

Engineering Mechanics: Statics
EGM 2511 Section 344J
Class Periods: MWF 9 (4:05-4:55 pm)
Location: MAE-A 303
Academic Term: Fall 2024

Instructor:

Dr. Kerry Costello, Assistant Professor

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(352) 392-0800

Office Hours: Wednesdays 2:30 pm – 3:30 pm (in Dr. Costello's office: WERT 482) or by appointment*

**If Wednesday afternoons do not work for you, please send me an email and I will gladly schedule a time to meet with you that works with your schedule. You are also encouraged to check and attend the TAs' office hours.*

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Please contact through the Canvas website

- Names, office hours, and locations will be posted on Canvas

Course Description

EGM 2511 Engineering Mechanics: Statics 3 credits

Reduction of force systems, equilibrium of particles and rigid bodies, vector methods and their application to structures and mechanisms.

Course Pre-Requisites / Co-Requisites

Pre-requisite: PHY 2048 Physics with Calculus 1

Corequisite: MAC 2313 Analytic Geometry and Calculus 3

Course Objectives

- Students understand and appreciate the relationship between the underlying principles of mechanics and the behavior of static mechanical systems.
- Students can represent physical bodies and restraints as idealized statical systems.
- Students understand the relationship between natural forces and how to properly model them.
- Students can analyze particles and rigid bodies subjected to external forces using analytical means and numerical methods.
- Students can use vector methods and free body diagram development as tools to logically approach and solve engineering mechanics problems in both the SI and U.S. customary systems.
- Students can apply the principles of statics to systems in the context of design or other similar engineering contexts.
- Students advance their abilities to solve engineering problems and to communicate the outcomes of technical investigations.
- Students will be prepared for more advanced study of engineering mechanics.

Materials and Supply Fees

None

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare,	Low

as well as global, cultural, social, environmental, and economic factors	
3. An ability to communicate effectively with a range of audiences	Low
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	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

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

Required Textbooks and Software

- Title: Engineering Mechanics: Statics
- Author: R.C. Hibbeler
- Publication date: 2021, Edition: 15th
- ISBN-13: 9780137514663
- eBook available through UF All Access: <https://www.bsd.ufl.edu/allaccess>

Recommended Materials

- Calculator capable of trigonometry functions

Required Computer

UF student computing requirement: <https://news.it.ufl.edu/education/student-computing-requirements-for-uf/>
Course communication will be done via the [Canvas eLearning platform](#).

Course Schedule

Below is a tentative course schedule subject to change. A more detailed and up-to-date schedule, including suggested readings, assignment and exam dates can be found on Canvas.

Week 1:	Introduction & Basics
Week 2:	Coordinate systems, vector resultants and components/HW1 due
Week 3:	Position vectors, force along a line/HW2 due
Week 4:	Vector products, 2D particle equilibrium/HW3 due
Week 5:	3D particle equilibrium, moment of a force/HW4 due
Week 6:	Principle of moments, moment about an axis, couple moments/HW5 due
Week 7:	Equivalent force and couple moment systems, distributed forces/HW6 due, MIDTERM 1
Week 8:	2D rigid body equilibrium/HW7 due
Week 9:	Trusses, frames, & machines
Week 10:	Internal forces and moments, shear and bending moment diagrams/HW8 due
Week 11:	Friction/HW9 due
Week 12:	3D static equilibrium/HW10 due
Week 13:	Centroids, fluid pressure/MIDTERM 2
Week 14:	Moment of inertia/HW11 due

Week 15: Thanksgiving (NO CLASS)
Week 16: Advanced topics, exam review/FINAL EXAM

Important Dates

Saturday 12/9 Final Exam (7:30-9:30 am, Location TBA)

****Note: All sections of statics take this early morning exam on the first day of finals week****

See full course calendar on Canvas and refer to the [official UF Fall 2024 schedule](#) for drop/add dates, withdrawal dates, and holidays.

Attendance Policy, Class Expectations, and Make-Up Policy

CLASS: Regular attendance and participation in class is expected and highly encouraged for optimal learning. You are responsible for all information disseminated during class. Disseminated information includes concepts explained by the instructor verbally or on the board, as well as any course logistics communicated by the instructor. If you miss class without an excused absence, please consult a classmate for any missed material.

HOMEWORK: Homework assignments provide students an opportunity to apply concepts learned in class and affirm their understanding of the course material. Learning is best achieved in an environment where discussions take place. Thus, you may find it beneficial to discuss your homework with other class participants in a small group of approximately 3 to 5 students. I welcome collaborative work; however, to be successful on assessments, you must be able to solve the problems on your own. If this is not the case, you will have great difficulty performing well on assessments in this course. Thus, submitted homework assignments should reflect your own work.

Assignments that are obviously copied will receive no credit and be subject to academic dishonesty policies.

Submission Policy: Homework assignments will typically be due one week after assigned (refer to Canvas for most up-to-date deadlines). All assignments should be turned in electronically via Canvas as a single PDF document. You must use the following convention when naming your submission: LastName_HW_X.pdf (replace "LastName" with your last name and "X" with the assignment number). **Makeup and Late Policy:** There will be no make-up homework assignments. No late homework assignments will be accepted. Since difficult weeks will arise during the semester, students will be allowed to drop one homework assignment grade (i.e., Of 11 homework assignments during the semester, only 10 will count towards the final grade). Note: Because no late homework assignments will be accepted, if you are unable to complete the homework by the deadline, it is often better to turn in a partially completed homework for partial credit rather than turning in homework late for a grade of zero.

EXAMS: Exams are an opportunity for students to demonstrate their mastery of course concepts. There will be two cumulative mid-term exams given during the semester and a final exam given during final exam week. Exams will be held during the block exam periods as posted on Canvas. A reference sheet may be used during all midterm and final exams. The **sheet must be handwritten (no photocopies or printouts) with your full name printed at the top** and it can be no larger than 1 side of an 8.5" x 11" piece of paper. Some students find it helpful to add material to the same reference sheet throughout the class, but you may also create a new reference sheet for each exam if you prefer. These must be turned in with your exams and will be returned when your exams are returned to you. If you choose not to use a reference sheet, you must submit a piece of paper with your name on it stating that no reference sheet was used. You may use a calculator during all exams. You may not use a phone as your calculator.

RE-GRADE POLICY: All grading appeals must be received in writing within 1 week after the assignment is graded and/or returned. If a student feels that an assignment, quiz, or exam was graded incorrectly, they should return the assignment and a written description of the grading error within 1 week of receiving the graded assignment. The instructor will evaluate the request and adjust the grade if an error was made. Any request for re-grading where the student has altered the assignment after it was returned to gain a grade benefit will be considered a violation of the University honor code.

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
Homework Sets (11*)	10 each	20%
Midterm Exam 1	100	20%
Midterm Exam 2	100	25%
Final Exam	100	30%
Engagement**	-	5%
		100%

*The lowest homework grade will be dropped (i.e., only 10 HW grades count towards HW total)

**Engagement will include in-class quizzes, participation in office hours, etc. This will be discussed further on the first day of class.

Grading Policy

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

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, 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 <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

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.

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 (<https://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 or TAs in this class.

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
- HWCHE 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>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://elearning.ufl.edu/>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.