

Welcome to ECE101: Foundations in Electrical & Computer Engineering

Professor: Akhil Penninti

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Class Timings: Wednesdays - 5:30 to 7:30 PM

Location: Engineering Building - C205



Course Description:

The **Electrical and Computer Engineering program** comprises of many courses in the first few semesters, including digital systems, electrical circuits, and electromagnetic fields. Computer engineering students take additional courses in computer science to provide the software part of their background. **Electrical Engineers** design, develop, analyze, research, and manufacture systems such as those for power generation distribution, communication, control, and instrumentation, whereas, the **Computer Engineers** design, develop, analyze, research, and manufacture hardware, software, and systems that process, store, and convey digital information. So, in this course we will be deep diving into the crucial elements that are required for pursuing a career in the **ECE** Background.

For the first half of the semester, ECE101 - Foundations in ECE will focus on the diversity of technical areas within ECE as well as potential careers by simulating an internship experience. You will first work on becoming a technical expert on the available subsystem of your choice, then collaborate with other technical experts in your class to create a complete proposal. That proposal will then be presented to professional engineers as part of a community forum. The second half of the semester will be your opportunity to create your own Arduino-based project.

Upon successful completion of the course, students shall be able to:

- Describe the key ECE concentrations available at CSU and how they interact in real engineering applications.
- Employ the engineering method to effectively approach engineering challenges.
- Incorporate non-technical constraints into an engineering solution.
- Identify a range of technical and nontechnical skills within themselves which are valuable in ECE.

- Effectively communicate benefits and drawbacks of an engineering recommendation.
- Develop and maintain a constructive research journal.
- Implement an ECE project using an Arduino and circuit board.

Office Hours: By appointment only, so please email me at akhil.penninti@colostate.edu

Grading Policy: Assignments throughout the course are allotted a certain number of points which reflect the amount of work expected for each element. The total number of available points is 200 with the breakdown being provided below. After determining the total number of points accumulated, grades will be assigned in the standard +/- manner.

Project Name	Project Breakdown	Details
Formative Assessment 1	Discussion (5pts) & Classroom Activity (5pts)	This is designed to create an ideal & Formative Assessment strategies to identify learning patterns of all the students & creating engaging experience for students during classroom participation.
Wind Farm Theoretical/Technical Project (Phase 1)	Subsystem Report + Presentation (20pts+10pts)	Group project to provide technical material to supplement a project bid Everyone should be able to demonstrate their wind turbine technical report through a short presentation for about 3 minutes. (All the necessary/supplementary materials will be provided to everyone.)
	Workshop Participation (15pts)	Everyone will be expected to participate in a workshop hosted by the ECE Department in affiliation with the ECEGSA (Electrical & Computer Engineering Graduate Students Association).
	Quiz (20 pts)	Based on 1,2,3,4 lectures.

Arduino Uno Project	Project Proposal (20pts)	Brief group report describing your desired project using an Arduino and basic circuit components. (Arduino Uno Boards will be provided to all the students). You will be expected to come up with a project proposal template for your Arduino Uno experiment. (All the necessary sources needed to fulfill your project requirements will be provided).
	Final Report + Presentation (30pts + 15pts)	The final reports should summarize the methodologies applied in the project by the team/individual students.
		Everyone should be able to demonstrate their project through a short presentation for about 3-5 minutes.
	Demonstration (25pts)	Show off what you have accomplished.
Miscellaneous	Class Participation (10pts)	2pts will be deducted for each week lacking participation unless special accommodations are requested.
	Post-class survey (15pts)	Complete survey via Canvas
	Attendance (10pts)	Active presence and participation is required. Exceptions will surely be made, but on a case by case basis following an email with valid reasoning.

Academic Integrity: This course will adhere to the CSU Academic Integrity Policy as found in the General Catalog, Section 1.6, as well as the Student Conduct Code. If it is discovered you have submitted work that you do not fully understand or which represents the work of another student or external source, that is justification for failing the assignment, failing the course, and/or facing disciplinary action by the university. At a minimum, violations

will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

Classroom Expectations: I will do my best to support and guide your academic endeavors during the semester but ultimately, you are expected to take responsibility for your learning. Regular communication is crucial during this journey and that goes both ways. This classroom is a safe space where your presence is valued both in the classroom and online as necessary. You are expected to actively participate in all course discussions and assignments. During this class, you will be working regularly with other engineers - from classmates to upperclassmen and working professionals. You may encounter different perspectives or conflicting approaches. These are important learning opportunities that lead to more robust solutions. All opinions are important. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. If you have any concerns or constructive feedback, please email me.

Special Accommodations: We are committed to creating a safe, fair, and inclusive learning environment. If you are experiencing difficult situations that are affecting, or could potentially affect, your academic success, please contact Student Disability Center as soon as possible (<https://disabilitycenter.colostate.edu/> (Links to an external site.)), Tilt Building Room 121, (970) 491-6385. Difficult situations can include issues such as medical, mental health, personal or family crisis, illness, or injury. If students request extensions or considerations due to difficult situations, I typically require documentation from SCM. In addition, I urge students to contact me in advance of deadlines about such issues. Late work will not be accepted without prior agreement.

Statement of Inclusivity: It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and nonvisible differences. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups.