SYLLABUS
Mechanical Design I MAE 3242
Spring Semester 2007
Mondays and Wednesdays 9:00 - 9:50 pm; Woolf Hall, Rm 221
Rev: Tuesday January 16, 2007

Instructor: Dr. John J. Mills
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Office Hours: Mondays and Wednesdays; 10:00 am to 12:00 pm and by email
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Instructor WWW site:
Course WWW site: http://www-woolf.uta.edu/mills/ME-Design-I
Course Prerequisites: Solid Mechanics (course MAE 2312); Materials science (course MAE 2321)
Required Textbook(s): Machine Design: an integrated approach, 3rd Edition, by R.L. Norton, Prentice Hall

Course Description: The overall nature of design as a process is presented along with various models of the process. Emphasis is placed on the need to identify and correct problems early in the process. Methods, techniques and tools, including concurrent engineering for capturing problems early, for the various phases of the process provide the student with an excellent understanding of how to do design. Specific emphasis is placed on extending solid mechanics concepts to designing simple mechanical elements such as beams, posts, etc. and to theories of failure under static and dynamic conditions. Both static and dynamic loads are considered. The student is introduced to the concept, typical in design, of open ended problems (i.e. problems with more unknowns than equations).

Course Learning Goals/ Objectives:

1. To expose the student and prepare them to

   (a) understand the multiplicity and commonalities of design processes,
   (b) use the various techniques, tools and methods (including solid mechanics and materials) that can be used at each stage and
   (c) use the various tools that are available to help,

2. To extend the students knowledge of solid mechanics to (a) specific mechanical structure elements such as posts, beams, curved beams, and (b) static and dynamic failure theories

3. To understand how solid mechanics and materials theory relate to the design process

4. To familiarize students with approaches to solving open ended problems, d) help the student make the transition from simple problem solving to the more open ended problem solving with the multiple constraints and objectives of real world design

5. To start the student on a course of life long learning by requiring them to study the book without lectures except where the book does not provide the required informaation

Attendance and Drop Policy: Standard University Policy
Tentative Lecture / Topic Schedule (Course Content): see home page
Specific Course Requirements w/ Descriptions:
Exams: ~ every third to fourth week These exams will not deal with material previously treated in homework.
Major Assignments: the final exam will be take home and require the student to "design" some artifact
Homework: Every other week. It is intended that the homework assignment will be posted on the web site. Homework will be submitted by hand by the beginning of the class on the day it is due
Key assignments:

Since this course specifically assesses the students ability to use math, science and engineering knowledge to solve engineering problems, .there will be a test of the students knowledge of math and basic physics within ten days of the start of classes In order to pass this course, the student must pass this exam. Any student who fails will be offered a short course in geometry, trigonometry, vectors, Newton's laws, free body diagrams and identifying forces on bodies. The course will conclude with a second exam. Students not passing this second exam will not pass the course even if they score perfectly on all other exams and other assignments. A passing grade is 60% of the maximum score. This means that if a student does not pass on of the two exams (passing grade is 60/100 points) they will not pass the course.

Projects:
Labs: none
Research Papers: perhaps
Missed Exams & Quizzes: Can be made up if arranged **prior** to quiz.
Makeup Work: Can be arranged on **prior** notification
Extra Credit: Will be given for any solution for any problem from the back of the book chapters up until that chapter is closed. A chapter is closed when the class period no longer deals with the topics it contains. Two points each for each submission will be given up to a maximum for the course of 50 points.

Course Evaluation & Final Grade: Homework assignments, total 200 points: 5 exams, each worth 100 points, total 500 points,: the final is worth 300 points: overall total 1000 points

Answers to quizzes and homework will be discussed in class

Student Evaluation of Teaching: Standard University policy
Americans With Disabilities Act

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112-The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act-(ADA), pursuant to section 504 of The Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member , I am required by law to provide **"reasonable accommodation"** to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.**

Academic Dishonesty

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.

"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." (Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)