



SYLLABUS
MENG 2223 – X30: MECHANICS OF SOLIDS
(Required Course)
Summer Session 2020 (First Term)

Instructor: Dr. Zeki Ilhan

Office: McCoy Hall 219E

Office Phone: (940) 397-4004

E-mail: zeki.ilhan@msutexas.edu

Office Hours: With appointment.

Teacher Assistant: TBA

Course Schedule: TBA

COURSE DESCRIPTION

Analysis of structures using stress-strain diagrams, generalized Hooke's law. Stress and strain due to axial, torsional, shear, and flexural loads.

COURSE PRE-REQUISITES

MENG 2113 (Statics)

REQUIRED TEXTBOOK

Mechanics of Materials. R.C. Hibbeler, 10th Edition, Pearson.

TOPICS COVERED

- Stress and strain
- Mechanical properties of materials
- Axial load
- Torsion
- Bending
- Transverse shear
- Combined loadings
- Stress and strain transformations
- Deflection of beams
- Buckling of columns (if time allows).

Additional material might be covered as time permits.

GRADING

The overall grade for the course will be based on the scores earned on the homework assignments, and the three take-home exams. **You will be given 24 hours to complete and submit the exams into the dropbox in D2L.** The homework assignments account for 10% of the course grade, the take-home exams account for 90% of the course grade. The overall score for the course is determined as follows.

Table 1: Percentage contribution of each assignment.

Assignments	Contribution
Test 1 (take-home)	30%
Test 2 (take-home)	30%
Final Exam (take-home)	30%
Homework	10%
TOTAL	100%

FINAL EXAM

Thursday, July 2 (Time: TBA)

COURSE ORGANIZATION AND ASSESMENT

- **Course Format:**
This course consists of up to four 120-minute online sessions each week. Class meetings will contain lecture sessions that cover the relevant topics and in-class exercises.
- **General Study Guidelines:**
Plan on spending few hours outside of class each week to study the material and to work on homework assignments. Do not wait until the last day to start the homework or to prepare for exams. Utilize office hours throughout the semester whenever you need help about the assignments or the course material.
- **Student Attitude:**
Once class starts, the use of cell phones, reading of newspapers, conducting private discussions, working on anything that is not directly related to the course, and making derogatory remarks about your classmates or instructor will not be accepted and may result in your dismissal from the class. Poor attitude directly affects the course grade.
- **Homework Evaluation Method:**
Your performance will be tested regularly throughout the semester by homework assignments. While several homework problems may be assigned as part of a homework assignment, only a subset of problems might be graded. However, you must attempt all problems. **Do not try to guess which (if any) problems will not be graded.**
- **Late Assignments:**
Homework assignments must be turned in online on the due date, at the beginning of class. Once class starts, late assignments will **NOT** be accepted.

- **Exam Make-up:**

You are expected to take all exams on the scheduled date and time. However, if for some acceptable reason you are not able to do so, then you must inform the instructor in advance. The instructor will then decide whether you will be allowed to take a make-up exam, depending on the validity of your excuse.

GENERAL EDUCATION STATEMENT

Students in this course must demonstrate their proficiency in oral and written communication through written homework assignments and exams.

ACADEMIC INTEGRITY POLICY

Scholastic dishonesty will not be tolerated and will be prosecuted to the fullest extent. You are expected to have read and understood the current issue of the student handbook regarding student responsibilities & rights, and the intellectual property policy information about procedures and what constitutes acceptable on-campus behavior.

DISABILITY SUPPORT SERVICES

If you have a documented disability that will impact your work in this class, please contact the instructor to discuss your needs.

DISCLAIMER STATEMENT

Information contained in this syllabus, other than grading policies, may be subject to change with advance notice, as deemed appropriate by the instructor.

CONFLICT RESOLUTION

1. The student should contact the instructor face to face or via e-mail if there is an issue with the course or the instructor. The faculty and the student will discuss this face to face or via email. Hopefully a resolution is reached on the issue.
2. The student should notify the faculty via email again if the issue still did not get resolved after the first encounter or communication.
3. The student can then contact the Chair of the McCoy School of Engineering, Dr. Desai, face to face or via email, (raj.desai@msutexas.edu), and discuss this issue. Dr. Desai will discuss the issue at hand with the faculty member. Dr. Desai will discuss the result of this discussion with the student. Hopefully a resolution is reached on the issue after this.
4. The student should notify the Chair via email if the issue still did not get resolved.
5. The Chair will contact the Dean and try to resolve the conflict. In case the conflict deals with the student grade, she will forward the case to the Grade Appeals Committee, if necessary.

SPECIFIC GOALS OF INSTRUCTION

Table 1: A detailed list of course objectives matched with the ABET outcomes (1-7).

COURSE OBJECTIVES	ABET OUTCOMES*						
	1	2	3	4	5	6	7
Define normal and shear stresses (Hw, Exam)	X						X
Define normal and shear strains (Hw, Exam)	X						X
Apply Hooke's law and understand the relationship between stress and strain (Hw, Exam)	X						X
Calculate normal stresses and strain for axially loaded member (Hw, Exam)	X	X					X
Calculate the shear stresses and angle of twist for torsional loaded member (Hw, Exam)	X	X					X
Find the internal shear force and bending moment in a beam (Hw, Exam)	X						X
Estimate the stresses and deformation of a beam (Hw, Exam)	X	X					X
Estimate shear stresses and shear flow in a beam (Hw, Exam)	X	X					X
Apply superposition and estimate stresses caused by combined loadings (Hw, Exam)	X	X				X	X
Define the principal stresses and the maximum in-plane shear stresses (Hw, Exam)	X	X				X	X
Define the principal strains and the maximum in-plane shear strains (Hw, Exam)	X	X				X	X
Define the buckling load for a beam column (Hw, Exam)	X	X				X	X

***Table 2:** Detailed descriptions of the ABET outcomes (1-7) listed in Table 1.

Outcome	DESCRIPTION
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2	an ability to apply engineering design to produce solutions that meets specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
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 judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
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.

Prepared by Zeki O. Ilhan, June 2020.