

COURSE TITLE	COMPUTER AIDED DESIGN LABORATORY
COURSE CODE	01ME0407
COURSE CREDITS	0

Objective:

- 1 The objective of Computer Aided Design Laboratory is to enable the development, modification, and optimization of the design process. CAD helps users create designs in either 2D or 3D so that they can visualize the construction. It allows for more accurate representations and easy modifications to improve design quality. The software also takes into account to practice the large number of alternatives investigations. Design errors are also reduced by the accuracy built into the system through calculations and checks available within the system
- 2 To develop the part drawing for various mechanical components and assembly operations are carried out in CAD

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

- 1 Draw the 3-D geometric information of machine components, including assemblies, and automatically generate 2-D production drawings.
- 2 Apply the basic analytical fundamentals that are used to create and manipulate geometric models in a computer program.
- 3 Improve visualization ability of machine components and assemblies before their actual fabrication through modelling.
- 4 Apply animation, shading, rendering, lighting, and coloring.
- 5 Model complex shapes, including freeform curves and surfaces.

Pre-requisite of course:Engineering Graphics

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	25	25

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Review of Drafting Package Review of Drafting Package, Basic Sketch command – Line, Circle, Rectangle, Arc, Polygon, Spline. Drafting the Orthographic views of Mechanical components	6

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	Exercise in Solid modelling software Introduction & Basic Create command, Extrude, Revolve, Sweep, Loft, Rib, Web, Web, Box, Cylinder, and Modifying command i.e. Fillet, Chamfer, Shell, Split Body., Modelling of Simple Mechanical Components, Modelling of components with sweep and loft feature, Modelling of temporary fasteners	8
3	Exercise of Parametric drawing Exercise of Parametric drawing, Parametric drawing of components	4
4	Exercise on assembly of components: Assembly of components, Conversion of 3D to 2D and mass property calculations, Assembly Drawing for Screw jack, Assembly Drawing for Connecting rod, Working Drawing for tolerances in Part and Assembly drawing	8
5	Production drawing Generating the Bill of material, Seat size and manufacturing settings, Industry drawing layout	2
Total Hours		28

Textbook :

- 1 Designing with Creo Parametric, Michael J. Rider, SDC Publication, 2022
- 2 Parametric Modeling with Creo Parametric, Randy H. Shih, Randy H. Shih, 2022

References:

- 1 Principles of Computer-Aided Design and Manufacturing, Principles of Computer-Aided Design and Manufacturing, Farid Amirouche, Pearson, 2nd Edition, 2004
- 2 “Autodesk Fusion 360: A Tutorial Approach, “Autodesk Fusion 360: A Tutorial Approach, Sham Tickoo, CAD/CIM Technologies, 2019
- 3 A Beginner’s Guide to 3D Modeling: A Guide to Autodesk Fusion 360, A Beginner’s Guide to 3D Modeling: A Guide to Autodesk Fusion 360, Cameron Coward, No Starch Press, 2019
- 4 “Fusion 360 Step by Step, “Fusion 360 Step by Step, Johannes Wild, Autodesk, 2021
- 5 Fusion 360 for Makers, Fusion 360 for Makers, Cline, Lydia Sloan, Make Community LLC, 2021

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
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

- 1 The practical are done using modeling

Supplementary Resources:

- 1 <http://www.3ds.com/products-services/enovia>
- 2 <http://www.3ds.com/>
- 3 http://learningexchange.ptc.com/tutorials/listing/product_version_id:44