

School of Engineering and Computer Science
MECH 304: Introduction to Electronic Circuits

Catalog Data:		304 Introduction to Electronic Circuits 3 Course Prerequisite: MATH 315 or concurrent enrollment; PHYSICS 202. Introduction to DC and AC circuits, analog electronic components, digital circuits, and engineering measurements. Typically offered Fall.	
Class Schedule:		Three 50-min lecture sessions per week, for one semester	
Laboratory Schedule:		None	
Prerequisites by Course:		Math 315 or c//; Physics 202	
Prerequisites by Topic:		<ol style="list-style-type: none"> 1. Calculus, linear algebra, differential equations 2. Understanding of voltage, current, charge concepts 3. Basic understanding of computer programming 	
Textbook:		James A. Svoboda, <i>Introduction to Electric Circuits</i> , Wiley, 9 th edition, 2014	
Course Coordinator:		Dr. Jong-Hoon Kim	
Course Objectives:		<ol style="list-style-type: none"> 1. Demonstrate basic understanding of circuit elements and electrical circuits. 2. Become familiar with the basic circuit analysis theorem. 3. Apply the basic circuit analysis methods to solve DC, AC, and simple transient circuit problems. 	
Topics Covered:		<ol style="list-style-type: none"> 1. Basic concept; Circuit variables and units 2. Introduction to circuit theory, Ohm's law, Kirchhoff's law 3. Node-voltage and loop-current analysis techniques 4. Capacitance and inductance 5. RC, RL, RLC circuits 6. Transient and steady-state response analysis 7. Diodes and transistors 8. Operational amplifiers 9. Basic digital electronic circuits, logic states, gates 	
Lab Experiments and Activities:		None	
Course Outcomes:		Students will be able to:	
	Assessed for Student Outcomes	<ol style="list-style-type: none"> 1-d. Apply appropriate analysis methods to different types of circuits containing multiple electric components. 7-a. Use multiple resources to study an electrical circuit not taught in class. 7-b. Use learning strategies based on credible sources to validate experimental circuit responses. 7-c. Apply software tools to analyze new electrical circuits designed by students. 	
	Other	<ol style="list-style-type: none"> 1-a. Demonstrate basic understanding of the physics of basic electronic devices and various transducers. 6-b. Learn how to use software tools to simulate electrical circuits. 	
Required or Elective Course:		Required	
Relationship of Course to Program:		Meets: Educational Objectives <u>1, 4</u> Student Outcomes <u>1, 6, 7</u>	
Prepared by:		Dr. Jong-Hoon Kim	Date: April 5, 2018 (4/9/18 mb)
Approved by USC:		4/9/2018	

