

PURDUE UNIVERSITY
School of Electrical Engineering
ECE 301 Signals and Systems
Class Information
Summer 2015

- Instructor:** Ikbeom Jang
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- Prerequisites:** ECE 202 (Linear Circuit Analysis II)
- Course TA:** Ashley Eidsmore
- Course Website:** https://www.projectrhea.org/rhea/index.php/2015_Summer_ECE_301_Jang
- Lecture Schedule:** MTWRF 11:00 am - 12:00 pm in EE117

Help/Office Sessions:

TA Office hours: MW 01:00 - 03:00 pm at MSEE190

Instructor's Office hours: TR 01:00 - 3:00 pm

Required Text:

Signals and Systems, (2nd Ed.), A. V. Oppenheim, A. S. Willsky with S. H. Nawab, Prentice-Hall, Inc., New Jersey, ISBN 0-13-814757-4, 1997.

Supplementary Reference (not required):

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

Course Outcomes:

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

- An understanding of signals and systems.
- A knowledge of impulse response functions and convolution for linear systems.
- An understanding of Fourier Series and periodic signals.
- An understanding of Fourier Transforms for linear time invariant systems.
- A knowledge of basic sampling and its applications.
- The ability to describe and apply discrete time signals, systems, and transforms.

Lecture:

It is essential that you attend in class and take notes. While this is generally a good idea with any course, it is particularly important in this course, because the references do 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 references. **You will need the text book *Signals and Systems, (2nd Ed.), A. V. Oppenheim***

for this course but just reading the text book should not be considered a substitute for attending class.

Quiz:

There will be **between 5 and 10 unannounced pop quizzes given during the semester on randomly selected days. These quizzes will be of 5 –10 minutes duration**, and will be intended to test how well you are staying caught up with the lecture material. They will be short questions that you should be able to answer if you have been attending class. If you miss a quiz because of an academic/business trip or illness, you will be allowed to make up the quiz during the TA's office hours up to twice, provided you notify the instructor before the missing class and submit suitable documentation. For the academic/business trip, this will require a letter documenting the visit along with a copy of your passenger coupon or other travel documentation. For illness, you will need a note from your doctor. In any case, **your lowest quiz grade will be dropped.**

Homework:

Homework will be assigned on a weekly basis. **Assignments will be due in class - homework will not be accepted after class** except if there are severe extenuating circumstances. The assignments will be distributed via the course web page. No late assignments will be accepted. 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 understanding homework problems will assist you in the exam preparation process. While it is perfectly reasonable to discuss your approach to solving the problems with a friend, the final write-up of the solution must be your own work. However, you will benefit most from the homework if you attempt to do the problems before consulting your friends. In any case, **your lowest homework grade will be dropped.**

Rules for Preparing your Solutions:

The grader will have to handle a lot of paperwork for the course, and wade through many pages of handwritten solutions. It will be to your benefit in terms of maximizing your grade and TA's failure to read your answers means that you get zero points for the corresponding questions. It's totally up to the grader so please write down clearly and it will be greatly appreciated 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 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. Remember that you will be responsible for knowing MATLAB in exams, so you are encouraged to work as independently as possible.

Examinations:

There will be one mid-term exam and one final exam. The dates for these exams are TENTATIVE, but will be fixed shortly at which point they cannot be changed.

Midterm: July 10th, 2015 (may change)

Final: August, 2015 TBA

Schedule your plant trips and interviews so that they do not conflict with these dates. You will not be allowed to make up a mid-term or final exam if you miss it. *Not showing up at an exam should be the result of extreme extenuating circumstances – getting checked out at PUSH does NOT constitute an extreme extenuating circumstance, unless they recommend that you be admitted to a hospital. Writing me e-mail and saying that you don't feel well will NOT excuse you from coming to an exam. Unless you are violently ill or very contagious with a serious disease, you should come to the exam. It is infinitely better to come to the exam and let me know you are not feeling well, which can be factored into your final grade determination. If you do not show up for an exam and are either not violently ill (with detailed documentation) or dealing with extreme extenuating conditions, you will receive a 0 for that exam. If you are violently ill or dealing with extreme extenuating conditions and have detailed official documentation, your score on your final exam will be also used for the exam you miss. If you can't make an exam due to either of the above extreme conditions, you should make every attempt humanly possible to contact me before the exam.*

Presentation:

Each student is expected to give 5-minute speech/lecture during the classes and may use presentation documents, videos, or any multimedia sources. The way of giving the presentation is freely up to you but the contents should be related to one or more of the following articles to some degree:

- Signal properties
- Impulse response
- Linear and Time-invariant system
- Fourier series
- Fourier transform
- Sampling or Reconstruction of signals/images
- Aliasing and Nyquist's theorem
- Image processing
- Any applications of signals and systems
- Magnetic resonance imaging (MRI)

There will be one or two presentations per a day during the classes and they will be scored based on the relevance to articles, novelty, and observance of given time. Copying someone else's presentation files or documents is prohibited.

Computation of Final Grade:

Your final grade will be determined as a weighted combination of your homework, mid-term exam, and final exam. Your letter grade will be based solely on your weighted final grade. This means that failure to do the homework assignments can definitely hurt your grade, regardless of how well you do on the exams.

Homework:	15%
Quiz:	15%
Midterm:	30%
Final:	35%
Presentation:	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.

Each problem of each exam will be assigned to one or more of the five outcome categories. At the end of the course, the total score will be tallied for each student's five outcome categories. Any student who does not meet a minimum performance standard for one of the five outcome categories will receive a failing grade for the entire course.

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 that is not your own work, or engaging in forbidden homework 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, quiz, or examination will result in a failing grade for the entire course**, or a reduced grade, or a zero score for the particular assignment, 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.