

EML4502 Mechanical Engineering Design 3

Spring 2022 Syllabus

Updated 1/6/2022

*Modifications to this syllabus may be required during the semester.
Any changes to the syllabus will be posted on the course website and announced in class.*

Teaching Team

Instructors: Matthew J. Traum, Ph.D.

Office Hours: Tuesdays & Thursdays during Lab Hours or by appointment

Email: mtraum@ufl.edu

Course PM: Alexander Dominguez

Email: domingueza@ufl.edu

Instructional Noel Thomas

Technician: Email: noel.thomas@ufl.edu

Instructional: Javian Morgan

Fellow: Email: javian.morgan@ufl.edu

Learning Kathleen Anderson

Assistants Email: kathleenanderson@ufl.edu

Dante Del Rosario

Email: dante.del.rosario@go.sfcollege.edu

Devin Cornair

Email: devin.cornair@ufl.edu

Devangi Gaikwad

Email: devangi.gaikwad@ufl.edu

Catalog Description

Design and realization of a mechanical engineering system, component, or process subject to appropriate standards and constraints. Team Project. Credits: 3

Prerequisites: EML4501

Corequisites: None

Course Materials and Fees

Course Fee: \$

Course Objectives & Relation to Program Outcomes (ABET)

Students who successfully complete this course demonstrate the following outcomes in the context of mechanical engineering design theory and application:

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	Medium
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	High
3. An ability to communicate effectively with a range of audiences.	High
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	Low

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	High
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	Medium
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	High

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

Required Computer

Students must have their own computer whose specifications meet or exceed the capabilities required by the College (<https://www.eng.ufl.edu/students/resources/computer-requirements/>) and MAE Department (<https://mae.ufl.edu/academics/prospective/undergraduate/computer-requirements/>).

Required Software & Online Resources

1. MS Teams will be used as a Learning Management system to host course documents, engineering documentation, and general announcements. MS Teams is also the required primary communication tool for inter- and cross-team discussions as well as communication between the Teaching Team and students. Each EML4502 Team must be linked to your computer and your smart phone with push notifications allowed for your relevant channels. Messaging through other platforms will not be recognized as EML4502 communication and will negatively impact your grade.

2. Canvas will be used as a secondary Learning Management System to host and distribute the course syllabus, grades, assignments, and assessments following university policy. However, Canvas is not intended as a primary means of communication in this course.

3. SolidWorks 2021 and SolidWorks PDM will be used for technical communication of 3D models and technical drawings. SolidWorks PDM logs facilitate assessment of student participation and effort. Failure to install and use PDM for class activities will negatively impact your grade.

Required Textbooks

1. Engineering Capstone Design, M. J. Traum, S. R. Niemi, et al., University of Florida, 2020
Free OER Download: <https://merge.mae.ufl.edu/outreach/textbook/> [Chapters posted when assigned]

Recommended Materials

1. Shigley's Mechanical Engineering Design, 10th Ed., R. G. Budynas and K. J. Nisbett, McGraw-Hill, 2015
ISBN: 9780073398204

2. Materials Selection in Mechanical Design, 5th Ed., Michael F. Ashby, Butterworth-Heinemann, 2016
ISBN: 0081005997

3. Machinery's Handbook, E. Oberg, 30th Edition (or later), ISBN-13: 978-0831130916

4. Roark's Formulas for Stress and Strain, 7th Edition, W. C. Young, R. G. Budynas, McGraw-Hill, 2002
ISBN 007072542X

Evaluation of Grades

This course is graded. Grades are earned based on the following individual and group deliverables. Further descriptions will be given when assignments and assessments are announced in class. Additional resources supporting these assignments will be posted on the course Learning Management System as needed.

Assignment/Assessment	Type	Points	%
Entry Resume + Resume Worded Score	Individual	0	0.0
Entry Skill Set Inventory Survey	Individual	0	0.0
3D Printed Part	Group	0	0.0
House Of Quality Brief	Group	20	4.0
Engineering Drawing	Individual	10	2.0
Motor Control Test	Group	20	4.0
Wind Stability Test	Group	20	4.0
CAD Model Design Review	Group	0	0.0
Azimuth & Elevation Motion Test	Group	20	4.0
Reflection Position Tracking Test	Group	50	10.0
Final Oral Presentation	Group	65	13.0
<i>Project Abstract</i>	Group	0	0.0
<i>Sign-Up & Links</i>	Group	0	0.0
<i>Final Oral Presentation Slides</i>	Group	0	0.0
90-Second Elevator Pitch	Group	20	4.0
Final Design Report	Group	85	17.0
Exit Resume + Resume Worded Score	Individual	0	0.0
Exit Skill Set Inventory Survey	Individual	0	0.0
Bi-Weekly Goal Setting & Reflection (x7)	Group	140	28.0
Tri-Weekly Peer Evaluations (x5)	Individual	50	10.0
	TOTAL	500	100.0

Any changes will be posted on the CANVAS page and announced in class

Explanation of Peer Evaluation:

Peer evaluations are an important part of your (and your teammates') growth as engineers. Be honest when evaluating your teammates' performance. Giving overly positive peer evaluations inflate class averages and will hurt your own grade! Moreover, evaluations submitted with every group member having perfect scores will be discarded as attempted grade inflation (see honor code section of the syllabus).

Grading Policy

A: 93-100 A-: 90-92.99
 B+: 87-89.99 B: 83-87.99 B-: 80-82.99
 C+: 77-79.99 C: 73-76.99 C-: 70-72.99
 D+: 67-69.99 D: 63-66.99 D-: 60-62.99
 E: 0-59.99

More information on UF grading policy may be found at:

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

Grade Definitions

A : Student demonstrated course mastery in all regards and with distinction.
 A- : Student performed outstandingly in all regards and is exceptional.
 B+ : Student performed with excellence in the course.
 B : Student showed high command of course content.
 B- : Student has done a commendable job with course content.
 C+ : Student demonstrated ample grasp of course content.

- C : Student demonstrated adequate grasp of course content.
- C- : Student demonstrated fair grasp of course content.
- D+ : Student met fair course expectations.
- D : Student attained below average expectations.
- D- : Student met minimal expectations to pass.
- E : Student failed to meet minimal expectations to pass.

Attendance

It is extremely important to attend class regularly. If you miss a class, **you** are responsible for acquiring notes or other resources covered. The teaching team will endeavor to make all course materials available through the Learning Management System. However, some experiences cannot be replicated asynchronously. Students are held responsible for knowledge of all scheduling and policy announcements made in class. Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>) and require appropriate documentation and advance communication with the instructor.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Policies on Clear Communication, “Ghosting”, Sources of Truth, and Assignment Grade Disputes

1. Once students are assigned into groups, all Emails to the EML4502 Teaching Team related to group business must clearly identify the group’s number. Each time any member of a group fails to identify the group by number in a communication to the Teaching Team, the group loses 1 point.
2. Individuals who fail to support their group or “ghost” the course, as demonstrated by peer evaluation scores, group feedback/emails, and/or low participation tracked in Canvas/PDM, will earn a failing grade in EML4502 regardless of points accumulated in the class.
3. Online platforms, notably GroupMe, provide venues for course discussion that exclude the instructor and EML4502 Teaching Team. Discussion platforms beyond UF-sanctioned Learning Management Systems will

not be monitored or curated by the instructor. **Thus, information propagated through these platforms is often incorrect.** It is each student's responsibility to verify information obtained from these external discussion services with reputable reference sources or UF-affiliated subject matter experts. Erroneous information obtained from external discussion platforms used in EML4502 will be marked incorrect on graded assignments and assessments.

4. If an individual or group has an assignment grading dispute, the issue must first be addressed with the Instructional Fellow or Learning Assistant who did the grading. If individuals/groups can show where grading errors occurred, Teaching Team members will correct grades accordingly. Only after communication with a Fellow or Learning Assistant fails to resolve a grading dispute may the individual/group bring the dispute to an instructor.

Laboratory Safety

EML4502 is a laboratory course. To ensure safety of all participants appropriate attire, personal protective equipment (PPE), and behavior are always required in the lab. Failure to follow lab safety rules will result in students' immediate dismissal from the lab and a course grade reduction at the instructor's discretion.

1. Lab Attire

- No open-toed shoes are permitted in the lab.
- No shorts are permitted in the lab.

2. PPE

In response to COVID-19, the following face-to-face instructional policies and requirements are in place to maintain a safe learning environment and enhance the safety of in-person interactions.

- Everyone in the lab is required to wear approved, properly fitted face coverings at all times.
- Sanitizing supplies are available in the lab to wipe down desks prior to sitting and at the end of class.
- Eye protection is always required in the laboratory.
- Use of specific equipment may necessitate an increase in the required PPE for a given task.
- Safety glasses, facemasks, and equipment specific PPE are available for students who do not have their own.

3. Behavior

- Disruptive or destructive behavior will not be tolerated.
- No food or drink is allowed in the machine shop, fabrication area, 3D print farm, or metrology stations in the lab.
- Food & drink are allowed at work desks, in conference rooms, at the coffee bar, and in the adjoining kitchen area

4. Emergencies

- Inform Instructors, Instructional Technicians, or Learning Assistants immediately of injury or exposure.

COVID-19 Protocols

1. If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.

2. If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

3. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.

4. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center [(352) 392-8565, <https://disability.ufl.edu/students/get-started/>] by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <http://gatorevals.aa.ufl.edu/students/> . Students will be notified when the evaluation period opens, and they can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <http://ufl.bluera.com/ufl/> . Summaries of course evaluation results are available to students at <http://gatorevals.aa.ufl.edu/public-results/> .

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.” On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel 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 Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.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 of Florida 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.

Student Privacy

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

Campus Resources

See appended pages.

Schedule of Topics, Assignments, & Assessments

See appended schedule.

“Treat a person as they should be, and they will become what they could be.”

--R. W. Emerson