School of Engineering, University of Guelph
ENGG*2400 Engineering Systems Analysis, Fall 2007, (3-1), 0.50

Course Description:
Analytical description and modeling of engineering systems such as mechanical, electrical, ther mal, hydraulic biological and environmental systems. Applications of multivariable calculus, lin ear algebra and differential equations to stimulate and analyse such systems.

Prerequisite(s): ENGG*1210, ENGG*1500, MATH*1200, MATH*1210, PHYS*1130
Co-requisite(s): MATH*2270

Course Objective:
To provide the student with the analytical skills required to model engineering systems. Students will learn to identify the relevant elements that comprise a system, apply elemental laws and gen eral theorems to derive mathematical models, and then solve the mathematical models using tech niques taught in other courses as well as using computer software for system simulation.

Instructor:
Prof. Gauri S. Mittal, Ph.D., P.Eng.; Engineering 2344, ext. 52431; Email: gmittal@uoguelph.ca
Office hours: Mondays 10-11, Tuesdays 11:00 -11:45

Teaching Assistants:
Carlos Daza Donoso (Room 312), cdazadon@uoguelph.ca, Office hours: W 2:30-3:30, Th 11-12
Lei Lei Pan (Room 316), Email: lpan@uoguelph.ca, Office hours: M 2-3, F 3:30 -4:30.

Class times: MWF 8:30 to 9:20 (LA 204)

Tutorial times:
Mon 16:30-17:20 MACK 314, Section 2
Wed 16:30-17:20 MACK 316, Section 3
Thur 16:30-17:20 MACK 316, Section 1

Course Text:
Woods & Lawrence, Modeling and Simulation of Dynamic Systems, Prentice-Hall, 1997

Evaluation:

Tests: Sat. Oct. 20, 2 to 4 pm, MACHALL 149	25%
Quizzes (2 best out of 4), given randomly	10%
Project on system modelling and simulation	10%
Final Exam: Tu. Dec. 11, 19:00 to 21:00	55%

Tentative Schedule:

Week	Topics	Chapters
1	Introduction, Basics of mechanical systems	1 (p7-18), 2 (p22-26,28-29,34-40,42-46), Handout

2-3	Mechanical systems	3 (p53-81)
4	Electrical systems	4 (p99-122), Handout
5-6	Fluid systems	5 (p135-156)
7-8	Thermal systems	6 (p169-196)
9-10	Laplace solution, frequency responses	p426-445, 8(p231-246)
11-12	System responses, simulation	9 (p259-263,265,284-287)

Important Notes:

- Due to physical space limitations you must attend only the tutorial time that you have been assigned on your timetable.

- Tutorial time is also for help with assignments and for providing additional problems and solutions. Attendees are expected to actively participate.

- Text book can be brought to all the tests and exams.

- We try to be consistent, fair and impartial in judging students' performance. If you are having difficulty with an assignment or have fallen behind in your work, come and talk to one of us and we will try to work out a mutually acceptable solution. But be warned: we will not tolerate (and the university does not allow us to tolerate) any of the following: cheating on exams; copying from published materials without appropriate attribution; presenting someone else's work as your own; making up results (for example, of an experiment or survey); damage to, or theft of, academic materials; and similar wrongdoing. If you need more explanation of what constitutes academic misconduct, or what sanctions may be imposed in the event of such misconduct, consult the undergraduate calendar or speak to the instructor. Don't hesitate to discuss a problem or question with me. The penalties for academic misconduct are severe, and repeat offenders may be expelled from the university.

- Please familiarize yourself with your Academic Responsibilities and the Regulations and Procedures as outlined in the Undergraduate Calendar

- Assignments will be given on various topics, however students are not required to hand over the solutions to the instructor for grading. Solutions of all the assignments will be placed on Courselink for comparing your solutions. Please try to solve all the assignments before going through the solutions. For further practice, try to solve the solved examples from the text book. All quizzes will be held during tutorial hour based on assignments, and class and tutorial work conducted after the previous quiz. All tests and examinations will be open book.

Holy Days: Students must contact the instructors within first two weeks of class if academic consideration is to be requested due to religious reasons.

Instructor will be available during office hour only. Additional time for individual consultation will be provided by appointment only. E-mail can also be used for consultation.