

Purdue University
ECE438: Digital Signal Processing with Applications
Fall 2019

1. INSTRUCTORS

Course Supervisor and lecture Instructor

Prof. Mireille (Mimi) Boutin
mboutin at purdue dot you know what
Office: MSEE 252, Tel: 494-0728
Office Hours: listed on the course wiki
Preferred pronouns: She/her/hers

Laboratory Instructors

Scott Dye
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Daulet Kenzhebalin
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2. PREREQUISITES AND REFERENCES

Textbook (Not required)

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.

Course Packet (Required)

“Fill-in-the-blank Notes for ECE438 Digital Signal Processing,” Prof. Boutin, Fall 2019. (Pick up at Boiler Copy Maker in PMU.)

Prerequisites

ECE301, ECE302, and a working knowledge of MATLAB.

Course Related Web Links

- Course Wiki: https://www.projectrhea.org/rhea/index.php/2019_Fall_ECE_438_Boutin
- Lab Wiki: https://www.projectrhea.org/rhea/index.php/ECE438_Lab_Fall_2019

Class Schedule

See the detailed Course Outline posted on the Course Wiki, which includes a list of supplementary references for each covered topic.

3. Grades

Your final grade will be computed as follows:

- Homework 10% (No late HW accepted but worst score dropped.)
- Laboratory 20%

- 2 Intra-semester Exams 20% each (No make up; use final exam grade to replace when absent.)
- Final 30%
- Bonus point project 3%

Grades will be uploaded on Blackboard. For a re-grade of any homework or exam, you must submit a written request to your instructor. The deadline for all regrade requests except for the final exam is 17:00 Friday December 6, 2019. The letter grades cut offs for the course will be set to represent the extent of which the course outcomes have been achieved. In particular, all students who do not meet the lowest threshold of competence for every course outcome will be assigned a failing grade (F). Conversely, all students who meet the highest threshold for every outcome will be assigned an A grade. Plus/minus grades will not be assigned.

Laboratory

The laboratory for this course is in EE215. Each student is registered for a mandatory weekly 3 hour lab session. In order to get a passing grade for this course, you must complete and hand in every lab, and you must receive a passing grade for the lab. See your specific lab syllabus for more details.

Homework

Homework will be assigned more or less every week. A hard copy of the homework will be collected in class. Early submissions are welcome: you may submit a hard copy of your homework in MSEE268 anytime before the beginning of class on the day when the homework is due without penalty. Submitting after that time is considered a late submission. No late homework will be accepted but in order to accommodate for unavoidable delay circumstances, each student's lowest homework grade will be dropped.

It is ok to discuss your approach to solving the problems with a friend, but the write-up of the solutions you hand in must be your own. Be careful not to plagiarize! Cite all your sources and write the name of the persons you collaborated with and the persons who helped you on the cover page of your homework. Do not look at answers from the Internet or from the graded copy of a student from a previous year: doing so would constitute plagiarism. Plagiarism will be punished with a failing grade (F) for the course, and reports to the Assistant Dean of Students and to the ECE Assistant Head for Education will be filed. The office of the dean of students may decide that further punishment is necessary.

Intra-semester Exams

- Test 1 Covers Part 1 of the material, Thursday October 10, 2019, 8-9pm, ARMS 1010.
- Test 2 Covers Part 2 of the material, Thursday November 21, 2019, 8-9pm, ARMS 1010.

The two intra-semester exams are traditional style evening exams. See the course outline on the Course Wiki for a list of material covered. There will be no make-up exams. If you miss an exam for any reason, your final exam grade will automatically be used to replace this exam grade. (No justification needed.) Scratch paper will be included with each exam; the work on your scratch paper will not be graded.

Final Exam

The final exam will be a comprehensive, traditional style (not multiple choice) exam.

Bonus Point Project

Each student has the opportunity to earn up to a 3% bonus on their course grade by contributing a Rhea page on a subject related to digital signal processing.

- To pick a subject, simply write your name/nickname next to it on the course wiki. Topic selection should be approved by the instructor.
- In order to edit the wiki, you must be logged in to the Project Rhea website. You can log in using your CAREER account credentials. If you would prefer to use an anonymous log in, please contact the course supervisor.
- Do not simply copy the lecture notes. The content of your project must be your own. In particular, all text must be your own words and all graphs must have been created by you. Modifying someone else's text or someone else's graph is plagiarizing. Do not use copyrighted pictures or videos without explicit permission from the copyright owner. **Do not plagiarize!!!**
- If you are describing your project in text form (as opposed to a video), you must write your project description directly on a Rhea page using the Mediawiki markup language Wikitext. Mathematical equations should be written using latex code. Do not post a link to a word document or pdf file.
- If you are describing your project using a video, send your video to the instructor to be uploaded onto the Project Rhea Youtube channel. You may want to use Filelocker for the file exchange (filelocker.purdue.edu).
- The deadline for contributing a project is at midnight on Sunday Dec. 1, 2019.

4. COURSE POLICIES

Attendance Policy

Students are expected to attend every lecture and every lab. However, it is recognized that, very occasionally, it may be necessary for a student to be absent from class for personal reasons beyond his/her control (e.g., serious illness, family emergency, bereavement, etc.). Missing class is only acceptable if you have such a serious reason beyond your control. We trust students' honesty and sense of ethics, and thus require no documentation or justification for missing class. Students who miss class are responsible for making up the material on their own by reading the references listed in the Course Outline.

Classroom Rules

Unless prior arrangement has been made with the instructor, cell phones and other communication devices must be turned off and stowed away during class. Please respect your instructor, your TA, and your fellow classmates. Students who act in a disruptive or disrespectful manner (e.g., arriving late, texting, sending email, surfing the web, watching movies, talking, etc.) will be asked to leave the classroom.

Policy about sharing course material

All course material is copyrighted. Reproduction, sharing, and posting (e.g. on the Internet) is prohibited without an explicit agreement with the author of the work. This includes course notes (including your own), homework questions, and exams.

Taking pictures or making audio/video recording of the lectures is prohibited without the instructor's prior approval.

Academic Honesty

- If you have in your possession the labs of a student who previously took the course, be warned: using these labs as a reference when doing your own is cheating. We recommend that you destroy all the past lab material you have in your possession. If you are caught cheating in the lab (e.g., reading a lab from a past student, reusing code from a past/current student, etc.), you will receive a failing grade for the lab (no exception).
- In order to prevent cheating, we ask that you keep your eyes on your sheet at all times during exams. Looking around is forbidden.
- All electronic devices are forbidden during exams. This includes calculators, cell phones, music players, fitbits and other smart watches.
- Working on an exam either before or after the official time is considered cheating. The exam of any student who is caught writing after time is up or before the exam begins will receive a grade of zero on the exam (no exception).
- We keep an electronic copy of all graded exams in order to compare them with any exam brought in for a grade revision. Any student who alters his/her exam post grading will receive a failing grade for the course (no exception).
- All occurrences of academic dishonesty will be reported to the Assistant Dean of Students and the ECE Assistant Head for Education (no exception).
- Students are urged to report issues of academic integrity that they observe through the Office of the Dean of Students by phone (765-494-8778) or by email (integrity@purdue.edu).

5. ADA Notice

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (<http://www.purdue.edu/drc>) of an impairment/condition that may require accommodations and/or classroom modifications.

6. Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

7. Emergency Procedures

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. In such an event, information will be provided through the Course Wiki, email or Blackboard.

8. ABET

The ABET learning outcomes for ECE438 are:

- An understanding of linear time invariant systems
- The ability to manipulate discrete parameter signals
- Knowledge of how to use linear transforms
- The ability to apply linear system analysis to engineering problems