

ECE 111 – Introduction to ECE: Tools

Catalog Description: Introduction to electrical and computer engineering professional practice. This course covers the foundations of engineering problem solving and other skills necessary for success. Students will be taught engineering practice through hands-on approaches. Recommended for electrical and computer engineering majors, and for those interested in engineering as a profession.

Credits: 3 **Terms Offered:** Fall

Prerequisites: MTH 111 is recommended (concurrent okay if necessary)

Courses that require this as a prerequisite: Recommended for ECE 112

Structure: Two 50-minute lectures per week, one 110-minute laboratory per week

Instructors: M. Shuman

Course Content:

- History of engineering (constraints on design)
- Expertise and application (areas of concentration and roles in engineering)
- Problem solving (engineering method)
- Continuous learning and creative thought (learning to be a more effective student)
- Nature and purpose of design (platform for learning)
- Teamwork skills and professional practice
- Nature of engineering ethics (engineer's obligation and ethical decision-making)
- Current, voltage, power, Kirchhoff's current and voltage laws, voltage and current division.
- Basic hands-on electronics
- Basic embedded systems programming (C language)

Measurable Student Learning Outcomes:

At the completion of the course, students will be able to...

1. **Apply** basic engineering methodology to solve problems (ABET Outcomes: A, k)
2. **Design and implement** a solution to a student-defined problem in the context of engineering design (ABET Outcomes: a, B, C, e, k)
3. **Explain** the history of electrical and computer engineering, and other engineering majors, as it relates to the societal impacts of innovations and design choices (ABET Outcomes: d, f, H, I, J)
4. **Utilize** a microcontroller to implement an engineering design (ABET Outcomes: a, C, e, K, m)
5. **Identify** at least one company that hires engineers in the student's specific sub-discipline of interest (ABET Outcomes: f, h, j)
6. **Identify** tools and techniques that will assist them to succeed better in their engineering education (ABET Outcomes: a, i, K)

Learning Resources:

- Laboratory: <http://eecs.oregonstate.edu/education/classes/ece111/>
- Laboratory equipment kit, cost included in course fee.

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct, i.e., cheating policies

<http://oregonstate.edu/admin/stucon/achon.htm>

Revised: 9/1/07

Revision to Learning Resources & Students with Disabilities: 2/15/11

Revised: 6/30/14