E 212 / ENGR 212 Dynamical Systems
(Engineering Design IV)
Spring Semester 2023

Prof. Joseph S. Miles
jmiles@stevens.edu
201-216-8964
Office: Edwin A. Stevens (EAS) Room 119-D

Office Hours

Monday 9 AM - 10 AM
Tuesday 10 AM – 11 AM
Thursday 7 PM – 9 PM via Zoom Meeting ID: 990 4777 1858
Sunday afternoon by appointment

Lab (Burchard 109) Office hours: Wednesday 3:00 PM- 6:00 PM

Class Schedule

Section A	Monday	02:00 PM to 03:50 PM	(153)	Kidde 228
Section B	Thursday	10:00 PM to 11:50 AM	(155)	Kidde 228
Section C	Friday	02:00 PM to 03:50 PM	(113)	Kidde 228

Required Textbook

Allan R. Hambley, *Electrical Engineering – Principals and Applications*, Seventh Edition, Pearson, Prentice Hall, 2018
ISBN-13: 978-0-13-448414-3;
ISBN-10: 0-13-448414-2.

(optional textbook)

Anthony J. Wheeler and Ahmad R. Ganji, *Introduction to Engineering Experimentation*, Third Edition, Pearson, Prentice Hall, 2010
ISBN-13: 978-0-13-174276-5;
ISBN-10: 0-13-174276-0.

Course Website:

All lecture notes, homework assignments and solutions, quizzes, and this course syllabus are/will be available on the Canvas course web site. It is your responsibility to download the required material from the course website. In addition, I will use the Canvas *Announcement* tool to share important announcements regarding this course. Please check your email regularly (before each class) during the semester.

Grading:

Spring 2023

- Homework: **6%**
  (Note: 50% penalty for an assignment submitted late.
  No assignments will be accepted after the first class past the original due date)
- Quizzes **28%**
  - Quiz One 14%
  - Quiz Two 14%
  - Optional/Make-Up Quiz
- Comprehensive Final Exam **24%**
- Lab **42%**

- Ethics Module (ABET) 18%
- Lab Reports/Quizzes 9 %
- Pre-Lab Quizzes 5%
- Lab Team Project 10 %

100%

Important Notes:

1. Your overall grade will be based upon the lecture and lab parts of this course. The lecture part of this course will be 58% of your grade and the lab part of this course will be 42% of your grade.

2. Lab: Each team member should become familiar with all aspects of each lab experiment. This includes the building (or simulation) of the circuit and/or system and the use of all (virtual) lab equipment. Each team member must know how to do all aspects of each lab.

3. All questions and/or concerns regarding the lab should first be directed to your lab TA.

	Time	Instructors	Size*
Lab section LA	Monday 11:00 AM - 1:50 PM	Yifan Liang	31
Lab section LB	Monday 2:00 PM - 4:50 PM	Khalid Hasan & Mingju He	45
Lab section LC	Monday 6:15 PM - 9:05 PM	Khalid Hasan & Jeffrey Tharakan	44
Lab section LD	Tuesday 8:00 AM - 10:50 AM	Mingju He, Matt Ruzich, & Eva Santos	44
Lab section LE	Tuesday 11:00 AM - 1:50 PM	Mingju He, Hanyi Zhang & Aidan Rudd	44
Lab section LF	Tuesday 2:00 PM - 4:50 PM	Mingju He & Yifan Liang	44
Lab section LG	Tuesday 6:30 PM - 9:20 PM	Yifan Liang & Hanyi Zhang	42
Lab section LH	Wednesday 11:00 AM - 1:50 PM	Yifan Liang & Hanyi Zhang	37
Lab section LI	Friday 2:00 PM - 4:50 PM	Khalid Hasan & Jeffrey Tharakan	44
Lab section LJ	Wednesday 6:30 PM - 9:20 PM	Yifan Liang	19
Lab section LK	Friday 8:00 AM – 11:50 AM	Mingju He & Hanyi Zhang	29
Lab office hours	Wednesday 3:00 PM - 6:00 PM	Khalid Hasan, Mingju He & Jeffrey Tharakan	

* Size accurate as of 1/19/2023 @ 12:30PM

Emails of Lab Instructors:

Khalid Hasan	mhasan12@stevens.edu
Yifan Liang	yliang33@stevens.edu
Hanyi Zhang	hzhang81@stevens.edu
Mingju He	mhe6@stevens.edu

4. Homeworks are graded based upon completion (effort and complete and timely submission) and not on whether the answer is correct or incorrect. Please submit your homework solutions electronically to our Canvas course web site. Instructions for submission of your assignments are posted on the course web site. Assignment received after the due date will be assessed a 50% penalty.

5. Grades for the homework assignments, quizzes, and the final exam will be posted on the course web site. You can appeal any grade; please contact me and we can review the grading. However – **the request to review the grade must be made one week from the original posting of the grade. No reviews will be scheduled for requests made after one week from the original posting of the grade.**

6. Make-Up policy

Students with documented excuses can make-up for their late work as follows:

- HW: No make-up, the lowest two homeworks will be dropped.
- Quizzes: Quiz 3 is a make-up/optional quiz; it can be used to substitute any missing quiz or to improve your grade.
- Lab: If you have an emergency and miss a lab, you need to email your lab TA, ask them to open the Pre-Lab Quiz for you, show up during the lab office hours, ask the lab TAs who are available during the office hours for help, implement the experiment, and show them your work. Then your TA will open the Post-Lab Quiz for you.

7. Exams are closed book (closed everything) – we will give a formula sheet.

8. For those with approved exam accommodations, you **must send me an email at least one week before the exam** to plan and schedule the required accommodations.

9. **Do not make plans** for the end of the semester until the final exam schedule is posted. Our final exam may be scheduled as late as Tuesday, May 16th from 6 PM until 10 PM.

10. Students are expected to attend all classes in which they are enrolled. Each faculty member determines their own policy dealing with class attendance.

Therefore, if a student misses a class or classes, the student is expected to discuss the matter with the instructor, and it is up to the discretion of the instructor whether to allow a student to make up any missed assignments, exams, or projects. Absences, for whatever reason, do not relieve students of their responsibility for fulfilling the requirements for any course.

If a student knows in advance that they are going to miss a class, the student is advised and is expected to discuss the situation with the appropriate faculty member in advance and in accordance with that faculty member's guidelines for class attendance. If documentation is desired by the faculty member, the student should inquire of the faculty member what would suffice for that purpose (e.g., medical documentation, proof of court appearance, participation in university-sponsored activities etc.) and provide such documentation.

ACADEMIC INTEGRITY

Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at http://web.stevens.edu/honor/

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

"*I pledge my honor that I have abided by the Stevens Honor System*."

Reporting Honor System Violations

Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at www.stevens.edu/honor.

INCLUSIVITY

Name and Pronoun Usage

As this course includes group work and in-class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

Inclusion Statement

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in academic discourse and innovation. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester.

Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to your instructor to make alternative arrangements.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions.

MENTAL HEALTH RESOURCES

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments can be made by phone (201-216-5177).

EMERGENCY INFORMATION

In the event of an urgent or emergent concern about the safety of yourself or someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, year-round. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text "Home" to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is *not* urgent or time sensitive, please email the CARE Team at care@stevens.edu. A member of the CARE Team will respond to your concern as soon as possible.

Proposed Grading Template

Letter Grade	Numerical Grade
A	**93 and above**
A-	**90 to 92.9**
B+	**87 to 89.9**
B	**83 to 86.9**
B-	**80 to 82.9**
C+	**77 to 79.9**
C	**73 to 76.9**
C-	**70 to 72.9**
D+	**67 to 69.9**
D	**60 to 66.9**
F	**Below 60**

E-212 Spring 2023; Proposed Course Schedule (Dates are subject to change)

The following is a tentative course schedule. Any changes to this schedule will be communicated to you 1) via class lecture and/or 2) via email. The Canvas shell for this course will always be kept up to date so you can always reference the "Assignments" tab for accurate due dates.

Week Month/Date	Topics Covered	Lab	Chapter(s) in Text
1 1/18-1/24	• Course Introduction • Fourier • Filter Transfer Functions- • Magnitude & Phase • Cascading 2 port networks	Lab Orientation Oscilloscope Ethics Module Lesson 1 START	Chapter 6 Hembly Text
2 1/25 – 1/31 Hwk 1 2/5 @ 9PM	• Passive Filters • LPF and HPF TF and • Break Frequencies	Introduction to MATLAB	Chapter 6 Hembly Text

3
 	
2/1-2/7
	Measurement Systems with Electrical Signals - Op-AMPs
	Major Topics Include:
	• Amplifiers
	  ○ Important Properties
	  ○ Operational Amplifiers
	• Inverting and non-inverting Amps
		Introduction to
		Simulink
		
		Ethics Module Lesson 1
		DUE 2/7 @ 11:59PM
			Chapter 3
			Wheeler &
			Ganji Text

4
2/8-2/14
 	
Hwk 2 2/19 @ 9PM
	Measurement Systems with Electrical Signals - Op-AMPs
	Major Topics Include:
	• Amplifiers
	  ○ Important Properties
	  ○ Operational Amplifiers
	• Inverting and non-inverting Amps
		Introduction to
		Simscape
		
		Ethics Module Lesson 2
		START
			Chapter 3
			Wheeler &
			Ganji Text

5 2/15 – 2/21	Quiz One Review 2/20 President's Day no classes Wednesday 2/22 is Monday schedule	Passive Filters	Quiz 1 Review
6 2/22 – 2/28	**QUIZ ONE***	EKG Experiment & Notch Filter Ethics Module Lesson 2 DUE 2/28 @ 11:59PM	Quiz 1

7 3/1-3/7	Active Filters	Op Amps Ethics Module Lesson 3 START	
8 3/8-3/21 Hwk 3 3/26 @ 9PM	Computer Data-Acquisition Systems Major Topics Include: • Analog-to-Digital Converters • Their role in Data Acquisition Systems • Practical Examples	Active Filters	Chapter 5 Wheeler & Ganji
3/13/23-3/17/23	**Spring Break**	Rest and catch up	
9 3/22-3/28 Hwk 4 4/2 @ 9PM	Discrete Sampling and Analysis of Time-Varying Signals Major Topics Include: • Analog-to-Digital Converters (cont.) • Sampling Theorem • Role of anti-aliasing filter	A to D Conversion and Data Analysis Ethics Module Lesson 3 DUE 3/28 @ 11:59PM Ethics Module Final Quiz DUE	Chapter 4 Wheeler & Ganji
10 3/29-04/04	Fourier in MATLAB–Prep for lab project Quiz 2 Review	Speaker Cross Over Project Intro.- Project Design	Problems
11 04/05 – 04/11 April 7th No Classes	**QUIZ TWO***	Project Design	Quiz 2
12 4/12 – 04/18 Hwk 5 4/23 @ 9PM	D to A Converters & Transistors	Experiment Construction	Slides
13 4/19 – 04/25	Review from Final Exam	Experiment Construction	Problems & Items to Remember
14 4/26 – 05/04 May 4 is Friday Class Schedule	**QUIZ THREE***	Oral Presentation & Report Due	Quiz 3
5/5	Reading day, no classes on 5/5		
Final Exam Period; May 6th through 16th	**FINAL COMPREHENSIVE EXAM*** **To Be Scheduled During Final Exam Period**		

* All quizzes and exams are closed books and closed notes. On some quizzes or exams, formula sheets and tables will be provided