

**UNIVERSITY OF MASSACHUSETTS  
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

**ECE 361**

**Fundamentals of Electrical Engineering (3 credits)**

**FALL 2017**

**Class Hours:** MWF 11:15 AM – 12:05 PM from 9/6/17 to 12/11/17

**Location:** Thompson 106

**Instructor:** David McLaughlin, Professor of ECE

**Office:** 110C Marston **Phone:** 413.896.8618 **email:** [dmclaugh@umass.edu](mailto:dmclaugh@umass.edu)

**Office Hours:** M, F 1:15 PM – 2:15 PM and by appointment

**Drop-in Lab Clinic:** MIE Innovation Lab; staffing schedule to be posted.

**Course Web Page:** <https://moodle.umass.edu> (login using your UMass OIT ID)

**Description:** This course is intended to provide non-ECE students with the relevant electrical and electronic engineering concepts and device knowledge to effectively work in multi-disciplined design, development, and manufacturing teams.

**Objectives:** Students completing the course will have a basic understanding of the following topics:

1. Key electrical circuit concepts: voltage, current, power, energy
2. Circuit analysis techniques: KVL, KCL, Ohm's law, node voltage analysis, Thevenin equivalence
3. Op Amp circuits and applications
4. Diode and transistor circuits and applications
5. Digital logic circuits
6. Arduino microcontroller applications
7. Design, construction, and testing of electronic circuits and subsystems

**Textbook:** Allan R. Hambley, Electrical Engineering Principles and Applications, 6<sup>th</sup> Ed., Pearson. (you may also use the 5<sup>th</sup> or 7<sup>th</sup> editions)

**Exams:** There will be two exams given during the semester. No final exam.

**Homework:** Weekly/Bi-weekly homework will be assigned. Homework problems will be graded and returned. Owing to the size of the class, late homework will not be accepted.

**Lab projects:** Students work in teams of two (2) on asynchronous lab experiments using a parts-kit that will be provided. Bi-weekly lab experiments will be assigned, culminating in two substantial term projects.

**Grading:**

2 midterms at 15% each	30%
Homework assignments	10%
Lab assignments	25%
Term projects	35% (1 <sup>st</sup> demo 10%; 2 <sup>nd</sup> demo 25%)

**Policies:**

*Accommodation Statement.* The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations

to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements.

*Academic Honesty Statement.* No form of cheating, plagiarism, fabrication, or facilitating dishonesty can be condoned in the University community. Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst. Collaborative efforts are encouraged on homework assignments, but the work you submit must be your own. Collaborative efforts are required on lab assignments in this course, and you will be instructed to submit lab reports on behalf of your lab team, with the expectation that each team member contributed an equal amount of effort. Exams represent an individual's work and require that you have personally gained the knowledge that you need from the homework and labs to succeed in the exams.

Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has committed an act of academic dishonesty. Any person who has reason to believe that a student has committed academic dishonesty should bring such information to the attention of the course instructor as soon as possible. Students are expected to be familiar with the academic honesty policy of the university, which can be obtained from the following site:  
[http://www.umass.edu/dean\\_students/codeofconduct/acadhonesty/](http://www.umass.edu/dean_students/codeofconduct/acadhonesty/)

*Names and Pronouns Statement.* Everyone has the right to be addressed and referred to by the name and pronouns that correspond to their gender identity, including the use of non-binary pronouns. Class rosters have a student's legal first name, unless they have entered a preferred/chosen first name in SPIRE. Pronouns are not included on rosters, so students should feel free to let the instructor know the pronouns that they use for themselves. A useful practice in smaller classes is to give everyone the opportunity to share their names and the pronouns that they use for themselves during the first class meeting. In a class as large as this one, this is not practical, but it is still important that a student's chosen name and pronouns are to be respected at all times.

*Diversity Statement.* The diversity of the participants in this course is a valuable source of ideas, problem solving strategies, and engineering creativity. If you feel that your contribution is not being valued for any reason, please speak with one of the instructors privately. If you wish to communicate anonymously, you may do so in writing or speak with Dr. Paula Rees, Director of Engineering Diversity Programs (rees@umass.edu, 413-545-6324, Marston 128). We are all members of an academic community where it is our shared responsibility to cultivate a climate where all students/individuals are valued and where both they and their ideas are treated with respect. The College of Engineering Diversity Mission Statement can be found at:  
<https://engineering.umass.edu/about-us/diversity-and-inclusion>