

Michigan State University

ECE457: Analog and Digital Communication Systems

Spring 2019

Course Information

Instructor:	Prof. Tongtong Li
Office:	2308K Engineering Building
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Email:	tongli@egr.msu.edu
Class Hours:	MWF, 9:10am-10:00am
Classroom:	221 Natural Resources Building
Instructor's Office Hours:	MW, 10:30 AM – 11:45 AM or by appointment
Course Website:	https://d2l.msu.edu

Required Text

- *Modern Digital and Analog Communication Systems*, B. P. Lathi and Zhi Ding, 5th Edition, Oxford University Press, 2018

References

1. *Principles of Communications*, Rodger E. Zimmer and William H. Tranter, John Wiley, 5th Edition, 2002.
2. *Principles of Digital and Analog Communication Systems*, J.D. Gibson, 2nd Edition, Macmillan Publishing Company, 1989

Simulation Tool

- **Matlab** simulations will be part of the homework assignments. Matlab tutorials can be found on the ECE 457 D2L course website under **Content**.

Exams, Homework and Grading Policies

- **Midterm Exams: 50%** There will be **two** 50-minute midterm exams. Planned Exam dates:
Exam 1: Monday, Feb. 18, 2019; **Exam 2:** Monday, Mar. 25, 2019.
The instructor reserves the right to change the date of the exam. In the case that you must miss an exam (for any reason), the make-up will be a qualitative oral exam with me.
- **Final Exam: 35%** Final exam will be on **Tuesday, Apr. 30, 2019 12:45pm - 2:45pm in 221 Natural Resources Bldg**. It will be a comprehensive exam that covers all course material.
- **Homework: 10%** Homework assignments will be posted on the course website regularly, together with their due dates. Posting of new assignments will be announced in class. You must submit your homework before the class on the due date. **No late homework will be accepted.** Two

lowest homework scores will be dropped when computing your average homework grade. **You must receive a passing grade on the Homework to pass the course.** Homework solutions must be original copies in the students own handwriting. No other submissions will be graded. Solutions must be clear and neatly written to receive credit.

- **Classroom Activities: 5%** Classroom exercises will be given and collected in classes as needed. Generally, short exercises are given after an important concept or technique/method is introduced. Classroom exercises will **not** be accepted after class. There will be five (5) classroom activities in all, and the lowest one will be dropped.

Grading Scale:

$\geq 90\%$	= 4.0	$\geq 85\%$	= 3.5	$\geq 80\%$	= 3.0	$\geq 75\%$	= 2.5
$\geq 70\%$	= 2.0	$\geq 65\%$	= 1.5	$\geq 60\%$	= 1.0	$< 60\%$	= 0.0

The above scale is *guaranteed*. The instructor reserves the right to adjust each grading transition as she sees fit at the end of the semester.

Other Policies

- **Attendance Policy:** Attendance is required. Spartan Life, Section 2.3.3: “*The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards.*” Attendance is enforced through classroom activities, also through the “Lecture Notes Policy” below.
- **Lecture Notes Policy:** Students are responsible to take their own notes, which will be provided in class in real-time through the overhead projector.
- **Classroom Policy:** “*The student’s behavior in the classroom shall be conducive to the teaching and learning process for all concerned.*” This means that I do not appreciate late arrivals, sleeping, reading the paper, ringing cell phones, rude interruption of the lecture, etc. Please try to develop your professional skills while in this class.
- **E-Mail Policy:** All e-mails to me regarding this course **MUST** start the subject with “**ECE 457**”. If you wish to request a meeting with me via e-mail, I suggest e-mailing me more than 24 hours in advance. Please send me two days/times that you can meet.
- **Calculator Policy:** Only simple (non-programmable/graphing) calculators are allowed in class.

Course Outline

- Introduction to Communication Systems
- Signals and Systems
- Analysis and Transmission of Signals
- Amplitude Modulation
- Angle Modulation
- Sampling and Pulse Code Modulation
- Digital Communication System Design

Lectures will be based on but not limited to the contents in the required textbook.