GUJARAT TECHNOLOGICAL UNIVERSITY

MECHATRONICS (20)
INDUSTRIAL DRAFTING
SUBJECT CODE:2132001
B.E. 3rd Semester

Type of Course: Engineering

Prerequisite: Engineering Graphics

Rationale: Industrial drafting is the Advanced version of Engineering Graphics. It enhances visualization and perception of intersecting surfaces and their sectional views. Mechanical aspects from assembly drawing point of view are included in this subject.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	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

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE End Semester Examination; PA- Progressive Assessment.

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	Introduction: Dimensioning, Classification of drawings such as machine drawing, production drawing, partdrawing, assembly drawing etc., Conventional representation for materials such as metals, wood, cement etc .and machine components such as gears, shafts, splined shafts, bearings etc.	3	11.5%
2.	Intersection of surfaces: Prism to prism, cylinder to cylinder, cylinder to prism, cone to cylinder, cylinder to cone.	5	19.3%
3	Sectional Views: Section plane line, types for sectional views such as full, half, partial, revolved, removed etc. with the conventions	3	11.5%
4.	Screw threads: profile of standard screw threads used for fasteners and power transmission screws, types of threads, conventional representation of external and internal threads with and without sections.	3	11.5%
5.	Screw fasteners: Bolts with nut and washer, studs, foundation bolts, locking arrangements of nuts	2	7.7%
6.	Mechanical elements for power transmission: Keys & Rigid joints such as types of keys, cotter joints such as socket & spigot	5	19.3%

	,gib&cotter, sleeve joint, knuckle joint etc., Rigid and flexible coupling, C.I. and v-belt pulley, representation of gear pair.		
7.	Elements of production drawing: Introduction to limits, fits, tolerances and surface roughness	3	11.5%
8.	Computer graphics: introduction to computer aided drawing, basics of computer graphics for preparation of drawing.	2	7.7%

Reference Books:

1. Machine Drawing by N D Bhatt,Charotar Publishing House
2. Engineering Drawing by N D Bhatt,Charotar Publishing House
3. Machine Drawing with AutoCAD, GoutamPohit and GoutamGhosh, Pearson Education
4. A textbook of Machine drawing, P S Gill, S K Kataria and Sons

Course Outcomes:

The subject would help students to get acquainted about significance of industrial drawings and standard drawing practices in engineering.

1. Students are expected to know about the machine drawing practices according to the standards prevailing.
2. The knowledge of orthographic projections of basic machine elements such as keys, shafts, rod joints, screw fasteners, foundation bolts, bolted joints etc. will help them to read and interpret the industrial drawings.
3. The concepts of the intersection of surfaces can be applied in the fabrication industries.
4. The topics like surface finish, limits, fits and tolerances will make them aware about the correlation between manufacturing practices and precision.
5. Additionally the basic practice on drawing software such as AUTOCAD will develop the new drawing generations and editing skills.

List of Practical:

Sr. No.	**Sheet Title**	**No. Of Turns**
1	Types of Drawings	02
2	Conventional representation for materials and machine components	02
3	Interpretation of views	02
4	Screw threads and screw fastenings	02
5	Types of rigid joints	01
6	Limits, Fits & Tolerances	02
7	Intersection of surfaces	02
8	Autocad Practice Sheet	01
	TOTAL	**14**

Open Ended Problem:

Industry defined component / component available in workshop may be given to students for its Isometric and Orthogonal drawing to understand its assembly and bill of materials using design / drawing software.

Major Equipments:
Computer Terminals with corresponding design software may be available for practicing.

Active learning Assignments (AL) : 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.