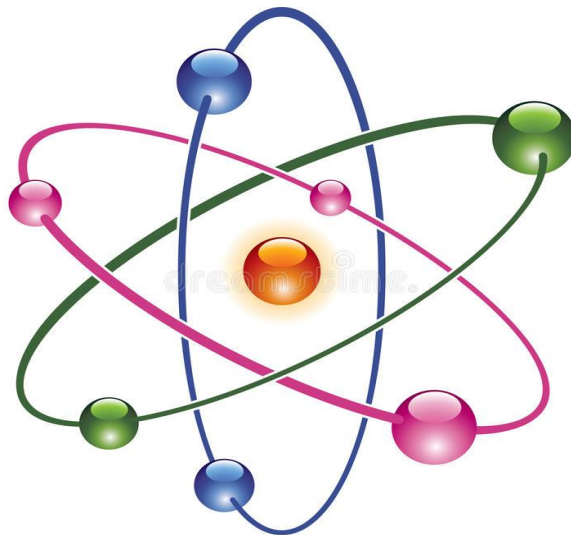


Add-on Course

APPLIED PHYSICS



Department Of Physics
Rural Institute of Higher Studies (RIHS), Bhograi

Course Objectives:

Applied Physics aims to give an understanding of this world both by observation and by prediction of the way in which objects behave. Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content..

When a student completes the add-on course on *Applied Physics* at RIHS, Bhograi, they should be able to:

- ☐ Understand and apply laws of Physics.
- ☐ Learn about what Physics governs and controls.
- ☐ Identify areas in their life that will be impacted by studying Physics.
- ☐ Differentiate between laws and theories.
- ☐ Develop and deliver professional presentations about different laws of Physics
- ☐ Become a better problem solver.

Duration:

The entire course will be of three months. The classes will be conducted on off-hours. There will be 25 classes to cover the entire courses. Each class will be of one and half hour duration.

Attendance:

75% attendance is mandatory.

Certificate:

“Certificate of Participation” will be given to each student having 75% of attendance.

Acknowledgement:

This syllabus has been adapted from the syllabus suggested by DHE, Govt. of Odisha as a short term course and is being continued as an Add-on Course.

Applied Physics Syllabus

Unit -1

Transmission of motion and power: Belt and pulley, types of belts, pulleys and drives, velocity ratio, power transmitted by belt, gears, types of gears , elements of spur gear , velocity ratio, determination of sizes of gears, gear trains, power transmitted by gear drive, worm and worm wheel, rack and pinion.

Principle and working of Hydraulic lift and Break.

Classification of material on the basis of thermal conductivity, working principle of Thermo flask, Principles of Conversion of Solar Radiation into heat, Solar Energy Collectors: Flat Plate Collectors – Types, Applications & Advantages, Concentrating Collectors – Focusing & non-focusing types , Advantages & Disadvantages of concentrating collectors over flat plate collectors.

Solar water heater and its type (Active, passive), Room temperature maintenance in winter and summer (without electric power or less power) solar room heater.

Unit-2

Internal combustion engine: What is I.C. engine , Classification of IC engine, four stroke cycle, two stroke cycle, principle of working of petrol engine, names and function of the main parts, carburetion, ignition , injection, governing, cooling and lubrication.

Steam engine: Working principle of steam engine, and its classification, names of various parts of steam engine and their function.

Steam Turbines: Classification -impulse and reaction turbine, Cycle and principle of working of a simple steam turbine. Steam electric generator, Advance Biomass Burner(Primary and secondary burning), Biomass burning mini electric generator for villagers, Farmers and small industries.

Unit-3

House Wiring, different electrical components (with type) use in it, Wire size, Switch types, Different safety components and its working principle (MCB, RCCB,GFCI, RCBO) ,Lighting Arrester, Grounding and its types, Home automation systems.

Unit-4

Power inverter system, Battery size calculation, C-rating, Battery types: flat, Tubular, gel, inverter VA rating, Backup calculation, Solar Hybride inverter, Grid tie solar inverter and its advantages and disadvantages, Two ways electric energy meter. Various non conventional energy sources : wind turbine, running water turbine (mini model for villagers), Biogas electric generator.
