ENS203 CIRCUITS I Meriç Özcan Fall 2007

Mon	Tue	Wed	Thu	Fri	Sat	Sun

COURSE GOALS:
This course is the beginning of a long journey that leads to Electronics Engineering. An engineering that enables you to move into variety of different fields such as Electronics Design, Optics & Photonics, Microwaves, Quantum Electronics, Robotics, Biomedical Engineering, Signal Processing, Computer Design both Hardware and Software plus more.
Even you can go to a grad school to work on Particle Physics if you like...There is no other engineering that provides such a broad path after the bachelor's degree...

It is the aim of this class to teach you the basics of electronic circuit design. We start from component level, basic circuit analysis methods, introduce differential equations, then we will continue with transient analysis, steady-state analysis, power relations, resonance circuits, amplifier basics, operational amplifiers and finally some lectures on diodes and bipolar junction transistors. Labs are involved, at the end you are going to build a simple working radio!

Nobody claims this is trivial. However, if you study properly it is not rocket science either. If you study properly as I tell you, if you do not miss any class, if you solve homework problems, if you ask questions whenever you don't understand something, if you work hard in the lab, I claim, you will pass the course one way or another.

If you are planning to attend the class as a tourist however, I can recommend better places to visit.

Finall words... You will just see the tip of the iceberg with this class. Hopefully you will get infected and continue with Circuits II...

LECTURES: Group A: **Tue 10:40-12:30 Thu 10:40-11:30 MDBF G077**
OFFICE HRS: TBD
ASSISTANTS: TBD

TEXT BOOK: Electrical Engineering Principles & Applications, Allan R. Hambley, 4th Ed.

LAB HANDBOOK: Will be available at Canon printing office later.

GRADING POLICY: Midterm = 30 % Lab = 25 % Quizzes =5 % Final =40% HW = 0 to -10%

Cheating is not tolerated, do not expect any sympathy for the laziness. Seriousness and hard work is appreciated.

24 **September 24th**	25 **CHAPTER 1** 1.1, 1.2 Intro., current, voltage, power, energy definitions	26	27 **CHAPTER 1** 1.2—1.7 Kirchhoff's Voltage and Current Law, Circuit elements…	28	29 **PREPARE FOR THE LAB INTRO NEXT WEEK**	30

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Mon	Tue	Wed	Thu	Fri	Sat	Sun
1 **LAB INTRO**	2 **CHAPTER 2** 2.1—2.3 Resistive circuits, parallel and series networks…	3	4 **CHAPTER 2** 2.4—2.5 Node Voltage Analysis, Mesh Current Analysis	5	6	7
8	9 **CHAPTER 2** 2.5—2.6 Mesh Current Analysis continued..	10	11 **CHAPTER 2** 2.6—2.8 Thevenin & Norton Circuits, Superposition…	12 **HOLIDAY**	13 **PREPARE FOR THE LAB 1: OPERATING THE INSTRUMENTS…**	14
15 **LAB 1 Instruments**	16 **CHAPTER 3** 3.1—3.4 Capacitance and Inductance	17	18 **CHAPTER 4** 3.5 — 4.1 Introduction to first order RC circuits	19	20 **PREPARE FOR THE LAB 2: Thevenin EquivalentCircuits**	21
22 **LAB 2 Thevenin Eq.**	23 **CHAPTER 4** 4.1—4.2 Transient Ciruits First order RC, RL circuits…	24	25 **CHAPTER 4** 4.3—4.5 RC, RL circuits with sources, 2nd order circuits	26	27	28
29 **HOLIDAY**	30 **CHAPTER 5** 5.1—5.2 Steady State Sinusoidal Analysis, Phasors	31				

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Mon	Tue	Wed	Thu	Fri	Sat	Sun
[redacted]			1 **CHAPTER 5** 5.3—5.5 Complex Impedances, Circuit analysis, power in AC circuits	2	3 **PREPARE FOR THE LAB 3: Series RC and RL Circuits**	4
5 **LAB 3 RC and RL**	6 **CHAPTER 5** 5.6 Thevenin and Norton Equivalent Circuits…	7	8 **CHAPTER 6** 6.1 — 6.4 Frequency Response, First order filters, Bode Plots	9	10	11
12	13 **S E M E S T E R**	14 **B R E A K**	15	16	17	18
19	20 **CHAPTER 6** 6.4 — 6.5 Bode Plots, High Pass Filters	21	22 **CHAPTER 6** 6.6 — 6.7 Series Resonance Parallel Resonance	23	24	**PREPARE FOR THE LAB 4: RC filters and Resonance**
26 **LAB 4 Resonance**	27 **CHAPTER 11** 11.1 — 11.3 Basic Amplifier Concepts, Cascaded Amplifiers	28	29 **CHAPTER 11** 11.4 — 11.6 Additional Amplifier models, ideal amplifiers	30	[redacted]	

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Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1 **MIDTERM**	2
3	4 **CHAPTER 11** 11.11 Differential Amplifiers	5	6 **CHAPTER 14** 14.11—14.4 Introduction to Operational Amplifiers	7	8 **PREPARE FOR THE LAB 5: Op-Amps**	9
10 **LAB 5 Amplifiers**	11 **CHAPTER 14** 14.5—14.6 Op-Amp imperfections	12	13 **CHAPTER 10** 10.1—10.3 Basic Diode, Load Line Analysis, Zener Diode	14	15	16
17	18 **CHAPTER 10** 10.4—10.5 Diode Models	19	20 **HOLIDAY**	21	22 **PREPARE FOR THE LAB 6: Building A Radio**	23
24 **LAB 6 Radio**	25 **CHAPTER 10** 10.6—10.8 Rectifiers, Wave Shaping, Small Signal Circuits	26	27 **CHAPTER 10** 10.6—10.8 Continued...	28	29	30

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Mon	Tue	Wed	Thu	Fri	Sat	Sun
31	1 **HOLIDAY**	2	3 **CHAPTER 13** 13.1—13.2 Bipolar Junction Transistors, Common Emitter Characteristics	4	5	6
7 **LAB FINAL**	8 **CHAPTER 13** 13.4—13.6 NPN transistor, large signal models, DC analysis	9	10 **CHAPTER 13** 13.4—13.6 Transistors cont. **LAST CLASS**	11	12	13
14 **FINALS START…**	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	[redacted]		