EE 239: Fundamentals of Electrical Engineering
Fall 2011 - Section A2

I. General Information

Instructor

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Teaching Assistant

Shuai Zhang
szhang4@ualbrta.ca

Class Information

Lectures: MWF 13:00 - 13:50
ETLE 1-003

II. Text

Required:

Basic Engineering Circuit Analysis (10th edition recommended, but not required)
Authors: J. David Irwin and R. Mark Nelms
Publisher: Wiley

III. Class Objectives

At the conclusion of this class, the students will have learned the basic concepts of electrical circuits as well as the tools required for their analysis and their design. The students will have learned to perform such analysis in both time- and frequency domains. The students will also learn the basics of power transfer in electrical networks.

IV. Lecture Syllabus (numbering follows 10th edition of textbook)

1. Basic Concepts

- 1.1 Systems of Units
- 1.2 Basic Quantities
- 1.3 Circuit Elements

2. Resistive Circuits

- 2.1 Ohm's Law
- 2.2 Kirchoff's Law
- 2.3 Single Loop Circuits
- 2.4 Single Node-Pair Circuits
- 2.5 Series and Parallel Resistor Combinations
- 2.6 Circuits with Series-Parallel Combinations of Resistors
- 2.8 Circuits with dependant sources
- 2.10 Application Examples
- 2.11 Design Examples

3. Nodal and Loop Analysis Techniques

- 3.1 Nodal Analysis
- 3.2 Loop Analysis
- 3.3 Application Examples
- 3.4 Design Examples

5. Additional Analysis Techniques

- 5.1 Introduction
- 5.2 Superposition
- 5.3 Thévenin and Norton's Theorem

6. Capacitance and Inductance

- 6.1 Capacitors
- 6.2 Inductors
- 6.3 Capacitor and Inductor Combinations
- 6.5 Application Examples
- 6.6 Design Examples

8. AC Steady State Analysis

8.1 Sinusoids
8.2 Sinusoidals and complex Forcing Functions
8.3 Phasors
8.4 Phasor Relationships for Circuit Elements
8.5 Impedance and Admittance
8.6 Phasor Diagrams
8.7 Analysis Using Kirchoff's Laws
8.8 Analysis Techniques
8.10 Application Examples
8.11 Design Examples

9. Steady-State Power Analysis

9.1 Instantaneous Power
9.2 Average Power
9.3 Maximum Average Power Transfer
9.4 Effective or rms Values
9.5 The Power Factor
9.6 Complex Power
9.7 Power Corrections

V. Grading

Item	Weight	Date
Problem sets	15%	
Labs	10%	
Midterm	25%	TBA
Final Exam	50%	TBA
Total:	100%	

VI. Various Policies

Homework assignments and their solutions will be posted on website.

All examinations will be *closed books*. One (1) 8' x 11' sheet of equations prepared by the student will be allowed. One faculty-approved calculator (programmable or non-programmable) will be allowed. The exam questions will be designed as per not to give any advantage to students possessing a programmable calculator over those possessing non-programmable one.

Please consult

http://www.engineering.ualberta.ca/en/Students/Accepted/CalculatorSpecs.aspx for a list of faculty-approved calculators.

Homework assignments are expected to be independent work. Plagiarism and/or "carbon copies" **will not be tolerated** *and will be reported to School authorities.*

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at http://www.governance.ualberta.ca/) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Lateness penalty for homework: 30 % off of score (at 4:01 pp) + 0.3 % per additional hour (nights and week-ends included).

Lateness due to sickness or other major issues should be noted to Dr. Evoy by email **prior** to the HW deadline. Medical or other signed note will then be expected afterwards.