Semester I
Engineering Graphics and Computer Aided Drawing

Course Code	Teaching hours per week				Self Study hours	Credits	Exam hours	Course Type	CIE Marks	ESE Marks
	L	T	P	R	SS					
26ABMES101	2	0	2	0	4	3	2 Hrs. 30 Min.	Theory & Lab	40	60

1. **Preamble:** The Engineering Graphics course aims to develop students' skills in dimensioning, preparation, and interpretation of engineering drawings. It enhances visualization of 2D and 3D objects through orthographic and isometric projections and provides basic knowledge of CAD software for modern engineering drafting applications.
2. **Pre-requisites**: Nil

SYLLABUS

Module No.	Syllabus Description	Contact Hours
1	Introduction: Relevance of technical drawing in engineering field. Types of lines, Dimensioning, BIS code of practice for technical drawing. **Construction of Conic Sections**: Parabola and Ellipse -Rectangular Method **Projection of points in different quadrants** **Projection of straight lines**: Inclined to both planes in different quadrants, Midpoint problems. Locate Traces of a line.	**12**
2	**Projection of Simple solids** such as Triangular, Square, Pentagonal and Hexagonal Prisms, Pyramids, Cone, Cylinder, cube and. Projection of solids with axis inclined to both reference planes and resting on horizontal plane & Vertical plane. (Exclude Suspended solids)	**12**
3	**Sections of Solids**: Sections of Prisms, Pyramids, Cone, Cylinder with axis in vertical position and cut by different section planes. True shape of the sections. **Development of Surfaces**: Development of surfaces of the solids and solids cut by different section planes. Trace the shortest distance between two points on the surface of Cone and Cylinder.	**12**

4	**Isometric Projection**: Isometric View and Projections of Prisms, Pyramids, Cone, Cylinder, Sphere, Hemisphere and their combinations with axis perpendicular to HP. **Computer Aided Drawing (CAD):** Introduction, Role of CAD in design and development of new products, Advantages of CAD. Familiarizing various Tools: move, copy, rotate, scale, mirror, offset and array, trim, extend, fillet, chamfer. Dimensioning and text editing. Exercises on basic drafting principles, to create technical drawings. Creation of orthographic views of simple solids from pictorial views.	**12**

3. Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Develop the ability to construct conic sections and plot the projections of points and lines located in different quadrants.	**K3**
CO2	Prepare Multiview orthographic projections of objects by visualizing them in different positions	**K3**
CO3	Plot sectional views and develop surfaces of a given object	**K3**
CO4	Prepare pictorial drawings using principles of isometric projection and create simple engineering drawings using CAD tools.	**K3**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

4. CO-PO Mapping Table:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1								
CO2	3	2	2	1							
CO3	3	2	2	1							
CO4	3	2	3		3				1	2	

5. Course Assessment Method (CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Micro project	Internal Examination- 1 (Written)	Internal Examination- 2 (Written)	Total
5	15	10	10	40

End Semester Examination Marks (ESE)

Student can choose any one full question out of two questions from each module

	Total
2 Questions from each module. Total 8 Questions, each question carries 15 marks **(15x4 =60marks)**	**60**

6. Text Books

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Engineering Graphics	Varghese, P. I.	V I P Publishers	1st Edition 2012
2	Engineering Graphics,	Benjamin, J.	Pentex Publishers	5th Edition 2017
3	Engineering Graphics for degree	John, K. C.	Prentice Hall India Publishers	Published in 2011
4	Engineering Graphics,	Anilkumar, K. N.	Adhyuth Narayan Publishers	10th Edition 2016

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Engineering Graphics with AutoCAD	Kulkarni D M, Rastogi A P and Sarkar A K	Prentice Hall India Publishers	2009
2	Engineering Drawing & Graphics	Venugopal K.	New Age International Publishers	4th edition 2007
3	Engineering Drawing	Parthasarathy N. S., And Murali V.	Oxford University Press	2015

Video Links or any other Reference Materials		
Sl No	**Weblink, Publication Details**	**Module**
1	https://archive.nptel.ac.in/courses/112/102/112102304/	All modules
2	Virtual labs https://eg-dei.vlabs.ac.in/	4

MODEL QUESTION PAPER		
FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY(AUTONOMOUS) SECOND SEMESTER B. TECH DEGREE EXAMINATION, MONTH AND YEAR		
Course Code: 26ABMES101		
Course Name: Engineering Graphics and Computer Aided Drawing		
Max. Marks: 60		Duration: 2 hours 30 minutes
Instructions: Retain Construction lines. Show necessary dimensions. Answer any ONE question from each module. Each question carries 15 marks		

Sl No.	**Module 1**	**CO**	**Marks**
1	The plan of a 75 mm long line AB measures 65 mm while the length of its elevation is 50 mm. Its end A lies on HP and 15 mm in front of VP. Draw its projection, find the true inclinations and locate its traces.	CO1	(15)
2	One end of a line AB 60mm long is 15mm above HP and 20mm in front VP. Draw its projection if the line is 30° inclined to HP and 45° inclined to xy in top view.	CO1	(15)
	Module 2		
3	A pentagonal pyramid of base edge 30 mm and axis 60 mm long is resting on HP on one of its base corners such that the slant edge containing that corner is inclined 50º to HP. Draw its projections if the top view of the axis is inclined 30º to XY line.	CO2	(15)
4	A pentagonal pyramid of sides 25mm and height 60mm long is resting on one of its base edges on HP in such a way that the triangular face containing the resting edge is perpendicular to HP and parallel to VP.	CO2	(15)
	Module 3		

5	A Pentagonal pyramid of sides 30mm and height 60mm is resting on HP in such a way that one of its base edges is parallel to VP. It is cut by an auxiliary inclined plane 30° inclined to HP and meets the axis at a distance 20 mm from its base. Draw its sectional top view, front view and true shape of the section.	CO3	(15)
6	A Hexagonal pyramid of sides 25mm and height 60 mm is resting on HP in such a way that two of its base sides are perpendicular to VP. It is cut by a section plane 40° inclined to HP, perpendicular to VP and bisects the axis. Draw the development of its lateral surface if its axis is perpendicular to HP.	CO3	(15)
	Module 4		
7	A sphere of 40 mm diameter is placed centrally over the top of a cylinder of 50 mm base circle diameter and 60 mm height. Draw its isometric projection.	CO4	(15)
8	A cone of 40 mm base circle diameter 60 mm height is placed centrally over the top of a square prism of 60 mm side of base and 40 mm height. Draw its isometric view.	CO4	(15)

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