

Fall 2018

Introduction to Mechanical Design

ME0024



Instructor:

Professor Sam Ghalambor

Office Hours: 11:00 am - 12:00 pm Tue/Wed or by appointment

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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 Prerequisite: ENGR 001, ENGR 0015, or ENGR 0711

Course Outline: 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/Analysis courses. In addition students will be exposed to CNC processes that is used to produce the designed parts.

Course Objectives:

1. Provide an understanding of the design process.
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 mechanical engineering information about parts, assemblies, prototypes, and manufacturing as they relate to the design process.

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

II. Applications

- CNC Machining and generation of "G" CODES
- Rapid Prototyping

III. Design Methodologies

Grade:

Homework.....	20%
Midterm Exam (I) October,26, 2018.....	20%
Midterm Exam (II)November, 21, 2018.....	20%
Final Exam.....	20%
Project	20%
90+	A
80 - 89	B
70 - 79	C
60 - 69	D
59-	F

Grade Dispute Process

If an obvious 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.