

**Syllabus for MAE 3319  
Fall 2009  
T-TH 8:00 AM – 9:20 AM  
Room: Woolf Hall 311**

**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](http://www-woolf.uta.edu)**

**User ID: Password:**

**Course Prerequisites: MAE 2206, MAE 2323, Differential Equations**

**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.

**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 and Reference Reading Assignments

Aug.	25	Objectives of course and background test
	27	Basic math concepts including linearization
Sept.	1	Laplace transforms and solving differential eqns
	3	Transfer functions, eigenvalues, and time constants
	8	<b>Exam #1</b> , closed book, no notes and no programmable calculators
	10	Lumped parameter models for mechanical systems
	15	Mechanical systems continued
	17	Introduction to Matlab. Use of symbolic math to solve simultaneous equations in Matlab, <b>Handout Key Assignment #1</b>
	22	Expressing differential equations and transfer functions in state Variable format
	24	Review of numerical integration algorithms
	29	<b>Exam#2</b> , closed book, no notes, comprehensive, and no programmable calculators
Oct.	1	Mechanical systems with rotation, <b>Handout Key Assignment #2</b>
	6	Mechanical systems with rotation, continued
	8	Properties of liquid systems
	13	Liquid systems continued
	15	Lumped parameter models for fluid transients in lines
	20	Valve driven linear hydraulic actuators
	22	Properties of gas systems
	27	Gas systems continued
Nov.	3	<b>Exam #3</b> , closed book, no notes, comprehensive, and no programmable Calculators, <b>Hand out Key Assignment #3</b>
	5	Example problems,
	10	Electrical systems, Chap. 4 and Lesson 15
	12	Operational Amplifiers, Chap. 4 and handout
	17	Thermal systems, Chap. 6 and Lesson 16
	19	Thermal systems, continued
	24	Example problems and review
	26	Thanksgiving Holiday
Dec.	1	<b>Exam #4</b> , closed book, no notes, comprehensive, and no programmable calculator
Dec.	3	Class will not meet

**No Final Exam**

## **Specific Course Requirements s/Descriptions**

**Quizzes:** 10 minute quiz at the beginning of almost every class; lowest two grades dropped before computing quiz average.

**Examinations:** Closed book, comprehensive, and no programmable calculators

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

**Missed Exams & Quizzes:** See Attendance and Drop Policy

**Key Assignments:** Students are not allowed to work together. These assignments are designated as key assignments. In order to pass this class, students must submit and pass all key assignments. If any key assignment is not submitted and passed, the student will not pass the class even if he/she scores perfectly on all exams and other assignments.

**Final Grade:** The final average will be a weighted average of Quizzes (15%), Exams (60%), Homework (10%) and Key Assignments (15%).

**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)

### **Teaching Assistant and Schedule:**