



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Institute of Technology  
Semester-1

**Subject:** Engineering Graphics -BETME10301

**Type of course:** Minor

**Prerequisite:** Knowledge of Basic Geometry

**Rationale:**

In engineering, Engineering Drawing is the language of the engineers. It is the graphical language from which technical communication and information can be shared within design process from design department to manufacturing department. Main Purpose of this subject is to clear and learn the basics geometric features of a product or any component so in future student is able to understand the industrial drawing. By helping of this student can draw and interpret technical drawing with all information in the drawing.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks					Total Marks
CI	T	P		Theory Marks		Practical Marks		CA	
			ESE	MSE	V	P	ALA		
3	0	2	4	60	30	10	20	30	150

*Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*



**Continuous Assessment:**

(For each activity maximum-minimum range is 5 to 10 marks)

Sr. No	Active Learning Activities	Marks
1	<b>Identify the Error</b> Identify the incorrect dimensioning; correct it as per BIS standards for Engineering Components and upload on Moodle.	05
2	<b>Make my Curve</b> Analyze geometric constructions (i.e. conics and special curves for projection of cricket ball, missile projection, etc.), draw Curve and upload on Moodle.	05
3	<b>Orthographic Projection</b> Sketch orthographic projection of solids in simple position and projection of solids inclined to one plane for any household accessories or objects and upload on Moodle.	05
4	<b>Isometric Projection</b> Convert orthographic view to isometric view for engineering components and upload on Moodle.	10
5	<b>Project</b> Develop lateral surfaces of the regular shapes and sectioned shapes and upload on Moodle.	05
Total		30

**Course Content:**

Unit No	Course content	Hrs	% Weightage
1	<p><b>Chapter-1: Engineering drawing, standards and tool:</b></p> <ul style="list-style-type: none"> <li>• Types of Lines</li> <li>• Elements of Dimensioning</li> <li>• Basic Standards of Drawing-BIS Scale-Diagonal &amp; Plain</li> </ul> <p><b>Chapter-2: Geometric construction:</b></p> <ul style="list-style-type: none"> <li>• Equal partitioning of drawing elements</li> <li>• Construction of Polygons</li> </ul>	12	30%



	<p><b>Chapter-3: Engineering curves:</b></p> <ul style="list-style-type: none"> <li>• Conic sections- Ellipse</li> <li>• Parabola and hyperbola</li> <li>• Special curves- Cycloid</li> <li>• Involute and Archimedean Spiral</li> </ul>		
2	<p><b>Chapter-4: Projection of point and lines:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Projection of Points, projection of point in all quadrants.</li> <li>• Projection of Lines with different cases in 1st quadrant only.</li> </ul> <p><b>Chapter-5: Projection of plane and solids:</b></p> <ul style="list-style-type: none"> <li>• Projection of different regular planes – Triangle, Square, Rectangle, circle, pentagon, hexagon and Rhombus</li> <li>• Projection of solid – Cylinder, Cone, Prism, Pyramid</li> </ul>	15	30%
3	<p><b>Chapter-6: Orthographic Projection</b></p> <ul style="list-style-type: none"> <li>• Conversion of pictorial view into orthographic Projection. (Sketching orthographic projection of solids in simple position for household accessories and objects)</li> </ul>	10	20%
4	<p><b>Chapter-7: Transformation of Projection: 2D To 3D:</b> Isometric Projection: Isometric scales, Isometric projections of simple objects.</p> <p><b>Chapter-8: Development Of Surfaces &amp; Free Hand Sketches:</b></p> <ul style="list-style-type: none"> <li>• Development of lateral surfaces of the regular shapes and sectioned shapes.</li> <li>• Interpret technical drawing of parts related with specific field.</li> </ul>	10	20%

**Suggested Specification table with Marks (Theory):60**

Distribution of Theory Marks (Revised Bloom’s Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	10%	50%	30%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



**Course Outcome:**

After learning the course, the students should be able to:	
CO1	Understand basic knowledge of Engineering Drawing
CO2	Construct mathematical curves in Engineering applications
CO3	Visualize geometrical solids in 3D space through Orthographic Projections
CO4	Draw projections of lines, planes, solids, isometric projections including cylinders, cones, prisms and pyramids using Mini-Dafter
CO5	To construct orthographic projections from pictorial views.

**List of Practical**

(Minimum-10practical):

Sketch book and drawing sheet will be prepared by the students as per following list.

Sr. No	Descriptions	Unit No	Hrs
1	Engineering drawing, standards and tool	1	2
2	Geometric Construction	1	2
3	Engineering Curves (Conic Sections)-1	1	2
4	Engineering Curves-2	1	2
5	Projections of Points and Lines	2	4
6	Projections of Planes& solid	2	4
7	Orthographic Projections	3	4
8	Isometric Projections	4	4
9	Development Of Surfaces	4	4
10	Free Hand Sketches	4	2
		Total	30



**Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

**Reference Books:**

- [1] Elementary Engineering Drawing, N. D. Bhatt, Charotar Publishing House, Anand
- [2] A Text book of Engineering Graphics, Natarajan, K. V., Dhanalakshmi Publishers
- [3] Engineering Graphics, Venugopal K and Prabhu Raja V, New AGE International Publishers
- [4] Engineering Drawing, B. Agrawal and C M Agrawal, Tata McGraw Hill, New Delhi

