

Maharashtra Shikshan Samiti,
Maharashtra Mahavidyalaya, Nilanga
Academic Year 2022-23
Department of Physics
Certificate Course in Workshops Skills

Syllabus

Duration : 30 Hrs.

Marks : 50

Course Objectives :

1. Aim of this course is to create awareness among the students about the mechanical, electrical and electronic tools through hands – on activities. This course introduces the students to the workshop skills like cutting, drilling, filing, different types of AC and DC generators, soldering desoldering of electrical and electronics components, constructing regulated power supplies. etc., therefore, after completing this course students will gain skills of using various workshop tools and also to find faults and general troubleshoots and writing faults.

Course Outcomes :

1. Measuring units. Conversion to SI and CGS. Familiarization with meter scale, Vernier caliper, Screw gauge and their utility. Measure the dimension of a solid block, volume of cylindrical beaker / glass, diameter of a thin wire, thickness of a metal sheet, etc. Use of sextant to measure height of buildings, mountains, etc.
2. Concept of workshop practice. Concept of machine processing. Introduction of a common machine tools like shaper, drilling, and surface machines. Cutting tools, lubricating oils. Cutting of a metal sheet using blade. Smoothing of cutting edge of sheet using file. Drilling of holes of different diameters in metal sheet and wooden block..Make funnel using metal sheet.

Course Content

Module I : Introduction

(04 Hours)

Measuring units. Conservation to SI and SSG Familiarization with meter scale, Vernier caliper, Screw gauge and their utility. Measure the dimension of solid block, volume of cylindrical beaker/ glass, diameter of a thin wire, thickness of metal sheet, etc. Use of sextant to measure height of buildings.

Module II : Mechanical Skill

(10 Hours)

Concept of workshop practice. Concept of machine processing. Introduction to common machine tools like shaper, drilling, and surface machine. Tools, lubricating oils. Cutting of metal sheet using blade. Smoothing of cutting edge of sheet using file. Drilling of holes of different diameter in metal sheet and wooden block.. Make funnel using metal sheet.

Module III : Electrical Skill

(10 Hours)

DC power sources. AC/DC generators, capacitance, and impedance Response of inductors and capacitors with DC/AC sources. Operation of transformers..

Module IV : Electronic Skill

(08Hours)

Soldering of electrical circuits having discrete components (R,L,C, diode) and ICs on PCB. Operation o oscilloscope. Making regulated power supply. Timer circuit, Timer IC: IC 555 pin diagram and its application as astable & Monostable Multivibrator Electronic switch using transistor and relay.

Prescribed Text Books / Recommended Books :

1. A text book in electrical Technology - B L Theraja – S. Chand and Company.
2. Performance and design of AC machines – M.G. say ELBS Edn.
3. Mechanical Workshop practice, K.C. john, 2010, PHI Learning pvt.Ltd.
4. Workshop Processes practice and material bruce j Black 2005, 3rd Edn., Editor Newness ISBN : 0750660732)
5. New Engineering Technology Lawrence Smyth/Liam Hennessy, The Educational Company of Ireland (ISBN : 0861674480)

Scheme of Evaluation