

# ME101 R - MECHANICAL WORKSHOP PRACTICES

Teaching Scheme : 04 P; Total: 04 hours/week

Credits : 02

Evaluation Scheme : 50 ICA

Total Marks :50

## COURSE DESCRIPTION

The course intends to make students familiar with the basic manufacturing operations that are widely used in day to day life, such as Welding, Fitting, Plumbing, Moulding and Smithy operations.

## DESIRABLE AWARENESS/SKILLS:

Fundamental knowledge of Physics, chemistry and mathematics.

## COURSE OUTCOMES:

On successful completion of this course, student shall be able to:

1. Understand the concept of welding and able to practice the operations in Arc welding.
2. Understand the concept of fitting , blacksmithy and able to practice the operations in fitting and blacksmithy .
3. Understand the concept of foundry and able to practice the operations in foundry.
4. Understand the concept of plumbing and able to practice the operations in plumbing.

## RELEVANCE OF COURSE OUTCOMES (COs) WITH POs AND PSOs (WITH STRENGTH OF CO-RELATION)

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	√		√									
CO 2	√	√	√									
CO 3	√		√	√					√			
CO 4			√						√			

## Course Content

Students entering in workshop must perform following practical's

### 1)Welding Shop.

Concept of accidents causes of accidents, safety precautions while working in shop, safety equipment's and their use. One job on Arc welding- Lap / Butt / Tee Joint etc.

### 2) Fitting Shop.

Study of various tools like- files, drills, taps, dies and Fitting operations.

One job Male/Female fitting with operations- Marking, cutting, drilling, tapping filing etc

### 3) Black smithy.

Introduction to smithy operations like- bending, forming, upsetting, drawing.

Introduction to smithy tools, hammer, hot and cold chisel, flatters, tongs, anvil etc.

One job in smithy involving upsetting, drawing, bending such as hook, peg, square headed bolt etc.

### 4) Foundry Shop.

Principles of moulding, methods, core and core boxes, preparation of foundry sand for casting.

### 5) Plumbing Shop.

Demonstration on plumbing tools, pipes, types of pipe joints, threading dies, Pipe fittings fitments, valves, etc.

**Text Books:**

1. M.S. Mahajan, Manufacturing Engineering, First edition, Dhanpat Rai and sons, Delhi, 2008
2. Hajara Chaudhary and Bose S K, Element of Workshop Technology, 2<sup>nd</sup> Edition.

**Reference Books**

1. P N Rao, Production Technology, Volume I and II", Tata McGraw Hill Publication, New Delhi, 2001.
2. P C Sharma, Production Technology, Khanna Publications , 2014
3. R K Jain, Production Technology, Khanna Publication, 2014.
4. W.A.J. Chapman, Workshop Technology, ELBS Low Price Text, Edward Donald Publications. Ltd.
5. Chapman W A J, Production Technology, HMT Tata McGraw Hill Publication,2001.
6. Kannaiah K L, Narayana, Workshop ManualChennai, second Edition Scitech Publications, 1998.

## ME 152R- ENGINEERING EXPLORATION WORKSHOP

Teaching Scheme : 04 P; Total: 04 hours/week

Credits : 02

Evaluation Scheme : 50 ICA

Total Marks :50

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### COURSE DESCRIPTION

The course intends to make students familiar with the basic Workshop operations that are widely used in day to day life, such as Carpentry, Sheet Metal. Further it intends to offer fundamental knowledge of equipment used in Electrical workshop. It also covers most of the widely used Computer peripherals and their operations and fundamental equipment used by a Civil engineer.

### DESIRABLE AWARENESS/SKILLS:

Fundamental knowledge of Physics, Mathematics, Electrical and Computer sciences.

### COURSE OUTCOMES:

On successful completion of this course student shall be able to:

- 1) Understand the concept of carpentry, sheet metal and practice hands-on operations on it.
- 2) Understand the concept of basic electrical appliances and practice hands-on exercise on it.
- 3) Understand the concept of basic computer devices and practice hands- on exercise on it.
- 4) Understand the concept of basic electronics component and practice hands on exercise on it.
- 5) Understand the concept of basic civil measuring instruments and practice hands on exercise on it.

### RELEVANCE OF COURSE OUTCOMES (COs) WITH POs AND PSOs (WITH STRENGTH OF CO-RELATION)

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1			√									
CO 2			√									
CO 3	√			√								
CO 4	√	√			√							
CO 5	√	√										

### Course Content

Students entering in workshop must perform following practical's

#### 1) Carpentry Shop.

Introduction to wood working, kinds of woods, hand tools and machines, Types of joints, wood turning, to instruments like Steel rule, Callipers, Vernier Calliper, Micrometre. One job involving joint and wood turning.

## **2) Sheet Metal Shop.**

Introduction to primary technology processes involving bending, punching and drawing various sheet metal joints, development of joints. One job on commercial items such as Dust bin, funnel, tray etc.

## **3) Electrical Workshop.**

Minimum **four** experiments shall be performed from the list of experiments provided below.

1. Identify different types of cables/wires, switches, fuses and fuse carriers, MCB and ELCB, MCCB with ratings and usage. 2. Measurement of voltage, current and power in single phase circuit Using voltmeter, ammeter and wattmeter 3. Wiring of backup power supply including inverter, battery and load for domestic installations. 4. Demonstration and measurement of power consumption of electric iron, mixer grinder, single phase pump, exhaust fan etc. 5. Installation and maintenance of domestic solar appliances 6. Demonstration on preparation of extension boards 7. Study of On-OFF control of electrical lighting and fans operated by remote.

## **4) Computer Workshop.**

Introduction and identification of hardware components of a typical computer system. Assembling and Disassembling the PC. Handling and operating peripheral devices like printer, scanner, pen drives, CD-ROM, Multimedia Devices, UPS etc.

## **5) Electronics Workshop.**

Demonstration and use of electrical and electronics hand and power tools. Measurement of resistance, capacitance, voltage and frequency. Assembly of Electronic components on the printed circuit board (PCB)/Bread Board.

## **6) Civil Workshop.**

Study and use of Chain and tape, Levelling staff and Dumpy level, Planimeter and Measurement of height of building.

## **Text Books**

1. M.S. Mahajan, Metrology and Quality Control, Dhanpat Rai and sons, Delhi. 2008 onwards.
2. Hajara Chaudhary, Bose S K, Element of Workshop Technology, Volume I and II, Asia Publishing House. 1997 onwards.
3. B. L. Theraja, Fundamentals of Electrical Engineering, 27<sup>th</sup> edition, S Cha Publishers, 1996.

## **Reference Books**

- 1 Chapman W. A. J., Workshop Technology, CBS Publication. 1986 onwards.
- 2 T. P. Kanetkar and S. V. Kulkarni, Surveying and leveling Part 1, Pune Vidyarthigriha Prakashan, 2010
- 3 Leonard S. Bobrow, Fundamentals of Electrical Engineering, 2nd Edition, Oxford Press, 1998.

