

**ECE-300 Signals and Systems
Fall 2005**

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Text: *Fundamentals of Signals and Systems* by Kamen and Heck, second edition, Prentice-Hall, 2000.

GRADING POLICY

(3) Exams	15% each
(Cumulative) Final Exam	20%
Labs	10%
Lab Practical	10%
Homework	10%
Quizzes	5%

Notes:

- (1) In general, 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 1 PM on Thursday*. No late homework will be accepted without prior approval.
- (3) You must acceptably complete each lab to pass the class.
- (4) Prelabs are *due at 1 PM on Tuesday*. These are to be done in your lab notebook, and you are to turn in copies of these. *One Prelab per lab group*.
- (5) Many of the homework problems will require you to use Matlab as part of the problem. If you do not do these parts of the problem, you may receive no credit for any parts of the problem.
- (6) 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 Matlab and both came from the same directory, neither will receive any points!
- (7) 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.

Labs:

A portion of your course grade (20%) is derived from your work in the laboratory exercises chosen to enhance the lecture material and your learning. You must want to participate to learn this material, and you will be rewarded for your work. **PASS NOTHING UP** -- that is the only way to truly learn. **DO NOT** let your lab partner do the work for you.

Your primary means of recording your work for the laboratory is by means of a laboratory notebook. Each student needs to keep a notebook, although normally you will be working with a lab partner. Each week one lab notebook will be turned in and graded and the other lab notebook will be used for the next week's lab. You and your lab partner will be allowed to use both lab notebooks for the lab practical.

- 1) Each lab is worth 25 points, 5 points for the *Prelab* and 20 points for the lab work and notebook.
- 2) Prelabs are **due at 1 PM on Tuesday.** If your Prelab is not turned in at this time you will not be allowed to complete the lab. One Prelab should be turned in for each lab group.
- 3) Each lab will have three components entered into the lab notebook:
 - Prelab Exercises
 - Lab setup diagram
 - Lab results and instructor checkoffs
- 4) Your grade in the laboratory is determined by your lab work and your lab practical.
- 5) You will only be allowed to bring your lab notebooks and laptop to the lab practical-- it is to your advantage to keep well maintained lab notebooks and make sure any software used or developed in lab is on both partners' laptops.
- 6) Refer to the course webpage for more information on notebook expectations.
- 7) You need to read the lab before you come to lab. If you read through the lab you will (hopefully) get the **big picture** and understand what we are trying to do. If you just blindly follow the steps in the lab with no thought as to where you are going, you will get little from the labs.

SYLLABUS

Class 1 (9/1) - Step, ramp, and impulse functions; periodic signals

Class 2 (9/5) – Power and energy signals

Class 3 (9/6) – Examples of systems

Lab 1 - Concept Inventory Exam

Class 4 (9/8) – System properties

Class 5 (9/12) - System properties

Class 6 (9/13) - Impulse Response

Lab 2 - Introduction to Matlab

Class 7 (9/15) – Convolution

Class 8 (9/19) – Convolution

Class 9 (9/20) - Convolution Properties

Lab 3 – Matlab scripts and functions

Class 10 (9/22) – Fourier Series

Class 11 (9/26) – **Exam 1**

Class 12 (9/27) – Fourier Series

Lab 4 – System impulse and step response

Class 13 (9/29) – Spectra

Class 14 (10/3) - Parseval's Theorem

Class 15 (10/4) – Properties of Fourier Series

Lab 5 – Summing harmonic sinusoids

Class 16 (10/6) – Response of systems to periodic inputs

Class 17 (10/10) - Response of systems to periodic inputs

Class 18 (10/11) – Filter performance criteria

No Lab Fall Break

Class 19 (10/17) - **Exam 2**

Class 20 (10/18) – Fourier Transforms

Lab 6 – Measurement of Fourier Coefficients

Class 21 (10/20) – Fourier Transform properties

Class 22 (10/24) – Fourier Transform properties

Class 23 (10/25) – Fourier Transform Tables

Lab 7 – Signal Spectra

Class 24 (10/27) – Response of systems to aperiodic inputs

Class 25 (10/31) - Response of a system to aperiodic inputs

Class 26 (11/1) - Analysis of ideal filters

Lab 8 - Filter Design

Class 27 (11/3) - Analysis of ideal filters

Class 28 (11/7) - **Exam 3**

Class 29 (11/8) - Sampling

Lab 9 - Lab Practical

Class 30 (11/10) - Sampling