

<b>COURSE TITLE</b>	<b>: WORKSHOP PRACTICE-IV</b>
<b>COURSE CODE</b>	<b>: 325</b>
<b>COURSE CATEGORY</b>	<b>: B</b>
<b>PERIODS/WEEK</b>	<b>: 6</b>
<b>PERIODS/SEMESTER</b>	<b>: 108</b>
<b>CREDITS</b>	<b>: 4</b>

### TIME SCHEDULE

<u>BATCH</u>	<u>TOPIC</u>	<u>PERIODS</u>
I	1.Machine Shop	54
	2. Fitting	54
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Total		108
II	1. Sheet Metal and Aluminium Fabrication	54
	2. Welding	54
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Total		108

Note: For third semester workshop practice, divide the students into two batches (I&II)  
 First batch should practice 1.M/C shop and 2.Fitting.The 2nd batch should practice  
 1. Sheet metal and aluminium fabrication and 2.Welding.

**In the fourth semester interchange the batches**

### CONTENT OUTLINE

#### **1 .Machine Shop**

Understand safety precautions

##### **1.1 Lathe work**

1.1.1 Familiarization with lathes- principal parts, work holding device, measuring instruments,accessories & attachments

1.1.2 Plain turning to the given accuracy - Practice with Precision measuring devices - use of digital vernier and Micrometer

1.1.3 Taper turning

1.1.4 Form turning (ball and curve)

1.1.5 Combination of above operations (taper , ball and curve)

##### **1.2. Work on shaper**

1.2.1 Familiarize with the parts, accessories and attachments.

1.2.2 Simple operations on Shaper (Planing)

1.2.3 Shaping of a rectangular block

1.2.4 Shaping a 'V' in a rectangular block

##### **1.3. Work on drilling machine**

1.3.1 Familiarization of drilling machine parts

1.3.2 Marking and drilling holes

1.3.3 Boring and counter boring

1.3.4 Reaming

1.3.5 Combination works

#### **2. Fitting Practice**

**2.1 Study of measuring gauges-dial gauges, feeler gauges, thread gauges**

**2.2 Working from a given blue print** exercises involving marking filing, drilling, reaming and tapping to an accuracy of 0.02mm (T- joint, V-joint, Single dovetail joint)

### **3. Sheet Metal & Aluminium fabrication**

#### **3.1 Understand safety precautions.**

**3.2 Familiarization of sheet metal tools** – scribes, dividers, trammel points, set square, punches – prick punches, centre punches – hand Grover, rivet, chisels, hammers, riveting hammers, ball peen

hammers – mallet, snip shears, pliers, hand seamers (tongs) files, stakes.

Measuring instruments in sheet metal - folding rule, common rule, steel circumference rule, vernier calipers, micrometer, combination set,

Thickness gauges – Plate gauge.

**3.3 Sheet metal operations** – piercing, punching, parting, notching, perforating, slotting, blanking,

lancing and cutting off.

#### **3.4 Practice work**

3.4.1 Sheet cutting, development, folding, bending and pipe bending, making right angle, soldering, brazing and riveting,

3.4.2 Making tray, oil can and bucket.

#### **3.5 Aluminium Fabrication**

3.5.1 Aluminium fabrication and its scope

3.5.2 Tools – different types of files, hacksaw, screw driver, hammer, drill bits etc

3.5.3 Measuring tools – steel tape, try square, bevel square, combination set etc.

3.5.4 Practice work – cutting, filing, drilling with hand drill, making key holes, making of different types of joints such as straight joints, corner joints, out joint with different aluminium sections.

### **4. Welding**

#### **4.1 Safety precautions**

**4.2 Study of various tools and equipments** used in the welding shop for both arc welding and gas welding.

#### **4.3 Practice work**

4.3.1.D.C. arc welding

4.3.2.A.C. arc welding

4.3.3.Gas welding

4.4.4.Horizontal, flat, vertical and over head welding

4.4.5.Edge preparation of welded joint such as V, double V.

4.4.6.Pipe welding – linear and round

4.4.7.Flame cutting

### **REFERENCE**

1. Workshop Manual by P.Kannaiah & K.L.Narayana, Scitech Publications