

Mechanical Engineering Design I “Mech 1”
EML 3005 Section 2213
Class Periods: M/W/F, Period 8, 3:00 PM – 3:50 PM
Location: AND 0134
Academic Term: Fall 2025

Instructor:

Alison C. Dunn

alison@ufl.edu

Office Phone Number: (352) 392-0039

Office Hours: Mondays & Wednesdays directly after class, Period 9 (4:05-4:55), Library West 1st Floor

Graduate Teaching Assistant:

Please contact through the Canvas website

- Chris Mauldin
- Office Hours: TBD

Course Description

3 credits. Design process, kinematics, gear trains, and standard mechanical components.

Course Pre-Requisites / Co-Requisites

Prerequisite: COP 2271 and EML 2322L and EGM 3520 with a minimum grade of C and EGM 3401 with a minimum grade of C.

Course Objectives

At the end of the course, students will be able to

- Understand the role of analysis in the mechanical engineering design process
- Be able to determine stresses in mechanical elements
- Be able to design elements to avoid failure from static and dynamic loading within some factor of safety
- Be able to design or select standard mechanical elements
- Have familiarity with the synthesis and analysis in mechanical design

Materials and Supply Fees

None

Required Textbooks and Software/Access

- Text: *Shigley’s Mechanical Engineering Design* by Budynas and Nisbett
- Versions: 10th Edition (2015) or 11th Edition (2020) are both ok, and in any format (eBook, paperback, hardback); avoid “international edition”
- Text Availability: UFAllAccess (<https://www.bsd.ufl.edu/allaccess>)
- Class website: <http://lss.at.ufl.edu> (e-learning on Canvas system)

Required Computer

MAE student computing requirement: <https://mae.ufl.edu/students/undergraduate/computer-requirements/>

Relation to Program Outcomes (ABET):

Outcome	Coverage*
a. Apply knowledge of mathematics, science, and engineering	high
b. Design and conduct experiments, as well as analyze and interpret data	
c. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	high
d. Function on multidisciplinary teams	
e. Identify, formulate, and solve engineering problems	high
f. Understand professional and ethical responsibilities	
g. Communicate effectively	medium
h. Understand the impact of engineering solutions in a global, economic, environmental, and societal context	
i. Recognize the need for and be able to engage in lifelong learning	
j. Understand contemporary issues	
k. Use the techniques, skills, and modern engineering tools necessary for engineering practice	high

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Attendance Policy, Class Expectations, and Make-Up Policy

The best way to succeed in this class is to attend all class sessions, including Fridays. On lecture days, attendance will be taken by the instructor. On discussion days, attendance will be evidenced by turning in a worksheet during class. You can miss up to 2 class sessions with no penalty and no requirement of documentation. Beyond that, you must submit a request and documentation through the instructor's web form at https://ufl.qualtrics.com/jfe/form/SV_9NeyBc62pcWYgvQ. Unexcused absences beyond the 2 free absences will cause a 0 for the participation grade for that class period.

Homework in the form of problem sets will be provided for practice, but no collection or grading of homework will be done.

If you will miss an in-class quiz, you must email the instructor ahead of the quiz time to schedule a makeup. Without submission of the excused absence form nor prior contact, no makeup quiz can be scheduled.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:

<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Participation: Pre-lecture quizzes (12)	100 each	10%
Participation: Attendance (33)	100 each	25%
Quizzes (6)	100 each	30%
Project 1	100	15%
Project 2	100	20%
Total		100%

Grading Policy

Grade Scale (tentative)

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

University Academic Policies and Resources:

<https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/>

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Undergraduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>