ASEN 2003 INTRODUCTION TO DYNAMICS AND SYSTEMS

Meeting Times:
Lecture: Tuesday and Thursday 2:00-3:15 PM ECCR 200
Lab: Monday & Wednesday ITLL 2B10
    Section 11 11:00-12:50 PM
    Section 12 3:00-4:50 PM

Instructors
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Internet Information

Class web site: http://www.colorado.edu/ASEN/ASEN_SOPH/ASEN2003

Class email list: ASEN_2003  To subscribe send an email message to listproc@lists.colorado.edu
with no subject and the message: subscribe asen_2003 <your name>

Textbook

Grading
Quizzes (Best 6 out of 7) 35
Final Exam (cannot be dropped) 10
Labs 30
Overview
The study of dynamics is a key component of every undergraduate engineering major, but is especially relevant to Aerospace Engineering. In the upper division you will begin taking courses dealing with the dynamics of air and space vehicles building upon the fundamentals presented in this class. Structures, fluids, controls, and orbital mechanics all have roots in this material, so it is critical that you build this technical base carefully. ASEN 2003 differs from a classical first course in dynamics in two ways. First, we take the study of simple motions one step further by introducing the fundamental concepts of vibrations and control in this introductory course. Vibration analysis is critical to aerospace vehicle design, and as engineers we are not content to understand the motion of vehicles, but rather we often seek to control or modify it to suit mission requirements. Second, the fundamentals of two-dimensional motion of particles and rigid bodies, are presented from both a theoretical and practical point of view. In addition to deriving and using first principles of dynamics, we will do experiments, designs, and hands-on homework that are intended to help students develop an intuition or feel for dynamics. This course will give you a flavor of these more advanced topics, again laying the groundwork for more advanced studies in your junior and senior years.

Prerequisites
Calculus 1-3, Physics 1, ASEN2001, and GEEN1300 or CSCI 1300 are prerequisites for this course. Much of the material covered in this class has been introduced in physics and depends heavily on a solid understanding of statics. Students are expected to have a working knowledge of vector operations and vector calculus. Programming assignments regularly require the use of a computer; familiarity with Matlab is required.

Class Format
Reading Assignments - The textbook is excellent, providing clear explanations and numerous examples of varying difficulty. Please take advantage of this outstanding resource. Reading assignments are to be completed prior to the class lecture period.

Lecture & Discussion – We generally start a new topic in the lecture session, beginning with a sample problem, followed by a discussion led by the instructor.
Homework – Homework problems are usually assigned twice per week. They provide practice in solving problems of varying difficulty. Collaboration on homework is allowed; however, students are encouraged to use homework as a means to ensure their individual mastery of the subject. Late homework will not be accepted; however, the lowest two homework grades for the semester will be dropped from your final grade calculation.

Labs - There are a variety of experimental and design labs in this course that offer a different perspective on the material. They vary in duration and requirements. Each lab handout will state the objectives of the assignment, the report requirements, and the weighting (number of points) in the overall lab grade. In some instances students will also be required to complete a prelab. This part of the lab will not be done with a lab partner, and will be turned in before the lab begins.

Quizzes – In-class quizzes are conducted approximately every two weeks. They generally reflect material covered in lecture, labs, and homework. Only thirty minutes are allotted for each quiz. The lowest quiz score is dropped from your final grade calculation. No make-ups are given for missed quizzes.

Logistics

T.A. Names, office locations and office hours will be arranged and announced as soon as possible. They will also be posted on the web.

Attendance to all lecture and laboratory sessions is mandatory. In-class assignments may be given at any time and students are expected to come to class prepared to participate.

Collaboration is permitted on homework. This means you may discuss the means and methods for solving problems and even compare answers, but you are not free to copy someone else's assignment. The work that you turn in must be your own--copying is not allowed for any assignments. All homework must be on 8.5x 11-inch ENGINEERING paper. It's the green or white ruled paper available at the bookstore. Multiple pages must be stapled in the upper-left corner. Please indicate clearly where each problem begins and ends. (You do not need to use a separate sheet for each problem.) Homework should be folded lengthwise with your work to the inside. Your name, lab section, assignment number, and due date should be visible on the outside in the upper portion of the each page, to the right of the fold. Written work must be neat and readable with adequate spacing and margins. Final answers must be indicated with an arrow, underline, or box. Multiple answers (when only one is required) will be counted
incorrect. You are responsible if grading is poor because of poor readability. Very messy work will be returned to you without being graded and a score of zero recorded.

Any type of collaboration or copying on a quiz or on the final constitutes cheating and will result in a zero grade, and a report will be filed in the student’s permanent record.

Experimental and design lab exercises are conducted together with your team. Some lab reports are to be written and submitted individually. Collaborations including shared diagrams or extensive discussion of results must be acknowledged at the end of your report. Copying text or answers from another student on an individual lab report with or without their permission constitutes cheating and will result in an F for the assignment.

Safety is the number one priority for laboratory activities. If you have not already done so, you are required to attend an orientation and safety lecture presented both by ITLL and by course staff during the first week of the semester. Anyone violating rules of safe conduct may receive a zero for the laboratory exercise and may be restricted from ITLL. Use of ITLL facilities is a privilege, not a right. Those endangering themselves, others, or laboratory equipment by their unsafe conduct will not maintain their access privileges.