

ECE 2040
 Course Outline
 Fall Semester 2000
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No.	Date	Topic	Notes	Text
1	8/21	Introduction; Voltages and currents; Ideal resistors, inductors, and capacitors	1.1, 1.2	1.3—1.5, 2.5, 7.3, 7.6
2	8/23	Independent sources; Kirchoff's current law	1.3, 1.4.1	2.6, 3.3
3	8/25	Kirchoff's voltage law; solution methodology; elements in series and parallel	1.4.2, 1.4.3	
4	8/28	Finding equilibrium solutions; dependent sources;	1.4.4, 1.5	2.8
5	8/30	Using Matlab to solve linear equations	Appendix A	
6.	9/1	Basic networks, writing sufficient KCL and KVL equations; including dependent sources	2.1.1, 2.1.2, 2.1.3	
	9/4	Holiday (no class)		
7.	9/6	Sufficient sets of equations; source superposition	2.1.4, 2.1.5	5.4
8.	9/8	Node method	2.2	4.3, 4.4, 4.5
9.	9/11	Mesh Method	2.3	4.6, 4.7, 4.7
	9/13	Quiz #1 (Lectures 1-6)		
10.	9/15	Two-terminal networks; determining v-I relations	3.1	
11.	9/18	Resistors in series and parallel	3.2.1, 3.2.2	3.4, 3.5, 3.6, 3.7
12.	9/20	Thevenin and Norton equivalent circuits	3.2.3, 3.2.4, 3.2.5	5.5, 5.6
13.	9/22	Source transformations; operational amplifiers	4.1, 4.2	3.3, 6.3, 6.4, 6.5
14.	9/25	Examples of operational amplifiers	4.3	6.6

15.	9/27	Summing amplifiers Introduction to Laplace transforms	5.3, 5.4	14.3
16.	9/29	Computing inverse Laplace transforms Partial fraction expansions	5.5.1	14.5, 14.12
17.	10/2	Inverse Laplace transforms with singularity functions and repeated roots	5.5.2, 5.5.3	14.4
18.	10/4	First-order reactive circuits; differential equations and initial conditions	6.1	8.3, 8.7
	10/6	Quiz #2 (Lectures 7-14)		
19.	10/9	Circuits in the Laplace domain; initial and final value theorems	6.2	14.6, 14.7
20.	10/11	Inspection methods for first-order circuits with step inputs	6.3	8.3, 8.6
21.	10/13	Impedances and admittances; Thevenin and Norton equivalents in the Laplace domain	6.4	14.8, 14.9
22.	10/16	Node and mesh methods in the Laplace domain; input/output view of circuits	6.5, 7.1	
23.	10/18	System functions; poles and zeros; forced and transient responses	7.1	14.11
24.	10/20	Linearity and time-invariance; impulse responses of circuits	7.2, 7.3	14.10
	10/23	Holiday (no class)		
25.	10/25	Review of sinusoids; sinusoidal steady state; example of sinusoidal response	8.1	10.3, 10.4 10.5
26.	10/27	Responses to real sinusoids; relation to complex exponential time function response	8.2.1	10.6, 10.7 10.8
27.	10/30	Circuit analysis in the complex amplitude domain	8.2.2	10.9
28.	11/1	Node and mesh equations with complex amplitudes	8.3.3, 8.3.4	10.10
	11/3	Quiz #3 (Lectures 15-24)		
29.	11/6	System functions and frequency responses	9.2.2, 9.3	16.6

30.	11/8	Frequency responses of first-order circuits Bode plots	9.3.1, 9.4.1	13.4
31.	11/10	Frequency responses of second-order circuits; Resonance; Q factor	9.3.1, 9.4.2	13.4
32.	11/13	Compound Bode plots	9.4.3	
33.	11/15	Frequency scaling; impedance scaling; filter transformations	10.	16.3, 16.4
34.	11/17	Classical approximations to ideal filter types; constructing filters with second-order sections	10.	16.5
35	11/20	Delta-wye transformations; two-port circuits		17.3, 17.4
36	11/22	Other devices: ideal transformers, semiconductor models		17.7, 11.10
	11/24	Holiday (no class)		
37.	11/27	Catch-up		
	11/29	Quiz #4 (Lectures 25-34)		
38.	12/1	Definitions of energy and power; power in the sinusoidal steady state.	12.1	1.6, 2.4 11.3
39.	12/4	Tellegen's theorem; conservation of power	12.2	
40.	12/6	Maximum power transfer; impedance matching	12.4	5.7, 11.8
41.	12/8	Course summary; key points to remember		
	12/13	Final Exam (Period 7)	inclusive	