

GEOMETRIC DIMENSIONS AND TOLERANCE
PROFESSIONAL ELECTIVE - II

VI Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5AE44	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES:								
<p>1. To impart through knowledge in technical graphics to communicate the technical information required for manufacture and assembly of machine components.</p> <p>2. To familiar with industrial drafting process and through understanding of production drawings to make themselves fit in industries</p>								
UNIT-I	LIMITS, FITS AND TOLERANCES							
<p>Limit System- Tolerance, Limits, Deviation, Actual Deviation, Upper Deviation, Lower Deviation, Allowance, Basic Size, Design Size, Actual Size. Fits- Types, Tolerances of Form and Position- Form and Position Variation, Geometrical Tolerance, Tolerance Zone, Indicating Geometrical Tolerances. Indication of Surface Roughness, Standard Abbreviations and Symbols used in industries.</p>								
UNIT-II	SECTIONAL VIEWS							
<p>Sections- Hatching of Sections, Cutting Planes, Revolved or Removed Section, Sectional Views- Full Section, Half Sections and Auxiliary Sections- Conventional Representation-One-view, Two-view and three view Drawings.</p>								
UNIT-III	INTRODUCTION TO MACHINE ELEMENT DRAWINGS							
<p>Drawing standards and Designation of Bolts, nuts, screws, keys, pins, Rivets, Welded Joints- Principle of dimensioning - Dimensioning of Welds, Belt Driven Pulleys, Chain and Gears Drives.</p>								
UNIT-IV	ASSEMBLY DRAWINGS AND SECTIONAL VIEWS							
<p>Preparation of manual parts drawing and assembled sectional views from orthographic part drawings, Automobile components - stuffing box, Machine Tool Parts plummer block, Joints knuckle joints, Couplings Protected type flanged coupling, Bearings swivel bearing.</p>								
UNIT-V	REAL PRODUCTS TO MACHINE DRAWING CONVERSION							
<p>Preparation of manual parts drawing and assembled sectional views from real time products- Internal combustion engine parts, connecting rod, couplings - universal coupling, machine tool parts -tailstock, Automobile components screw jack, stuffing box - Commercial products - Preparation of Bill of materials and tolerance data sheet.</p>								

Text Books:

1. Gary R Bertoline, Leonard O Nasman, Technical Graphics Communication (Irwin Graphics Series), 2nd edition, Richard D Irwin Publisher, 1997.
2. William P. Spence, Engineering Graphics, Printice - Hall Inc, Engle Wood Cliff, 1984.
3. S. Bogolyubov. A. Voinov., Engineering Drawing, Van Nostr and Reinhold Company, 1976.

Reference Books:

1. N.D. Bhatt, Machine Drawing, Charotar Publishing House Pvt. Ltd., 2014
2. P.S.Gill, A Textbook of Machine Drawing, Katson books, 2013
3. K.C. John, Textbook of Machine Drawing, PHI Learning Pvt. Ltd.,2009

COURSE OUTCOMES:

1. Use limits, fits and tolerances in real world problems.
2. Sketch the sectional views of simple elements.
3. Sketch and dimension the standard mechanical elements like bolt, nut, screw etc.
4. Sketch the assembly drawings and sectional views of automobile components from orthographic part drawings.
5. Sketch the detailed drawing of automobile components and able to prepare bill of materials and tolerance sheet. .