

Laboratories

BOTANY LABORATORY

At TSWRDC NIRMAL College Botany Lab is well equipped for Under Graduate students to perform various Botany practicals which are necessary for the study of the structure, properties and biochemical process of all forms of plant life, as well as plant classification, plant diseases and the interactions of plant with their physical environment.

Plant anatomy and morphology deals with structures, evolution, process and mechanism of plant parts. From Plant taxonomy the students find, identifies, describes, classifies, and the names of the different types of plants. Scientifically, the plant taxonomy is closely associated to plant systematics which involves relationships between plants and their evolution.

The laboratory is spacious, well-ventilated and well equipped with all necessary instruments and chemicals. There is a small Botanical Garden as additional asset to the Botany Department.

EQUIPMENT:

1. Microscope
2. Dissecting Microscope
3. Cover slips
4. Slides
5. Specimens
6. Display Charts
7. Digital Balance
8. Chemicals

Students performing taxonomy practical



Students preparing permanent slides in Anatomy





Chemistry Lab

Chemistry is the science which deals with properties, composition and structure of substances, the transformations they undergo and the energy that is released or absorbed during this process.

Chemistry is a laboratory science and it cannot be taught effectively without a robust laboratory experience for students. Chemistry lab have long had a distinct central role in the science curriculum as a means of making sense of natural world. The Chemistry laboratory, Dept., of Chemistry at TSWRDCW-Nirmal was established in 2016. Chemistry laboratory is accessible to all students and maintained with safety in mind.

With rapidly increasing scientific knowledge, laboratory is used as a means of confirming and illustrating information previously learnt in a lecture or from textbooks. The practical work engages students in investigations, discoveries, inquiry and problem-solving activities. It develops conceptual understanding and practical abilities (designing an experiment, recording data and analyzing & interpreting results obtained from conducting an experiment)

Chemistry laboratory is well equipped and allows the students to carry out qualitative analysis (semi-micro analysis) of inorganic compounds, quantitative analysis, synthesis of organic compounds, qualitative analysis of organic compounds, experiments based on Electrochemistry, Colorimetry, Distribution law, Adsorption, Physical constants, Potentiometry, pH metry, Conductometry, Kinetic Studies.

Chemistry laboratory is a house for 116 different chemicals and various glass apparatus, analytical balances, analytical weigh boxes, digital balance, rough balance, hot air oven, burners, centrifuge machines,

conductivity meters, digital colorimeters, pH meters, potentiometers, thermometers, Stop Watches, etc., ...









Computer Science Lab-I

The lab is equipped with twenty high configured desktop computers, one projector and UPS. A white marker board has been provided in this lab to demonstrate various concepts. This lab is utilized by the all the semester students of B.Sc. (computer science) and B. Com (computer application) to perform the exercises given in lab syllabus. The lab is also utilized by all the final year students in a specified time slot to do their projects, to browse the information requisite to pursue higher studies like post-graduation.

Hardware configuration

- Processor: Intel i7
- RAM: 8GB
- HDD: 500GB

Software

- Operating system: Windows10
- MSOFFICE 2016
- ORACLE 11g
- TURBOC++
- JDK1.7
- DEVCC++

The following practicals are to be conducted in the lab

SNo	Title of the practical lab	Course & Sem
1	Fundamentals of Information Technology	B. Com I
2	Programming in C	MSCS I
3	Programming with C and C++	B. Com II
4	Programming in C++	MSCS II
5	Database Management systems	MSCS IV, B. Com III
6	Data Structures using C++	MSCS III

7	Java Programming	MSCS V
8	Web Technologies	B. Com VI, MSCS VI
9	Cyber Security	B. Com VI
10	Commerce Lab	B. Com VI
11	Ecommerce	B. Com V





Computer Science Lab -2

The lab is equipped with twenty high configured HP Laptop computers with WIFI network facility, one K-YAN projector and I KVA UPS. This lab is utilized by the all the semester students of B.Sc. (computer science) and B. Com (computer application) to perform the exercises given in lab syllabus. The lab is also utilized by all the final year students in a specified time slot to do their projects, to browse the information requisite to pursue higher studies like post-graduation.

Hardware configuration

- Processor: Intel i7
- RAM: 8GB
- HDD: 500GB

Software

- Operating system: Windows10
- MSOFFICE 2019
- JDK11
- DEVC++

The following practicals are to be conducted in the lab

SNo	Title of the practical lab	Course & Sem
1	Fundamentals of Information Technology	B. Com I
2	Programming in C	MSCS I
3	Programming with C and C++	B. Com II
4	Programming in C++	MSCS II
5	Database Management systems	MSCS IV, B. Com III
6	Data Structures using C++	MSCS III
7	Java Programming	MSCS V
8	Web Technologies	B. Com VI, MSCS VI
9	Cyber Security	B. Com VI

10	Commerce Lab	B. Com VI
11	Ecommerce	B. Com V



Zoology Lab

The TSWRDC NIRMAL have well equipped Zoology Laboratory. It provides the students with a suitable environment to develop a detailed understanding of the animal kingdom by exploring the physical, morphological, physiological characteristics of animals and evolutionary history. Students to trained clinical diagnostics like Blood grouping, Estimation of Hb%, RBC count and WBC count,

Students trained in assessment of soil fertility and increasing the awareness of organic fertilizers, Vermicompost. Students to encourage in various projects and developing basic research skills

Zoology lab have have following equipment

1. Invertebrate specimens
2. Vertebrate specimens
3. Microscopes
4. Hemocytometer
5. Hemometer
6. Histological slides
7. Ostiology models
8. All required chemicals





Physics Lab

Physics is the branch of science that deals with the laws governing matter, energy, space, time and the relationship among them. This provides a platform for the technological development and innovations which leads to greater comfort for people. Study of physics therefore occupies a pivotal position in the search for human comfort.

Experimental physics involves measurement of physical quantities and verification of laws relating to them. To understand the concept of physics, one has to look beyond the books and conventional class room teaching.

Role of physics Lab:

- Mechanics as a part of physics deals with safety, strength, rigidity, reliability and behaviours of mechanical beams
- From thermodynamics lab students can learn how to deal with heat, temperature, and their relation to energy, work, radiation & properties of matter
- Conducting optical experiments helps the students to understand about properties of light, including its interactions with matter & construction of instruments that use or detect it
- Electronics related experiments helps to understand information processing, telecommunications and signal processing. Solid state physics experiments give guidance on how to design the circuits needed for the study of rigid matter or solids through method of crystallography, electromagnetism & metallurgy

The physics lab is established in 2017 in a well-equipped manner.

It consists of all the equipment and instruments regarding several practicals of each semester.

Mechanics:

- ❖ Compound pendulum
- ❖ Fly wheel
- ❖ Simple pendulum
- ❖ Torsion pendulum equipment

- ❖ Viscosity equipment
- ❖ Bifilar suspension
- ❖ Equipment of spring constant
- ❖ Melde's apparatus
- ❖ Volume resonator
- ❖ Sonometer
- ❖ Bar pendulum

Thermal physics:

- ❖ Planks constant
- ❖ Stefans constant
- ❖ Searle's apparatus
- ❖ Lees and charton's disc method
- ❖ Thermo couple
- ❖ Resistance temperature device

Waves and Optics:

- ❖ Fresnel's biprism
- ❖ Newton's rings equipment
- ❖ Diffraction sinle slit method
- ❖ Diffraction grating
- ❖ Double slit equipment
- ❖ Capillary flow method

Electromagnetic Theory:

- ❖ Foster's bridge
- ❖ Verification of Nortan theorem
- ❖ Verification of Thevinin theorem
- ❖ Verification of maximum power transfer theorem

Modern physics:

- ❖ Photo electric effect

- ❖ Determination of e/m value
- ❖ Millikan oil drop apparatus
- ❖ Determination of Boltzmann constant using PN diode
- ❖ LASER equipment

Electronics:

- ❖ Logic gates: AND, OR, NOT, XOR, NAND gates
- ❖ PN diode VI characteristics
- ❖ Zener diode VI characteristics
- ❖ Transistor configuration in CE mode
- ❖ RC Coupled oscillator
- ❖ Tunnel diode







Microbiology Lab

TSWRDC W Nirmal has a well-equipped Microbiology laboratory which facilitates the students to understand the Morphological and growth characteristics of a Microorganism by Handling the Microscope, Sterilization Process, Culture media preparation, Staining Techniques, Isolation Techniques etc. Students were trained with modern techniques useful for their research and career growth in Labs and Industries. It shall encourage students to go beyond the classroom and learn on the basic research applications and to develop practical laboratory skills.

Microbiology laboratory consists of the following equipment:

1. Autoclave – 1
2. Incubator – 1
3. Hot Air Oven -1
4. Microscopes – 4
5. Water Bath – 1
6. Colorimeter – 1
7. Centrifuge – 1
8. Haemocytometer- 10
9. Haemoglobinometer – 2
10. Digital Weighing machine- 1
11. Refrigerator – 1
12. All Chemicals



Students performing experiment to estimate the chemical oxygen demand in the water sample collected from Venkatapur lake, Nirmal



Students performing experiment to isolate Microorganisms and to identify their external morphological characteristics by doing Simple and Grams staining Techniques.

