

### ECE 300 – Linear Circuits: II

Term – Spring 2019 (201901)

#### Instructor

Dr. Jens Bornemann

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#### Office Hours

Days: Mondays, Thursdays

Time: 15:00 – 16:00

Location: EOW 309

#### Course Objectives

To introduce students to more advanced concepts pertaining to network analysis in the time and frequency domain, including the treatment of active circuits.

#### Learning Outcomes

At the end of the course, students will be able to ...

1. demonstrate functionality of circuits containing operational amplifiers
2. evaluate the frequency response of linear circuits and make straight line Bode gain and phase plots
3. design circuits which have specified transfer functions and meet other specified constraints
4. analyze circuits containing coupled inductors and ideal transformers
5. use Laplace transforms to find the response of linear circuits to time varying inputs
6. assess the stability of linear circuits
7. evaluate two port parameters of linear circuits and find the response of two ports to external input

#### Syllabus

	Appr. No of Classes
Introduction .....	1
Basic Circuit Laws (review) .....	2
Operational Amplifiers .....	2
Transfer Functions .....	1
Bode Plots .....	4
Serial and Parallel Resonance .....	1
Filters .....	2
Coupled inductors and transformers .....	1
Laplace Transforms for Circuits .....	4
Two-Port Networks .....	4
Sub Total	22
Midterm Test	1
Review	1
Total	24

**Lectures**

**A-Section(s):** A01 / CRN 20835  
**Days:** Mondays & Thursdays  
**Time:** 10:00-11:20  
**Location:** HSD A240

**Labs****Location: ELW B324**

<b>B-Section(s):</b>	<b>Days:</b>	<b>Time(s):</b>
B01	Tue	13:30-16:20
B02	Tue	13:30-16:20
B03	Tue	13:30-16:20
B04	Tue	13:30-16:20
B05	Tue	16:30-19:20
B06	Wed	13:00-15:50
B07	Tue	16:30-19:20
B08	Wed	13:00-15:50
B09	Thu	15:30-18:20
B11	Thu	15:30-18:20

Odd-numbered labs begin week of 28 Jan 2019, even-numbered labs begin week of 04 Feb 2019 (c.f. schedule below). Names and emails of lab TAs posted on course website.

**Required Text**

**Title:** Electric Circuits  
**Author:** J.W. Nilsson and S.A. Riedel  
**Publisher:** Pearson  
**Year:** 2019 (11<sup>th</sup> ed.) or 2015 (10<sup>th</sup> ed.)

**Optional Text**

**Title:** Fundamentals of Electric Circuits  
**Author:** C.K. Alexander and M.N.O. Sadiku  
**Publisher:** McGraw Hill  
**Year:** 2007, 2009, 2013 or 2017 (6<sup>th</sup> ed.)

**References:**      **Couse Website:**      **TBA**

**Assessment:**

<b>Assignments:</b>	10 %	<b>Due Dates:</b>	TBA
<b>Labs</b>	20 %		
<b>Mid-term</b>	20 %	<b>Date:</b>	28 Feb 2019
<b>Final Exam</b>	50 %		

**Note:**

1. Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
2. The aggregate grade of the mid-term test and the final exam must be a passing grade ( $\geq 35/70$ ) to pass the course.

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.

<https://web.uvic.ca/calendar2019-01/undergrad/info/regulations/grading.html>

**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 Assistant to set up an appointment.

**Accommodation of Religious Observance:**

<https://web.uvic.ca/calendar2019-01/undergrad/info/regulations/religious-observanc.html>

**Policy on Inclusivity and Diversity:**

<https://web.uvic.ca/calendar2019-01/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.

<https://web.uvic.ca/calendar2019-01/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.

**Sexualized Violence Prevention and Response at UVic**

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting [www.uvic.ca/svp](http://www.uvic.ca/svp). If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

**Where:** Sexualized violence resource office in EQHR; Sedgewick C119

**Phone:** 250.721.8021

**Email:** [svpcordinator@uvic.ca](mailto:svpcordinator@uvic.ca)

**Web:** [www.uvic.ca/svp](http://www.uvic.ca/svp)

**Week-by-week lab schedule as provided by Dan will be added here.**