Second Year ECE Design & Communication Courses

In response to student experience and stakeholder feedback, ECE undergraduate students will now have more options when selecting their second-year design and communication course. While both courses will centre on engineering design, oral and written communication, and teamwork — important skills for a future engineering career — one course (ECE297) will tackle design within software engineering while the other will focus on hardware systems (ECE295).

Option 1: ECE297 “Software Design and Communication”

Software is pervasive and enabling. From financial systems to healthcare, voice recognition to web search engines, software is embedded in most aspects of our modern lives. This course involves designing and completing a large software project in a team, and communicating effectively with both technical supervisors and client-facing business managers. The course focuses on practical skills in all these areas — design, software development, oral and written communication, project management and teamwork — as these skills are essential to having a successful engineering career.

In the current project, students create programs that interactively visualize the streets and landscape of any city in the world and optimize tasks within these cities such as finding courier delivery routes to minimize travel time. Students gain experience in multiple aspects of software: using modern tools like revision control and unit testing frameworks, processing large amounts of data efficiently, designing a graphical user interface, and solving computationally complex optimization problems. The evaluation is based on the quality of your software design, the calibre of your oral and written communication, and your project management.

Option 2: ECE295 “Hardware Design and Communication”

Electronic systems power our modern world — everything from your smartphone to your electric car. This course will connect students to the latest in the hardware technologies that underpin society through the design and completion of a substantial electronics project. Students will have access to state-of-the-art tools in a new Open-Access Laboratory for Experiential Learning in the Myhal Centre for Engineering Innovation and Entrepreneurship, as they design, build and test a fully functional electronic system.

By the end of this course, students will be able to: work in a team environment in developing a complex hardware project; demonstrate proficiency using computer aided design (CAD) and electronic design automation (EDA) techniques for hardware development; demonstrate ability to solder components, familiarity with surface-mount technology; confidently use laboratory instruments and apply them for testing circuits and systems; assemble instruments and controlling software for the purpose of automated hardware testing (test automation); and demonstrate confidence preparing oral presentations and written documents on technical engineering hardware design. The evaluation is based on the results of your hardware design, the calibre of your oral and written communication, and your project management.
FAQs

Which course will I be enrolled in?
Students will be automatically enrolled into the course associated with the discipline they originally entered into the Department in, but students can submit a change request up until the last day of Fall Term classes in second year.

Can I take both?
No. Students must take either ECE295 or ECE297.

I’m interested in software, should I avoid ECE295?
No, this is an excellent opportunity for students to get hands-on experience with hardware, without committing to a full-year course. Software engineers find it lucrative to better understand the inner workings of hardware. Moreover, hardware experience can be a strong distinguishing factor for a software engineer in a competitive job market.

If I pick the software course does this mean I will be locked into Computer Engineering courses going forward?
Students are not locked into the Electrical Engineering or Computer Engineering stream based on their selection of ECE295 or ECE297. The design and communication course they choose in second year has no bearing on the courses they can choose going forward. This provides students with an excellent opportunity to either hone their existing skills and interest in an area or to explore an area they might not yet have experience in and work with a team to learn new skills and execute a project that they can speak about in PEY Co-op interviews or on their CV.