

ECE 313: Control Systems, Spring 2019

<http://www.egr.msu.edu/~xbtan/Courses/ECE313-Spring19-Syllabus.pdf>

Access [D2L](#) for homework problems and solutions, etc.

Instructor:

Prof. Xiaobo Tan, Electrical & Computer Engineering

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Office hours: Wednesdays, 1:30-2:30 pm; Fridays, 10-11 am; or by appointment

Grader:

Tarek A. Kaararani (kaafara2@msu.edu)

Class Meeting Time & Place:

M, W, F, 3 - 3:50 pm, 225 Natural Resources Building

Text Book:

Nise, Control Systems Engineering (7th Edition), John Wiley & Sons, Inc., 2014

Course Outline:

- Introduction to control systems
- Transfer functions, models for electrical, mechanical, and electromechanical systems
- Stability, time response, steady-state error, and sensitivity
- Root locus method, gain adjustment, PD/PI/PID/Lead/Lag/Lead-Lag compensators
- Frequency response, Bode plots, Nyquist criterion, gain adjustment and compensators
- Matlab, Simulink, and Control Systems Toolbox throughout the semester

Homework:

- Homework is assigned weekly, and will be posted one week before the due date. Homework is due in class. Homework solutions will be posted after the due date.
- The lowest homework grade will be dropped.
- While discussion on homework problems between students is allowed and encouraged, copying homework solutions directly from any sources (including peers) is **strictly prohibited**. A violating student will receive zero points for the whole assignment in question. The instructor reserves further rights to reflect homework cheating on the final grade.

Attendance Requirement:

- Attendance is required. **A student missing 8 or more lectures automatically fails the class.**
- The allowed 7 absences are meant to cover incidents such as sickness, job interviews, family emergencies, and other legitimate circumstances.
- Starting the second lecture, attendance is taken for every lecture. Each student shall sign in on the attendance sheet prior to the start of each lecture.
- A student who is late for class for 10 or more minutes cannot sign the attendance sheet.
- A student who signs the attendance but leaves prior to the end of class will void the signed attendance.
- Signing in on behalf of another student is strictly prohibited. Once discovered, both students involved will receive warning, and the instructor reserves further rights to reflect sign-in cheating on the final grades of both.
- Please use your consistent signature in attendance sign-in.

Exams:

There will be two midterm exams and one final exam. **Note that the exact dates for the midterms will be announced two weeks before the exams.**

- Midterm 1: TBA
- Midterm 2: TBA
- Final exam: May 1, Wednesday, 5:45 – 7:45 pm, 225 Natural Resources Building. **Note that failing to attend the final exam automatically fails the class.**

Honors Option:

The honors option is available. Eligible and interested students should contact the instructor during the first week of class.

Grading:

The final grade is based on homework (20%), midterm 1 (25%), midterm 2 (25%), and final exam (30%).

Percentile	87% - 100%	80% - 86.9%	70% - 79.9%	65% - 69.9%	60% - 64.9%
Final grade	4.0	3.5	3.0	2.5	2.0

The instructor can adjust the above grading scale as he deems appropriate.