

ENGR 201 – Electrical Fundamentals I

Catalog Description: Analysis of linear circuits. Circuit laws and theorems. DC response of circuits. Operational amplifier characteristics and applications.

Credits: 3 **Terms Offered:** Fall, Winter, Spring

Prerequisites: (MTH 251 or MTH 251H) and (MTH 252 or MTH 252H)

Courses that require this as a prerequisite: ENGR 202, ECE 272

Structure: Two 50-minute lectures and one 2-hour lab per week

Instructors: J. Eggerton

Course Content:

- Basic circuit concepts and laws
- Methods of analysis (e.g., nodal, mesh)
- Circuit theorems
- Operational amplifiers
- Capacitors and inductors
- First-Order circuits

Measurable Student Learning Outcomes:

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

1. **State and utilize** the current-voltage relationships of resistors, capacitors, inductors, and independent and dependent current and voltage sources in solving dc circuits and calculating power and energy (ABET outcomes: A, e, m)
2. **State** Ohm's and Kirchoff's laws and **apply** these to voltage and current division, series/parallel and Wye-Delta transformations, mesh analysis, and nodal analysis for resistive circuits (ABET outcomes: A, e, m)
3. **State** Superposition, Thevenin's and Norton's theorems and **apply** these for the analysis of dc circuits (ABET outcomes: A, e, m)
4. **Analyze** circuits made up of ideal opamps and resistors (ABET outcomes: A, e, m)
5. **Analyze** first-order circuits, which contain resistors, capacitors, or inductors (ABET outcomes: A, e, m)
6. **Perform** laboratory experiments utilizing the above concepts (ABET outcomes: A, B, e, Q)

Learning Resources:

- *Fundamentals of Electric Circuits*, 3rd Edition, C. K. Alexander and M. N. O. Sadiku, McGraw-Hill, 2007 (required)
- Laboratory Notes and Manuals: <http://eecs.oregonstate.edu/education/classes/engr201>

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD 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 SSD should contact SSD immediately at 737-4098.

Link to Statement of Expectations for Student Conduct:

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

Revised: 5/23/07