PURDUE UNIVERSITY
School of Electrical Engineering
EE 438 Digital Signal Processing with Applications
Class Information
Fall 2002

Prerequisites: EE 301 and EE 302

Instructor: Professor Ilya Pollak
MSEE 334
494-5916
ipollak@ecn
Weekly help session (in lieu of office hours): Th 5:30–7:30PM, MSEE 184.

Course TA Burak Bitlis
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Lab TA's: Cheolhwan Oh (oh2@ecn) Buyue Zhang (bz@purdue.edu) Yeong-Chuan Lim (limy@ecn)

Course Web Site: http://www.ece.purdue.edu/~ipollak/ee438
Lab Web Site: http://www.purdue.edu/vise/ee438L

Recommended Text:

Digital Signal Processing, 3rd edition, John G. Proakis and Dimitris G. Manolakis, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, ISBN 0-13-373762-4, 1996.

Class Mailing List:

All class-related e-mail will be sent to your ECN account. If you prefer to receive e-mail at a different address, send an e-mail to ipollak@ecn.purdue.edu .

Course Outcomes:

A student who successfully fulfills the course requirements will have demonstrated:

i. an understanding of linear time invariant systems;
ii. the ability to manipulate discrete parameter signals;
iii. knowledge of how to use linear transforms;
iv. the ability to apply linear system analysis to engineering problems.

Lecture:

It is essential that you attend the lecture and take complete and accurate notes. While this is generally a good idea with any course, it is particularly important in this course, because the text does not contain all of the material that we will cover. We will not necessarily do everything the same way

that it is done in the text. On questions of terminology, definitions, and notation, your lecture notes should be relied upon, not the text.

Homework:

Homework will be assigned on a weekly basis, except the exam weeks. Assignments will be due on Friday in class. They will be distributed on the preceding Friday (except for Homework 1, which is distributed on Monday, August 19 and is due on Friday, August 23). No late assignments will be accepted for any reason. Your lowest homework score will be dropped.

Since we do not have a grader this semester, only one or two problems will be graded on each homework. Therefore, if you do not attempt every problem on a homework, you may receive a zero for that homework (on the other hand, if you only solve one problem, there is a chance that you will get full points for the whole homework).

The homework is a very important part of the course. You may read your lecture notes and the text, and think that you understand the material. However, when you attempt to work the homework problems, you will frequently find that you actually did not understand the material as well as you thought you did. Also, the problems on the exams will be very similar to the homework problems. Needless to say, your understanding of the material will not be improved if you simply copy your solutions from a friend. You will benefit most from the homework if you attempt to do the problems *before* consulting your friends. While it is perfectly reasonable to discuss your approach to solving the problems with a friend, the final write-up of the solution should be your own work.

Rules for Preparing your Solutions:

It will be to your benefit in terms of maximizing your grade, and will be greatly appreciated by us if you adhere to the following four rules when preparing your assignments:

1) Do not use paper torn out of a spiral bound notebook.
2) Write on only one side of each page.
3) Put the problems in the proper order.
4) Staple the pages together before turning in the assignment.

MATLAB:

Knowledge of the MATLAB software environment will be a required part of this course. MATLAB is an integral part of the laboratory and will be required for solving many weekly homework assignments. If you are not familiar with MATLAB, you are strongly encouraged to attend one of the MATLAB tutorials offered by ECN at the beginning of the semester.

If you choose to work with others on MATLAB homework assignments, you must list all collaborators' names at the top of the assignments. Remember that you will be responsible for knowing MATLAB in exams, so you are encouraged to work as independently as possible.

Laboratory:

The laboratory is in Room MSEE 184, the Video and Image Systems Engineering (VISE) Lab. You will be assigned to a 3 hour lab session which you must attend each week during the entire semester. You must attend and attempt the labs to pass the course since you do get an hour of lab credit. All laboratory material is available at the web site listed at the top of this handout. You are responsible for printing out and reviewing the labs in advance of your laboratory session. Each lab

session will begin with a quiz covering the basic concepts underlying that week's experiment or related lecture material. ***All lab sections will meet during the first week of the semester.***

You will also be able to use the laboratory to work on EE 438 homework or laboratory experiments during periods when it is not scheduled for use. Please observe the rules for laboratory use posted at the lab web site.

Examinations:

There will be three one-hour exams, which will be given during the normal class period. The dates for these exams are fixed and cannot be changed. They are:

Friday, September 20
Friday, October 18
Friday, November 15

Please schedule your plant trips and interviews so that they do not conflict with these dates. You are allowed to replace the lowest one-hour exam score with your final exam score. ***Therefore, you will not be allowed to make up a one-hour exam if you miss it***. All examinations will be closed book. One standard (8.5-by-11 inches) sheet of *handwritten* (i.e., not printed, typed, photocopied, *etc*.) notes will be allowed for each one-hour exam. You may write on both sides of the sheet. You may bring three sheets of notes to the final. Each exam will typically contain 3 to 4 problems that are similar to homework problems.

Help Session:

We will be holding a weekly help session. During the weeks during which an exam will be given, the help session will serve as a review for the exam. You will benefit from attending this help session, not only because you can get answers to your questions; but also because you can learn what questions your classmates have, and what the answers are for those questions, as well. You will benefit much more from the help session if you try to work the problems in advance, and come prepared with questions. The instructor will only answer the students' questions. The help session will not consist of a review "lecture".

Computation of Final Grade:

Your final grade will be determined as a weighted combination of the homework, laboratory, hour exams, and final exam. If your lowest hour exam grade is less than your final exam grade, then the grade for that exam will be replaced by your final exam grade. Your letter grade will be based solely on your weighted final grade. This means that failure to do the homework or laboratory assignments can definitely hurt your grade, regardless of how well you do on the exams. Finally, the instructor and TAs will assign 5% of your grade during the final staff meeting of the semester. This policy will mostly influence students who are close to the cut-off point between two letter grades. Many factors will go into the assignment of this portion of the grade: attendance of the labs, effort, etc.

Laboratory	20%
Homework	10%
3 Hour Exams (15% ea.)	45%

Final exam	20%
Instructor and TAs' discretion	5%

If you dispute your grade on any homework or hour exam, you have *one week* from the date that the graded paper was returned to you to request a change in the grade. After this time, no further change in grade will be considered. When you return your paper for a re-grade, please attach a sheet to the front, indicating where you think that your paper was graded incorrectly. Also, date the sheet. We reserve the right to re-grade the whole paper. ***Only written re-grade requests will be considered, both for homeworks and for exams***.

Academic Dishonesty

The ECE faculty expect every member of the Purdue community to practice honorable and ethical behavior both inside and outside the classroom. Any actions that might unfairly improve a student's score on homework, quizzes, labs, or examinations will be considered cheating and will not be tolerated. Examples of cheating include (but are not limited to):

- Sharing results or other information during an examination.
- Bringing forbidden material or devices to an examination.
- Working on an exam before or after the official time allowed.
- Requesting a re-grade of answers or work that has been altered.
- Submitting homework or lab report that is not your own work or engaging in forbidden homework or lab collaborations.
- Representing as your own work anything that is the result of the work of someone else.

At the professor's discretion, cheating on an assignment, lab, or examination will result in ***a failing grade for the entire course***, or a reduced grade, or a zero score for the particular assignment, lab, or exam. All occurrences of academic dishonesty will be reported to the Assistant Dean of Students and copied to the ECE Assistant Head for Education. If there is any question as to whether a given action might be construed as cheating, please see the professor or the TA before you engage in any such action.

Please also refer to the laboratory ethics guidelines at
http://www.purdue.edu/vise/ee438l/lab0/pdf/lab0.pdf

Web Site:

Copies of all class handouts including this one will be available at the EE 438 web site
http://www.ece.purdue.edu/~ipollak/ee438.