

ENGR 202 – Electrical Fundamentals II

Catalog Description: Sinusoidal steady-state analysis and phasors. Application of circuit analysis techniques to solve single-phase and three-phase circuits including power, mutual inductance, transformers and passive filters.

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

Prerequisites: ENGR 201

Courses that require this as a prerequisite: ENGR 203

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

Instructors: A. von Jouanne (primary), A. Jander (secondary)

Course Content:

- Sinusoidal AC circuits and phasors
- AC power analysis (single-phase)
- Three-phase AC circuits
- Magnetically coupled circuits and transformers
- Passive filters

Measurable Student Learning Outcomes:

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

1. **Apply** circuit analysis techniques to single-phase AC circuits using phasors to calculate real power, reactive power and apparent power (ABET outcomes: A, e, K, m, n)
2. **Apply** circuit analysis techniques to three-phase circuits to calculate line- and phase-voltages and currents, and real, reactive and apparent power (ABET outcomes: A, e, K, m, n)
3. **Apply** the principles of frequency dependence of inductive and capacitive components for the analysis of passive filters (ABET outcomes: A, C, K, m)
4. **Develop** a system beginning with the formal specification, and including implementation and test (ABET outcomes: A, B, E, h)
5. **Work effectively** in professional multidisciplinary teams utilizing appropriate communication skills (ABET outcomes: D, G)

Learning Resources:

- *Fundamentals of Electric Circuits*, 5th Edition, C. K. Alexander and M. N. O. Sadiku, McGraw-Hill, 2013 (required)
- Course Notes - copies available at OSU Bookstore
- Laboratory Notes and Manuals: <http://eecs.oregonstate.edu/education/courses/engr202>

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: 5/14/07

Revised Learning Resources: 6/30/14