Northeastern University
Electrical and Computer Engineering Department

ECE U210 **Electrical Engineering (4QH)** **Spring Semester**

Instructor: Professor Vincent Harris
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Class Schedule: M, W, Th 8:00 -9:05 AM
Room: 101 Churchhill Hall
Office Hours: Tuesday and Wednesdays, 10-11:30 am, Rm 132 Egan Center
TA: Bill Warger
TA Office Hours: By appointment

Course Description:

The course introduces the basic concepts related to circuits and circuit elements: current, voltage, and power; resistors, capacitors, and inductors; and circuit analysis using Kirchhoff's laws, nodal and mesh methods. We also discuss selected topics that illustrate a variety of applications of electrical engineering, such as AC circuits and electric power, transients in circuits with energy storage, digital signals, logic circuits, and some basic concepts of computer operations, specifically number coding, arithmetic operations, and memory circuits.

Textbooks: Introduction to Electrical Engineering by Mulukutla Sarma (Publisher: Oxford University) 2001

Grading Format:

Homework assignments:	30%
Midterm Exam (TBA):	30%
Final Exam (TBA):	40%

Homework assignments

Assignment 1 Read: Ch. 1.1 Problems: 1.1.1, 1.1.2, 1.1.4*, 1.1.7, 1.1.11, 1.1.20
Due: Jan 15th
* particularly challenging and will be awarded with extra credit

Topics include:
Charge and Electric Force
Conductors and Insulators
Current and Magnetic Force
Electric Potential and Voltage
Energy and Power
Sources and Loads
Wave Forms

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Assignment 2 Read: Ch. 1.2 Problems:1.25, 1.2.6, 1.2.7, 1.2.8, 1.2.9, 1.2.13(a), 1.2.14, 1.2.18, 1.2.19
Due: Feb 5th

Lumped Circuit Elements
Resistance
Maximum Power Transfer

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Assignment 3 Read: Ch. 1.3 Problems: 1.3.1, 1.3.2, 1.3.5, 1.3.6, 1.3.10
Assigned; Feb. 5th
Due: Feb. 12th (due in one week)

Kirchhoff's Laws
KCL
KVL

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Assignment 4 Read Ch. 2.1, 2.2 Problems: 2.1.1, 2.1.2, 2.1.3, 2.2.2, 2.2.4, 2.2.9, 2.2.10
Assigned: Feb. 5th
Due: Feb. 19th

Thevenin and Norton Equivalent Circuits
Node Voltage Method
Mesh Current Method

Note:
Superposition (if time permits)
Wye-Delta transformations (if time permits)

Note: Feb. 23rd and 25th are review classes to prepare for Midterm Exam

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MIDTERM
Date: Thurs. Feb 26th
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Assignment 5: Problems: 1.2.20, 1.2.21, 1.2.22, 1.2.24, 1.2.26
Assigned: March 11th
Due: March 18th

Capacitance (page 24-29 text)
Inductance (page 29-36 text)

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Assignment 6: Read Ch. 3.1 Problems: 3.1.5, 3.1.6, 3.1.7, 3.1.8

Assigned: March 18th
Due: April 1st

Response to exponential excitations (page 103 text)
Forced response to sinusoidal excitations (page 106 text)

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Assignment 7: Problems: 3.1.9, 3.1.11, 3.1.13, 3.1.14, 3.1.18 (a)
Assigned April 1st
Due: April 12th

Phasor Method (page 109 text)
Power and power factor in ac circuits (page 112 text)

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FINAL EXAM
Date: April 15-23 TBA
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