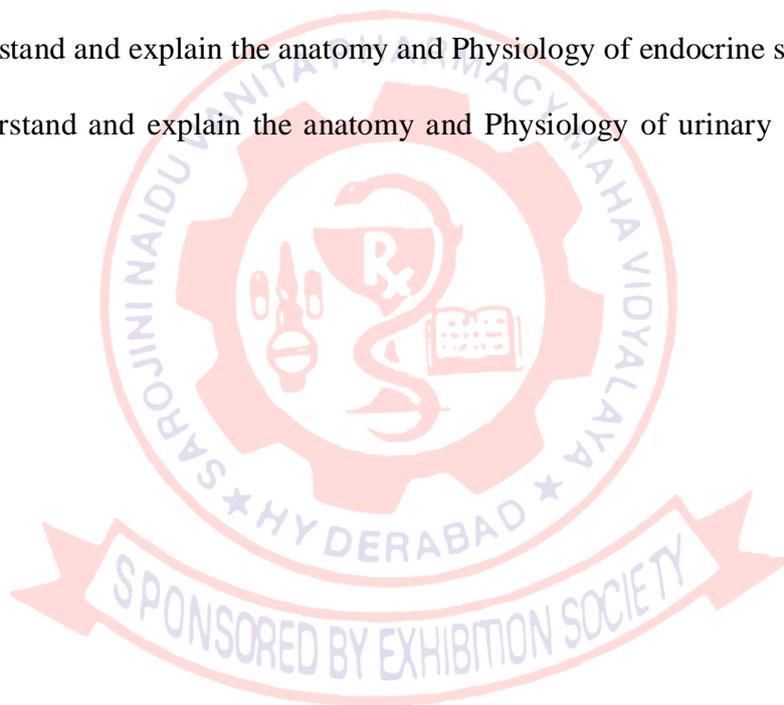
CO 1: To understand and explain the anatomy and Physiology of respiration.

CO 2: To understand and explain the anatomy and Physiology of nervous system.

CO3: To understand and explain the anatomy and Physiology of digestive system and Physiology of digestion.

CO 4: To understand and explain the anatomy and Physiology of endocrine system.

CO 5: To understand and explain the anatomy and Physiology of urinary and reproductive system.



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### **COURSE OUTCOMES**

**Subject Name:** BASIC COMPUTER APPLICATIONS-II AND ENGLISH LANGUAGE THEORY

**Subject Code :** PY.05.881.2.4.T

*Upon completion of this course the student should be able to*

CO 1: This course emphasises an importance of c language and learning basic building of c language.

CO 2: This course helps to learn the C language. Also emphasis on how to build logic and write programmes using different control statements like FOF, IF, IF-ETSE while and do while loop etc. Also ables to write simple programme using standard function.

CO 3: This gives discuss about advantages of DBMS and using different data models.

CO 4: This course discuss about structured language its data type and different SQL command and also compares access SQL server.

CO 5: This introduce to data analysis, cloud computing, big data, data viewing and also teaches to design chemical structures using Chemsketch, Chemdraw, chemical data base design and their tools.

**Subject Name:** BASIC COMPUTER APPLICATIONS-II AND ENGLISH LANGUAGE PRACTICAL

**Subject Code :** PY.05.881.2.8.P

*Upon completion of this course the student should be able to*

CO1.The students will gain hands on experience on writing simple programs based on C and SQL which will be useful in pharmaceutical applications.

CO2 The students will gain hands on experience and practice on usage of better communication skills.

CO3.Create & Design webpage using HTML tags and other multimedia aids.

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### **COURSE OUTCOMES**

**Subject Name:** COMMUNICATIVE ENGLISH THEORY

**Subject Code :** PY.05.881.2.5.T

*Upon completion of this course the student should be able to*

CO1: Able to learn the basics of communication and different types of communicating, they will be able to know how to communicate better. How to present themselves better in front of others.

CO2: They will know how to deliver a speech, types of speech, direct and indirect speech. The students will come to know how to make use of communication by understanding the difference between British English and American English.

CO3: Written skills are brushed by the previous units. Student will learn how to write letter officially and non officially like memos, circular notice, they will learn to identify elements of letter. They will apply elements of letter to compose a letter.

CO4: Learning of common errors which Indians make while learning English. They will learn difference between learning and listening and different method in applying to learning and listening.

CO5: After completing of essay student will come to know how to research a topic and organise her thoughts into an introduction a body and conclusion and gives good grammar language.

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**COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL ORGANIC CHEMISTRY-II THEORY

**Subject Code :** PY.06.881.3.1.T

*Upon completion of this course the student should be able to*

CO1. Explain Reactions, Reactivity, Nomenclature, Orientation of Benzene, Benzene derivations and Polynuclear hydrocarbons.

CO2. Define, classify, organize the atoms and produce stereoisomers.

CO3. To describe nomenclature, explain methods of preparation, examples and uses of Heterocyclic compounds containing on heteroatom

CO4. Describe nomenclature, explain methods of preparation, examples and uses of heterocyclic compounds containing one heteroatom.

CO5. Describe methods of preparations, and applications of different synthetic reagents and named reactions.

**Subject Name:** PHARMACEUTICAL ORGANIC CHEMISTRY -II PRACTICAL

**Subject Code :** PY.06.881.3.6.P

*Upon completion of this course the student should be able to*

CO1. Able the synthesis and explain the mechanism involved in the synthesis of heterocyclic compound containing one hetero atom.

CO2. Able to synthesis and explain the mechanisms involved in the synthesis of heterocyclic compound containing two hetero atom.

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**COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL ANALYSIS –I THEORY

**Subject Code :** PY.06.881.3.2.T

*Upon completion of the syllabus students should be able to*

- CO1. Explain the fundamental concepts of volumetric analysis.
- CO2. Explain and apply the principles of Neutralization titrations.
- CO3. Explain and apply the principles of redox titrations and gravimetric analysis.
- CO4. Explain and apply complexometric precipitation, nonaqueous titrations and gas analysis.
- CO5. To recall and acquire knowledge on computation of analytical results.

**Subject Name:** PHARMACEUTICAL ANALYSIS –I PRACTICAL

**Subject Code :** PY.06.881.3.7.P

*Upon completion of the syllabus students should be able to*

- CO1. To apply the concept of calibration of various glassware used in analytical techniques.
- CO2. To apply the concept of Standardization & Estimation of various compounds using different volumetric titrations.
- CO3. To apply the concept of Estimation of compounds by gravimetric methods.

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### **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL MICROBIOLOGY THEORY

**Subject Code :** PY.06.881.3.3.T

*Upon completion of the syllabus students should be able to*

CO1. Explain microbiology and Microscopy. Write the taxonomical classification of different Micro-organisms and their significance in pharmacy. Explain the Nutrition, cultivation Isolation, Identification and preservation techniques used for Bacteria.

CO2. Enumerate the different Bio-Chemical reactions employed to identify the Micro-organisms. Explain the physiology and Reproduction of bacteria, actinomycetes, fungi, yeasts and viruses. Write about mutations and mutants various factors influencing mutations and their repair mechanism.

CO3. Explain sterilization and different methods involved in sterilization. Enumerate the factors involved in disinfection.

CO4. Describe the general principles of Immunology and serology with their applications.

CO5. Explain the term infection and write about communicable diseases and their prevention like tuberculosis, typhoid, Diphtheria, Whooping cough plague, Malaria, filariasis, Influenza. Explain the systemic studies of E.Coli, Pencillium species, streptomyces, Explain the microbiology of milk and water.

**Subject Name:** PHARMACEUTICAL MICROBIOLOGY PRACTICAL

**Subject Code :** PY.06.881.3.8.P

*Upon completion of the syllabus students should be able to*

CO1. Explain the sterilization procedures using dry heat and moist heat sterilization.

CO2. Describe the various medias, methods of Aseptic transfer Isolation of pure cultures and preservation technique.

CO3. Enumerate the different staining techniques and biochemical reactions for identification of bacteria. Describe the Bacteriology of milk and water.

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## **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL ENGINEERING-I THEORY

**Subject Code :** PY.06.881.3.4.T

*Upon completion of this course the student should be able to*

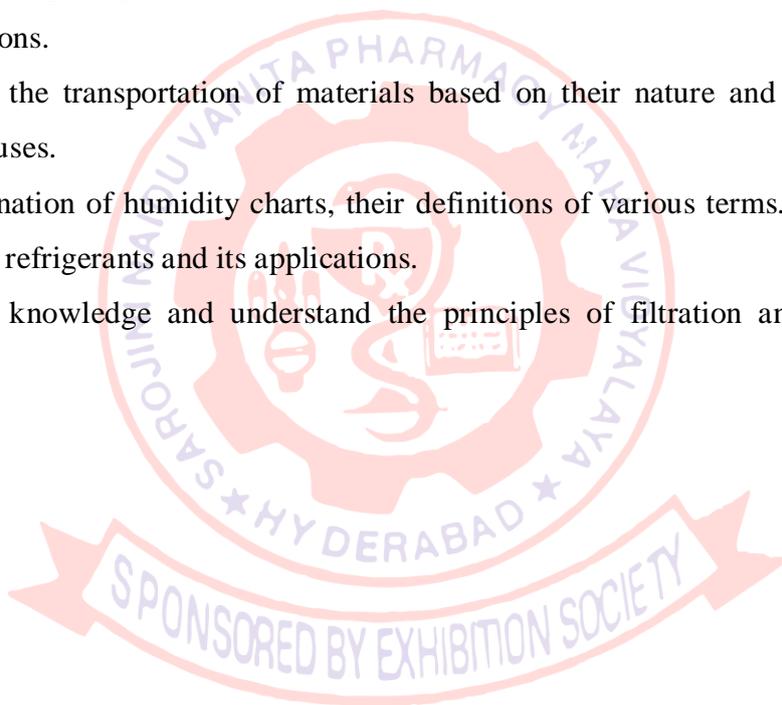
CO1. Describe the materials for the construction of Pharmaceutical Equipment's and methods to prevent corrosion and definitions of unit operations.

CO2. Explain the principles, theories measurements of fluid flow and heat transfer proceeds and its applications.

CO3. Classify the transportation of materials based on their nature and its principles of construction & uses.

CO4. Determination of humidity charts, their definitions of various terms. Write a note on air conditioning refrigerants and its applications.

CO5. Acquire knowledge and understand the principles of filtration and centrifugation methodologies.



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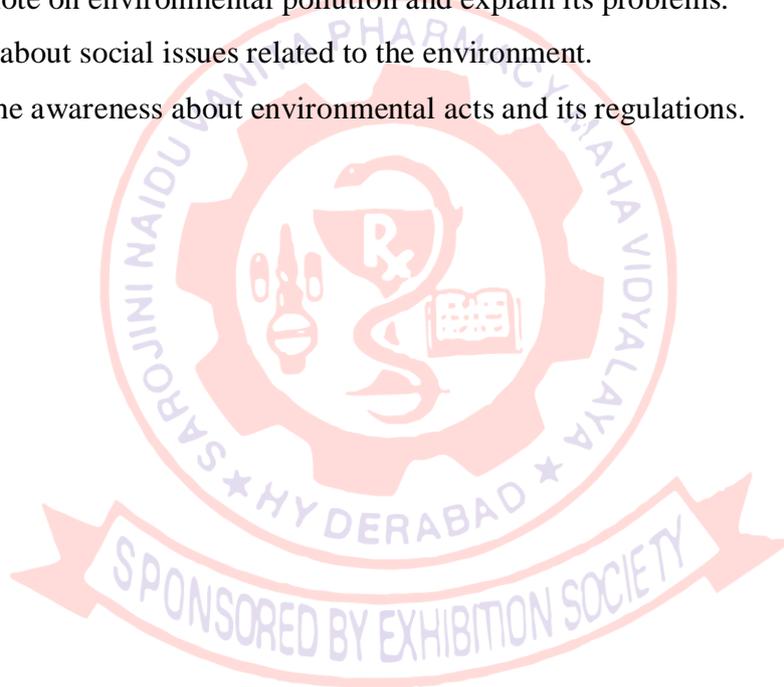
## **COURSE OUTCOMES**

**Subject Name:** ENVIRONMENTAL SCIENCES THEORY

**Subject Code :** PY.06.881.3.5.T

*Upon completion of this course the student should be able to*

- CO1. Acquire the knowledge about environment, Natural resources of its allied problems and its conservation.
- CO2. Explain the impact of biodiversity and its conservation.
- CO3. Give a note on environmental pollution and explain its problems.
- CO4. Explain about social issues related to the environment.
- CO5. Create the awareness about environmental acts and its regulations.



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## COURSE OUTCOMES

**Subject Name:** PHARMACEUTICAL CHEMISTRY (CNP) THEORY

**Subject Code :** PY.06.881.4.1.T

*Upon completion of this course the student should be able to*

CO1. Identify the various chemical techniques to confirm the structures of Natural carbohydrates. Analyse the fats and oils by different analytical techniques.

CO2. Describe the Relationship of Amino acids to proteins and polypeptides. Explain the chemistry of Protein drugs with their significances.

CO3. Explain the general methods of structural determination of flavonoids. Recognise the significance of flavonoids. List out the methods of Isolation of terpenoids. Choose the different chemical techniques to confirm the structures of terpenoids.

CO4. Classify the alkaloids with examples. Describe the general methods of extraction and uses. Explain the structure Elucidation and chemistry of Alkaloidal drugs. Acquire knowledge in purine drugs understands the significance of Naturally occurring drug resources.

CO5. Identify the steroidal drugs. Categories the hormonal drugs with their significance. Explain the mechanism of Action and uses of cardiac drugs.

**Subject Name:** PHARMACEUTICAL CHEMISTRY PRACTICAL

**Subject Code :** PY.06.881.4.6.P

*Upon completion of this course the student should be able to*

CO1. Identify the different classes of Natural drugs with qualitative analysis

CO2. Analyse the fats and oils by Analytical techniques judge the purity of the substance.

CO3. Select the techniques for estimation of natural drugs.

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### **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL ENGINEERING-II THEORY

**Subject Code :** PY.06.881.4.2.T

*Upon completion of this course the student should be able to*

CO1. Define & choose various unit operations in pharmaceutical industries for size reduction & size separation. To understand the material handling techniques. To perform the various process involved in pharmaceutical manufacturing process.

CO2. Define & classify evaporation & Distillation. To understand the Principle construction working & applications of various equipment's used in evaporation & distillation.

CO3. Define & classify drying & crystallization. To understand the principles, construction working & applications of equipment's used in Drying & Evaporation. describe about the importance of gas absorption in Pharmacy & their properties & type of equipment's.

CO4. Define about mixing & the types of mixing process. describe about the Principle, construction working advantage, disadvantage of various mixers and ion exchange operations.

CO5. Explain about various process involved in manufacturing process of tablets. Explain about the various automatic process variables.

**Subject Name:** PHARMACEUTICAL ENGINEERING-II PRACTICAL

**Subject Code :** PY.06.881.4.7.P

*Upon completion of this course the student should be able to*

CO1. Identify the Reynold's number, Analyse the heat transfer co-efficient. To differentiate & identify the humidity by dew point & Psychrometry method. To analyze the stokes law.

CO2. Analyse the efficiency of size reduction using the ball mill. To represent the size distribution by sieve analysis.

CO3. Comprehend the symbols for unit operation. Appreciate the plant layout design used in various unit operations.

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**COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL BIOCHEMISTRY THEORY

**Subject Code :** PY.06.881.4.3.T

*Upon completion of this course the student should be able to*

CO1. Recall the biochemical organization of cell, transport processes and explain the concept of free energy & energy rich compounds.

CO2. Understand the catalytic activity of enzymes, metabolic processes of carbohydrates in physiological & pathological condition.

CO3. Explain the metabolism of lipids in physiological & pathological condition.

CO4. Understand the metabolism of protein, amino acid and the genetic organisation of mammalian genome, functions of DNA in synthesis of RNA & proteins.

CO5. To apply the knowledge of biochemical processes for qualitative & quantitative determination of various biomolecules in body fluids for various diagnostic purposes.

**Subject Name:** PHARMACEUTICAL BIOCHEMISTRY PRACTICAL

**Subject Code :** PY.06.881.4.8.P

*Upon completion of this course the student should be able to*

CO1. To identify & analyze various Carbohydrates, Proteins & Amino acids qualitatively.

CO2. To analyze and estimate Cholesterol, Glucose, Urea & Creatinine in Serum quantitatively.

CO3. Qualitative & Quantitative estimation of normal and abnormal constituents of Urine.

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### **COURSE OUTCOMES**

**Subject Name:** BIOSTATISTICS (PHARMACOSTATISTICS) THEORY

**Subject Code :** PY.06.881.4.4.T

*Upon completion of this course the student should be able to*

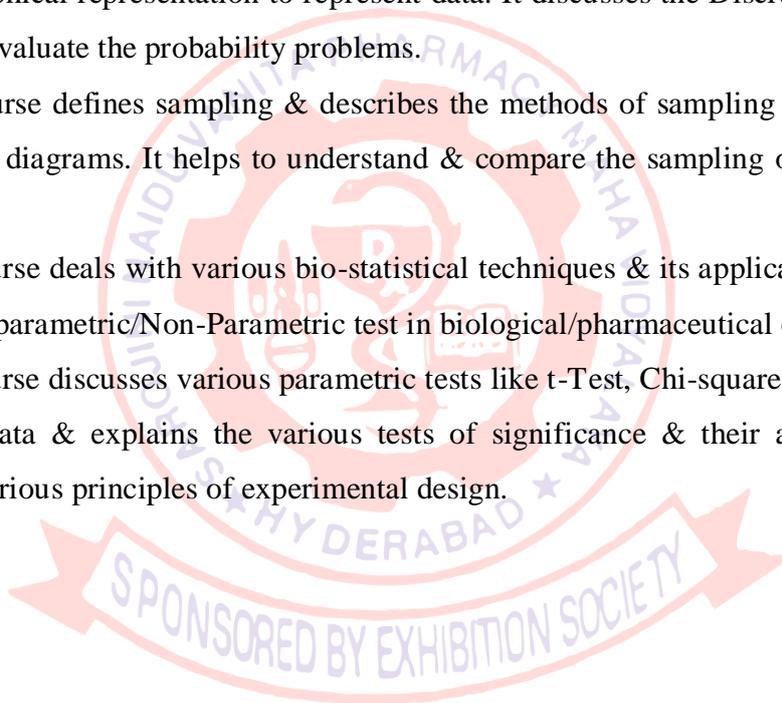
CO1. This course underlines the basics of statistics. Define mean, median & mode. It helps to understand concepts of standard deviation correlation, regression. Also focuses on describing the probability theory and application of theorems to day to day problems.

CO2. This course comprises of nature scope, statistical methods & limitations. It focuses on methods of graphical representation to represent data. It discusses the Discrete & continuous distribution to evaluate the probability problems.

CO3. This course defines sampling & describes the methods of sampling & representation of data through diagrams. It helps to understand & compare the sampling of Non-Sampling errors.

CO4. This course deals with various bio-statistical techniques & its applications. It helps to apply common parametric/Non-Parametric test in biological/pharmaceutical experiments.

CO5. This course discusses various parametric tests like t-Test, Chi-square test, ANOVA. It evaluates the data & explains the various tests of significance & their application. Also discusses the various principles of experimental design.



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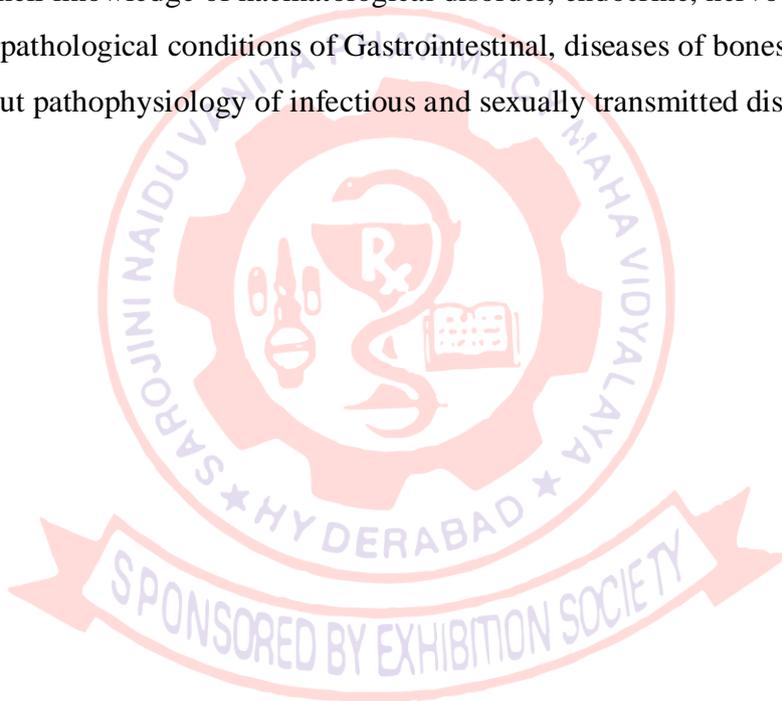
## **COURSE OUTCOMES**

**Subject Name:** PATHOPHYSIOLOGY THEORY

**Subject Code :** PY.06.881.4.5.T

*Upon completion of this course the student should be able to*

- CO1. Study types, morphology of Cell injury and pathophysiology and types of Inflammation.
- CO2. Know the pathogenesis of different diseases of cardiovascular, respiratory and renal systems.
- CO3. Improve their knowledge of haematological disorder, endocrine, nervous system.
- CO4. Learn the pathological conditions of Gastrointestinal, diseases of bones and cancer.
- CO5. Learn about pathophysiology of infectious and sexually transmitted diseases.



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## COURSE OUTCOMES

**Subject Name:** Medicinal Chemistry-I

**Subject Code :** PY.07.881.5.1.T

*Upon completion of the syllabus students should be able to*

CO1. Explain the influence of physico chemical properties of drug molecules in relation to biological activity.

CO2. Knowledge on classification, mechanism of action, structural activity relationship, synthesis and metabolites of some pharmacodynamic agents.

CO3. Classify and explain mechanism of action, structural activity relationship, synthetic route and metabolites of selected cardio vascular system.

CO4. Define, classify and describe mechanism of action, structural activity relationship, synthesis and metabolites of selected category of drugs which interfere the Hormonal balance in our body.

CO5. Classification, design and development of drugs which treat allergies. Descriptions of Proton pump inhibitors (H1+H2) classification and description of coagulants and anticoagulants.

**Subject Name:** MEDICINAL CHEMISTRY-I PRACTICAL

**Subject Code :** PY.07.881.5.6.P

*Upon completion of the syllabus students should be able to*

CO1. To understand and adopt the reaction mechanisms and purification techniques for the synthesis of drugs or intermediates.

CO2. To understand and adopt procedure in the estimation of the amount of API present in formulations.

CO3. To appreciate the significance of absorption of drugs in bio-phase and to determine the partition coefficient of drugs.

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## **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL TECHNOLOGY THEORY

**Subject Code :** PY.07.881.5.2.T

*Upon completion of the syllabus students should be able to*

CO1. Give a note on the properties, selection of various recipients used in different forms and formulation, preparation, evaluation of capsules.

CO2. Explain the formulation, manufacturing and evaluation of suspensions, emulsions.

CO3. Give a note on the formulation, manufacturing and evaluation of tablets, tablet coating.

CO4. Explain the formulation manufacturing and evaluation of parenteral, ophthalmic preparations.

CO5. Explain the formulation, manufacturing, evaluation of Aerosols and acquire knowledge about packaging materials of their properties, uses evaluation.

**Subject Name:** PHARMACEUTICAL TECHNOLOGY PRACTICAL

**Subject Code :** PY.07.881.5.7.P

*Upon completion of the syllabus students should be able to*

CO1. Acquire about formulation of parenteral and sealing of ampoules.

CO2 Prepare gels, knowledge suspensions, emulsions and evaluate the suspensions, emulsions.

CO3 Prepare tablets, hard gelatin capsules by different methods and evaluate them

# **SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA**

(Sponsored by The Exhibition Society), Tarnaka, Secunderabad

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## **COURSE OUTCOMES**

**Subject Name:** PHYSICAL PHARMACY – I THEORY

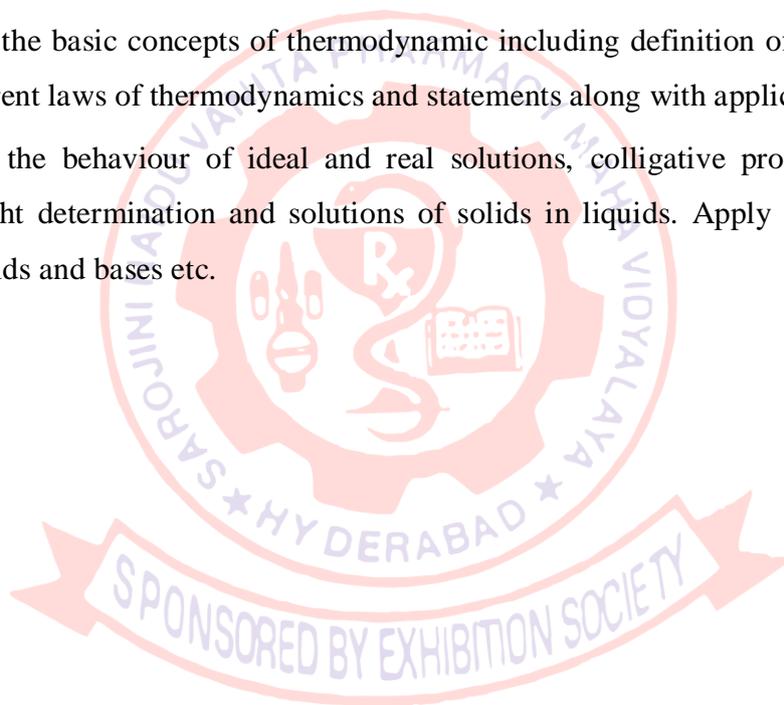
**Subject Code :** PY.07.881.5.3.T

*Upon completion of the syllabus students should be able to*

CO1. Explain the basic concepts, interactions and formation of Physical states of matter and its various physicochemical properties of drug molecules in designing the dosage forms and different techniques to identify them.

CO2. Explain the basic concepts of thermodynamic including definition of thermodynamic terms and different laws of thermodynamics and statements along with applications.

CO3. Explain the behaviour of ideal and real solutions, colligative properties and their molecular weight determination and solutions of solids in liquids. Apply the principles of ionisation of acids and bases etc.



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**COURSE OUTCOMES**

**Subject Name:** PHARMACOGNOSY – I THEORY

**Subject Code :** PY.07.881.5.4.T

*Upon completion of the syllabus students should be able to*

CO1. Describe classification, Isolation tests, chemical nature and uses of various alkaloidal containing crude drugs.

CO2. Describe classification, Isolation, tests, chemical nature and uses of various glycoside containing crude drugs.

CO3. Demonstrate Isolation, characterization & estimation of Phyto constituents. Describe classification, Isolation, tests, chemical nature and uses of various volatile oil containing crude drugs.

CO4. Understands various techniques involved in tissue culture.

CO5. Understand the preparation & development of herbal formulation. To analyse various quality control and standardization methods of raw materials used in herbal formulation.

**Subject Name:** PHARMACOGNOSY – I PRACTICAL

**Subject Code :** PY.07.881.5.8.P

*Upon completion of the syllabus students should be able to*

CO1. Identify the morphological & microscopical evaluation of crude drugs

CO2. Analyse physical & microscopical methods of evaluation of crude drugs

CO3. Describe about isolation & estimation of various crude drugs

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## **COURSE OUTCOMES**

**Subject Name:** PHARMACOLOGY – I THEORY

**Subject Code :** PY.07.881.5.5.T

*Upon completion of the syllabus students should be able to*

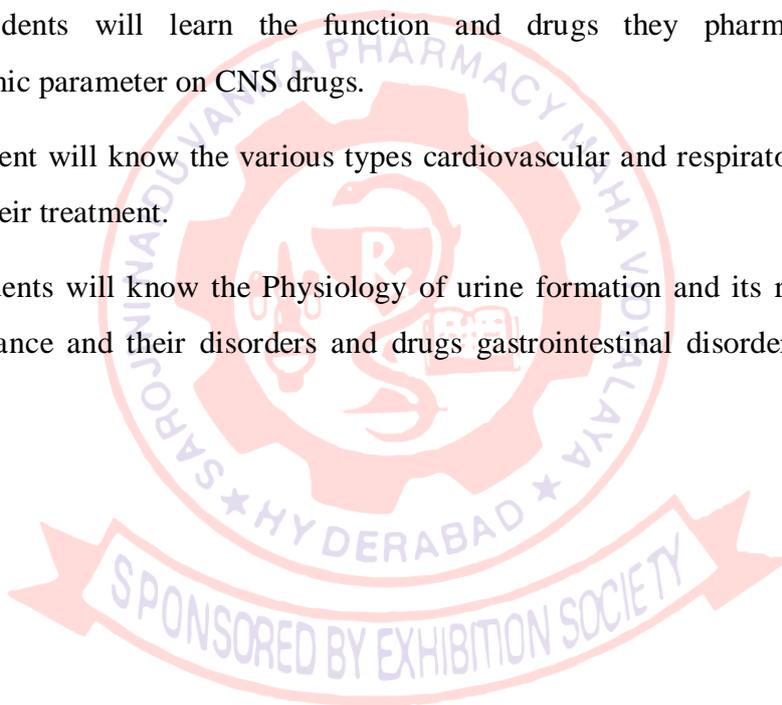
CO1: Pharmaceutics and pharmacodynamic principle of drugs and different dosage forms.

CO2: The students will learn the function and mechanism involved in sympathetic and parasympathetic neurotransmitters and their pharmacokinetics parameters.

CO3: The students will learn the function and drugs they pharmacokinetics and pharmacodynamic parameter on CNS drugs.

CO4 : The student will know the various types cardiovascular and respiratory disorders and drugs used in their treatment.

CO5 : The students will know the Physiology of urine formation and its role in water and electrolytes balance and their disorders and drugs gastrointestinal disorders and drugs are studied.



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### **COURSE OUTCOMES**

**Subject Name:** PHYSICAL PHARMACY – II THEORY

**Subject Code :** PY.07.881.6.1T

*Upon completion of the syllabus students should be able to*

CO1. Understand & describe the solubility of solute in liquids focus on solids distribution phenomena for application in the design of drugs.

CO2. Describe the chemical kinetic principles, order, rate of reaction, factors affecting the rate of reaction, prevent degradation & use of these principles for stability testing and determination of expiry date of formulations.

CO3. Understand & Explain principles and applications of interfacial phenomena, Adsorption at solid interfaces, Electrical properties of interfaces.

CO4. Understand & Explain principles and applications of colloids, micromeritics, properties of colloids, methods to determine particle size distribution, derived properties of powders.

CO5. Describe type of flow (Rheology) & their measurement. Applications of Rheology, Thixotropy and its measurement, classify polymers and their pharmaceutical applications.

**Subject Name:** PHYSICAL PHARMACY – II PRACTICAL

**Subject Code :** PY.07.881.6.6 P

*Upon completion of the syllabus students should be able to*

CO1. Demonstrate the physico chemical properties of drugs and solvency.

CO2. Evaluate the Acidity, Instant.

CO3. Demonstrate the behaviour of surface phenomena.

CO4. Study the solid-state properties of drugs and Excipients

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### **COURSE OUTCOMES**

**Subject Name:** PHARMACOLOGY – II THEORY

**Subject Code :** PY .07.881.6.2.T

*Upon completion of the syllabus students should be able to*

CO1. Explain the basic principles of chemotherapy and Analyze the problem associated with the drugs used for the treatment of various microbial infections and cancer.

CO2. Describe physiological role of autacoids and pharmacology of related drugs and predict the drug targets based on etiopathogenesis of haemopoietic disease and explain the pharmacology of drugs acting on haemopoietic systems.

CO3. Explain the Pharmacology and rationale use of drugs used for the treatment of various endocrine disorders.

CO4. Explain the principles of Bioethics and Bioassays and describe the biological assays of some selective drugs.

CO5. Explain the principles of Toxicology and their adverse reactions and Describe the treatment of poisoning for drugs and phases of clinical trials.

**Subject Name:** PHARMACOLOGY –II PRACTICAL

**Subject Code :** PY .07.881.6.7.P

*Upon completion of the syllabus students should be able to*

CO1: Understand the concepts and fundamentals of experimental pharmacology, its history and various equipment and appliances used in introduction part of experimental pharmacology.

CO2: Analyse the receptor location, action and the effect of various drugs on isolated tissue or whole using simulation experiments.

CO3: Learn and comprehend the effect of various drugs response on different activity studies such as anti-pyretic, hypoglycaemic, anti-psychotic, analgesic, types of antagonism on whole animal/isolated tissue preparation.

CO4: Understand the various routes of administration by using different drugs available, and acquire data regarding dose response curve relationships.

CO5: Understand the concepts of bioassay and its significance.

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**COURSE OUTCOMES**

**Subject Name:** PHARMACOGNOSY-II THEORY

**Subject Code :** PY.07.881.6.3.T

*Upon completion of the syllabus students should be able to*

- CO1. Describe classification, Isolation tests, chemical nature and uses of various alkaloidal containing crude drugs.
- CO2. Describe classification, Isolation, tests, chemical nature and uses of various glycoside containing crude drugs.
- CO3. Demonstrate Isolation, characterization & estimation of Phyto constituents. Describe classification, Isolation, tests, chemical nature and uses of various volatile oil containing crude drugs.
- CO4. Understands various techniques involved in tissue culture.
- CO5. Understand the preparation & development of herbal formulation. To analyse various quality control and standardization methods of raw materials used in herbal formulation.

**Subject Name:** PHARMACOGNOSY PRACTICAL

**Subject Code :** PY.07.881.6.8.P

*Upon completion of the syllabus students should be able to*

- CO1. Identify the morphological & microscopical evaluation of crude drugs
- CO2. Analyse physical & microscopical methods of evaluation of crude drugs
- CO3. Describe about isolation & estimation of various crude drugs.

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## **COURSE OUTCOMES**

**Subject Name:** FORENSIC PHARMACY (PHARMACEUTICAL JURISPRUDENCE)  
THEORY

**Subject Code :** PY.07.881.6.4T

*Upon completion of the syllabus students should be able to*

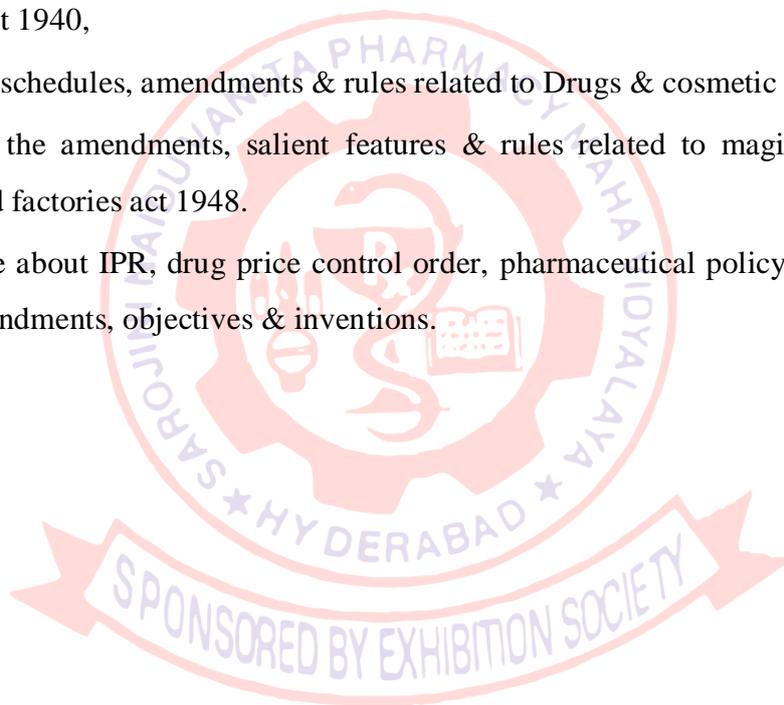
CO1. Describe about pharmaceutical and Drug legislation in India, Explain evolution and growth of Pharmaceutical industry and code of Pharmaceutical Ethics.

CO2. Gain knowledge on Administration, control and manufacture and regulation of Drugs & cosmetics Act 1940,

CO3. Explain schedules, amendments & rules related to Drugs & cosmetic Act,

CO4. Explain the amendments, salient features & rules related to magic remedies food adulteration and factories act 1948.

CO5. Describe about IPR, drug price control order, pharmaceutical policy & Indian patent act with its amendments, objectives & inventions.



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## COURSE OUTCOMES

**Subject Name:** PHARMACOTHERAPEUTICS THEORY

**Subject Code :** PY.07.881.6.5 T

*Upon completion of the syllabus students should be able to*

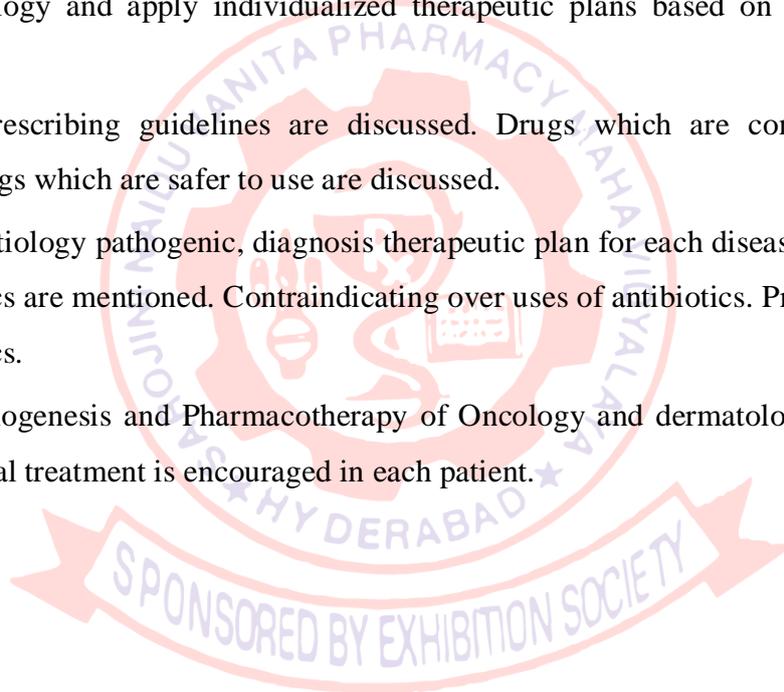
CO1. Learn ethiopathogenesis and pharmacotherapy of disease present in cardiovascular system and respiratory system, applying of pharmacotherapy will be learnt according to different types of complications present in the person.

CO2. Learn ethiopathogenesis and pharmacotherapy of disease present in Endocrine system and ophthalmology and apply individualized therapeutic plans based on the diagnosis of patient.

CO3. Learn prescribing guidelines are discussed. Drugs which are contraindicated are mentioned. Drugs which are safer to use are discussed.

CO4. Discuss etiology pathogenic, diagnosis therapeutic plan for each disease mentioned and use of antibiotics are mentioned. Contraindicating over uses of antibiotics. Promoting rational use of antibiotics.

CO5. Ethiopathogenesis and Pharmacotherapy of Oncology and dermatological disease are learnt. Individual treatment is encouraged in each patient.



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## COURSE OUTCOMES

**Subject Name:** MEDICINAL CHEMISTRY –II THEORY

**Subject Code :** PY.07.881.7.1 T

*Upon completion of the syllabus students should be able to*

CO1. Describe the structural features, synthetic route and their influence on metabolic pathway for selected Anti-inflammatory agents.

CO2. Explain and gain knowledge on classification and structure activity relationship influencing metabolism for antibiotics and chemotherapeutic agents.

CO3. Knowledge on various parasitic and protozoal infections and to describe the role of medicinal agents used for prophylaxis.

CO4. Classify and describe structural features mechanism of action of some drugs influencing central nervous system.

CO5. Knowledge on preparation and biochemical role of vitamins, essential amino acids and protein drugs in health promotion.

**Subject Name:** MEDICINAL CHEMISTRY –II PRACTICAL

**Subject Code :** PY.07.881.7.6 P

*Upon completion of the syllabus students should be able to*

CO1. Outline & Illustrate the synthesis for selected compounds.

CO2. Recognize and interpret the IR spectral data for selected medicinal agents

CO3. Estimate and evaluate the percentage purities of selected drugs in formulations.

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## COURSE OUTCOMES

**Subject Name:** PHARMACEUTICAL ANALYSIS THEORY

**Subject Code :** PY.07.881.7.2.T

*Upon completion of the syllabus students should be able to*

CO1. Understand the principle of absorption in UV-Visible spectroscopy and its applications

CO2. Understand & apply the concepts of IR spectroscopy in interpreting of functional groups

CO3. Explain the principle involved in Fluorescence spectroscopy, NMR spectroscopy & mass spectrometry & its application.

CO4. Explain the principle & theoretical aspects DTA, Home photometry & Electrochemical analysis – like conductometry, potentiometry, Amperometry.

CO5. Describe and apply the principles of separation in chromatography & Electrophoresis to analyse various drugs.

**Subject Name:** PHARMACEUTICAL ANALYSIS PRACTICAL

**Subject Code :** PY.07.881.7.7.P

*Upon completion of the syllabus students should be able to*

CO1. Understand the principle of absorption in UV-Visible spectroscopy and its applications

CO2. Understand & apply the concepts of IR spectroscopy in interpreting of functional groups

CO3. Explain the principle involved in Fluorescence spectroscopy, NMR spectroscopy & mass spectrometry & its application.

CO4. Explain the principle & theoretical aspects DTA, Home photometry & Electrochemical analysis – like conductometry, potentiometry, Amperometry.

CO5. Describe and apply the principles of separation in chromatography & Electrophoresis to analyse various drugs.

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**COURSE OUTCOMES**

**Subject Name:** DOSAGE FORMULATION DESIGN (PHARMACEUTICS –III) THEORY

**Subject Code :** PY.07.881.7.3. T

*Upon completion of the syllabus students should be able to*

- CO1. Explain and describe physic chemical parameters in preformulation studies.
- CO2. Explain, describe & prepare dosage form by using techniques of sustained action and microencapsulation.
- CO3. Design & prepare new drug delivery systems like transdermal, Liposomes, ocular, nanoparticles.
- CO4. Describe, indicate, apply and judge Bioavailability & Bioequivalence
- CO5. Explain and indicate the procedures of quality control, quality Assurance and manufacturing process.

**Subject Name:** DOSAGE FORMULATION DESIGN (PHARMACEUTICS –III)  
PRACTICAL

**Subject Code :** PY.07.881.7.8.P

*Upon completion of the syllabus students should be able to*

- CO1. Prepare and evaluate different Novel drug delivery systems.
- CO2. Prepare and evaluate sustain release and matrix tablets.
- CO3. Evaluation of Liposomes, transdermal matrix preparations.

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### **COURSE OUTCOMES**

**Subject Name:** BIOPHARMACEUTICS AND PHARMACOKINETICS THEORY

**Subject Code :** PY.07.881.7.4.T

*Upon completion of the syllabus students should be able to*

CO1. Understand the basic concepts in biopharmaceutics and pharmacokinetics their significance, describe the factors affecting drug Absorption.

CO2. Determine factors affecting drug distribution, explain protein and tissue binding of drugs and their significance.

CO3. Understand determine the factors affecting the metabolism Explain phase-I and phase-II metabolic reactions. Understand Excretion of drugs factors affective Excretion of drugs rate processes in biological system.

CO4. Understood and Describe rate processes in biological system, derive various pharmacokinetic parameters, their significance and applications, explain the clinical pharmacokinetics, dose adjustment with & without renal & hepatic diseases.

CO5. Use of plasma concentration time profile. Analyze the PK parameters to interpolate Absorption, distribution, metabolism, Excretion and elimination under the conditions of IV bolus infection, Intravenous infusion, oral single dose graphically.

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## **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL BUSINESS MANAGEMENT THEORY

**Subject Code :** PY.07.881.7.5.T

*Upon completion of the syllabus students should be able to*

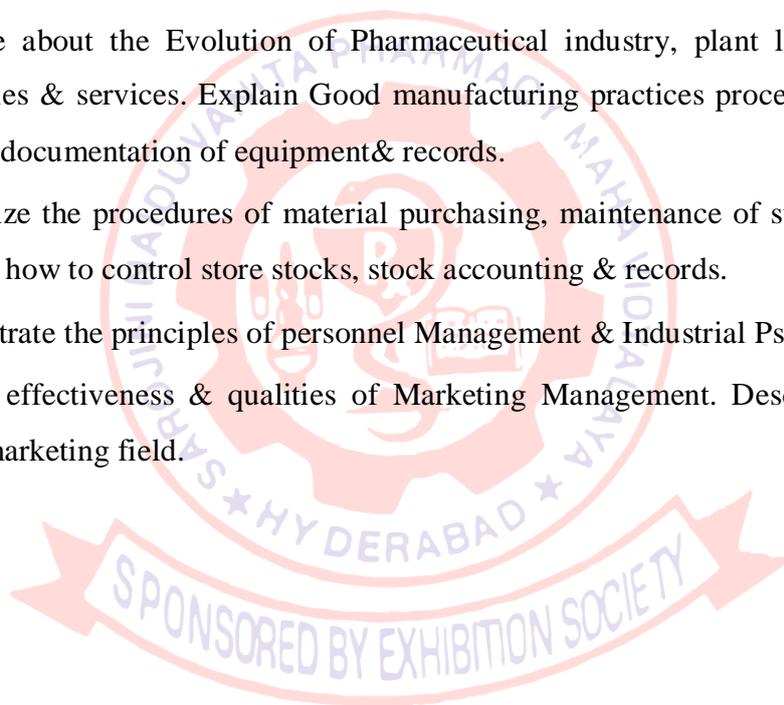
CO1. Explain Management concepts for production planning & quality control. Summarise principles of Management information system & principles of TQM for Pharmaceutical products.

CO2. Describe about the Evolution of Pharmaceutical industry, plant layouts, Building facilities, Utilities & services. Explain Good manufacturing practices procedure involved in maintenance of documentation of equipment & records.

CO3. Generalize the procedures of material purchasing, maintenance of store & Inventory control, explain how to control store stocks, stock accounting & records.

CO4. Demonstrate the principles of personnel Management & Industrial Psychology.

CO5. Explain effectiveness & qualities of Marketing Management. Describe the role of Pharmacist in marketing field.



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### **COURSE OUTCOMES**

**Subject Name:** PHARMACEUTICAL BIO TECHNOLOGY THEORY

**Subject Code :** PY.08.881.8.1T

*Upon completion of the syllabus students should be able to*

CO1. Describe the Genetic code and explain the different products that are obtained by the r-DNA technology

CO2. Explain the process of Fermentation in detail and different byproducts that are obtained by this process.

CO3. Describe the Immunization products (Active & Passive). Explain their preparation, standardization, storage, labelling and their applications.

CO4. Explain the blood products and glandular products, plasma substitutes and write about their collection, processing and storage.

CO5. Explain the production of monoclonal antibodies along with techniques that are involved in the process of Animal culture.

**Subject Name:** PHARMACEUTICAL BIO TECHNOLOGY PRACTICAL

**Subject Code :** PY.08.881.8.6.P

*Upon completion of the syllabus students should be able to*

CO1. Describe the standardization of cultures and the procedure involved in it.

CO2. Conduct the microbiological Assay of Antibiotics, vitamins. Describe the Isolation of mutants by gradient plate techniques. Evaluate the pharmaceutical products for sterility and prepare bacterial vaccine.

CO3. Understand the Immobilization of cells/enzymes by different techniques and compare their efficacy. Explain production of Alcohol by fermentation techniques.

CO4. Explain the extraction of DNA from onions and the preparation of blood products/human normal immunoglobulin injection.

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### **COURSE OUTCOMES**

**Subject Name:** PHARMACOINFORMATICS THEORY

**Subject Code :** PY.08.881.08.2 T

*Upon completion of the syllabus students should be able to*

CO1. Design & classify database, explain the structure of databases & generalize the importance of Biological databases in related to pharmacy.

CO2. Distinguish between different search algorithms. Describe the procedure for storage & retrieval of Biological information.

CO3. Explain about the development of Drug information resources and describe about pharmacy automation.

CO4. Acquire knowledge on Genomics & Proteomics. Explain about different DNA sequencing techniques & How to prepare Gene Libraries.

CO5. Explain different concepts of SAR & QSAR analysis. summarize Biochemical approaches in Drug design.

**Subject Name:** PHARMACOINFORMATICS PRACTICAL

**Subject Code :** PY.08.881.08.7.P

*Upon completion of the syllabus students should be able to*

CO1. Acquire knowledge on different literature search engine, pharmaceutical resources, Drug information resources. Sequence alignment Techniques.

CO2. Practicing skills on Virtual library, database & search tools & molecular docking studies.

CO3. Execute programming with SQL & Bioperl

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## **COURSE OUTCOMES**

**Subject Name:** COSMETIC TECHNOLOGY THEORY

**Subject Code :** PY.08.881.08.3.T

*Upon completion of the syllabus students should be able to*

CO1. Know and explain the skin structure, functions, ingredients used in cosmetics, related regulatory provision of cosmetic preparation

CO2. Understand and describe formulations, manufacturing, packaging, labeling evaluation of face, eye and body preparations.

CO3. Know and describe the formulation, manufacturing packaging, labeling, quality evaluation of skin, nail, body & shaving preparation.

CO4. Understand & describe the formulation, preparation, packaging, evaluation of hair and dental preparation.

CO5. Acquire knowledge of herbal cosmetics & describe the formulation, manufacturing, packaging labeling and evaluation of herbal cosmetics.

**Subject Name:** COSMETIC TECHNOLOGY PRACTICAL

**Subject Code :** PY.08.881.8.8.P

*Upon completion of the syllabus students should be able to*

CO1. Formulate, prepare, pack and label skin cosmetics

CO2. Formulate, prepare, pack and label powders, nail & lip cosmetics.

CO3. Formulate, prepare, pack and label body & men's cosmetics

CO4. Pack & Label.

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## **COURSE OUTCOMES**

**Subject Name:** HOSPITAL & CLINICAL PHARMACY THEORY

**Subject Code :** PY.08.881.08.4.T

*Upon completion of the syllabus students should be able to*

- CO1. Describe about the objectives of Hospital Pharmacy and its organisation
- CO2. Describe about Hospital formulary, Budget planning, purchasing and inventory control of drugs, surgical instruments and radioisotopes.
- CO3. Explain the basic principles of clinical pharmacy
- CO4. Understand the concept of Essential drugs and Rational drug use
- CO5. Explain diseases, disease system and treatment

