

## ENGR 203 – Electrical Fundamentals III

**Catalog Description:** Laplace transforms, Fourier series, Bode plots, and their application to circuit analysis.

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

**Prerequisites:** ENGR 201, ENGR 202, MTH 256

**Courses that require this as a prerequisite:** ECE 323, ECE 351, ECE 391

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

**Instructors:** U. Moon, K. Mayaram

### Course Content:

- Review of Laplace transforms
- Application of Laplace transform to circuit analysis
- The transfer function
- Time convolution
- Introduction to Fourier series
- Bode plots

### Measurable Student Learning Outcomes:

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

1. **Apply** the Laplace Transform to functions and operations, and **determine** the inverse Laplace Transform (ABET Outcomes: A, k, M, N)
2. **Apply** the Laplace Transform in circuit analysis [in frequency and time domain], and **utilize** transfer functions. (ABET Outcomes: A, c, k, M)
3. **Apply** Bode analysis (ABET Outcomes: A, c, e, k)
4. **Utilize** the trigonometric form of the Fourier Series (ABET Outcomes: A, k, M, N)

### Learning Resources:

- *Fundamentals of Electric Circuits*, 5th Edition, C. K. Alexander and M. N. O. Sadiku, McGraw-Hill, 2013 (required)

### 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: 5/21/07

Revised Description, Content, CLOs, Students with Disabilities: 12/14/10

Revised CLO Outcome Mappings and Learning Resources: 9/15/14