ECE212H1F Circuit Analysis - Course Syllabus (Fall 2017)

Course Description

Course Objectives
ECE212 provides students with an understanding of the basic methods that are used for the time and frequency domain analysis of linear electric circuits. The course is the second of the three-course sequence, ECE110->ECE212->ECE231, designed to provide ECE students with a foundation for circuit analysis and electronics.

Learning Objectives
1. Master the fundamental techniques of circuit analysis. This includes the use of Ohm’s law, Kirchhoff’s laws, nodal analysis, mesh analysis, superposition, and Thévenin’s and Norton’s theorems.
2. Know the properties of the fundamental circuit elements. This includes resistors, capacitors, inductors, and transformers (coupled inductors).
3. Understand the analysis and design of basic electronic circuits using op-amps.
4. Understand how to determine the transient response of first- and second-order circuits.
5. Understand how to determine the steady-state response of AC circuits using the concepts of phasors and impedances.
6. Understand how the response of a circuit changes with frequency. This involves the concepts of transfer functions, Bode plots, poles and zeros, resonant networks, and filter networks.
7. Understand how to apply the Laplace transform to determine the complete response of a circuit using s-domain analysis.

Instructors

<table>
<thead>
<tr>
<th>Lecture Section</th>
<th>Instructor</th>
<th>Office</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEC101</td>
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Textbook and WileyPLUS
Irwin & Nelms, Basic Engineering Circuit Analysis (11th Edition)
Available at the UofT Bookstore:

1. eTextbook with WileyPLUS: $80, ISBN#9781119347095
2. Printed loose-leaf (binder-ready) version with WileyPLUS: $139.95, ISBN#9781119033493

Throughout the term, we will assign homework exercises through the WileyPLUS online supplement that is integrated into the Blackboard course site.


**COURSE MARKS**

<table>
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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Final Exam</td>
<td>50%</td>
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<tr>
<td>Mid-term (Oct. 30)</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratories (5 x 2%)</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes (2 x 5%)</td>
<td>10%</td>
</tr>
<tr>
<td>Homework (WileyPlus)</td>
<td>10%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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**LABORATORY EXPERIMENTS**

- The laboratory sessions for ECE212H1F will be run in the Instrumentation Laboratory, GB341, and will consist of five experiments.
- The instructions for each experiment will be posted on the course website as the term progresses.
- You will work in groups of two and you will have the opportunity to choose your own partner in the first lab.
- Each student must keep a bound lab book to document the lab preparation and all work done in the laboratory.

**ONLINE HOMEWORK ASSIGNMENTS (WILEYPLUS)**

- Roughly each week (except during midterms), a WileyPLUS assignment will be posted through Blackboard.
- Each assignment will consist of questions that deal with the material covered by the week’s lectures and suggested problems. The purpose of these assignments is to ensure that you take the time to practice the techniques covered in the course. Circuit analysis is a skill and practice is the means for acquiring and developing that skill.

**TUTORIALS AND GROUP WORK**

- Tutorials are held weekly starting the week of Sept.11. The purpose of the tutorials is to allow the students to actively discuss a selection of the assigned problems for that week with classmates and the teaching assistant.
- Some of the problems discussed will be taken from previous tests or exams. In general, these past test problems will only be available in the tutorial.

**DISCUSSION FORUM & EMAILS**

- We will use the internal discussion forum on Blackboard.
- Our goal is to encourage discussion amongst students, so don’t simply wait for an answer from your TA or instructor - take part in answering questions. We’ll be actively monitoring the discussion and giving feedback.
- Email correspondence should only be used for course administration such as handling a missed quiz or lab. Emails should be sent to ask212@eecg.utoronto.ca. Please direct questions related to concepts, homework or lectures to the discussion forum.

**COURSE WEBSITE (BLACKBOARD)**

- The course Blackboard website is accessible through the main UofT portal. You should see the link for the course as: **Fall-2017-ECE212H1-F-LEC0103.LEC0101.LEC0102:CIRCUIT ANALYSIS**
- Announcements, handouts, and schedules will be posted here.