Department of Civil Engineering The University of Texas at Arlington

CE 2313- Mechanics of Materials I

Summer 2016

Instructor: Eyosias Beneberu, P.E.

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Faculty Profile: https://www.uta.edu/profiles/eyosias -beneberu

Time and Place of Class Meeting: TuTh 1:00PM - 2:50PM, ERB 130

Office Hours: TuTh 3:00PM-4:30PM or you can schedule an appointment by email.

Graduate Teaching Assistant: Mina Riad

email: mina.riad@mavs.uta.edu

Office hours: MoWe 12:30PM-2:00PM, ELB Room 265

Prerequisite: CE 2311 and MATH 2425 both with a grade of C or better.

<u>Required Textbook:</u> Mechanics of Materials, 9th edition by Russell C. Hibbeler, Prentice Hall, 2014

Course Content:

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory.

Student Learning Outcomes:

This course will focus on the following student educational outcomes:

- > An ability to apply knowledge of mathematics, science, and engineering
- > An ability to design a system, component, or process to meet desired needs
- > An ability to identify, formulate and solve engineering problems
- > An understanding of professional and ethical responsibility
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- > A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Class Participation:

Class participation can be achieved in two ways. I will ask you questions in class on the previous lectures, and on the material currently being discussed. You should be prepared to

answer these questions, and should also participate by asking questions, suggesting ideas, and performing in-class group activities that I assign. I prefer an interactive class-room where the instructor and the students freely participate in active learning.

Group Work

You must work in groups of three for the following activities: homework and class room activities. The groups should represent diversity in terms of student background and academic performance. You should participate in all group activities and make a fair contribution to the group effort.

Homework:

- Homework problems will be assigned each Tuesday or Thursday and are generally due on the following Tuesday or Thursday - <u>one solution set per group.</u>
- Homework should be in standard format. This includes a) statement of the problem (with a sketch); (b) quantities with given values; (c) quantities to be found; and (d) solution of the problem. Work MUST be done in pencil and must be neat and readable. Draw a box around the answer(s). DO NOT WRITE IN THE BACK OF THE PAGE.
- On the cover page, put the name of the group leader, all other participating group members, the date, and the assignment number. If a student's name appears on a solution set, it certifies that he/she has participated in solving some of the problems and understands all the solutions. If this turns out not to be the case, both the student in question and the group leader will be considered to have cheated and will be dealt with accordingly. However, if a group abuses this privilege on a regular basis, it will be withdrawn. One group member should be designated the leader for each homework. The leader will be responsible for coordinating the work and making sure everyone in the group understands all the problem solutions before they are handed in (Hint: Try to set up each problem individually, then get together to work out the details). After being a group leader, an individual may not be leader again until everyone else in the group has held the position
- > Late homework will be accepted with a penalty of 20% for each 24 hours.

Make-up Exams Policy:

Makeup examinations are not given. If an examination is missed as a result of an illness or because of a University Authorized Absence, the weight of the missed examination will be added to the weight of the final examination when the class grade is determined. It is the responsibility of the student to provide acceptable, written documentation for absences that occur on the day of an examination. <u>http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#5</u> in the UTA catalog at discusses University Authorized Absence. If arrangements are made well in advance, an examination can usually be taken before the scheduled time and a more lenient excuse policy is applied.

Grading:

13% - Quizzes
7% - Class participation
15% - Homework
30% - Midterm exam
35% - Final exam

A weighted grade of 90 or above overall is guaranteed an A, 80 or above at least a B, 70 or above at least a C, and 60 or above at least a D.

Attendance: Required

Policies:

In general, the class will be conducted in accordance with the policies given below. However, it is impossible to anticipate every possible circumstance. The instructor reserves the right to modify the given policies or to deviate from them in unforeseen or unusual circumstances. If there is a policy that you anticipate will affect you in a way that seems unfair, please bring it to the attention of the instructor before the end of the second week of class. After that, the reason for a student initiated change in policy must be compelling.

Dropping the Course:

Students may drop or swap (adding and dropping a class concurrently) classes through selfservice in MyMav from the beginning of the registration period through the late registration period. For Engineering students, added classes must be on the list approved by the academic advisor. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information.

Academic Integrity:

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is 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, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

The College of Engineering has a "Statement on Ethics, Professionalism, and Conduct for Engineering Students" which may be downloaded from www.uta.edu/engineering/coees.doc. Each student is responsible for understanding and acting in accordance with this document.

Grade Grievances:

The university policy regarding "Student Grievance Procedures Related to Grades" is explained in item 6 at http://www.uta.edu/catalog/content/general/academic_regulations.aspx#10.

Electronic Communication Policy:

The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. **Students are responsible for checking their MavMail regularly**. Information about activating and using MavMail is available at http://www.uta.edu/oit/email/. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

Student Support Services Available:

The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

Librarian to Contact: Sylvia George-Williams, sylvia@uta.edu, Science & Engineering Librarian.

Americans with Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Emergency Exit Procedures:

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the end of the hallway. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Course Schedule

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. - Eyosias S Beneberu

Course Topics	Date, Tentative	Sessions
Introduction	06/07	0.5
Stress	06/07-06/16	3.5
Strain	06/21-06/23	2
Mechanical properties of		
materials	06/28-06/30	2
Axial Load	07/05-07/07	2
Torsion	07/12-07/14	2
Bending	07/19-07/21	2
Transverse shear	07/26-07/28	2
Combined loading	08/02-08/04	2
Stress transformation	08/09-08/11	2