

Lectures: T/Th: 12:30 – 1:45 pm, FLMG 155

Recitations & Labs: Section 011 F: 1:00 – 2 :50 pm, ITLL 1B50**
Section 012 F: 3:00 – 4 :50 pm, ITLL 1B50**
Section 013 M: 3 :00 – 4 :50 pm, ITLL 1B50**

** if location for particular labs differs from the one stated above, the alternate location will be announced on D2L.

Class Web Site: DL2: <https://learn.colorado.edu/> , ASEN3112

Class e-mail list: Through D2L only

Texts: Lecture notes are posted on D2L

Prerequisites: ASEN 2001-2003-2004 and APPM 2360, with grade of C or better in each.

Course Objectives: The main objective of the course is to introduce modern structural analysis techniques based on understanding of the development of internal forces, stresses and deformations. These are essential to the design and verification of advanced aerospace structures and systems. The course offers an introduction to matrix and finite element methods for skeletal (truss and frame) structures, as well as to fundamental concepts in mechanical vibrations, structural dynamics, and structural stability.

Major Course Topics and Schedule:

Week	Topic
1	The concept of stress and average stress
2	Pressure Vessels, Strain measures, Elastic behavior of materials I
3	Elastic behavior of materials II, Plane stress
4	Torsion I
5	Torsion II & III
6	Deformation of Beams I & II
7	Deformation of Beams III
8	Finite Element Method I & II
9	Finite Element Method III & IV
10	Structural Dynamics and Vibration I
11	Structural Dynamics and Vibration II & III
12	Structural Dynamics and Vibration IV & V
13	Fall Break
14	Structural Dynamics and Vibration VI
15	Stability of Structures I & II
16	Stability of Structures III & IV

Course Work:

Coursework consists of reading assignments, in-class clicker quizzes, homework, recitations, experimental/computer labs, four midterm exams and one final exam. Attendance to recitation and labs is expected and may affect the student's score. Exams cover all material including lectures, recitations, laboratory work and homework.

Recitations: Recitations are offered on Fridays and Mondays (depending on the student's lab section) at the Active Learning Center of ITLL 1B50, in three sections of 1 hr. 50 min each. The main objective is to review material covered during the week, especially that helpful for the currently assigned homework. Recitations may also include additional exercise material, not covered in class, useful for midterm exam preparation. Recitations are replaced by lab demos (conducted at the same time, but in the ITLL Plaza area nearby) when laboratory and/or computer work is scheduled for the following week.

Reading Assignments: Reading assignments are to be completed before the lecture/discussion. The lecture/discussions should help to clarify and supplement what students have read.

Homework: Homework assignments are given most weeks on Thursdays and are due at the start of the following class on Thursday, as specified in the assignment. No homework assignments are posted due in the week of midterm exams. Assignments generally cover 4 to 5 problems and are designed to help students become proficient in a subject. Before doing any homework, students should read the posted lectures and try to follow worked-out examples. This should give the student an idea of the principles involved and the solution method. Homework problems may be also discussed in the recitation prior to the due date. All homework should be done on Engineering paper (the green-on-white ruled paper available at the bookstore). No electronic versions (e.g. PDF or WORD) is accepted. No late homework submissions are accepted.

Written work should be neat and readable with adequate space and margins. Messy work will be returned ungraded and a zero-score recorded. The main and essential steps of the solution approach need to be shown; failing to do so will result in a lower score. The final result needs to be indicated by an arrow, underline or box. Multiple answers when one is required will be counted as incorrect. Copying material from any resource (including solutions manuals) and submitting it as one's own are considered plagiarism and are an Honor Code violation.

Labs: Safety is the first priority for lab work involving experiments or use of computers. If you have not done so, students are required to attend an orientation and safety course presented by the ITLL staff in the first week of the semester. Anyone violating rules of safe conduct may be restricted from accessing the ITLL facilities. The three experimental labs are carried out in groups of five or six students. The groups are created randomly among student of the same lab section. Attendance is mandatory; missing part of a lab (demo, experiment) without cause or notification results in 50% of the student's report score being deducted. A student should contact one of the instructor

Grading Guidelines:

Group work: *	4 Lab reports	25% (= 5% + 10% + 5% + 5%)
Individual:	Clicker Quizzes	10%
	Homework	20%
	4 Midterm Exams	30% (= 4 times 7.5%)
	Final Exam	15%
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		100%

*Group work only counts toward final grade if the total individual grade is C or better. If the individual grade is below C, the final grade equals the total individual grade.

Notes:

- < Clicker quizzes gauge the student's level of preparation of a lecture and the conceptual understanding of course material. The scores of the two lowest clicker quizzes are dropped. The quiz questions are discussed after the quiz during the lecture. No makeup quizzes are ~~allowed~~.

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technical content and presentation for

Solutions for all homework problems are posted on D2L after the due date.

- < Midterms cover material covered in the weeks prior to the exam. They provide a gauge to determine what an individual student has learned. The midterm exams are given at regular lecture hours in FLMG 155. All midterm exams are closed-book but a crib sheet is permitted. The maximum

