

MAE 2312-002: SOLID MECHANICS

Fall 2009

Course Syllabus

Instructor(s): Dr. D. Stefan Dancila

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Office Hours: MW 15:00-16:00

Section Information: MAE 2312-002 Solid Mechanics

Time and Place of Class Meetings: Woolf Hall 221, MW 17:30-18:50

There will be no class on Monday, September 7, 2009 (Labor Day) and Wednesday, November 25, 2009 (the day before the Thanksgiving Holiday).

Description of Course Content: The course covers the relationship between stresses and strains in elastic bodies and the tension, compression, shear, bending, torsion, and combined loadings which produce them. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory.

Student Learning Outcomes: Students will acquire an understanding of fundamental concepts of deformable body mechanics - strain, stress, and their principal values and directions. They will also develop an understanding of the constitutive equations of structural materials, characterizing the relationships between stress and strain, with particular emphasis on the linear case (Hooke's Law). Students will learn about structural material failure modes and the associated failure criteria. Students will subsequently learn techniques to analyze the distribution of internal loads, deformation, stresses, and strains in various types of structural elements (bars, trusses, beams, columns) due to the application of various types of external loading. They will also learn fundamental concepts and analysis techniques of structural stability, with particular emphasis on the buckling of columns.

Requirements: MAE 1312 Engineering Statics

Required Textbooks and Other Course Materials: Hibbeler, R. C., Mechanics of Materials, 7th ed., Prentice Hall, 2008. The textbook will be used as reference, and for some reading and homework assignments.

Descriptions of major assignments and examinations with due dates:

1st Midterm – Monday, September 28, 2009, 17:30-18:30; Covers all class material to date, including homework and reading assignments;

2nd Midterm – Monday, November 2, 2009, 17:30-18:30; Covers all class material to date, including homework and reading assignments;

Quizzes – assigned during class without prior notice; Cover all class material to date, including homework and reading assignments;

Homework – assigned weekly during Wednesday class and due before the following class meeting; Covers all class material to date, including new reading assignments;

Final Exam – on the date scheduled by the University during the Final Exam Period; Covers all class material, including homework and reading assignments.

NB. Homework turned in late (after the class starts) will be considered late and penalized 20%. Missed quizzes cannot be taken at a later time. UTA regulations permitting, missed midterms and/or final exams can only be rescheduled when missed due to major health problems and/or circumstances beyond the student's control, and in such cases at the earliest time possible and agreeable to the instructor thereafter.

Grading Policy: Each of the five components below will be graded on a scale from 0 to 100 points. For each student, their final numerical grade will be computed as an average of the five components by using the weighting factors shown below.

1 st Midterm	25%
2 nd Midterm	25%
Quizzes	10%
Homework	10%
Final Exam	30%

The final letter grade for each student will be determined by converting their final numerical grade according to the following ranges:

Final Numerical Grade	Letter Grade
85-100	A
75-84	B
65-74	C
50-64	D
0-49	F

Attendance Policy: Students are expected to attend all class meetings and to arrive on time.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. 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. The last day to drop a class for the Fall 2009 semester is October 30, 2009.

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.

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."

NB. Any violation of Academic Integrity will automatically result in a grade of F for the course.

Student Support Services Available: The University of Texas at Arlington has established a variety of programs to help students meet the challenges of college life. Support to students includes advising, counseling, mentoring, tutoring, supplemental instruction, and writing assistance. For a complete list of academic support services, visit the Academic Assistance resource page of the Office of Student Success Programs, www.uta.edu/uac/studentsuccess/academic-assistance. To help students address personal, academic and career concerns, individual counseling is also available. For more information, students are encouraged to contact Counseling Services www.counseling.uta.edu at (817) 272-3671 or visit a counselor in 216 Davis Hall.

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.