



SPRING 2021

ECE 110

INTRODUCTION TO ELECTRONICS

COURSE SYLLABUS

Official Description: 1 (lab only) or 3 hours credit

Introduction to selected fundamental concepts and principles in electrical engineering. Emphasis on measurement, modeling, and analysis of circuits and electronics while introducing numerous applications. Includes sub-discipline topics of electrical and computer engineering, for example, electromagnetics, control, signal processing, microelectronics, communications, and scientific computing basics. Lab work incorporates sensors and motors into an autonomous moving vehicle, designed and constructed to perform tasks jointly determined by the instructors and students. *Class Schedule Information:* Students must register for one lab and one lecture section. *Course Director:* C. D. Schmitz

Course Websites

<http://courses.engr.illinois.edu/ece110>
<https://compass2g.illinois.edu/>

Technology

Required: Computer to view and print (or markup) PDFs, view video lectures, attend Zoom sessions with audio video interactions, and operate the ADALM2000 Active Learning Module from the ECE110 Electronics Kit. Record and submit short video segments for some laboratory assignments. Ability to complete online PrairieLearn exercises and exams. Hand-written exercises will be required (except for explicit DRES accommodations). Exam proctoring via the Computer-Based Testing Facility may require the use of a Zoom-connected smartphone.

Recommended: A video option during Zoom interactions for increased community building.

Required Course Materials

- **Lecture Handouts** available online at <https://courses.engr.illinois.edu/ece110>
- **Laboratory Manuals** available online at <https://courses.engr.illinois.edu/ece110>
- **ECE 110 Electronics Kit** with ADALM2000 Active Learning Module ordered from ECE Supply Center
- **ECE 110 Class Notes** Textbook available online at <https://courses.engr.illinois.edu/ece110>

Optional Course Materials

- **ECE110 Recommended:** Arduino or RedBoard (for self-selected activities)
- **ECE110 Add-ons:** Hand-held multimeter, wire stripper, diagonal cutters, soldering iron
- **Other texts** are on reserve at Grainger Library: See Suggested Reading under Other Teaching Aides

Lecture Schedule, Synchronous and Online

| Section | Days | Time | | Instructor | Email |
|---------|--|----------------|-----|-----------------------|-----------------------|
| AL2 | Mondays & Wednesdays | 10:00-10:50 am | ONL | Prof. Chris Schmitz | cdschmit@illinois.edu |
| AL1 | Beginning Monday, January 25 th | 11:00-11:50 am | ONL | Prof. Soo Choi | hyungsoo@illinois.edu |
| AL3 | | 2:00-2:50 pm | ONL | Prof. Matthew Gilbert | matthewg@illinois.edu |
| AL2 | All times Central | 3:00-3:50 pm | ONL | Prof. Kejie Fang | kfang3@illinois.edu |

Laboratory Meeting Schedule, Synchronous and Online

| Inclusive Dates | Exclusive Dates | Classroom | Lab Director |
|--|---|---------------|---------------|
| Start: February 1 (Mon) End: April 30 (Fri) | Teams will not meet with TA: 1/25-1/29 (1 st week), 2/15-2/19 (Wed off), 3/22-3/26 (Wed off), 4/12-4/16 (Tues off), 5/3-5/5 (end of term). Watch Compass2g for short team assignments these weeks. | ONLINE | Prof. Schmitz |
| Notes: Always read the laboratory assignment before your laboratory meeting. All laboratory meetings are mandatory and attended via Zoom. See the absence policy. Some meetings will be team lead while some meetings will be TA lead. A schedule and more details will be provided. | | | |

Students will be assigned to teams of 4 which be required to meet virtually via Zoom at their regular scheduled time. Efforts will be made to have a course aide facilitate the answering of questions during this time. Approximately every-other week, students will meet with their TAs at their regular lab time, again via Zoom, for instruction and for student presentations.

Lecture Attendance Policy

Lecture delivery will be online and synchronous (live at the scheduled times). We will not mandate live attendance of the lectures, but we do highly encourage it. Engagement is significantly enhanced through the live interaction and group activities will be pursued by some instructors during these sessions as well. Knowing who will be typically present will better enable the use of, say, breakout rooms within Zoom. Lecture attendance will not directly affect your course grade, but regular attendance will be required or **second-chance testing** on PrairieLearn Quizzes **will not be counted**.

Laboratory Attendance Policy

With the few explicit exceptions listed before, laboratory attendance is mandatory each and every week at the scheduled Zoom online sessions. If you have an unavoidable medical or personal emergency, contact your lab partners and your TA (not your lecture instructor) as soon as possible to make alternate arrangements. You and your lab team are responsible for meeting for activities outside of the regular laboratory Zoom meetings.

Homework

HOMEWORK DEADLINE

Homework will be due
Thursdays at 11:59 pm Central Time
unless stated otherwise

Homework problems are on-line through PrairieLearn and GradeScope. When you submit answers in PrairieLearn, they are graded immediately computer-graded. GradeScope will require human grading. There is no partial credit for homework completed after the deadline. Students will not be reminded about due dates. You should work regularly and in an organized manner. It is recommended that you begin a homework set immediately following the lecture covering that material.

Office Hours Schedule

| Regular Dates | Classroom | Reading Day | Office Hours Contact |
|--|-----------|--|--|
| Start: Monday, Feb 1 End: Last Wed of term Exception: Breaks | ONLINE | Thursday, May 6 <i>A new schedule will be used from this date on.</i> | cdschmit@illinois.edu |
| <i>Notes:</i> The official office hour schedule will be posted at our course website. <i>Questions or concerns?</i> You may go to any office hours that fit in your schedule. You <i>must</i> show your attempt in written form to receive office hour assistance on a specific problem! | | | |

Lab Office Hours

Typically Saturday 12-3pm the lab is available for students to play with course-defined mini-projects or final-projects as well as any personal projects (deemed safe by the TAs). We hope to continue this tradition with virtual assistance and occasional in-the-lab offerings!

Quizzes (Confirmed!)

| Q1 (PL) | Q2 (GS) | Q3 (PL) | Q4 (GS) | Q5 (PL) | Q6 (GS) | Location for all: |
|------------------------|-----------------------|------------------------|------------------------|-----------------------|------------------------|-------------------|
| Tuesday Feb 23, 7pm | Tuesday Mar 2, 7pm | Tuesday Mar 16, 7pm | Tuesday Mar 30, 7pm | Tuesday Apr 6, 7pm | Tuesday Apr 27, 7pm | ONLINE |

A computer-graded quiz through PrairieLearn (PL) will be followed the next week by a human-graded quiz submitted using GradeScope (GS). The GradeScope quizzes will be proctored by the CBTF as per <https://cbtf.engr.illinois.edu/cbtf-online/index.html>.

Second-Chance Testing (PrairieLearn Quizzes Only)

We are offering second-chance testing following the PrairieLearn quizzes only in the spring of 2021. This opportunity to boost weak PrairieLearn quiz scores will only be given to students who have already demonstrated commitment to the material through their *strong lecture attendance*. More information will be provided through the course website.

Review Sessions (GradeScope Quizzes Only)

For Quiz 2, we will have a review session on Saturday, February 27th from 2-4 PM (Zoom link: <https://illinois.zoom.us/j/81552750662?pwd=bVoxY1g3b0phTDd1NU5FTzY2NWYwUT09>)

For Quiz 4, we will have a review session on Saturday, March 27th from 2-4 PM (Zoom link: <https://illinois.zoom.us/j/83180740268?pwd=RWZHZXRJd2FxcWwWmoyVmhdDNXdjZz09>)

For Quiz 6, we will have a review session on Saturday, April 24th from 2-4 PM (Zoom link: <https://illinois.zoom.us/j/89541466192?pwd=YytjTWRvYXpya2RaTGv0dFNhUkxEdz09>)

Final Examination - 3 hours, divided!

| Final Exam (PL) | Final Exam (GS), times CST | Location: |
|---|---|-----------|
| 3 options: Mon. Dec. 14 8:00 am Wed. Dec. 16 9:00 pm Thurs. Dec. 17 8:00 pm | 1 normal: Tues Dec. 15 1:30 pm 2 conflict: Tues Dec. 15 7:00 pm Wed Dec. 16 8:00 am | ONLINE |

(Dates TBD) The PrairieLearn portion of the final exam is like the PrairieLearn quizzes. Open notes and not proctored. You may not receive any human assistance or use any other tool besides a calculator. It will last 60 minutes and may be taken in *any* of the three options. The CBTF/GradeScope portion of the final is like the CBTF quizzes: closed notes and proctored. You may take the conflict only with a valid reason. It will last 120 minutes.

Examination Policy

Academic integrity must be maintained throughout the semester. The website <https://cbtf.engr.illinois.edu/index.html> documents the CBTF for students as well as special instructions for DRES accommodations. If you have an unavoidable medical or personal emergency, the course director may be able to allow for a conflict. To be eligible, you must notify your lecture instructor (not a TA) immediately, and you must document your absence as best you can.

Getting Help!

For general assistance with the undergraduate curriculum, visit the *ECE Department Advising Office* in the administrative suite room 2120 ECEB (for academic advice), the Center for Academic Resources in Engineering 4th floor of Grainger Library (CARE, for engineering-course-related help), or the campus's *Counseling Center* (for time management, study skills, test taking skills, and confidential personal counseling). For assistance in ECE110 specifically, please see your instructor or the course director.

- **Instructors, TAs, undergraduate Course Aides:** See office hours.
- **Supervised Study Sessions:** Peer-team study (watch for announcements).
- **Tutoring:** Watch for announcements from class or check with IEEE/HKN, Tau Beta Pi, Women in Engineering (WIE), Women in Electrical and Computer Engineering (WECE) as well as the Center for Academic Resources in Engineering (CARE) located in Grainger Library. Tutoring can also be arranged. Please contact the course director, Prof. C. Schmitz, cdschmit@illinois.edu.
- **ECE Advising Office:** For any questions that arise or just for someone to talk to, email ece-advisor@illinois.edu. Prof. Schmitz is also an Undergraduate Academic Advisor and can be found at cdschmit@illinois.edu.
- In an emergency, you can leave a message for Prof. Schmitz at (575) 323-1011.

Disability Accommodations

To determine if you qualify for disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or email a message to disability@uiuc.edu.

The Office of Minority Student Affairs

For Spring 2021, the Office of Minority Student Affairs' (OMSA) Tutoring and Academic Services will continue to be offered online. The OMSA offers free tutoring and academic services. Matched tutoring, online self-paced workshops and academic skills consultations are among the services featured in the OMSA's Academic Services Center (ASC). OMSA's services are designed to help students achieve in college. The level of rigor at the University of Illinois is different than in high school or community college. No matter how you performed before attending Illinois, there is always room to hone your study skills.

- To learn more about their tutoring services and to sign up for a tutor, visit <https://www.omsa.illinois.edu/programs/tutoring/tutoring/>.
- To learn more about their academic skills consultations and to request a consultation, visit <https://tutortrac.omsa.illinois.edu/TracWeb40/Default.html>.
- To learn more about the self-paced workshops and to take advantage of their self-paced workshops, visit <https://www.omsa.illinois.edu/programs/tutoring/workshops/>.

You are encouraged to make the most of your tutoring and workshop session(s) by:

- Requesting a tutor at the beginning of the term.
- Come to each of your tutoring or workshop sessions prepared. Preparation includes having your textbooks, notes, and specific questions concerning the material. The more you prepare, the more you will get out of the session.
- Tutors do not serve as a substitute for our instructional faculty. They will not "lecture" or "re-teach." They will provide strategies to help you improve your approach to mastering your course content. Tutoring is not a substitute for missed classes. If you miss class, make sure you get notes from a classmate and meet with your professor during office hours.

Sexual Misconduct Reporting Obligation

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX Office. In turn, an individual with the Title IX Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: wecare.illinois.edu/resources/students/#confidential.

Other information about resources and reporting is available here: wecare.illinois.edu.

Academic Integrity

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

Religious Observances

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus at the beginning of the semester for potential conflicts between course deadlines and any of your religious observances. If a

conflict exists, you should notify your instructor of the conflict and follow the procedure at <https://odos.illinois.edu/community-of-care/resources/students/religious-observances/> to request appropriate accommodations. This should be done in the first two weeks of classes.

Disability-Related Accommodations

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail disability@illinois.edu or go to <https://www.disability.illinois.edu>. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available that can help diagnosis a previously undiagnosed disability. You may access these by visiting the DRES website and selecting "Request an Academic Screening" at the bottom of the page.

Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

Grading Policy

Course grades will be based on **both** lecture and lab performance with these weights:

- Six quizzes (5% each x 6 = 30%)
- Final exam (25%)
- Homework (15%)
- Laboratory (30%)

The final exam carries added significance as your lowest quiz score will be automatically replaced by your final exam score in the final grade calculation only when the result would improve your grade. The PrairieLearn portion of the final replacing the lowest PrairieLearn quiz and the GradeScope portion replacing the lowest GradeScope quiz.

| | | | | |
|-----------------|-----------------|-----------------|-----------------|---------------|
| A+ > 97 | B+ 87-90 | C+ 77-80 | D+ 67-70 | F < 60 |
| A 93-97 | B 83-87 | C 73-77 | D 63-67 | |
| A- 90-93 | B- 80-83 | C- 70-73 | D- 60-63 | |

These cutoffs *might* be lowered, but they will not be raised. Furthermore, they are strict. For example, a grade of 89.99 is a B+ and not an A-. Both the lecture **and** the lab must be taken seriously and minimum proficiency of 50% must be shown in the Laboratory grade and a minimum proficiency of 50% must also be shown in the remaining portion of the grade (quizzes, final exam, homework).

| | |
|---|--|
| Important Lecture/Lab Policy | A failing grade will be given to any student who does not score at least 50% in both the <u>lab</u> and in <u>quiz + final exam + homework, separately.</u> |
|---|--|

Once a month, we hope to produce an **estimated course letter grade** for each student, based on the hour exams, homework problems to date, and an assumed high lab grade. **This estimate predicts your final letter grade *optimistically* if you continue the same level of effort throughout the remainder of the semester.** If you receive a low letter grade after the first quiz, you should take action to diagnose the reasons for your performance; instructors are there to help. Students who ignore weak academic performance on exams usually earn poor grades in ECE 110; Students who address deficiencies in academic performance early usually do better in the remainder of ECE 110 and in later semesters.

COURSE SCHEDULE

Visit our Compass2g website for week-by-week instructions.

Thanks!

We welcome **your** suggestions to make **your** course better.

On the following pages you will find information about protecting yourself from life-threatening situations (Run-Hide-Fight) and from threats against your well-being (a disengaged teammate).

Run > Hide > Fight

Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with almost any kind of emergency – like severe weather or if someone is trying to hurt you – we have three options: Run, hide or fight.



Run

Leaving the area quickly is the best option if it is safe to do so.

- | | |
|--------|---|
| Run... | <ul style="list-style-type: none">• Away from Danger!• Grassy Area East of ECEB• Beckman Institute Atrium |
|--------|---|

- ▶ Take time now to learn the different ways to leave your building.
- ▶ Leave personal items behind.
- ▶ Assist those who need help, but consider whether doing so puts yourself at risk.
- ▶ Alert authorities of the emergency when it is safe to do so.



Hide

When you can't or don't want to run, take shelter indoors.

- | | |
|---------|--|
| Hide... | <ul style="list-style-type: none">• Desk• Bathroom• Office |
|---------|--|

- ▶ Take time now to learn different ways to seek shelter in your building.
- ▶ If severe weather is imminent, go to the nearest indoor storm refuge area.
- ▶ If someone is trying to hurt you and you can't evacuate, get to a place where you can't be seen, lock or barricade your area if possible, silence your phone, don't make any noise and don't come out until you receive an Illini-Alert indicating it is safe to do so.



Fight

As a last resort, you may need to fight to increase your chances of survival.

- ▶ Think about what kind of common items are in your area which you can use to defend yourself.
- ▶ Team up with others to fight if the situation allows.
- ▶ Mentally prepare yourself – you may be in a fight for your life.

Please be aware of people with disabilities who may need additional assistance in emergency situations.

Other resources

- ▶ police.illinois.edu/safe for more information on how to prepare for emergencies, including how to run, hide or fight and building floor plans that can show you safe areas.
- ▶ emergency.illinois.edu to sign up for Illini-Alert text messages.
- ▶ Follow the University of Illinois Police Department on Twitter and Facebook to get regular updates about campus safety.

Professional Development

Professional development of students is important to this course. The following storyline will be discussed in class.



SANTA CLARA UNIVERSITY

MARKKULA CENTER FOR APPLIED ETHICS

Picking Up the Slack

Chloe Wilson

****DISCLAIMER: All characters and scenarios in this post are fictional.****

Greg and Natalie have been in business classes together since freshman year. While they're not close friends, they have always enjoyed each other's company in class and have been in the same social circle as they've moved from lower division courses to where they are now: senior capstone. Greg and a few of his friends invite Natalie to join their group at the start of the term, and they begin to work on their project.

Fairly quickly, though, Greg realizes that Natalie isn't pulling her weight. Any aspect of the project that's assigned to her has to be redone by other members of the group, she doesn't pay attention in meetings, and she consistently shows up late or hung over. Greg and his other groupmates think that Natalie needs to step it up and take this project seriously, but they ultimately agree it would be more trouble than it's worth to confront her about it. They decide to just push through and let her do her own thing. Natalie continues to participate marginally in discussions, planning, and writing, but makes it clear through her actions that their final presentation is not her biggest priority.

After Greg's group gives its final presentation, the members are asked to write an evaluation on their teammates that the professor will use to determine individual grades. When it comes to most of his teammates, Greg easily gives them all A's and B's for their participation and contributions to the project. However, when Greg comes to Natalie's evaluation, he is faced with a dilemma. It's their last big project before graduation, and if he were to evaluate her in a harsh way, it could negatively affect her cumulative GPA. He doesn't want to throw her under the bus; however, her apathy and poor work ethic put a huge burden on everyone else's shoulders, and Greg had to personally sacrifice a lot of time and effort to make up for her mistakes or tasks that she left undone.

Is it worth giving her an honest evaluation, just so the professor will give her the grade she deserves? Or is giving her a bad evaluation petty and unnecessary, considering that they are all about to graduate and their group received an A, regardless of her performance?