EE/CE/TE 3301-001 Electrical Network Analysis

Fall 2016
Time: TR 10:00 am-11:15 am, ECS2. 2.201
Instructor: Prof. Babak Fahimi
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Office Hours: TR 1:00pm-3:00 pm (or if the door of my office is completely open)
TA information: Ms. Sepideh Rahmatinia
Prerequisites: MATH 2420, PHYS 2326

Course Description

Analysis of resistive networks, nodal and mesh analyses, steady state and transient analysis of linear time invariant circuits, dynamic behavior of linear time invariant circuit under sinusoidal excitation at steady state, frequency domain analysis of linear time invariant circuits using Laplace transformation, and multi-port circuit elements.

Student Learning Objectives/Outcomes

1. Ability to use Kirchoff's laws to analyze electric circuits.
2. Ability to analyze resistive circuits.
3. Ability to analyze circuit using nodal and mesh methods.
4. Ability to analyze circuits using Thevenin and Norton Equivalent circuits.
5. Ability to analyze linear time invariant circuits under steady state sinusoidal excitation.
6. Ability to analyze linear time invariant circuits in time domain.
7. Ability to analyze linear time invariant circuits in frequency domain.
8. Ability to analyze and synthesize passive filters.
9. Ability to analyze multi-port elements.

Resources

Main Textbook: Linear circuit analysis, 3rd edition by DeCarlo/Lin, Oxford University Press.
Suggested reference: Electric Circuits, 9th or 8th edition, by Nilsson and Riedel, Prentice Hall.
Suggested reference: Basic Circuit Theory by C.A. Desoer and E.S. Kuh, Mc-GrawHill Book Company.
MIT Open Courseware.

Grading Policy

Homework and class participation: 10%
Midterms: (three each 20%)
Final Exam: 30%
Policy:

- Late homeworks are not accepted. Homeworks are due a week after the date they have been assigned (they are to be returned at the beginning of the class). The graded homeworks will be

returned to you two weeks after the date of submission. Selected homeworks will be discussed in the classroom as time permits.

- Make up Exam: No Makeup Exams will be given.
- Classroom citizenship: professional at all times.

Policy Regarding Plagiarism

There is a **zero tolerance** policy in regards to **plagiarism**. Copying of homeworks, reports, and other assignments from classmates or World Wide Web constitutes academic dishonesty. Occurrence of such cases results in a grade of "F" for the course. Furthermore, instructor may report academic dishonesty to judicial affairs of the UTD.

Chapter	Section	Date	Topic
1	1-4	8-23	Introduction, fundamentals
1	4-8	8-25	Introduction, Fundamentals
2	1-4	8-30	Kirchoff's law, resistive circuits
2	5-10	9-1	Kirchoff's law, resistive circuits
2		9-6	Problem session
2		9-8	Problem session
3	1-4	9-13	Nodal analysis
3	5-7	9-15	Mesh Analysis
4	1-3	9-20	Operational Amplifier
Exam-1	Exam 1	9-22	
6	1-4	9-27	Thevenin and Norton equivalent circuits
6	4-7	9-29	Thevenin and Norton equivalent circuits
7	1-5	10-4	Energy storage elements
8	1-4	10-6	First order circuits
8	4-8	10-11	First order circuits
9	1-3	10-13	Second order circuits
9	4-6	10-18	Second order circuits
Exam 2	Exam 2	10-20	
10	1-6	10-25	Phasor technique
10	6-10	10-27	Phasor technique
13	1-5	11-1	Laplace Transform
13	5-8	11-3	Laplace Transform
14	1-5	11-8	Laplace Transform Applications
14	5-8	11-10	Laplace Transform Applications
15	1-6	11-15	Laplace Transform Applications
15	6-10	11-17	Laplace Transform Applications
		11-22	Fall Break
		11-24	Thanksgivings Holiday
Exam 3	Exam 3	11-29	(Take Home)
16	1-5	12-1	Impulse response and convolution theorem
10	6-10	12-5	Impulse response and convolution theorem