

MACHINE DRAWING THROUGH CAD LABORATORY

III Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AMEB07	Core	L	T	P	C	CIA	SEE	Total
		-	-	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes: 36			
I. COURSE OVERVIEW:								
<p>Machine drawing is used to communicate the necessary technical information required for manufacture and assembly of machine components. Students practice the development of drawings of machine components as per Bureau of Indian Standards (BIS) and assembly using industry leading mechanical design softwares. This course is central to developing students ability to easily develop a full range of products, from single parts to assemblies containing thousands of components with accurate fit and therefore involves economic, societal, safety and manufacturing aspects.</p>								
II. OBJECTIVES:								
The course should enable students to								
I The Code of drawing practice as per BIS conventions for mechanical elements using AutoCAD.								
II The 2D drawing of joints, couplings, bearings and keys and their sectional views.								
III The preparation of component drawings, assembly drawings and bill of materials for selected assemblies.								
IV The part drawings of the assembly of various machines and engine components.								
III. COURSE OUTCOMES:								
After successful completion of the course, students should be able to:								
CO 1 Select the conventional representation of materials and machine elements for assembly drawing work. Apply								
CO 2 Classify the different types of sectional views to expose internal surfaces of machine elements. Analyze								
CO 3 Explain the importance of the linking functional and visualization aspects in the preparation of the part drawings for the design process. Evaluate								
CO 4 Identify the different types of couplings are used for fastening components that require frequent assembly and disassembly. Apply								
CO 5 Develop detailed assembly drawings of Engine parts, Tailstock, Machine vice and safety valves to facilitate its manufacture. Apply								
IV. SYLLABUS:								
LIST OF EXERCISES								
Week-1	CONVENTIONAL REPRESENTATION							
Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs and ribs; Introduction to AutoCAD.								
Week-2	SECTIONAL VIEWS							
Types of sections, selection of section planes and drawing of sections and auxiliary sectional views, parts not usually sectioned.								
Week-3	DIMENSIONING							
Methods of dimensioning, general rules for sizes, and placement of dimensions for holes, centers, and curved and tapered features.								

Week-4	WORKING DRAWINGS
Types of drawings–working drawings for machine parts.	
Week-5	MACHINE ELEMENTS
Drawing of machine elements and simple parts; Selection of orthogonal views and additional views for the following machine elements and parts with drawing proportion, popular forms of screw threads, bolts, nuts and stud bolts.	
Week-6	KEYS AND COTTER JOINTS
Keys, cotter joints, and knuckle joint.	
Week-7	RIVETED JOINTS
Riveted joints for plates.	
Week-8	COUPLINGS
Shaft couplings and spigot joint.	
Week-9	BEARINGS
Journal, pivot, and collar bearing.	
Week-10	ASSEMBLY DRAWINGS-ENGINE PARTS
Assembly drawings Assembly drawings for the following, using conventions and drawing proportions: Engine parts stuffing box.	
Week-11	CONNECTING ROD AND ECCENTRIC
Eccentrics, I.C. engine connecting rod.	
Week-12	SCREW JACK
Screw jack.	
Week-13	TAIL STOCK AND MACHINE VICE
Machine vice and tailstock.	
Week-14	SAFETY VALVES
Rams-bottom Safety Valve, feed check valve.	
Text Books:	
1.K.L. Narayana, P. Kannaiah, K. Venkata Reddy, “Machine Drawing”, New Age Publishers, 3 rd Edition, 2012. 2. K.C. John, “Text book of Machine Drawing”, PHI Eastern Economy, 1 st Edition, 2010. 3. P.S Gill, “Machine Drawing”, S.K Kataria & Sons, 1 st Edition, 2013. 4. Junnarkar N.D, “Machine Drawing”, Pearson Education, 1 st Edition, 2007. 5. Basudeb Bhattacharya, “Machine Drawing”, Oxoford University Press, 1 st Edition, 2011. 6. N. D. Bhatt, V. M Pancahal, “Machine Drawing”, Charotar, 1 st Edition, 2014. 7. R. K. Dhavan, “A Text book of Machine drawing”, S.Chand Publication & Co, New Delhi, 2 nd Edition, 2008.	
Web References:	

1. http://web.iitd.ac.in/~achawla/public_html/201/sheets/sheet5/sheet5.pdf
2. https://drive.google.com/file/d/0B_GCh7LMfHf6Z0VNWTNHU3pMSTg/view?pref=2&pli=1
3. <http://www.uiet.co.in/downloads/20140911122818-Machine20Drawing.pdf>
4. <http://listpdf.com/ma/machine-drawing-book-pdf.html>