ECGR-2112 Network Theory II
Fall 2013
Course syllabus

INSTRUCTOR: Amitangshu Pal

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OFFICE HOURS: Tuesdays and Thursdays, 5.00 pm – 6.30 pm

LECTURE SCHEDULE: Tuesday and Thrusday, 3:30 pm – 4.45 pm, EPIC-2222.
Recitations on Fridays, 12:30 – 1.45pm, EPIC-1249.

COURSE CONTENT: The objective of this course is to provide students with a working knowledge required for the analysis of a.c. components and circuits.

PREREQUISITE: ECGR 2111, MATH 2171, and PHYS 2102 all with a grade of C or better.
Prerequisites by topics:

1. An understanding of introductory DC circuit analysis, including resistors and independent/dependent voltage and current sources, passive power, Ohm's law, and Kirchoff's voltage and current laws
2. An understanding of the analysis of single loop and single node pair circuits, voltage and current division, resistor series and parallel combinations, and analysis of general resistive circuits
3. An understanding of nodal and mesh analysis, including the solution of simultaneous algebraic equations
4. An understanding of additional circuit analysis techniques, including linearity scaling, linear superposition, source transformation, Thevenin and Norton equivalent circuits, and maximum power transfer
5. An understanding of voltage and current characteristics of capacitors and inductors using differential and integral calculus.

TEXT: ELECTRIC CIRCUITS by Nilsson and Riedel, Prentice Hall, 9th Edition 2011, ISBN-13: 978-0-13-611499-4 ISBN-10: 0-13-611499-7.

OUTCOMES: The following competencies will be developed:

At the conclusion of this course, students should have the following competencies

1. An understanding of AC circuit analysis, including sinusoids, sinusoidal and complex forcing functions,

phasors, phasor relationships for circuit elements, impedance and admittance.

2. An understanding of AC analysis using Kirchoff's laws, instantaneous power, average power, complex power, power factor, power factor correction, and effective or rms values.
3. An understanding of mutual inductance and ideal transformer circuits.
4. An understanding of variable frequency response, Bode plots, and resonant circuits.
5. An understanding of Laplace transforms and its application in circuit analysis.
6. An understanding of Fourier series and its application in circuit analysis.

GRADING:

Homework assignments=25%,
Mid-term examinations=25%,
Quiz=20%,
Final examinations=30%.
Late assignments will not be accepted for grading.

ACADEMIC INTEGRITY:

Students have the responsibility to know and observe the requirements of the UNCC Code of Student Academic Integrity. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.

ONLINE:

Course material and announcements will be available at http://webpages.uncc.edu/~apal/

TENTATIVE SCHEDULE OF CLASSES:

Lectures	Topics	Chapter
1-5	Sinusoidal steady-state analysis.	9
6-8	Sinusoidal steady-state power calculations.	10
9-11	Balanced three-phase circuits.	11
12	Mid-term examination.	
13-16	Introduction to the Laplace transform.	12
17-20	The Laplace transform in circuit analysis.	13
21-24	Introduction to frequency selective circuits.	14
25-28	Fourier series	16