

GUJARAT TECHNOLOGICAL UNIVERSITY

MANUFACTURING ENGINEERING MANUFACTURING AND ASSEMBLY DRAWING SUBJECT CODE: 2133405 B.E. 3RD SEMESTER

Type of course: Theoretical + Practical (Regular)

Prerequisite: Basic knowledge of Engineering Drawing and metrology

Rationale: Designing of Machine elements and assembly

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks			Practical Marks			
			ESE (E)	PA (M)		PA (V)		PA (I)		
				PA	ALA	ESE	OEP			
2	0	2	4	70	20	10	20	10	20	150

Contents:

Sr. No.	Subject Content	Hours	Module Weightage
1.	Technical Drawing Standard Indian Standard Code of practice for Engineering Drawing: General principles of presentation, conventional representation of dimensioning and sectioning, conventional representation of threaded parts, gears, springs and common features. Abbreviations and symbols used in technical drawings. Symbols and method of indication on the drawing for surface finish, welding and riveted joints.	8	20
2.	Fits And Tolerances Tolerance types and representation on the drawing - Fits types and selection for different applications - Basic hole systems - Basic shaft systems - Allowances. Geometric tolerances - Form and positional. Datum and datum features symbols used to represent geometric tolerances	4	20
3.	Ferrous And Non Ferrous Metals Effect of alloying additions on steel (Mn, Si, Cr, Mo, V, Ti & W)- classification of steels (tool steel, stainless)- cast irons – alloy cast irons- Copper and Copper alloys –Aluminum and its alloys- Magnesium and its alloys– Titanium and its alloys- Nickel and Cobalt alloys, properties and applications of these materials.	12	20
4.	Production Drawing Preparation of production drawing for simple components, interpretation of production drawings	8	20
5	Assembly Drawing Of Machine Elements Preparation of assembled views given parts details - Lathe tail stock - Lathe chuck	8	20

	- Connecting rod - Screw jack, machine vice, Square Turret tool holder for Lathe, tool head of shaper and stop valve. Representation of tolerances in drawing. Injection moulding dies assembly for plastic products		
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Reference Books:

1. Sidheswar Kannaiah, N., Sastry, P.V.V.V., Machine Drawing, Tata McGraw Hill, New Delhi, 1997
2. Bhatt, N. D., Machine Drawing, Charotar publishing house, Anand, 1999
3. Junnarkar, N. D., Machine Drawing, First Indian print, Pearson Education (Singapore) Pvt. Ltd., 2005
4. P.S.G. Design Data Book, Coimbatore, 2001

Course Outcome:

From this practical students can understand about different fits required for assembly for machine elements how to study the machine drawing, how the different elements assembled and how to maintain the machine (How to disassembled the parts) etc.

List of Experiments:

1. Draw the detail drawing of joints.
2. Draw the detail drawing of coupling.
3. Draw the detail drawing of bearings.
4. Draw the detail drawing of different machine elements

Design based Problems (DP)/Open Ended Problem:

1. Design of different machine elements.
2. Assembly drawing of machine elements.

Major Equipments:

Drawing Board.

List of Open Source Software/learning website:

1. en.wikipedia.org/wiki/Technical_drawing
2. <http://www.solidworks.in/sw/resources/getting-started-part-and-assembly-drawings.htm>

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.