

The University of Texas at Tyler
College of Engineering
Course Objectives, Syllabus, and Course Policy
2020 Fall Semester (August 24-December 12) MENG-3306.030

INSTRUCTOR: Jose F. Hurtado, Ph.D., P.E.
jhurtado@uttyler.edu, M: 281-229-2073
You are encouraged to email or call the instructor with your questions. You can also request Zoom live sessions with the instructor at least 24 hours in advance.

COURSE: MENG 3306 on Thursday from 6 – 8:45 pm. Lectures will be taught remotely using Zoom. You can access pre-recorded lectures at your own pace.

TEXTBOOK: R. C. Hibbeler: Mechanics of Materials, 10th Edition, Pearson, NJ, 2015 (ISBN 9780134319650) or any earlier cheaper edition of the same book having the same course contents.

COURSE INFORMATION

A required course providing undergraduate mechanical engineering students with fundamentals of internal forces and deformation of solids, concepts of stress and strain, formulas for stress and deflection for elastic bars, shafts, and beams, stress and strain transformation, and theories of failure.

ABOUT THE COURSE

Mechanics of Materials is the third of the three-course sequence in Mechanics (Statics and Dynamics being the other two) that is usually required of most engineering majors. Statics and Dynamics provide an early introduction to basic engineering principles and applications in traditional engineering curricula. Ordinarily, they are included at the beginning of engineering programs/curricula so as to provide an opportunity to find out if the student has the necessary aptitude to succeed in engineering.

In-depth understanding of Statics and Dynamics is an absolute necessity for the study of other mechanics courses such as Strength of Materials, Thermodynamics, Fluid Mechanics, etc. In order to meet these objectives, this course will be presented with a strong emphasis on understanding the fundamental theoretical concepts complemented by solutions to a number of example problems to reinforce the understanding of the theory discussed in class.

Past experience indicates that one of the most effective ways of mastering the course material is to solve as many classroom, practice and homework problems as possible.

REQUISITES

ENGR2301 or CENG2301-Statics is a prerequisite for this course with a minimum “C” grade.

CANVAS

Course syllabus and all course material will be posted in Canvas. Please review all the material posted in Canvas on a regular basis. It will be used to post announcements and contacting students by e-mail.

OBJECTIVES

By the end of this course students will be able to:

1. Use external loads including axial force, bending moment, torque, shear force, forces caused by temperature change, and constraints to determine internal forces for a variety of structures and structural elements. Relate the internal forces to specific stress components, calculate stresses and deformations.
2. Determine the state of stress at a point for uni-axial, bi-axial and tri-axial stress configurations and use them to calculate principal stresses and directions. Also, use the Mohr's circle diagram to analyze biaxial state of stress, and calculate the maximum and minimum stresses and directions.
3. Relate stress to strain using material properties, analyze the state of strain at a point and use strains to calculate deformations. For a variety of external loads, analyze statically determinate structures, and indeterminate structures using compatibility conditions.
4. Use load-deformation equations and other methods to calculate beam deflections. Analyze and design beams, circular and non-circular shafts and sections as well as other structural members based on strength and deformation requirements. Consider maximum stresses due to geometric features such as holes and fillets.
5. Use appropriate failure theories to predict ductile or brittle material failure. Use elastic instability and column buckling analysis to design columns.

TOPICS

The following schedule is tentative and subject to change:

Week of	Topics	Chapters
8/24	Stress, strain and mechanical properties of materials	1, 2, 3
8/31	Axial load	4
9/7	Torsion	5
9/14	Bending	6
9/21	Exam #1 (chapters 1-6)	-
9/28	Transverse shear	7
10/5	Combined loading	8
10/12	Stress transformation	9
10/19	Exam #2 (chapters 7-9)	-
10/26	Strain transformation and failure theories	10
11/2	Design of beams and shafts	11
11/9	Exam #3 (chapters 10-11)	-
11/16	Thanksgiving week	-
11/23	Deflection of beams and shafts	12
11/30	Buckling of columns	13
12/7	Exam #4 (chapters 12-13)	-
12/15	Last day to submit course grades to school	

PRACTICE PROBLEMS

It is your responsibility to work as many textbook problems as possible to understand the material. The instructor will be available to answer questions during class and via email/phone/Zoom.

EXAMS

All exams will be open textbook (hardcopy only). Electronic equipment (laptops, tablets, smart phones, etc.) will not be allowed. All exams will be done remotely using Canvas.

You are expected to show your work and demonstrate understanding of the material. If you miss any exam without getting prior approval from the instructor or School Chair at least one week before the exam date, it will be counted as zero in the calculation of your course grade. There will be no make-up exams. The percentage of any exam or homework missed will be added to the final exam.

GRADE POLICY

Each exam (total of four) = 25% of your course grade

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Student Standards of Academic Conduct

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, or material which has been submitted within a different course without explicit approval of the instructor, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

“Cheating” includes, but is not limited to:

- copying from another student’s test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials, or devices and instruments allowing access to materials, which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes” as well as cell phones, to name a few. The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student or person during a test or other assignment without explicit authorization;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, or removing material from the exam location, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.

- “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- All written work that is submitted will be subject to review by plagiarism software.
- Penalty for any related infractions will be decided at the discretion of the instructor including, but not limited to, granting of a failing grade in part or the course or in the entire course.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

Important Covid-19 Information for Classrooms and Laboratories

Students are required to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms and laboratories), as specified by Procedures for Fall 2020 Return to Normal Operations. The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the Covid-19 safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

Recording of Class Sessions

Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco

products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history

of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)