School of Engineering + Technology
EE202 - Network Theory II
Spring 2020
Belk 365 – MWF 10:10 am-11:00 am

Instructor Information

Instructor: Dr. Yeqin Huang
Campus Office/Office hours: MW 9:00 am-10:00 am
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Catalog Description

Alternating current circuit analysis, phasors, Kirchoff's laws, single-phase and 3-phase circuits, resonant circuits, filter networks, Laplace transforms, Fourier series, Fourier transforms and Fourier analysis techniques.

Prerequisites: EE 201; MATH 320; both with grades of C or better.
Credits: 3

Course Aims and Objectives

The goal of this course is to provide students with a working knowledge required for the analysis of AC components and circuits. Upon completion of the course, the students are expected to be able to:

1. Understand and apply steady-state sinusoidal network analysis methods.
2. Apply phasor diagrams in AC network analysis, including general network parameters.
3. Understand and apply electrical power concepts in AC network analysis, including instantaneous power, average power, complex power, power factor, single-phase and three phase circuits, safety considerations, source/load connections, power factor correction.
4. Understand the characteristics of transformers and energy analysis of transformer networks.
5. Understand and apply variable frequency analysis techniques in frequency selective network analysis.
6. Understand and apply Laplace transforms in network analysis.
7. Understand fundamental concepts of Fourier series and Fourier transforms.

Course Materials

Required Text: J. W. Nilsson and S. A. Riedel, *Electric Circuits*, 10th Edition, Pearson Prentice Hall, 2007. ISBN: 0133760030.
References: Handouts, class notes, library holdings, and worldwide web.

Grading

The following percentages will be used to determine the final grades.

- Homework 20%
- Two Tests 30%
- Quiz 20%
- Final exam 30%

Grades will be awarded based on the following scale:

Numerical Course Average	Grade Assigned	Numerical Course Average	Grade Assigned
97-100	A+	72 - 77	C
92 – 96	A	70 – 71	C-
90 – 91	A-	68 – 69	D+
88 – 89	B+	62 – 67	D
82 - 87	B	60 - 61	D-
80 – 81	B-	0 - 59	F
78 – 79	C+		

Tentative Schedule

Week	Topic
01	Course introduction, sinusoidal source Phasor, circuit elements in the frequency domain
02	Kirchhoff's laws in the frequency domain Nodal analysis method, mesh analysis method
03	Thevenin and Norton equivalent circuits Transformer
04	Instantaneous power, average power, reactive power rms value, complex power and power calculations
05	Three-phase voltage sources Wye-Wye circuit
06	Wye-Delta circuit **TEST 1**
07	Review Power calculations in balanced three-phase circuits
08	Laplace transform step function, impulse function
09	Inverse transforms, poles and zeros of F(s) Circuit elements in the s-domain
10	Circuit analysis in the s-domain Transfer function
11	Low-pass filters, high-pass filters Band-pass filters, band-reject filters
12	Fourier series Applications of Fourier series in circuits
13	Fourier transform Applications of Fourier transform in circuits
14	Two-port parameters Analysis of two-port circuits
15	**TEST 2** Review
16	Final

Faculty Expectations of Students/Course Policies

Attendance:
Students are required to attend all lectures. In the event that a student must miss a class they should inform the instructor and be able to provide ample evidence to justify the absence.

Timely Submissions:
Typically assignments must be submitted on time or they will receive a grade of zero. The instructor MAY exercise discretion in the instance a student can demonstrate extenuating circumstances.

Expectations for Submitting Required Work:
Work will be completed to professional standards. Hand written work must be written legibly. Digital submissions will be done for some assignments.

Technology:
The School of Engineering + Technology requires that all students have a laptop computer capable of running standard software and accessing the internet. Many of the applications can be accessed without installation using virtual.wcu.edu. Mobile devices, such as phones, cannot replace a laptop.

Student Resources

Writing and Learning Commons (WaLC):
The Writing and Learning Commons (WaLC), located **in BELK 207**, provides free course tutoring, writing tutoring, academic skills consultations, international student consultations, and online writing and learning resources for all students. To view schedules and make appointments for any of these services, visit tutoring.wcu.edu or call 828-227-2274.

Math Tutoring Center:
The Mathematics Tutoring Center (MTC) in Stillwell 455 provides drop-in tutoring for math courses and math-related content across the curriculum, workshops on study skills specific to math courses, and graduate and professional exam preparation resources. Tutoring is available on a drop-in basis, MTWR 9:00am-9:00pm and Friday 9:00am-5:00pm. For more information, please visit http://mtc.wcu.edu/ or contact us at 828–227–3830.

Hunter Library:
Hunter Library provides students with access to group and individual study spaces and to thousands of information resources: print and electronic books, newspapers, and scholarly journal articles.
These resources can be searched online and often accessed there (http://www.wcu.edu/hunter-library) or library staff and subject specialists skilled in their specific disciplines can be contacted via the library's research guides (http://researchguides.wcu.edu/).

Blackboard Support:
The learning management system for this class is Blackboard and can be found at http://wcu.blackboard.com
Additional help with Blackboard can be found at tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Academic Toolbox:
The Academic Toolbox is available in all WCU courses via the course Blackboard site. It can be found in the left-hand side column. The Academic Toolbox contains information and contact information for nearly all of the resources needed by WCU students, including but not limited to: technology assistance, academic services, student support, co-curricular programs and university policies.

Academic Calendar
This includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at http://www.wcu.edu/learn/academic-calendar.asp

Final Exam
The university final exam schedule can be found at http://www.wcu.edu/learn/academic-services/registrars-office/

Syllabus Updates

This syllabus, along with its course schedule, is based on the most recent information about the course content and schedule planned for this course. Its content is subject to revision as needed to adapt to new knowledge or unanticipated events. Updates will remain focused on achieving the course objectives and students will receive notification of such changes. Students will be notified of changes and are responsible for attending to such changes or modifications as distributed by the instructor or posted to Blackboard.

Academic Integrity Policy and Reporting Process

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see ArticleVII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

General:
This policy addresses academic integrity violations of undergraduate and graduate students. Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.
Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to and including a final grade of "F" in the course in which the violation occurs.

Definitions:
Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
Fabrication – Creating and/or falsifying information or citation in any academic exercise.
Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

Undergraduate and Graduate Academic Integrity Process:
Additional information is available on the Student Success website under Student Community Ethics: http://www.wcu.edu/experience/dean-of-students/academic-integrity.aspx