

## ELEC2420 Basic Electronics

<b>Course Code:</b> ELEC2420	<b>Course Title:</b> Basic Electronics
<b>Terms Offered (Credits):</b> Fall (3 credits)	<b>Pre/Co-Requisites:</b> Pre-requisites: MATH1014 / MATH1020 / MATH1024 Co-requisites: PHYS1112 / PHYS1152
<b>Course Structure:</b> Lecture – 1 days per week, 3 hours; Lab – 1 day per week, 2 hours	
<b>Textbook/Required Material:</b> D. Kerns, Jr. and J. Irwin, Essentials of Electrical and Computer Engineering, Pearson, 2012.	
<b>Course Description:</b> 1. Required course for BEng in Mechanical Engineering 2. Basic electronic concepts and components; DC, AC and transient analyses of analog electronic circuits; operational amplifiers and circuits; digital electronics includes binary number systems, Boolean algebra, and combinational and sequential logic.	
<b>Course Topics:</b> (1) Basic electronic components such as resistors, capacitors and inductors; (2) basic DC analysis such as KCL, KVL, and equivalent circuits; (3) transient analysis of first order circuits; (4) AC analysis using phasors for analog electronic circuits; (5) operational amplifiers and circuits; (6) binary number systems; (7) fundamentals of Boolean algebra; (8) combinational and sequential logic.	
<b>Course Objectives:</b>	● Basic training for MECH students in analog and digital electronics to partially fulfill Program Objectives.
<b>Course Outcomes:</b>	A. Recognize basic concepts of electronic components and circuits; B. Analyze DC, AC and transient behaviors of electronic circuits; C. Recognize basic logic functions and logic gates; D. Analyze and design combinational and sequential logic circuits; E. Employ electronic instruments to perform experiments.
<b>Assessment Method:</b>	<b>Learning activities:</b> <u>Lectures:</u> Introduce key concepts and theories, and teach analysis skills with worked examples.  <u>Labs and Lab briefings:</u> 1. Learn to use electronic instruments; 2. Learn to analyze, design and debug analog and digital circuits.  <u>Assessment:</u> ♦ Homework sets, prop-up quizzes, midterm and final examinations ♦ Lab performance and lab reports