

Department of Electrical and Computer Engineering
520.213 Circuits

2004-05 Catalog: An introductory course on electric circuits covers analysis techniques in time and frequency domains, transient and steady state response, and operational amplifiers. (4 credit hours/Required)

Prerequisite(s): 110.108-109 Calculus I, II

Textbook: J. David Irwin, "A Brief Introduction to Circuit Analysis," Wiley, 2003

Course Objectives: To provide students with a variety of circuit analysis and design techniques, and an understanding of how basic circuits behave

- Topics Covered:
1. Circuit variables: voltage, current, power
 2. Circuit elements: resistors, sources, switches
 3. Resistive circuits: Kirchhoff's laws, voltage and current dividers
 4. Nodal analysis
 5. Circuit theorems: superposition, source transformations, Thevenin and Norton equivalents, maximum power transfer
 6. Operational amplifiers
 7. Capacitors and inductors
 8. RL and RC circuit response
 9. Response of second order circuits
 10. Sinusoidal steady-state analysis using phasors and impedance
 11. Sinusoidal steady-state power

Class Schedule: Three – one hour classes/week
One – one hour recitation section/week

Contribution of Course to Meeting the Professional Component (credit hours):

| Engineering Science | Engineering Science and Design |
|----------------------------|---------------------------------------|
| 4 | |

Relationship of Course to Program Educational Outcomes (✓ those that apply):

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| x | Apply mathematics, probability and statistics, basic science, and computer science |
| | Design and conduct experiments, analyze and interpret data |
| x | Identify, formulate and solve electrical engineering problems |
| | Use technical skills and modern engineering tools to design to meet needs |
| | Communicate effectively and work on multidisciplinary teams |
| x | Contemporary issues, ethical responsibilities, environmental, health, safety issues |
| | Engage in life-long learning |

Prepared June 1, 2005 by: Howard Weinert