19ME106 WORKSHOP TECHNOLOGY AND PRACTICES

Source :
https://penland.org/wp-content/uploads/2018/01/wood3-500x335.jpg

Hours Per Week :

L	T	P	C
1	0	4	3

Total Hours :

L	T	P
15	-	60

WA/RA	SSH/HSH	CS	SA	S	BS
20	30	-	5	-	5

COURSE DESCRIPTION AND OBJECTIVES:

This course is aimed to impart knowledge and provide hands-on experience in Carpentry, Fitting, Facing and Turning. In addition it also provides knowledge on various manufacturing processes such as Foundary, Welding, and Machine Shops.

COURSE OUTCOMES:

Upon completion of the course, student will able to achieve the following outcomes:

COs	Course Outcomes	POs
1	Understand, the foundry shop, plant lay out and lathe machine.	---
2	Apply and Fabricate wooden joints and joining of metals.	2
3	Evaluate as a member or leader in diverse teams and in multi-disciplinary settings.	4,9
4	Apply turning, facing, milling, drilling, threading, *etc.* in project work, industry or other engineering works.	1,6
5	Create, select and apply appropriate techniques, resources and modern engineering tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	5,7

SKILLS:

- ✓ *Prepare wooden and metal furniture.*
- ✓ *Make funnels, trays, locker and steel almirahs etc.*
- ✓ *Fabrication of various agriculture tools, hooks, axes and rims etc.*
- ✓ Various machining operations and processes.

UNIT - I **L-3**

Safety in workshop: Plant layouts - Types, advantages and disadvantages, factors influencing layouts. Mechanical and Technological properties, types and description. Introduction to various carpentry tools, materials, seasoning, types of wood and their characteristics and operations in wood working. Introduction to smithy tools and operations.

UNIT - II **L-3**

Introduction to welding: Types of welding, Oxyacetylene gas welding, Types of flames, Welding techniques and equipment. Principle of arc welding, equipment and tools.

UNIT - III **L-3**

Casting processes: Classifications, Foundry tools, Pattern: Types of materials and allowances. Foundry sand and sand additives, types, uses and desired properties. Core and core prints. Moulding processes, types, advantages and disadvantages, casting defects.

UNIT - IV **L-3**

Constructional details of centre lathe: Main accessories and attachments. Main operations and Tools used on centre lathes. Types of shapers, Constructional details of standard shaper. Work holding devices, shaper tools and main operations.

UNIT - V **L-3**

Types of drilling machines: Constructional details of pillar types and radial drilling machines. Work holding and tool holding devices. Main operations. Twist drill nomenclature. Types of Milling machines. Constructional details and main operations.

LABORATORY EXPERIMENTS

LIST OF EXPERIMENTS **TOTAL HOURS-60**

1. Study of carpentry and welding tools.
2. Study of types of wood and wooden joints.
3. Study of types of carpentry tools.
4. Preparation of simple carpentry joints: Cross half Lap joint.
5. Preparation of simple carpentry joints: Dovetail joint.
6. Preparation of simple carpentry joints: T- Lap joint.
7. Jobs on carpentry - Plane to size.
8. Introduction to welding equipment, processes tools, their use and precautions.
9. Study of arc welding.
10. Study of gas welding.
11. Jobs on arc welding - Straight line welding.
12. Jobs on arc welding - Single'V' butt joint welding.
13. Jobs on arc welding - Lap joint.
14. Jobs on arc welding - Butt joint.
15. Jobs on arc welding - T-Joint in arc welding.