ECE 112 – Introduction to ECE: Concepts

Catalog Description: Basic Electrical and Computer Engineering concepts, problem solving and hands-on laboratory project. Topics include electronic circuit and device models, digital logic, circuit analysis, and simulation tools.

Credits: 3 Terms Offered: Winter

Prerequisites: MTH 111 or MTH 112 or (MTH 251 or MTH 251H) or Math Placement Test score of 24 or higher

Courses that require this as a prerequisite: ECE 272

Structure: Two 50 minute lectures and one three hour lab per week

Instructors: R. Traylor

Course Content:
- System design concepts
- Basic definitions of current and voltage
- Circuit elements and schematics
- Modeling circuits with voltage and current sources
- Applying Kirchoff's voltage and current laws
- Analyzing basic circuits with SPICE
- Analyzing basic transistor and diode circuits
- Understanding the operation of logic gates
- Simplifying Boolean equations

Measurable Student Learning Outcomes:
At the completion of the course, students will be able to…
1. Solve for values of current, voltage and power in simple direct current circuits using Kirchoff's Voltage and Current laws (ABET Outcomes: a, e, m)
2. Analyze basic direct current circuits with the circuit simulator SPICE (ABET Outcomes: a, e, k)
3. Construct a working programmable robot from a kit using basic electronic tools including soldering irons and multimeters (ABET Outcomes: k, o, q)
4. Determine the regions of operation for a simple bipolar transistor circuit (ABET Outcomes: a, e, m)
5. Correctly bias a simple one-transistor bipolar amplifier (ABET Outcomes: a, c, e)
6. Design simple digital circuits given a set of logic gates (ABET Outcomes: a, c, e)
7. Simplify Boolean equations of up to four variables (ABET Outcomes: a, m, n)
Learning Resources:
- Instructor notes, linked from online syllabus
- Laboratory notes and manuals:
  http://eecs.oregonstate.edu/education/resources/courses/ece112
- TekBot kit, cost included in course fee
- Took kit (available for purchase if you do not have these already)
- Electrical Engineering Honor Society (HKN), and Freshman Mentor tutoring help

Evaluation of Student Learning:
- Test 1 20%
- Test 2 20%
- Homework 10%
- Laboratory 25%
- Final Exam 25%

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

Revised: 1/17/11