ENGINEERING GRAPHICS COURSE STRUCTURE FOR AY 2021-22

Course Code	**MEE1003A**			
Course Category	***ENGINEERING SCIENCE***			
Course Title	**ENGINEERING GRAPHICS**			
Teaching Scheme and Credits	**L**	**T**	**Laboratory**	**Credits**
Weekly load in Hrs	**03**	**--**	**03**	**02+00+01=03**

Pre-requisites: Geometry, Elementary Drawing

Course Objectives:

1) To impart basic knowledge required to construct engineering objects using drafting techniques.
2) To elaborate construction of curves used in engineering practices.
3) To visualize and draw the projection of point, line, planes and solids.
4) To imagine and draw different views of physical engineering objects.
5) To explore basic knowledge about modern tool required to plot the engineering objects.

Course Outcomes:

Upon learning the course, the student will be able to:

1) Draw engineering objects through graphics language.(CL III)
2) Construct the conic sections using the drafting techniques. (CL III)
3) Interpret and construct objects like line, planes, solids etc.(CL III)
4) Apply the visualization skill to draw 2D and 3D engineering objects. (CL II)
5) Create physical objects by using computer aided drafting tools (CL III)

Course Contents:

NOTE: *Only FIRST ANGLE METHOD OF PROJECTION IS TO BE USED IN ALL THE UNITS.*

Introduction of Engineering Graphics: Introduction to Drawing instruments and their uses, Types of lines and their applications, Method of Dimensioning.***(*Not expected in theory Exam)*** **[01 Hrs]**

Engineering Curves: Conic Sections-Ellipse, Parabola and Hyperbola by Focus-Directrix method only. Involutes of circle, Cycloid, Archimedean Spiral, Helix on cylinder. **[03 Hrs]**

Orthographic Projection: Theory of Projections, Draw the orthographic views (2D) from the given pictorial view (3D). **[04 Hrs]**

Sectional Orthographic Projection: Type of Sections, and Sectional views. **[01 Hrs]**

Isometric Projection: Introduction, Draw the isometric views (3D) from the given orthographic views (2D). **[05 Hrs]**

Projection of Point and Line: Projection of point, Projection of line: Line inclined to Horizontal plane, Vertical plane and both the planes. **[05 Hrs]**

Projection of Planes: Introduction to Plane-Triangle, Quadrilateral, Pentagon, Hexagon and Circle. Plane inclined to Horizontal plane, Vertical plane and both the planes. **[04 Hrs]**

Projection of Solids: Introduction to Solids-Prism, Pyramid, Cylinder and Cone, Solids inclined to Horizontal plane, Vertical plane and both the planes. **[05Hrs]**

Development of Solids: Development of Prism, Pyramid, Cylinder and Cone. **[02 Hrs]**

Laboratory Work

All sheets should be drawn by using CAD Software tools.

1) Introduction to AUTO CAD: Basic operations of CAD software, use of various operations for plotting the drawings. **[03 Hrs]**
2) Engineering Curves **[04 Hrs]**
3) Orthographic Projection **[05 Hrs]**
4) Isometric Projection **[05 Hrs]**
5) Projection of Line **[03 Hrs]**
6) Projection of Planes **[04 Hrs]**
7) Projection of Solids **[04 Hrs]**
8) Development of Solids **[02 Hrs]**

Learning Resources: Engineering objects & machine component

Reference Books:

1) Engineering Graphics for Degree, K. C. John, PHI Learning Pvt. Ltd., New Delhi, India.
2) Engineering Drawing, Plane and Solid Geometry, N. D. Bhatt and V. M. Panchal, Chartor Publication
3) Engineering Drawing with an Introduction to AutoCAD, D. A. Jolhe, Tata McGraw-Hill Publishing Co. Ltd., New Delhi, India.
4) Engineering Graphics, By Luzzadder.
5) Engineering Drawing, A.J. Dhananjay, TMH, 2008.
6) Mastering AutoCAD 2019, Brian and George Omura, Willey Publication.

Supplementary Reading: Understanding of computer aided drafting packages.

i) http://www.autocadtutorials.net/
ii) https://academy.autodesk.com/software/autocad

Web Resources:

i) https://nptel.ac.in/courses/112103019/
ii) https://www.youtube.com/watch?v=z4xZmBpXIzQ

iii) https://www.youtube.com/watch?v=uojN7SOHPBw

iv) https://www.youtube.com/watch?v=T8SAAGuo174

v) https://www.youtube.com/watch?v=G3DJ4pu1qF4&list=PL9RcWoqXmzaJT-fliqTSwUjWU4zCX_H2A

vi) https://www.youtube.com/watch?v=tuNw2R_6oz4

Weblinks:

1. Introduction to Engineering Drawing.

https://www.youtube.com/watch?v=7vcQHqTp1Vo

2. Theory of Projections.

http://nptel.ac.in/courses/112103019/14

3. Projection of Points.

http://nptel.ac.in/courses/112103019/17

4. Projection of Lines

http://nptel.ac.in/courses/112103019/19

5. Projection of Planes

http://nptel.ac.in/courses/112103019/24

6. Projections of Solids.

http://nptel.ac.in/courses/112103019/28

7. AUTO CAD Software

https://www.youtube.com/user/AutoCADExchange/videos

MOOCs: Online courses for self-learning:

i) https://www.classcentral.com/tag/engineering-drawings

ii) https://www.mooc-list.com/tags/engineering-drawing

iii) https://www.mooc-list.com/tags/technical-drawing

iv) https://www.mooc-list.com/tags/drawing

Pedagogy:

i) Co Teaching Method

ii) Videos and Power point presentations on smart boards available in each class room

iii) Actual models of solids like cone, prism, pyramid etc.

iv) Teaching by online platform.

v) Use of CAD Software

Assessment Scheme:

Class Continuous Assessment (CCA): 50 Marks

Attendance	Assignment	Mid Test	Case Study	MCQ	Oral	Any other
10 Marks 20%	25 Marks 50%	15 Marks 30%	Nil	Nil	Nil	Nil

Laboratory Continuous Assessment (LCA): 50 Marks

Practical	**Practical Exam**	**Site Visit**	**Mini Project**	**Problem based Learning**	**Any other**
50 Marks 100%	--	--	--	--	--

Term End Examination: 50 marks

Prepared by, **Checked by** **Approved by**

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