



EGR 231: Electrical Engineering I

Basic electrical theory and techniques of electrical circuit analysis for engineering transfer students. Topics include resistive circuits, independent and dependent sources, analysis methods, network theories, energy-storage elements, RC and RL circuits, second order circuits, sinusoidal excitation and phasers. Prerequisite: MTH 215 with a C- or better. Co-requisite: EGR 233. Recommendation: Completion of EGR 131 and 132. Three lecture hours and one recitation hour per week. Instructional Support Fee applies.

Course Student Learning Outcomes

1. Apply formulas for current, charge voltage, energy and power in the solution of applied problems including the power balance equation. 2. Apply Kirchoff's laws and other axioms and definitions to determine the voltage and currents in simple circuits and to analyze the general single-loop or series circuits. 3. Use derived equivalent components to reduce more complicated networks to equivalent series or parallel circuits. 4. Apply node-voltage analysis & mesh-current analysis approaches to network analysis. 5. Apply the properties of linearity and time invariance associated with input-output equations in simplifying network analysis. 6. Apply characteristics of operational amplifiers (OP AMP) and the concept of negative feedback. 7. Describe signal models and signal characterizations as applied to electrical engineering. 8. Apply differential equation definitions to solve the response of source-free circuits. 9. Analyze circuits which include independent sources (drivers) and to solve differential equations describing the circuits.

Credits: 3

Program: Engineering

Recommended:

Completion of EGR 131 and 132.