

**HOWARD UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

EECE 202 NETWORK ANALYSIS I

Instructor

Dr. Charles Kim
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Office Hour: TR 3:00 –5:00 PM and appointed time

Goal

This course is designed to equip electrical engineering students with some of the basic tools for analyzing electrical circuits. Analytic techniques to be studied will include: Superposition, Mesh and Nodal analysis, transient responses, and operational amplifier. Mobile Studio is used through the class for lecture-lab hybrid learning.

Catalog Data

EECE 202: Network Analysis I: 3 Credits
Include Ohm's and Kirchoff's Law; V-I law's for RLC elements; Thevenin's and Norton's theorems; Delta-wye Transformation; operational amplifiers; and RLC Transient Responses.

Textbook

James W. Nilsson and Susan A. Riedel, *Electric Circuits*, 6th (or any higher than 3rd) Edition, Prentice-Hall, 2000

Reference(s)

J. David Irwin, *Basic Engineering Circuit Analysis*, 7th Edition, Wiley, 2002.
ISBN 0-471-40740-2

Pre-Requisites

EECE202 is open only to the students who already took and passed the two courses:

1. MATH157 Calculus II
2. PHYS 014 Physics II

Co-requisite

EECE202 is open only to the students who take the following course concurrently:

1. EECE208 Intro to Electrical Engineering Lab

Topics

CHAPTER	CONTENTS*
1	CIRCUIT VARIABLES System of Units, Voltage, Current, Power and Energy
2	CIRCUIT ELEMENTS Ohm's law, Kirchoff's law Independent and Dependent Sources

3	SIMPLE RESISTIVE CIRCUITS Voltages and Current Division, Combination of Resistors, Delta-Y Conventions, Volt Meter and Ohmmeter circuits
4	TECHNIQUES OF CIRCUIT ANALYSIS Mesh and Node Analysis, Thevenin and Norton equivalents, Source Transformation, Superposition, and Maximum Power Transfer
5	OPERATIONAL AMPLIFIER The Op-amp, Terminal Voltages and Currents, Inverting and Non-inverting Modes.
6	L, C, MUTUAL INDUCTANCE The Inductor, the Capacitor, Combination of C's and L's.
7	RESPONSE I Responses of RL and RC Circuit
8	RESPONSE II Responses of RLC Circuit

*NOTE: Lecture may not follow the above sequence exactly as it is listed

Design Project

This course supports the emphasis on design of circuits. Design oriented problem, in a team project basis, will be given to students to focus the design aspects of the circuits. This project involves the analysis, simulation with PSPICE or MATLAB, and implementation of the circuit and testing.

Grading Policy

Project	20%
Home works (3)	(5%+5%+5%)=15 %
Exams (2 + final)	(25%+25%+25%)=75%

Final Course Grade

100 - 85	A
84 - 75	B
74 - 65	C
64 - 55	D
54 or below	F

General policy

Students must be actively involved in the learning of the material to be covered in this course. Homework will be assigned. Answers and outlines of solutions will be discussed in class.

Class note Web-Site

Students are expected to check the following class note web-site for materials covered or will be covered in the class: <http://netstar.eng.howard.edu>

Acrobat Reader® version 4.0 or above is needed to view and print the pdf files.

Safety/Ethics

Follow instructions carefully. Avoid handling live circuits and equipment. See “Safety Manual” in 3113 L.K. Downing and “Electrical Engineering Undergraduate Handbook.”

Abet Category Content

Engineering Science: 2.0

Engineering Design : 1.0

Program outcomes and assessment

(a) An ability to apply knowledge of mathematics, science, and engineering

Demonstrated competence in course work undertaken to learn materials and concepts of basic electrical elements and electrical circuits as listed in the Course Objectives. *Tests and homework will demonstrate such competence. Minimum competence is defined to be 70% average on all tests and homework assigned during the semester.*

(k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Some of the homework exercises (project type) are based on PSPICE, Matlab, or other software tool competence as demonstrated by providing relevant simulation results in reports and homework. Minimum competence is a grade of C in the project types of homework

NOTE: *If you want to be identified as a person with disability and accommodated under the Americans With Disabilities Act (ADA) of 1990, please make an appointment with the instructor.*