**COURSE TITLE : MACHINE DRAWING**
**COURSE CODE : 3024**
**COURSE CATEGORY : B**
**PERIODS/ WEEK : 4**
**PERIODS/ SEMESTER : 60**
**CREDIT : 3**

## TIME SCHEDULE

| MODULE | TOPIC | PERIODS |
|---|---|---|
| 1 | Threaded fasteners. Rivets and riveted joints. | 12 |
| 2 | Assembly and detailed drawing of Cotter joints, Couplings. | 20 |
| 3 | Assembly and detailed drawing of Bearings and machine parts. | 20 |
| 4 | Welded joints. Piping layout | 8 |
| TOTAL | | 60 |

**Course Distribution:**

| Module | Name of Module | Course Outcome no. | Total periods per semester | | |
|---|---|---|---|---|---|
| | | | Instructional | Test | Total |
| 1 | Threaded fasteners.<br>Rivets and riveted joints. | 1 | Theory :2<br>Practical :7 | 3 | 12 |
| 2 | Assembly and detailed drawing of Cotter joints, Couplings. | 2 | Theory :2<br>Practical :15 | 3 | 20 |
| 3 | Assembly and detailed drawing of Bearings and machine parts. | 3 | Theory :2<br>Practical :15 | 3 | 20 |
| 4 | Welded joints.<br>Piping layout | 4 | Theory :3<br>Practical :3 | 2 | 8 |
| Total periods per semester | | | | | 60 |

**COURSE OUTCOME** :

| SL.NO. | SUB | STUDENT WILL BE ABLE TO |
|---|---|---|
| 1 | 1 | Understand the fastening devices. |
| | 2 | Understand the assembly and detailed drawing of different joints and couplings. |
| | 3 | Appreciate the assembly and detailed drawing of bearings and other machine parts. |
| | 4 | Comprehend the piping layout and welded joints. |

**SPECIFIC OUTCOME**

## MODULE I

### FASTENING DEVICES

1. Screw Threads. Thread terminology– Forms of screw threads (Square thread, V thread) – Wit worth thread– British Association thread–American standard thread–Acme thread–ISO metric thread–square thread–single start and multi start threads–right hand and left hand threads– conventional representation of threads. Bolted connection using standard proportions..
2. Basic Fastening Devices. Temporary and permanent fasteners – areas of applications – Nuts and Bolts– Bolts with special forms of heads–Stud bolts-Screws– different types of locking arrangements of nuts.
3. Riveted joints. Different types of rivet heads for general purposes–proportions of riveted joints-Different types of riveted joints – single riveted and double riveted lap joint (Chain and zigzag), single riveted single strap butt joint and single riveted double strap butt joint.
4. Foundation bolts. Common types, Special types.

**Exercises in**

1) Drawing assembly of a bolt, a nut and a plain washer, Drawing different types of locking arrangements of nuts
2) Drawing rivets and riveted joints using standard proportions,
3) Drawing foundation bolts-(Eye end type–Lewis type only). (3Sheets)

## MODULE II

### ASSEMBLY AND DETAILED DRAWINGS OF COTTER JOINTS AND COUPLINGS

1. Need and functions of assembly and detailed drawings – selection of sheet sizes – preparation of title block – bill of materials and parts list –
2. Steps in preparing Assembly and Detailed drawings. Exercises in Assembly and Detailed drawings of
   1) Sleeve and Cotter Joint, Socket and Spigot Joint, Knuckle Joint, Gib and Cotter joints
   2) Coupling such as Flanged coupling – (Protected type, unprotected type and bush type)

**(7 sheets)**

## MODULE III

### ASSEMBLY AND DETAILED DRAWINGS OF BEARINGS AND MACHINE PARTS

Classification of bearings-Types of journal and thrust bearings-Bearing brasses and their support-Prevention of rotation of brasses.

Exercises in Assembly and Detailed drawings of

1. Bushed bearing,
2. Plummer block(snug at bottom),
3. Foot step bearing. (3Sheets)

Exercises in Assembly and Detailed drawings of

1. Stuffing box,
2. Non return valve,

## MODULE IV

### WELDED JOINTS AND PIPING LAYOUT

Classification of welds- Elementary welding symbols. Types of pipes – Methods of connecting pipes-pipe threads-Representation of pipe threads- Types of pipe joints. Single and double line orthographic symbols for pipe fittings and valves (flanged, screwed and welded joints).

Piping layout(1 sheet)

## GENERAL INFORMATION :

Note – Guidance for setting question paper.
MODULE I – 15 marks
MODULE II – 30 marks
MODULE III – 40 marks
MODULE IV – 15 marks
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100 marks

## TEXT BOOKS

1. Machine Drawing - N.D. Bhatt
2. Machine Drawing - P.I. Varghese & K.C. John

## REFERENCE


1. Machine Drawing by P.S.Gill
2. A text book of Machine Drawing by V. Lakshmi Narayan.
3. Engineering Drawing by M.B Shah & B.C Rana.