

Course discipline/number/title: ENGR 2214: Linear Circuit Analysis II

A. CATALOG DESCRIPTION

1. Credits: 4
2. Hours/Week: 3 Lecture, 2 lab
3. Prerequisites (Course discipline/number): ENGR 2213, MATH 2238
4. Other requirements: None
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: This course is a study of linear circuits. The more rigorous methods for the solution and ultimate understanding of electric circuits are studied, including the methods of Laplace transforms. Complex circuits involving filters are studied. Operating characteristics of semiconductor devices are explained. The accompanying integrated laboratory allows students to study, measure, and troubleshoot these circuits.

C. DATE LAST REVISED (Month, year): February, 2019

D. OUTLINE OF MAJOR CONTENT AREAS:

1. Sinusoidal steady-state power calculations
2. Laplace transforms
 - a) Mathematical basis
 - b) Use in circuit analysis
3. The transfer function
4. Frequency selective circuits
5. Active filter circuits
6. Transistors
 - a) Transistor theory
 - b) Device characteristics of BJTs and FETs
 - c) Analysis of BJT and FET amplifiers
7. Electronic measurement techniques
 - a) Multimeter
 - b) Oscilloscope
 - c) Function generator

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Use more advanced methods, including Laplace transforms, to analyze an electrical circuit for voltage and current responses when the circuit is stimulated by a forcing function.
2. Analyze sinusoidal steady-state circuits and calculate power.
3. Analyze frequency-selective circuits.
4. Analyze active-filter circuits.
5. Design transistor amplifiers.

F. LEARNING OUTCOMES (MNTC): NA

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:

1. Objective exams
2. Lab exams
3. Research papers
4. Quizzes
5. Written homework
6. Online homework
7. Small group projects
8. Oral presentations
9. Laboratory reports



- H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s):
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

- I. SPECIAL INFORMATION (if any):
 - 1. Scientific calculator or equivalent is required.