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ECE-205 Dynamical Systems
Spring 2010

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GRADING POLICY

Each of Three Exams	13%
Final Exam	26%
Labs	10%
Homework	10%
Matlab/Simulink	5%
Quizes	10%

Notes:

(1) You must have a passing average (greater than or equal to 60%) on the exams to pass the class!

(2) Homework assignments are ***due at the beginning of class on Thursday***. No late homework will be accepted without prior approval.

(3) You must acceptably complete each lab to pass the class.

(4) Many of the homework problems will require you to use Matlab or Simulink as part of the problem. If you do not do these parts of the problem, do not expect to receive credit for any parts of the problem.

(5) You are expected to do your own work. You can certainly talk with each other and help each other, but the work you hand in should be your own. As an example, if two people hand in the same Simulink plot and both came from the same directory, neither will receive any points!

(6) Unless specifically told otherwise on a particular problem, you are expected to work out the problem by hand (or use Matlab). *If you write on your assignment that you used Maple and are copying the answer, expect to get no points.* You can use Maple to check your answers. You cannot turn in any Maple code or plot as part of the solution to a problem. ***In general, you will not be allowed to use calculators on exams.***

(7) While each exam (except the final) will focus on material since the previous exam, you are responsible for all previous material. *Anything covered from the beginning of class up until the time of an exam is fair game for the exam.*

(8) In general, I will give you answers to problems, but ***I will not hand out or post solutions.*** If you have questions or cannot get the correct answer, you need to come and see me. Your homework solutions will be your primary source for reviewing material before each exam, so it is very important that you do the homework.

Quizes: Most weeks we will have a multiple choice answer quiz, usually (though not always) on Thursday. Usually before the quiz a "practice quiz" will be posted to give you an idea of the kinds of problems you are expected to be able to solve on that weeks quiz.

Labs: For the most part, each person will turn in their own lab work. You can help each other out, but each person is responsible for doing and understanding the lab. We will use Simulink, Matlab, and MobilStudio each week, so plan to bring your laptops to lab each week. Labs memos will be e-mailed to me, along with any necessary code as an attachment. You will be required to have your lab signed off by me before you send me the memo, so I can be sure your lab is working appropriately.

Class 1 (3/8) – First Order Circuits
Lab 1 - Concept Inventory, Calibration of Mobile Studio Boards
Class 2 (3/9) – Time Constants, Static Gain
Class 3 (3/11) – Solving First Order Differential Equations

Class 4 (3/15) – Second Order Circuits, Standard Form
Lab 2 - Introduction to Simulink and Matlab
Class 5 (3/16) – Solving Second Order Differential Equations
Class 6 (3/18) – Response of Underdamped Systems

Class 7 (3/22) – System Properties: Linearity, Time-Invariance
Lab 3 – Introduction to Mobile Studio, Time Constants, Settling Time, Percent Overshoot
Class 8 (3/23) – System Properties: Causality, Memory, Invertability
Class 9 (3/25) **Exam 1**

Class 10 (3/29) – Impulse and Unit Step Functions
Lab 4 – Time Domain Modeling of One Degree of Freedom Mechanical Systems
Class 11 (3/30) – Impulse Response
Class 12 (4/1) – Convolution

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Class 13 (4/12) – Convolution Examples, BIBO Stability
Lab 5 – System Linearity and a Common Emitter Amplifier
Class 14 (4/13) – Laplace Transforms
Class 15 (4/15) – Laplace Transforms of Circuit Elements

Class 16 (4/19) – Transfer Functions, Impulse Response, Poles and Zeros
Lab 6 – Numerical Integration and Fourier Series in Matlab
Class 17 (4/20) – Partial Fractions
Class 18 (4/22) **– Exam 2**

Class 19 (4/26) – Characteristic Modes, Initial and Final Value Theorems, Asymptotic Stability
Lab 7 – Transfer Functions, Signal Flow Graphs, and Mason's Rule
Class 20 (4/27) – Second Order Systems and Pole Locations
Class 21 (4/29) – Block Diagrams

Class 22 (5/3) – Feedback Systems
Lab 8 –Simulation of Feedback Control Systems in Matlab and Simulink
Class 23 (5/4) – Steady State Response to a Periodic Input
Class 24 (5/6) – Computing $H(j\omega_o)$ from the Pole-Zero Diagram

Class 25 (5/10) – Bode Plots
Lab 9 – Implementation of a Feedback Control System
Class 26 (5/11) – Bode Plots
Class 27 (5/13) – **Exam 3**

Class 28 (5/17) - Bode Plots
Lab 10 – Experimental Construction of Bode Plots
Class 29 (5/18) – Filter Types, Bandwidth, Q of a Filter
Class 30 (5/20) **–** Gain and Phase Margins