

Course name	ECE 20200 Linear Circuit Analysis II
Credit and contact hours	(3 cr.) Class 3
Course coordinator's name	Seemein Shayesteh
Textbook	C. K. Alexander and M. N. O. Sadiku, <i>Fundamentals of Electric Circuits</i> , 6th ed., McGraw-Hill, 2017. ISBN: 9780078028229
Course information	<p>ECE 20200 Linear Circuit Analysis II (3 cr.) P: ECE 20100, MATH 26100, and PHYS 25100. P: or C: MATH 26600. Class 3. Continuation of ECE 20100. Use of computer-aided design programs. Complex frequency plane, resonance, scaling, and coupled circuits. Two-port network parameters. Laplace transform methods. Use of general loop and nodal equations, matrix formulations.</p> <p>Prerequisites/ Co-Requisite P: ECE 20100. C: MATH 26600</p> <p>Required, Elective, or Selected Elective: EE Required, CE Required</p>
Goals for the course	<p>Upon successful completion of the course, students should be able to</p> <ol style="list-style-type: none"> 1. Compute impedances and admittances of components and circuits. [1,6] 2. Compute responses of linear circuits with and without initial conditions via one-sided Laplace transform techniques. [1,6] 3. Compute responses to linear circuits using transfer function and convolution techniques. [1,6] 4. Analyze and compute responses of linear circuits containing mutually coupled inductors and ideal transformers in the s-domain. [1,6] 5. Analyze basic two port circuits using the various types of two port parameters and be able to construct such parameters from a given circuit. [1,6] 6. Analyze and design basic LP, BP, HP and resonant circuits in the s-domain. [1,6]
List of topics to be covered	<ol style="list-style-type: none"> 1. Magnetic Coupling, mutual inductance (2 classes) 2. Ideal transformers, linear transformers (2 classes) 3. Two-port parameters (2 classes) 4. Passive frequency selective circuits: Band pass, low pass, high pass filters (3 classes) 5. Step function, delta function, and Laplace transforms (4 classes) 6. Complex frequency, natural frequency, poles and zeros (2 classes)

	<ul style="list-style-type: none">7. Use of PSpice with schematic capture for steady-state and transient analysis (2 classes)8. Use of Matlab for circuit analysis (2 classes)9. Circuit analysis with s-domain (2 classes)10. Transfer functions (1 class)11. Natural response, convolution (3 classes)12. Exams and Quizzes (5 classes and final exam period)
Syllabi approved by	Seemein Shayesteh
Date of approval	07/26/2019