

**Syllabus for ME 5305
Fall 2009
T-TH 11:00 AM – 12:20 PM
Room: Nederman Hall 112**

Instructor: David Hullender

Office: Woolf Hall 304B

Office Hours: T-TH 9:30 am – 11:00 am and by appointment

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Instructor WWW site: <http://maepro.uta.edu/hullender>

Course WWW site for reference notes: www-woolf.uta.edu

User ID: Password:

Required Textbook: *“Application of Matlab to Modeling, Simulation, and Analysis”* by David Hullender, August, 2009. Lecture notes and solved problems which can be purchased at Birds Copies, 208 S. East St., Arlington 817-459-1688

Student Version of MATLAB with Controls Tool Box.

Course Description: Modeling and simulation of dynamic systems.

Course Learning Goals/Objectives: This course is intended to provide a comprehensive treatment of the modeling techniques of the major types of engineering systems, the solution techniques for the resulting differential equations, and the attendant mathematical procedures related to the representation of dynamic systems and determination of their response characteristics for deterministic and stochastic inputs.

Attendance and Drop Policy: Class and exam attendance is mandatory. Reasons for absence from class must be documented in writing to the instructor. There are no make-up exams; an excused absence from an exam will result in one less exam being considered in the final grade computation. The Drop Policy is consistent with the University drop schedule; the student must be passing to receive a W/P.

Tentative Lecture Schedule

Aug.	25	Objectives of course
	27	Basic math concepts including linearization, Laplace transforms, & differential equations
Sept.	1	Transfer functions, eigenvalues, and time constants
	3	Applications of Matlab to basic math and analysis
	8	Lumped parameter models for mechanical systems
	10	Mechanical systems continued
	15	Frequency response and power spectral densities
	17	Modes of a system, transfer function approximations, and symbolic math
	22	Expressing differential equations and transfer functions in state Variable format
	24	Simulation and numerical integration algorithms in Matlab
	29	Exam#1 , closed book, no notes, comprehensive, and no programmable calculators.
Oct.	1	Random vibration: stochastic processes, random inputs, & simulation
	6	Analysis and design of stationary random processes
	8	Mechanical systems with rotation
	13	Lumped parameter models for systems with beams
	15	Properties of liquid systems
	20	Liquid systems continued
	22	Lumped & distributed parameter models for fluid transients in lines
	27	Valve driven linear hydraulic actuators
Nov.	3	Exam #2 , closed book, no notes, comprehensive, and no programmable calculators.
	5	Properties of gas systems
	10	Gas systems continued
	12	Active and passive electrical systems
	17	Thermal systems
	19	System identification
	24	System identification continued
	26	Thanksgiving Holiday
Dec.	1	Exam #3 , closed book, no notes, comprehensive, and no programmable calculators.
Dec.	3	Class will not meet

No Final Exam

Specific Course Requirements s/Descriptions

Examinations: Closed book, comprehensive, and no programmable calculators

Homework: It is suggested that students do their own work.

Missed Exams: See Attendance and Drop Policy

Final Grade: The final average will be a weighted average of Exams (75%) and Homework (25%).

Student Evaluation of Teaching: Forms will be handed out during the last two weeks of the semester.

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, here 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 suspensions 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)