COURSE OUTLINE

ECE 300 – Linear Circuits: II

Term – SPRING 2020 (202001)

Instructor
Dr. Jens Bornemann
Phone: 250-721-8666
E-mail: jbornema(at)ece(dot)uvic(dot)ca

Office Hours
Days: Mondays, Thursdays
Time: 14:30 – 15:30
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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Appr. No of Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
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<tr>
<td>Basic Circuit Laws (review)</td>
<td>2</td>
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<tr>
<td>Operational Amplifiers</td>
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<td>Transfer Functions</td>
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<td>Bode Plots</td>
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<td>Serial and Parallel Resonance</td>
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<tr>
<td>Filters</td>
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<tr>
<td>Coupled inductors and transformers</td>
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<tr>
<td>Laplace Transforms for Circuits</td>
<td>4</td>
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<tr>
<td>Two-Port Networks</td>
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<td>Sub Total</td>
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<tr>
<td>Midterm Test</td>
<td>1</td>
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<tr>
<td>Review</td>
<td>1</td>
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<td>Total</td>
<td>24</td>
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Lectures
A-Section(s): A01 / CRN 20859
Days: Mondays & Thursdays
Time: 10:00-11:20
Location: ECS 125

Labs
B-Sections:
B01  -  Mon 13:30-16:20
B03  -  Mon 13:30-16:20
B05  -  Tue 13:30-16:20
B07  -  Tue 13:30-16:20
B09  -  Wed 13:00-15:50
B13  -  Tue 16:30-19:20
B15  -  Tue 16:30-19:20

Location: ELW B324

Labs start the week of 27 Jan 2020 and run every other week, except during reading break (c.f. schedule below). Names and emails of lab TAs are posted on the course website.

Required Textbook
Title: Electric Circuits
Author: J.W. Nilsson and S.A. Riedel
Publisher: Pearson
Year: 2019 (11th ed.) or 2015 (10th ed.)

Optional Textbook
Title: Fundamentals of Electric Circuits
Author: C.K. Alexander and M.N.O. Sadiku
Publisher: McGraw Hill

Assessment:
Assignments: 10 %  Due Dates: TBA
Labs  15 %
Mid-term  25 %  Date: 27 Feb 2020
Final Exam  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 (≥ 37.5/75) 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/calendar2020-01/undergrad/info/regulations/grading.html

Assignment of an E grade and supplemental examination for this course will be at the discretion of the Course Instructor. The rules for supplemental examinations can be found in the current Undergraduate Calendar.

https://web.uvic.ca/calendar2020-01/undergrad/info/regulations/exams.html#

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.

Course Withdrawal Deadlines:
- January 19: Withdrawal with 100% reduction of tuition fees
- February 9: Withdrawal with 50% reduction of tuition fees
- February 29: Last day for withdrawal (no fees returned)
Accommodation of Religious Observance:

Policy on Inclusivity and Diversity:
https://web.uvic.ca/calendar2020-01/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/calendar2020-01/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 an appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building. https://www.uvic.ca/services/cal/
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. 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: sypcoordinator@uvic.ca
Web: www.uvic.ca/syp

Office of the Ombudsperson:
The Office of the Ombudsperson is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: ombuddy@uvic.ca; Web: https://uvicombudsperson.ca/
# Two-Week Block Lab Schedule

## Morning Schedule

- **Week 1 (Odd Week)** starts Jan 27 to Jan 31, 2020
  - Monday: ECE 300 B01/B03, ECE 320 B05
  - Tuesday: ECE 300 B05/B07, ECE 300 B13/B15
  - Wednesday: ECE 300 B09
  - Thursday: ECE 300 B01/B03
  - Friday: ECE 300 B03

- **Week 2 (Even Week)** starts Feb 3 to 7, 2020
  - Monday: ECE 330 B02/B04
  - Tuesday: ECE 340 B02/B04
  - Wednesday: ECE 340 B02/B04
  - Thursday: ECE 340 B06/B08
  - Friday: ECE 458 B02

## Afternoon Schedule

- **Week 1 (Odd Week)**
  - Monday: ENGR 120 B03
  - Tuesday: ENGR 120 B04
  - Wednesday: ENGR 120 B05
  - Thursday: ENGR 120 B06
  - Friday: ENGR 120 B07

- **Week 2 (Even Week)**
  - Monday: ENGR 120 B08
  - Tuesday: ENGR 120 B09
  - Wednesday: ENGR 120 B10
  - Thursday: ENGR 120 B11
  - Friday: ENGR 120 B12

## Notes:
- Shaded sections are held on both odd and even weeks.
- ENGR 120 labs are 2 hours in duration & start the 2nd week of classes.
- ECE 441 lab is 1 hour in duration when offered.
### SPRING 2020 TERM
### Alternating Lab Weeks Schedule

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<td><strong>WEEK 1</strong></td>
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<td><strong>Reading Break</strong></td>
<td><strong>HOLIDAY</strong></td>
<td><strong>NO LABS</strong></td>
<td><strong>THIS WEEK</strong></td>
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<td>Feb 17 - 21</td>
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**Note:** Week 1 = odd weeks, Week 2 = even weeks

**First day of classes**

**HOLIDAY**

**NO LABS THIS WEEK**

**Last day of classes**