FALL 2025

Introduction to Mechanical Design ME0024

Instructor:
Professor Sam Ghalambor
Office Hours: 11:00 AM - 12:00 PM Tuesdays and
Wednesdays or by appointment Sam.ghalambor@scupi.cn

Office: SCUPI NEW BUILDING **N501**

Textbook:
1)Introduction to CATIA V5 Release 19, Kristie Planterberg SDC, Schroff Development Corporation
2) Parametric Modeling with Creo 3.0 ,Randy H. Shih, SDC Publications

Mechanical Design Engineering Handbook, Peter R.N. Childs, Elsevier, 2014

Course Outline: I. In this course student will be introduced to solid and parametric modeling techniques. The lessons proceed in pedagogical fashion to guide students from construction basic shapes to building intelligent complex solid models and creating multi-view drawings. The students are expected to take a hands-on, exercise intensive approach to all the important parametric modeling and concepts that helps them in their future design courses.

Course Objectives:

1. Course introduces industrial design and its place in the manufacturing process. Content includes design visualization, creation and application of three-dimensional (3D) computer-generated models in today's manufacturing, communication, and publishing industries; creating a 3D computer model component design from original idea, pencil sketching, concept analysis and use of surface and solid modeling software.
2. Teach the fundamentals of conveying graphical mechanical engineering information, including drawing views, dimensioning and tolerancing.
3. Teach the fundamentals of computerized drawing and solid modeling through the use of a particular CAD software package (Creo and CATIA)
4. Provide basic Industrial engineering information about parts, assemblies, prototypes, and manufacturing as they relate to the design process.

Course outcome based on ABET requirement:

By completing this course, students can recognize, analyze, and resolve complex engineering challenges by utilizing the principles of engineering, science, and mathematics.

1. ***Part Models***

   Analysis of Mechanisms

   - wheel, Flange, Pulley
   - Wide Flange Beam, Bracket

- boat, Swept Parts, Handlebars
- Ribbed Flange, Cap Screw

2. ***Assembly Models***
   - complete car Assembly
   - Hatch Assembly

3. ***Engineering Drawings***
   - Part Drawings
   - Assembly Drawings
   - 2D Layouts

CATIA Tutorials	CATIA Exercises	Week
CATIA Basics: Tutorials 1.1, 1.2 & 2.1	Exercise 2.1	Week 1
Sketcher: Tutorials 2.2, 2.3	Exercise 2.2, 2.3	Week 2
Sketcher: Tutorials 2.4, 2.5 & 2.6	Exercise 2.4, 2.5, 2.6	Week 3
Part Design: Tutorials 2.7, 3.1 & 3.2	Exercise 3.1, 3.2	Week 4
Part Design: Tutorials 3.3 & 3.4	Exercise 3.3	Week 5
Part Design: Tutorial 3.5	Exercise 3.4	Week 6
Part Design: Tutorials 3.6 & 3.7	Exercise 3.5	Week 7
Part Design: Tutorials 3.8 & 3.9		Week 8
Wireframe: Tutorial 4.1		Week 9
Wireframe: Tutorials 4.2 & 4.3	Exercise 4.1	Week 10
Assembly: Tutorial 5.1		Week 11
Assembly: Tutorial 5.2	Exercise 5.1	Week 12
Drafting: Tutorial 6.1	Exercise 6.1	Week 13

Grade:

Attendance…….10%
Homework..... 30%
Midterm Exam (I) .....,.October 26,..... 20%
Midterm Exam (II) ….. November 22,..... 20%
Final Exam.....Dec 20..... 20%
90^{+} ..... **A**
80 - 89 ..... **B**
70 - 79 ..... **C**
60 - 69 ..... **D**
59^{-} ..... **F**

Grade Dispute Process

If an oblivious error in grading has been made, I will correct it immediately. All disputes regarding severity and judgment must be filed through a written process. All appeals are to be made by submitting a package including the following information:

- A complete copy of your entire quiz or exam.
- A cover page describing which problems are in question and the details of the disputed mark.
- A complete rework of a disputed problem on a separate sheet of paper.

Disability Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact me or admin Staff for accommodation.

Academic Integrity

All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

Statement on Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.