424 Fabrication Drawing

Lectures	Practical	Credits	Assessment		Theory		Practical Ex.	Total
2	4	6	25	50	3Hrs	100	-	175

Pre-requisite	Source	Semester	Theory	Test	Total	TW	PR	Gr Total
2002	FAB		75	25	100	50	—	150

RATIONALE: - This final course in drawing is designed to suit to the needs of fabrication engineering technicians. The pre-requisite for this course has already been dealt with the earlier course in drawing. The contents included in this course are based upon the needs, which emerged out from the job survey.

COURSE CONTENTS

	Hrs	Mks
1. TERMINOLOGY	4	5
Fabrication technology, fabrication drawing, design drawing, machine drawing, foundation, anchor bolts, bearing plate, column, beam, girder, cleats, splicing, bracing, lacing, fabrication or shop clearance, field or site or erection clearance, gauge line, back mark, erection diagrams, edge clearance, driving clearance, etc		
2. STRUCTURAL ENGINEERS HAND BOOK (SP: 6 (1))	4	10
Designation and specifications of rolled sections (I- beams, channels, equal angles, unequal angles, bulb angles, tee bars, strips, sheets, flats, plates, round bars, square bars, hexagonal bars, etc.). Sketch of any one section of each rolled section with clear dimensioning. Determination of sectional and design parameters of a particular section. For I- beam, connection details.		
3. CONVENTIONAL SYMBOLS FOR JOINTS	4	10
Conventional symbols for rivets, bolts and riveted joints. Symbols for site and shop rivets and bolts. Edge distances for rivets as per IS 800. Gauge lines for angles, channels I-beams, and other rolled sections. Rivet gauge distances in legs of angles. Rivet size and spacing as per IS 800. Different type of riveted joints. Determination and selection of rivet size. Sketch of riveted joints of known thickness of plates and dimensioning clearly.		
4. WELD REPRESENTATION (AS PER IS: 813)	4	10
Introduction. Weld symbols. Position of symbols on drawings. Dimensioning of welds. Complementary indications. Practical examples.		
5. FABRICATION DRAWINGS	6	30
Preparation of fabrication drawings from a design drawing of any simple truss (refer chapter 27 of reference book 2) with riveted, welded and welded/bolted joints. Drawing the orthographic views, isometric views and detailed drawings of each member from assembly pictorial sketch of any simple support made up of rolled sections of welded joints only.		
6. BILL OF MATERIALS	1	5
Preparing a bill of materials of small assembly drawings as of those in chapter 5 in tabular form. Marking and naming of different members: Identical members, mirror image members, un-identical members. Essential columns in the bill of materials: Serial No, part name/no, description, dimensions (length, breadth, thickness), quantity, weights per part, total weight and gross weight.		
7. STRUCTURAL DRAWING (SKETCHES ONLY)	4	10
Different base connections (welded and riveted), detailing of beams and columns. Columns to beam connections. Beam to beam connections. Lacing systems. Different column splices. Different parts of roof truss. Different types of roof trusses. Typical ridge joint. Typical shoe joint. Forms of plate girders. Typical		

section of crane girders. Components of plate girders (Welded and riveted). Bearing and transverse stiffeners in plate girders. Web splices in plate girders.

8. PIPE LINE AND PIPE JOINTS	5	20

Introduction: Purpose of pipelines. Different pipe materials. Pipe manufacture. Specification of MS pipes. Pipe joints: Screwed pipe joints, flanged pipe joints. Welded flange. Screwed flange. Forged flange. Welded pipe joints. Plain butt-welded. Butt-welded with backing ring. Bell and spigot pipe joints. Pipe bends, flexibility or ability to absorb expansion, expansion bends. Gland and stuffing box expansion joint. Copper corrugated expansion joint. Copper pipe loop. Need of expansion joints in pipelines. Pipe supports: Need of pipe supports, different types of pipe supports: clamp type hanger, turn bucket hanger, U-bolt hanger, plate hanger. Roller support. Screw jack support. Different types of pipe-fittings and valves: Elbow, Tee, Union, Reducers, Laterals, Globe valve, Gate valve, Stopcock, Plug or cap, coupling. Symbols of pipe fittings and valves in screwed, flanged, bell and spigot, welded and soldered joints in single line. Single line and double line pipe line drawings. Isometric view, orthographic views and developed view. Drawing isometric view from plan of pipelines, knowing the elevation levels of pipes.

Total	32	100

Note: Use of B.I.S: 800 codes and I.S.I Structural Engineers Handbook (SP: 6 (1)) is permitted in examination. Maximum time for each test-1 hr, maximum time for theory examination- **4 hrs.**

TERM WORK

Fabrication Drawing sheets (2 sheets min.) based on topics No. 5,6 and 8.
Sketchbook (Minimum 25 plates) based on topics 2,3,4,7 and 8.

REFERENCE BOOKS

1. B.I.S. Codes 800, 813, 696, 806, 801
2. Engg. Drawing and Geometry by Hoelscher & Springer (John Willy & Sons Inc) Chp. 27,28,29
3. Structural Engineers Handbook by Milo S Ketchum Mc Graw Hill Book Co
4. Engineering Drawing by Thomas E. French and Charles J. Vierek
5. Fundamental of Engg. Drawing by Warran J. Luzadder, Prentice Hall of India Chp. 18, 19, 22
6. I. S. I. Structural Engg. Handbook SP: 6 (1) Students are strongly advised to own this handbook