

It may become necessary to modify this syllabus during the semester. In this event, students will be notified and the revised syllabus will be posted on the course web site.

## **Mechanics of Materials Fall 2021**

### **EGM 3520 Section 2607**

**Lecture:** Monday/Wednesday/Friday, CSE A101, 10:40 am – 11:30 am (4<sup>th</sup> Period)

**Office Hours:** Online: Tuesday/Thursday 11:45 am – 12:25 pm (5<sup>th</sup> Period)

In Person: Wednesday/Friday, 9:35 am – 10:25 am (3<sup>rd</sup> Period)

#### ***Professor***

Douglas Spearot, Ph.D.

Email: dspearot@ufl.edu

Phone: 352-392-6747

#### ***Teaching Assistants***

Graduate and undergraduate TAs and their office hours will be communicated through Canvas.

#### ***Course Description***

Introduction to stress and strain, stress-strain-temperature relations and mechanical properties of materials. Analysis of systems subjected to axial load, torsion load and bending. Design concepts, indeterminate structures and applications.

#### ***Course Pre-Requisites***

EGM 2511 (not EGM 2500) and MAC 2313

Engineering Mechanics: Statics and Analytical Geometry/Calculus III

#### ***Required Textbooks and Software***

Mechanics of Materials, Eighth Edition

Beer, F.P.; Johnston, Jr., E.R.; DeWolf, J.T.; and Mazurek, D.F.

The seventh edition of this textbook is sufficient, but it is the student's responsibility to confirm that problems assigned from the eighth edition are consistent with those in the seventh edition.

#### ***Course Objectives***

The purpose of this course is to provide students with the means to analyze and design load bearing structures including machines. Upon completion of this course, each student should have:

1. A basic understanding of engineering mechanics and the ability to apply this understanding to analyze and solve a given problem.
2. A basic understanding of material properties and mechanical deformation.
3. The ability to apply advanced science and engineering principles in the design and analysis of structures to support loads within a given limit of safety.

#### ***Assessment Methods***

Your grade for this course will be determined based on your performance on homework, quizzes, and exams as follows:

##### ***Homework (~18 assignment) 10%***

Your 2 lowest homework assignments will be dropped.

Homework is to be submitted electronically on Canvas by the specified due date and time. Working in groups is permitted. However, copying homework is NOT permitted. To assist the graders, homework should adhere to the following format: Each problem should be on a single sheet of paper, with a clear problem statement, appropriate free-body diagram, and the solution with reasonable

It may become necessary to modify this syllabus during the semester. In this event, students will be notified and the revised syllabus will be posted on the course web site.

significant digits inside a box. Use of solution manuals or websites to complete homework is considered cheating and a violation of the honor policy. This will be enforced.

Homework in this class is VERY IMPORTANT. The problem solving skills that you develop by doing the homework are similar to the skills that you will need in the real world of engineering practice. Students are encouraged to develop a problem solving procedure, rather than memorize how to complete a certain type of problem. TAs have been instructed to look for problem solving process and explanations, not just answers.

**Quizzes (5) 15%**

Quizzes will be given in the first 15 minutes of class on assigned days. Your worst 1 quiz will be dropped. The purpose of the quizzes is to periodically assess your understanding of course topics in a short format in a lower stress environment than exams.

**Exams (3) 25% Each**

Exams will be two hours in length given on the assigned days. Exams will be scheduled at the same time as the other sections of Mechanics of Materials (except the final exam).

**Grading Scale**

An example numerical grading scheme is shown below. This information is a general guide; the course instructor reserves the right to adjust the final numerical grading demarcations. Course grades will be “elevated” if necessary – this decision will not be made until the end of the semester once all exams and homework assignments are graded. Additional information may be found at:

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

100–93 = A, 92.9–90 = A-, 89.9–87 = B+, 86.9–83 = B, 82.9–80 = B-, 79.9–77 = C+, 76.9–73 = C  
72.9–70 = C-, 69.9–67 = D+, 66.9–63 = D, 62.9–60 = D-, 60-0 = F

**Professional Component (ABET)**

EGM 3520 supports several program outcomes enumerated in the Mission Statement of the Department of Mechanical & Aerospace Engineering (MAE). Specific MAE program outcomes supported by this course include being able to work professionally in the area of mechanical systems including the design and realization of such systems.

**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, as well as global, cultural, social, environmental, and economic factors	Low
3) An ability to communicate effectively with a range of audiences	
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 addressed by this course.

**Attendance Policy, Class Expectations, and Make-Up Policy**

Class attendance is strongly encouraged but is not mandatory. Excused absences for homework submission and quizzes must be consistent with university policies in the undergraduate catalog and

It may become necessary to modify this syllabus during the semester. In this event, students will be notified and the revised syllabus will be posted on the course web site.

requires appropriate documentation. Homework extensions and make-up quizzes/exams will be provided for excused absences in which notification is provided before the assignment due date.

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

### ***Health and Wellness Related to COVID-19***

In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

1. You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits.
2. 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 [covid@shcc.ufl.edu](mailto:covid@shcc.ufl.edu)) to be evaluated for testing and to receive further instructions about returning to campus.
3. 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.
4. 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 (<https://coronavirus.uflhealth.org/screen-test-protect-2/>) for more information.
5. Consistent with UF policy, if a student is absent from classes or examinations because of illness, they should contact their instructor.

### ***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/> (phone: 352-392-8565). 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.

### ***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

It may become necessary to modify this syllabus during the semester. In this event, students will be notified and the revised syllabus will be posted on the course web site.

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.

### ***Zoom or MediaSite Recording***

Class sessions may be recorded by the instructor for students in the class to refer back to and for enrolled students who are unable to attend live. Students who participate in class are agreeing to have their voices and possibly images recorded.

### ***Course Evaluations***

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. Summaries of results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### ***Commitment to a Safe and Inclusive Learning Environment***

The instructor is committed to providing a safe learning environment for all students that is free from all forms of discrimination and harassment. 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 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 Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, [jpennacc@ufl.edu](mailto:jpennacc@ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto:nishida@eng.ufl.edu)

### ***University Honesty Policy***

UF students are bound by The Honor Pledge, “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, 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://www.dso.ufl.edu/sccr/process/student-conduct-honor-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.

### ***Software Use and Copyrighted Materials***

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use and copyrighted material. 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 regarding grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>.

It may become necessary to modify this syllabus during the semester. In this event, students will be notified and the revised syllabus will be posted on the course web site.

## ***Campus Resources***

### *Health and Wellness*

#### **U Matter, We Care**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352-392-1575 so that a team member can reach out to the student in distress. A nighttime and weekend crisis counselor is available.

#### **Counseling and Wellness Center**

<http://www.counseling.ufl.edu/cwc> or 352-392-1575; or contact the University Police Department: 352-392-1111 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](mailto:title-ix@ufl.edu).

#### **Sexual Assault Recovery Services (SARS)**

Contact the Student Health Care Center at 352-392-1161.

#### **University Police Department**

Contact UFPD at 352-392-1111 (or 9-1-1 for emergencies) or <http://www.police.ufl.edu/>.

### *Academic Resources*

#### **E-learning technical support**

Call 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). You may also find answers to common problems at <https://lss.at.ufl.edu/help.shtml>.

#### **Career Resource Center**

Located in the Reitz Union and offers career assistance and counseling. Call 352-392-1601 or <https://www.crc.ufl.edu/>.

#### **Library Support**

Information on various ways to receive assistance using the libraries or finding resources. <http://cms.uflib.ufl.edu/ask>.

#### **Teaching Center**

Located in Broward Hall and provides general study skills and tutoring. Call 352-392-2010 or 352-392-6420 or <https://teachingcenter.ufl.edu/>.

#### **Writing Studio**

Located at 302 Tigert Hall. Provides help brainstorming, formatting, and writing papers. Call 352-846-1138 or <https://writing.ufl.edu/writing-studio/>.

#### **Students Complaints Process**

<http://www.distance.ufl.edu/student-complaint-process>.