

**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
<b>TOTAL</b>		<b>90</b>

**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- smoothing 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 Foundry 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- gagers- 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** – scribe- 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** – scribe – 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 – scribes- 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**