COURSE TITLE	**ENGINEERING DRAWING AND COMPUTER AIDED DESIGN**
COURSE CODE	**01ME1105**
COURSE CREDITS	**4**

Objective:

1 Engineering Drawing is an effective language of engineers. It is the Foundation block which strengthens the engineering & technological structure. Moreover, it is the transmitting link between ideas and realization.

Course Outcomes: After completion of this course, student will be able to:

1 Interpret engineering drawings using fundamental technical mathematics and standards

2 Construct basic and intermediate geometry and apply orthographic projection techniques to represent 3D objects in 2D

3 Enhance visualization skills for the development of innovative product designs using CAD tools

4 Utilize CAD tools to create 3D models and prototypes using 3D printing

5 Gain hands-on experience in laser cutting and understand its applications in engineering designs

Pre-requisite of course:NIL

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	4	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction to Engineering Drawing & Sketching** Drawing instruments and accessories, BIS –SP 46 and Use of Plane Scale. , construction of different polygon, divide the line and angle in parts.	2
2	**Orthographic Projections** Fundamental of projection along with classification, Projections from the pictorial view of the object on the principal planes for view from front, top and sides using first angle projection method and third angle projection method, full sectional view.	11
3	**Isometric Projections and Isometric View or Drawing** Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing.	11
Total Hours		**24**

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Basics of CAD** Basic of CAD over traditional drafting Introduction to 3D modelling software, Creating 2D Sketches, Understanding and applying geometric constraints (e.g., parallel, perpendicular, tangent), Dimensional constraints: Specifying lengths, angles, and relations, , Practice: Simple 2D shapes, , Extrusion, Revolve, and Sweep operations, Fillet, Chamfer, Draft features, Shell, Rib, and Pattern tools	40
2	**Basics of 3-D printing & Laser Cutting** Introduction to laser cutting technology , 3D Printing and its principles, Hands-on practice with laser cutting , 3D Printing machines, Design and fabrication projects integrating laser cutting and CAD.	8
Total Hours		**48**

Textbook :

1 Engineering Graphics , Dr. R.L. Jhala, McGraw Hill Education Publication, 2015

2 A Text Book of Engineering Graphics , P.J. Shah, S. Chand Publishing - Technology & Engineering, 2014

References:

1 A Text Book of Engineering Drawing , A Text Book of Engineering Drawing , P.S. Gill, S.K. Kataria & Sons, McGraw Hill Education Publication , 2015

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	10.00	40.00	10.00	10.00	20.00

Instructional Method:

1 PPT

2 Videos

3 Animations

4 Hands on sessions

Supplementary Resources:

1 https://www.designtechcadacademy.com/knowledge-base/introduction-to-cad

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Supplementary Resources:

2 https://fractory.com/engineering-drawing-basics/

3 https://www.autodesk.in/solutions/technical-drawing

4 https://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-ispring- 2009/related-resources/drawing_and_sketching/

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