University of Victoria Engineering

Faculty of Engineering

COURSE OUTLINE

ELEC 250 – Linear Circuits I

Term – Fall 2017 (201709)

Instructor

Dr. Nikitas Dimopoulos
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Office Hours

Days: TWF
Time: 13:30-14:00
Location: EOW 437

I can be reached via email (please use "ELEC250 question" as your subject)
If you need to see me in person at a different time, please make an appointment (via email).
If you need to see me urgently, please come to my office.

Course Objectives

- To introduce the mathematical techniques and application skills needed to analyze, design, and make laboratory measurements on linear electric circuits.

Learning Outcomes

1	Use Ohm's law and Kirchoff's laws to analyze resistive circuits
2	Use network theorems (including mesh currents and node voltages) to analyze resistive circuits.
3	Solve 1st and 2nd order RC and RL circuits
4	Use phasors to perform AC analysis
5	Assess series and parallel resonance and calculate AC power
6	Solve 3-phase circuits with Y- and Delta- loads
7	Demonstrate communication skills through lab reports documenting experiential work carried out in a laboratory environment.
8	Demonstrate ability to work as a member of a team documenting this through lab reports and interaction with the lab demonstrator.

Syllabus

- - Circuit analysis and design techniques. Resistors, sources, Kirchhoff's voltage and current laws. Theorems: linearity, superposition, Thevenin, Norton. Node and loop analysis. Capacitors and inductors, series and parallel connections, stored energies. Analysis of first- and second-order circuits. Forced and natural responses. Phasors, impedance and admittance. Network theorems using phasors. Series and parallel resonance. RMS quantities, complex power. Maximum power transfer. Three-phase circuits, Y- and Delta-loads.
- Introduction to first and second order differential equations.

These topics are covered in Chapters 1,2,3,4,6,7,8,9,10 and 11 in your book.

Lectures

A-Section(s): A01, A02 / CRN 11225, **B**-Sections Please see below for Lab sections
Days/Location: T/ELL 168 WF/HSD A240
Time: 12:30-13:20

Tutorial

Tutorial Instructor: Mr. Mostafa Esmaeli emostafa@uvic.ca

T-Section(s): T01 / CRN 11233

Days: M Tutorials start the second week of classes (i.e. Monday September 12, 2016)
Time: 15:30-16:20
Location: ELL 168

Labs **Location: ELW B324**

B01	Odd Weeks	T	13:30-16:30
B02	Even Weeks	T	13:30-16:30
B03	Odd Weeks	W	17:30-20:30
B04	Even Weeks	W	17:30-20:30
B05	Odd Weeks	R	15:30-18:30
B07	Odd Weeks	T	15:30-18:30

Odd weeks start with week 1 on September 25 to 29 and continue at two weeks intervals
Even weeks start with week 2 on October 2 to 6 and continue at two weeks intervals
There are no labs the weeks of October 9 to 13 and November 13 to 17.
A more detailed schedule can be found in the course web site and in the course notes.

ELEC 250 LAB Orientation Schedule

B01	Tuesday, Sep 12	2:00 - 3:30 pm	ELW B324
B02	Tuesday, Sep 12	3:30 - 5:00 pm	ELW B324
B03	Wednesday, Sep 13	2:30 - 4:00 pm	ELW B324
B04	Wednesday, Sep 13	5:30 - 7:00 pm	ELW B324
B05	Thursday, Sep 14	3:30 - 5:00 pm	ELW B324
B07	Tuesday, Sep 12	5:30 - 7:00 pm	ELW B324

Required Text **Optional Text**

Title: Electric Circuits (plus Mastering Engineering)
Author: J.W. Nilsson, S.A. Riedel
Publisher: Pearson (10th Edition)
Year: 2015

Title: ELEC250 Linear Circuits I Laboratory Manual
Author: N. Dimopoulos, F. Gebali
Edition 3, July 2017

References:

Course Web site: www.ece.uvic.ca/~elec250
login: elec250
password: will be distributed in class

Assessment:

Assignments:	8%	Due Dates: TBA (on course's web site)
Labs	20%	
Mid-term	20%	Date: Tuesday, October 24th , 2017
Final Exam	46%	
Quizzes:	4%	(Quizzes will be done through MasteringEngineering)
Pop quizzes	2%	(Pop quizzes will take place during the tutorial)

Notes:

- Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
- To pass the course, the aggregate grade of the midterm and the final must be a passing grade, OR the grade of the final exam must be a passing grade.

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

There will be no supplemental examination for this course.

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

Accommodation of Religious Observance:
http://web.uvic.ca/calendar2017-09/undergrad/info/regulations/religious-observanc.html

Policy on Inclusivity and Diversity: http://web.uvic.ca/calendar2017-09/general/policies.html

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.
https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.
http://web.uvic.ca/calendar2017-09/undergrad/info/regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for

appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.
The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.