



## GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

### ENGINEERING WORKSHOP

Course Code: GR15A1025  
I Year II Semester

L:0 T:0 P:2 C:2

#### Prerequisites

- Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability

#### Course Objectives

- To develop general machining skills in the students.
- To develop a skill in dignity of labour, precision, safety at work place, team working and development of right attitude.

#### Course Outcomes

- Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.
- Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.
- Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.
- Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.
- Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee joint, Edge joint, Butt joint and Corner joint.

#### Unit-I

##### Carpentry Shop – 1:

- 1.1. Introduction to various types of wood such as Teak, Mango, Sheesham, etc. (Demonstration and their identification).
- 1.2. Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed.  
Job I Marking, sawing, planning and chiselling & their practice
- 1.3. Introduction to various types of wooden joints, their relative advantages and uses.  
Job II Preparation of half lap joint  
Job III Preparation of Mortise and Tenon Joint
- 1.4. Safety precautions in carpentry shop.



## Unit-II

### Fitting Shop – 2:

- 2.1. Introduction to fitting shop tools, common materials used in fitting shop.
- 2.2. Description and demonstration of simple operation of hack-sawing, demonstration and description of various types of blades and their specifications, uses and method of fitting the blade.
  - Job I Marking of job, use of marking tools and measuring instruments.
  - Job II Filing a dimensioned rectangular or square piece of an accuracy of + 0.5 mm
  - Job III Filing practice (production of flat surfaces). Checking by straight edge.
  - Job IV Making a cutout from a square piece of MS Flat using hand hacksaw such as T-fit and V-fit
- 2.3. Care and maintenance of measuring tools like callipers, steel rule, try square.

## Unit-III

### House wiring – 3:

- 3.1 Study, demonstration and identification of common electrical materials such as wires, cables, switches, fuses, PVC Conduits.
- 3.2 Study of electrical safety measures and demonstration about use of protective devices such as fuses, and relays including earthing.
  - Job I I identification of phase, neutral and earth of domestic appliances and their connection to two pin/three pin plugs.
  - Job II Preparation of a house wiring circuit on wooden board using fuse, switches, socket, holder, ceiling rose etc. in PVC conduit and PVC casing and capping wiring system.
  - Job III Two lamps in series and parallel connection with one way switch
  - Job IV Two lamps in series and one lamp in parallel connection with one way switch.
  - Job V Stair case lamp connection with two way switch.

## Unit-IV

### Tin-smithy – 4:

- 4.1 Introduction to tin-smithy shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications.
- 4.2 Introduction and demonstration of hand tools used in tin-smithy shop.
- 4.3 Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet, galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheets etc.
- 4.4. Preparation of a rectangle tray and open scoop/ funnel.



## Reference books

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Chaoudhary. Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy, KL Narayana et al; MacMillan India Ltd.
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd.,New Delhi
5. Workshop Technology by B.S. Raghuwanshi, Dhanpat Rai and Co., New Delhi.
6. Workshop Technology by HS Bawa, Tata McGraw Hill Publishers, New Delhi.