COURSE TITLE : WORKSHOP PRACTICE
COURSE CODE : 2008
COURSE CATEGORY : F
PERIODS/ WEEK : 3
PERIODS/ SEMESTER (I & II): 90
CREDIT : 3

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Carpentry, Foundry & Casting	27
2	Smithy, Forging & Fitting	27
3	Sheet metal	18
4	welding	18
TOTAL		90

Course outcomes:

STUDENT WILL BE ABLE TO:

- Perform various exercises on given drawing and specifications in Carpentry shop, Foundry & Casting shop.
- Perform various exercises on given drawing and specifications in Smithy, Forging & Fitting shop.
- Perform various exercises on given drawing and specifications in Sheet metal shop.
- Perform various exercise on given drawing and specifications in Welding shop.

CONTENT DETAILS

MODULE I

Introduction, objectives, safety in the Carpentry shop, Foundry & Casting shop.
Familiarization of tools
Marking and measuring tools such as straight edge- meter square- try square- bevel square- combination square- marking knife- marking gauge- mortise gauge- cutting gauge- wing compares- trammel- divider- outside and inside calipers- spirit level and plumb bob.
Cutting tools such as Rip saw- Cross cut saw- panel saw- tenon saw- bow saw- compass saw- key hole saw- firmer chisel- bevel edge firmer chisel- parting chisel- mortise chisel- jack plane- wooden and metal- trying plane- smoothening plane- rebate plane- plough plane- router plate- spoke shave.
Boring tools such as Bradawl ratchet brace- wheel brace- shell bit- fostries bit- counter sunk bit.
Striking tools such as mallet etc
Holding devices – Bench vice- bench stop- sash clamp- G-clamp- hard screw.
Miscellaneous tools – Rasp cut file- scraper- glass paper- pincers- ratchet and cabinet type screw drivers.
Carpentry Practice

Marking- sawing- planning- chiseling- grooving- rebating exercises Preparation of carpentry joints.

Familiarization of Foundary tools

Hand tools – shovel- riddle- hammers- trowels- relic- lifters- strike off bar spruce- balloons- swab- gate cutter- mallet- vent rod- draw spike- lifting plate- pouring weight- gaggers- clamps, core & chaplets.

Moulding practice & casting

Preparation of moulding sand- Prepare moulds of different types using different patterns(single, double & three piece patterns)- ferrous & Non- ferrous metal casting using simple patterns.

MODULE II

Familiarization of Smithy tools

Hand tools – anvil- swage block- hammers such as ball peen- straight peen- cross peen and sledge hammers.Tongs such as flat- hallow- cold and hot chisels- swages- fullers- flatters- set hammers- pinch and drift.

Equipment: Open and closed hearth- heating furnaces- hand and power driven blowers- open and stock fire fuels such as charcoal- coal- oil and gas

Smithy & Forging Practice

Building fire in the furnace- Upsetting- bending- drawing- setting down- pinching- cutting and welding exercises

Familiarization of fitting tools

Hand tools & Marking tools – scriber- compass- dividers- outside and inside calliper- jenny calliper- ordinary scribing block- universal scribing block- angle plate- V-block- center punch- prick punch- try square- bevel square- surface plate- straight edge.

Cutting tools – chisels – flat- crosscut- half round- diamond point- side chisel. Files – single cut and double cut files rough- bastard- second cut- smooth Dead smooth files – flat- square- pillar- round triangular- half round- knife- safe edge and needle files.

Scribers – Neck saw – solid and adjustable frames – blades – cutting with point rack saw

Striking tools: Ball peen- straight peen- cross peen and double-faced hammers

Holding devices-vice-bench- leg- pipe- hand- pin and tool makers vice

Marking tools – scriber – ordinary and universal scribing block- center and prick punch.

Angle plate- v-block- Try Square- surface plate

Fitting Practice

Cutting - filing- scribing and simple joints exercises

MODULE III

Familiarization of Sheet metal tools

Understand safety precautions.

Familiarization of sheet metal tools – scribers- dividers- trammel points- set square- punches – prick Punches- centre punches – hand Grover- rivet- set- chisels hammers- riveting hammers- ball peen hammers – mallet- snip- shears- pliers- hand reamers (tongs) files- stakes. Measuring instruments in sheet metal folding rule- common rule- steel circumference rule- vernier calipers- micrometer- calipers- thickness gauges (SWG) sheet metal gauge.

Practice work

Sheet cutting- development- folding- bending and pipe bending- making right angle joints.

MODULE IV

Familiarization of welding tools & safety

Safety precautions- Study of various tools and equipments used in the welding shop for both arc welding and gas welding.

Practice work

1.D.C. arc welding

2.A.C. arc welding

3.Gas welding

4. Edge preparation of welded joint such as V and double V.

5.Horizontal -flat and vertical joints

General Information:

Examination in the Second Semester

TEXT BOOKS

1. **Mechanical Workshop Practice By K. C Jon, PHI Learning Private Limited**
2. **Mechanical Workshop & Laboratory Manual By K. C. John**

REFERENCE BOOKS

1. **S K Hajra Choudhary - Workshop Technology Vol. I**
2. **S K Hajra Choudhary - Workshop Technology Vol. II**