

ECE212 Topical Outline							
Week	Part	Lecture	Reading	Description	Labs		
1	1. Linear Resistive Circuits	1	2-1, 2-2	Element constraints, connection constraints	No Labs		
			2-3	Combined Constraints, KCL and KVL			
			3-1	Nodal Analysis			
2		2	3-1	Nodal Analysis by Inspection	Lab 0 - Introduction to simulation tools.		
			3-2	Mesh Analysis, Solving by Inspection			
		3	2-4, 2-5	The <i>i-v</i> Characteristic, equivalent circuits			
			3-3	Linearity, Superposition			
		4	3-4, 3-5	Thevenin and Norton Equivalent Circuits			
			4-1, 4-2	Circuit Analysis with Controlled Sources			
3		2. Op Amps	5	4-3		Operational Amplifier: Real and Ideal	
			6	4-4		Operational Amplifier - Analysis Principles	
			7	4-4, 4-5		Solving circuits with OP AMPS	
4		3. Linear Dynamic Circuits	8	6-1, 6-2		Capacitors and Inductors	Lab 1 - Resistive Op. Amp circuits.
				6-3		Dynamic OP AMP Circuits	
	6-4			Series and Parallel Combinations			
	9		Notes	Review of Differential Equations			
	10		7-1	First-Order RC and RL Circuits			
			7-2, 7-3	Step Response			
			7-4	Exponential Input			
	5		11	7-5	Series RLC Circuit		
				7-7	Step Response		
				12	7-6	Parallel RLC Circuit	
Notes		Exponential and Sinusoidal Inputs					
6	4. Sinusoidal Steady State Analysis	13	8-1	Complex numbers, sinusoids and phasors	Lab 2 - First order circuits and analog solver.		
		—	—	Thanksgiving (Monday) - no class.			
		14	8-2	Circuit and element constraints, impedance			
			8-3	Basic circuit analysis with phasors			
		15	8-3, 8-4	Basic circuit phasor analysis, Thév./Norton			
			8-5, 8-6	Nodal/Mesh analysis, energy and power			
		7	16	15-1 – 15-3		Coupled inductors, the dot convention	
			17	15-4		The ideal transformer	
			18	15-5		Transformer circuits phasor domain analysis	
		8	19	16-1		Power in sinusoidal steady state	Lab 3 - Second order circuits.
20	16-2, 16-3			Complex Power, Power in Phasor Domain			
21	16-4			Power Flow, Power Factor Correction			
9	5. Frequency Domain Analysis	22	9-1 – 9-4	The Laplace transform	Lab 4 - Transformers and magnetically coupled circuits.		
		23	9-5, 10-1	Laplace circuit analysis, transformed circuits			
		24	10-2 – 10-5	Circuit analysis in the s-domain			
		—	—	Reading week - no classes.			
11	25	11-1, 11-2	Network Function, Transfer Function	Lab 4 - Transformers and magnetically coupled circuits.			
		26	11-3, 11-6		Impulse Response, Convolution		
		27	11-4, 11-5		Step Response, Sin. Steady-State Response		
12	28	12-1 – 12-3	Frequency Response, First-order Low-pass				
	29	12-3	First-order Low-pass and High-pass responses				
13	30	12-4	Bandpass and bandstop responses				
	31	12-5	The Frequency Response of RLC Circuits				
	32	12-6, 12-7	Bode Diagrams with both Poles and Zeros				
14	33	14-1, 14-2	Active Filters, 2nd order low/high pass filters		No Labs		
	34	14-3	2nd order bandpass and bandstop filters				
	35	—	Course review				