ECE 201: Electrical Networks I (Fall 2004)

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Meeting Times: ECG 324. Mon, Wed and Friday: 9:40 - 10:30am.

Office hours: GWC 418. Mon and Wed 10:30-11:30am, Thur: 2:00-3:00pm

Course Objective: To be able to analyze, design, and measure linear analog electrical systems important across engineering disciplines.

Course Description: Introduction to electrical networks. Component models, transient and steady-state analysis. Lecture, Lab.
Pre-requisite: ECE 100. Pre- or co-requisite: MAT 274, PHY 131, 132.

Class Website: http://www.public.asu.edu/∼ chaitali/ECE201/

Textbook: J. D. Irwin, *Basic Engineering Circuit Analysis*, 7th Edition, 2002.

Topics: Textbook Chapters 1-7

1. Basic Concepts: Current, Voltage, Power, Passive Sign Convention
2. Resistive Networks, Ohm's Law, Kirchoff's Law
3. Nodal and Loop Analysis, OPAMP Circuits
4. Superposition, Thevenin and Norton's Theorems
5. Capacitance and Inductance
6. First and Second Order Transient Circuits
7. AC Steady-State Analysis

Laboratory: Each student must register for the laboratory component of this course. The labs are scheduled on set days and times. The lab website is http://ceaspub.eas.asu.edu/ece201lab/

Homework: The homework assignments will be posted on the class web page. Homework is to be turned before the start of class on the due day. Late submissions will not be allowed. For complete credit, show your work and box the answer. Students may work together on the homework, but copying is unacceptable.

Grading: Homework assignments: 15%, Laboratory assignments 15%, Test 1: 15%, Test 2: 20%, Final: 25%, Pop quizzes: 10%.

Other information:
∗ There will be a problem solving session every Thursday from 2:00 - 3:00 pm in GWC 409. Please try to attend.
∗ Please check your ASU email regularly. Important information may be sent to your ASU account.

Course Schedule

Aug 23	Introduction; Units (1.1); Basic Quantities (1.2)	
Aug 25	Circuit Elements (1.3); EE Subdisciplines	
Aug 27	Ohm's Law (2.1); Kirchoff's Law (2.2)	
Aug 30	Single Loop Circuits (2.3)	
Sep 1	Single Node Pair Circuits (2.4)	HW 1 due
Sep 3	Sinusoids (7.1); Phasors (7.3)	
Sep 8	Complex Numbers (Appendix)	
Sep 10	Phasor Relationships for Circuit Elements (7.4)	HW 2 due
Sep 13	Impedance and Admittance (7.5)	
Sep 15	Series and Parallel Resistor Combinations (2.5, 7.5)	
Sep 17	Circuits with Resistor Combinations (2.6, 7.7)	
Sep 20	Additional Examples	HW 3 due
Sep 22	Exam Review	
Sep 24	Exam 1	
Sep 27	$\Delta - Y$ Transformations (2.7)	
Sep 29	Circuits with Dependent Sources (2.8)	
Oct 1	Nodal Analysis (3.1)	
Oct 4	Nodal Analysis (7.8)	
Oct 6	Loop Analysis (3.2)	HW 4 due
Oct 8	Loop Analysis (7.8)	
Oct 11	AM Radio Handout	
Oct 13	Circuits with OPAMPS (3.3)	
Oct 15	Equiv/Linearity (4.1)	HW 5 due
Oct 18	Superposition (4.2, 7.8)	
Oct 20	Thevenin's Theorem (4.3)	
Oct 22	Thevenin's Theorem (7.8)	HW 6 due
Oct 25	Telephone Handout	
Oct 27	Exam Review	
Oct 29	Exam 2	
Nov 1	Norton's Theorem (4.3, 7.8)	
Nov 3	Maximum Power Transfer	
Nov 5	AC PSPICE Analysis	HW 7 due
Nov 8	Capacitors (5.1); Inductors (5.2)	
Nov 10	Capacitor and Inductor Combinations (5.3)	
Nov 12	RC OPAMP Circuits (5.4)	
Nov 15	Instrumentation Handout	HW 8 due
Nov 17	First-Order Circuits (6.1, 6.2)	
Nov 19	Solving First-Order Circuits	
Nov 22	Second-Order Circuits (6.3)	HW 9 due
Nov 24	Transient Circuit Analysis	
Nov 30	Additional Examples	
Dec 1	Make-up exam	
Dec 3	Transient PSPICE Analysis (6.4)	HW 10 due
Dec 6	Review	
Dec 13	Final exam	