

LAB COURSE OUTCOMES DEPARTMENT OF PHYSICS

Renewable Energy

Practical:

Upon completion of this Lab	
CO1	The student will be able to Able to understand the renewable energy sources available at present.
CO2	The student will be able to Able to understand the solar energy operation and its characteristics.
CO3	The student will be able to educate the wind energy operation and its types.
CO4	The student will be able to he student will be able to educate the tidal and geothermal energy principles and its operation.
CO5	The student will be able to understand the biomass energy generation and its technologies

Solar Thermal and Photovoltaic Aspects

Practicals:

Upon completion of this course.	
CO1	The student will be able to Able to study the basic properties of solar photovoltaic panel
CO2	The student will be able to Measurement of solar radiation and its constants with pyro-heliometer and Pyrometer
CO3	The student will be able to Determination of efficiency of FPC
CO4	The student will be able to Able to measure the emissivity, reflectivity and transsivity

Wind Hydro and Ocean Energies

Practical:

Upon completion of this course.	
CO1	The student will be able to determination of wind speed and characteristics of wind generator.
CO2	The student will be able to Study of rotor characteristics with blade properties of wind turbine
CO3	The student will be able to To study the performance of turbine with its mode of axis.
CO4	The student will be able to To measure the output power of hydroelectric generator with the variation of different properties

DEPARTMENT OF BOTANY

LAB COURSE OUT COMES

Lab: Vegetable Crops –Cultivation:

After successful completion of the Lab:

CO1: Student will be able to list out, identify and handle different garden implements.

CO2: Student will be able to identify the important vegetable crops grown in their locality.

CO3: Student will be able to demonstrate various skills in cultivation of vegetable crops.

CO4: Student will be able to identify pests, diseases and their remedies that are specific to a vegetable crop.

Lab: Vegetable Crops – Post Harvest Practices:

After completion of the Lab:

CO1: Student will be able to list out, identify and handle different garden implements.

CO2: Student will be able to identify the important vegetable crops grown in their locality.

CO3: Student will be able to demonstrate various skills in cultivation of vegetable crops.

CO4: Student will be able to identify pests, diseases and their remedies that are specific to a vegetable crop.

DEPARTMENT OF CHEMISTRY

FUNDAMENTALS IN ORGANIC CHEMISTRY

Organic Qualitative analysis – (Practical)

Course outcomes:

At the end of the course,

CO1. The student will be able to Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

CO2. The student will be able to Determine melting and boiling points of organic compounds

CO3. The student will be able to understand the application of concepts of different organic reactions studied in theory part of organic chemistry

Experiments

Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point with suitable derivatives. Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Aromatic primary amines, amides and simple sugars.

ORGANIC CHEMISTRY

Organic preparations (Practical)

Course outcomes:

On the completion of the course,

CO1. The student will be able to How to use glassware, equipment and chemicals and follow experimental procedures in the laboratory.

CO2. The student will be able to How to calculate limiting reagent, theoretical yield, and percent yield.

CO3. The student will be able to How to perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.

CO4. The student will be able to How to critically evaluate data collected to determine the identity, purity and percent yield of products and to summarize findings in writing in a clear and concise manner.

Experiments

I Acetylation of β -naphthol, vanillin and salicylic acid by:

a) Using conventional method. b) Using green approach

II Preparation of Nerolin

PHYSICAL CHEMISTRY (Practical)

Course outcomes:

At the end of the course,

- CO1. The student will be able to Use of glassware, equipment and chemicals and follow experimental procedures in the laboratory.
- CO2. The student will be able to Understand and apply the concepts of solutions practically.
- CO3. The student will be able to Apply concepts of electrochemistry in experiments.

Experiments

CST, Conductometric and Potentiometric Titrimetry

1. Determination of CST for Phenol-water system.
2. Effect of electrolyte on CST.
3. Conductometric titration - Determination of concentration of HCl solution using standard NaOH solution.
4. Conductometric titration – Determination of concentration of CH₃COOH Solution using standard NaOH solution.
5. Potentiometric titration-Determination of concentration of HCl using standard NaOH solution.

INORGANIC AND PHYSICAL CHEMISTRY QUALITATIVE INORGANIC ANALYSIS (Practical)

Course outcomes:

At the end of the course,

- CO1 The student will be able to Understand the basic concepts of qualitative analysis of inorganic mixture.
- CO2 The student will be able to Use glassware, equipment and chemicals and follow experimental procedures in the laboratory.
- CO3 The student will be able to Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis.

Experiments

Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:

Anions: Carbonate, Sulphate, Chloride, Bromide, Acetate, Nitrate, Borate, Phosphate.

Cations: Lead, Copper, Iron, Aluminium, Zinc, Nickel, Manganese, Calcium, Strontium, Barium, magnesium and Ammonium.

Minimum of Six mixtures should be analyzed.

DEPARTMENT OF ZOOLOGY LAB COURSE OUTCOMES

COURSE: ANIMAL DIVERISTY-II BIOLOGY OF CHORDATES

CO1 Describe general taxonomic rules on animal classification of chordates

CO2 Classify Protochordata to Mammalia with taxonomic keys

CO3 Understand Mammals with specific structural adaptations

CO4 Understand the significance of dentition and evolutionary significance

CO5 Understand the origin and evolutionary relationship of different phyla from Prochordata to Mammalia.

COURSE: PRINCIPLES OF GENETICS

CO1 To understand the history of genetics, gain knowledge basic terminology of genetics

CO2 To acquire knowledge on interaction of genes, various types of inheritance patterns existing in animals with reference to non-Mendelian inheritance.

CO3 To acquire knowledge on chromosomal inheritance

CO4 Acquiring in-depth knowledge on various of aspects of genetics involved in sex determination,

CO5 Acquiring in-depth knowledge on human karyotyping, pedigree analysis and chromosomal disorders concepts of proteomics and genomics.

COURSE: ANIMAL BIOTECHNOLOGY

CO1 Get knowledge of the Vectors and Restriction enzymes used in biotechnology

CO2 Describe the gene delivery mechanism and PCR technique

CO3 Acquire basic knowledge on media preparation and cell culture techniques

CO4 Understand the manipulation of reproduction with the application of biotechnology

CO5 Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering.

DEPARTMENT OF COMMERCE (COMPUTER APPLICATIONS)

Lab Course Outcomes

Course:-Office Automation Tool Lab

CO1	Student will be able to perform documentation
CO2	Student will be able to perform accounting operations
CO3	Student will be able to Presentation Skills
CO4	Student will be able to make students well familiar with computer concepts and Office automation tools.
CO5	Student will be able to Create spreadsheet with formulae, charts, filtering etc

Course:- E Commerce & Web designing

CO1	Student will be able to Understand the foundations and importance of E-commerce
CO2	Student will be able to Learn the language of the web: HTML and CSS
CO3	Student will be able to Learn Analyse the impact of E-commerce on business models
CO4	Student will be able to Design & develop web pages including: CSS Style Rules, Typography, Hyperlinks, Lists, Tables, Frames, Forms, Images, Behaviors, CSS Layouts
CO5	Student will able to Exploring a web development framework as an implementation example and create

Course: - DATABASE MANAGEMENT SYSTEM

CO1	Student will be to provide knowledge about RDBMS Concepts, SQL Concepts and PL / SQL Programming and database normalization.
CO2	Student will be to Understand the features of database management systems and Relational database
CO3	Student will be able to learn theory involved in data models and query Languages

CO4	Student will be able to Demonstrate the relational data model and use of SQL
CO5	Student will be able to Apply the concepts such as procedures, triggers, cursors and packages in a PL / SQL program.

DO'S & DON'TS

DEPARTMENT OF BOTANY

DOS AND DON'TS

Dos:

- 1. Do keep your lab clean and tidy**
- 2. Do clean up after using any glass ware or equipment**
- 3. Do keep your working bench clean**
- 4. Do handle slides and specimens with care**

Don'ts

- 1. Don't carry and handle Microscope with one hand**
- 2. Don't Directly touch any chemical with hand**
- 3. Don't Use cell phone in the lab**
- 4. Don't Eat or drink in the lab**

DEPARTMENAT OF PHYSICS

DOS

- Be On time before the experiment starts
- Carefully follow all instructions.
- Pay attention to safety both of yourself and others.
- Check all instruments before starting to see if they are Ok.
- When the experiment is over, the students should put the instrument in order.
- Keep the lab clean.

Don'ts

- Do not eat, drink, chew gum, smoke or apply cosmetics in the lab.
- Don't touch the instruments before the experiment starts.
- Don't leave the lab without the teacher's permission.
- Don't take anything from the lab.
- Do not use the phone or computer with gloves on your hands.

DEPARTMENT OF ZOOLOGY

DOS AND DON'TS

Dos:

1. Do dress appropriately
2. Do dispose of the waste and clean up the workstation
3. Do remember where emergency equipment is located
4. Do keep your working bench clean
5. Do handle slides and specimens with care

Don'ts

1. Don't eat or drink in a science lab
2. Don't enter the lab without any adult supervision
3. Don't eat or drink in a science lab

Department of Commerce Computer Lab

DO'S

- Please leave footwear outside the laboratory at the designated place. Please keep your belongings such as bags in the designated place. Maintain Discipline in the laboratory
- Work on the designated computers only.
- Turn off the respective systems and arrange the chairs before you leaving the laboratory.

DONT'S

- Do not eat food, chew gum in the laboratory.

- Do not install, uninstall or alter any software on the computer.

Students are not allowed to work in a laboratory alone or without the presence of faculty or instructor.

DEPARTMENT OF CHEMISTRY

Do'S AND Don'ts in Chemistry Laboratories

Do's in Chemistry Laboratory

- To work in the laboratory, a student must follow the following rules:
- In chemistry laboratory students have to always wear safety glasses, lab coat and shoes while working in the laboratory.
- A student must have a practical note-book, rough note book for instructions, a pen or pencil, and other equipment such as a platinum wire, fractional weights as required.
- Always come prepared for the experiment. This will help in understanding the experiment better.
- Always listen to the teacher's instructions carefully and note down the important points and precautions to be followed.
- After the instructions, collect the apparatus from the laboratory assistant in queue.
- Thoroughly clean the apparatus to be used.
- Do only the experiments assigned, unallotted experiments should not be done.

Don'ts in Chemistry Laboratory

- To avoid unnecessary risk or injury during laboratory work the students are advised to observe the following precautions:
- Do not touch any chemical with hand as some of them may be corrosive
- Never taste a chemical, it may be poisonous.
- Do not place the chemical on the palm of your hand.
- Do not keep the reagent bottles open.
- Do not roam here and there in the laboratory without work.
- Do not put any object into the reagent bottle.
- Do not bring inflammable liquids such as alcohol, either near the flame
- Do not take the reagent from the shelf to your seat.
- Do not disturb the arrangement of reagents placed on the shelf
- Do not use cracked glass apparatus such as breakers for heating purposes.
- Do not keep water tap running when not required
- Do not throw solid waste materials like filter paper pieces, test tube pices, etc., in the sink. Throw them in the waste box only