

Common Course Outline for: ENGR 2011 Linear Systems and Circuits**A. Course Description**

1. Number of credits: 4
2. Lecture hours per week: 4
Lab hours per week: 0
3. Prerequisites: ENGR 2001 (C or better), PHYS 1122 (C or better), MATH 2520 (C or better), and ENGC 1101 (C or better).
4. Co-requisites: None
5. MnTC Goals: None

Elements of signals and of linear system analysis. Sinusoidal steady state analysis, Laplace transforms, Fourier transforms, frequency selective circuits, active filter circuits, single stage transistor amplifier, frequency response of transistor amplifiers.

B. Date last revised: April 2017**C. Outline of Major Content Areas:** Steady-state circuit analysis, Fourier transforms in circuit analysis, Laplace transforms in circuit analysis, filters, two-port circuits, frequency response of transistor amplifiers.**D. Course Learning Outcomes**

Upon successful completion of the course, the student will be able to:

1. Analyze sinusoidal steady-state circuits.
2. Calculate sinusoidal, steady-state power in circuits.
3. Use Fourier transforms in circuit analysis.
4. Use Laplace transforms in circuit analysis.
5. Analyze frequency-selective circuits.
6. Analyze active-filter circuits.
7. Analyze the frequency response of circuits containing transistors.
8. Use computer-based simulations of frequency-selective circuits.

E. Methods for Assessing Student Learning: Evaluation methods are at the discretion of the instructor and may include exams, quizzes, homework, and projects.**F. Special Information:**

Relationship to ABET Accreditation Criteria: To assist our transfer partner engineering programs in their ABET accreditation evaluations, this course teaches skills that help students achieve the following ABET outcomes:

- (a) An ability to apply knowledge of mathematics, science, and engineering.
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data.
- (e) An ability to identify, formulate, and solve engineering problems.
- (g) An ability to communicate effectively.
- (i) A recognition of the need for, and an ability to engage in, life-long learning.
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.