

Haldia Government College
Programme Specific Outcome (PSO) &
Course Outcome (CO)
(Affiliated to Vidyasagar University)

Department of Physics

☒ **Program:** B. Sc. Hons. Major in Physics (Under CCFUP-NEP)

Programme Specific Outcome (PSO)

1. Students will learn the skills to solve problems. The Problem-solving habit really helps the students to test their own theoretical knowledge as they have apply those in realistic situations.
2. Students will develop a realistic outlook towards nature upto certain limitations.
3. In these consecutive four years, they will learn realistic events like why cricket ball spins in a certain way, why earth behaves like a magnet, how computer memory works, how does a mobile phone work etc. Thus, they will learn about the nature from the deepest possible human knowledge.
4. Good knowledge in computer coding will really help them to critically analyze problems and build a career even in fields like data science, stock market etc.

Course Outcome (CO)

1. Semester-1

MJ-1T: Foundation of Physics-1

- a) Unit-1: Preliminary Mathematical Methods
Credit: Theory – 02
Practical – 00

After completion of this course students should learn the basics of vector algebra, vector calculus, infinite series, partial derivatives, differential equations etc. They will learn all these stuffs in details so that they can really apply them in context of real physical problems in latter part of their four-year course.

- b) Unit-2: Introduction to thermodynamics
Credit: Theory – 02
Practical – 00

In this course the students will learn the basic concepts of kinetic theory of gases, thermodynamics and its laws of thermodynamics, notion of entropy and related stuffs, thermodynamic potentials, black body radiation etc.

2. Semester - 1

SEC-1: Introduction to Python programming and Graph Plotting
Credit: Theory – 00
Practical – 03

This course will enhance the programming skill of the students to a great extent and will help to build a strong foundation in Python, which is the most important programming language to learn if we consider the demand of the job market as well as the requirements of academia. They will get to know the basic concepts of data types, the libraries, the modules and how to apply them to solve various real life problems.

3. Semester-2

MJ-2T: Foundation of Physics-2

- a) Unit-1: Preliminary Classical Mechanics
Credit: Theory – 02
Practical – 00

In this course, students will brass up their knowledge of Galilean mechanics and Newton's laws of motion. They will learn the concepts of system of particles, central force, classical scattering and eventually some exposures on fluid mechanics.

- b) Unit-2: Basic Electricity & Magnetism
Credit: Theory – 02
Practical – 00

Students, in this course, will learn basic notions of electric field, potential, Gauss's law, dielectric properties of matter, magnetic field, magnetic properties of matter, electromagnetic induction and electrical circuits etc.

4. Semester - 2

MI2: Thermal Physics and Statistical Mechanics

Credit: Theory – 03

Practical – 01

In this course the students will learn the basic concepts of kinetic theory of gases, thermodynamics and its laws of thermodynamics, notion of entropy and related stuffs, thermodynamic potentials, black body radiation etc. In the practical classes, they will receive a hands-on training regarding verification of important laws of nature like Planck's law, Stefan's law, law of thermal conductivity of a bad conductor etc.

5. Semester - 2

SEC-2: Basic Instrumentation

Credit: Theory – 00

Practical – 03

In this course, students will get the basic idea of measurement and errors and they will get hands on training on how to use and handle various types of instruments necessary in day-to-day life as well as in physics laboratory. The course will enhance their skill and knowledge about the circuitry of household wiring and relevant safety and security measures.

☑ **Program:** B. Sc. Physical Sciences (Multidisciplinary Course) with
Physics (Under CCFUP-NEP)

Programme Specific Outcome (PSO)

5. Students will learn the skills to solve problems. The Problem-solving habit really helps the students to test their own theoretical knowledge as they have apply those in realistic situations.
6. Students will develop a realistic outlook towards nature upto certain limitations.
7. In these consecutive four years, they will learn realistic events like why cricket ball spins in a certain way, why earth behaves like a magnet, how computer memory works, how does a mobile phone work etc. Thus, they will learn about the nature from the deepest possible human knowledge.
8. Good knowledge in computer coding will really help them to critically analyze problems and build a career even in fields like data science, stock market etc.

Course Outcome (CO)

6. Semester-1

MJ-1A1/B1: Mathematical Methods and Mechanics (Including STR)

Credit: Theory – 03

Practical – 01

After completion of this course students should learn the basics of vector algebra, vector calculus, infinite series, partial derivatives, differential equations etc. They will learn all these stuffs in details so that they can really apply them in context of real physical problems in latter part of their four-year course. Also students will brush up their knowledge of Galilean mechanics and Newton's laws of motion. They will learn the concepts of system of particles, central force, classical scattering and eventually some exposures on special theory of relativity. In the practical class they will learn to check and verify the theory learnt in the classroom. They will learn to carry out basic measurements and the use of vernier callipers and screw gauge. Also study of bar pendulum and Kater's pendulum will enlighten them regarding rigid body motion.

7. Semester - 1

SEC-1: Introduction to Python programming and Graph Plotting

Credit: Theory – 00

Practical – 03

This course will enhance the programming skill of the students to a great extent and will help to build a strong foundation in Python, which is the most important programming language to learn if we consider the demand of the job market as well as the requirements of academia. They will get to know the basic concepts of data types, the libraries, the modules and how to apply them to solve various real life problems.