Elec Eng 3EJ4  
Electronic Devices & Circuits 2  
Fall 2017 Course Outline

**COURSE OBJECTIVE**

To understand the:
- terminology and classification;
- principles of operation;
- design methods;
- analysis, including small-signal, large-signal, and frequency response analysis; and
- laboratory techniques

related to analog and mixed signal circuits including specifically:
- passive and active filters;
- analog-to-digital and digital-to-analog converters;
- differential and multistage amplifiers;
- oscillators; and
- feedback circuits.

**Prerequisites:**
Elec Eng 2CI5, 2EI5, and 2CJ4

**INSTRUCTOR AND CONTACT INFORMATION**

**Instructor:**

Yaser M. Haddara  
ITB-A223  
Ext. 24968  
yaser@mcmaster.ca

**WEBSITE**

The course will have an Avenue to Learn site.

**COURSE DESCRIPTION:**

Analog and digital electronics; operational amplifier circuits; multistage amplifiers; oscillators; analog and digital integrated circuits; data converters; amplifier frequency response; feedback and stability; computer aids to analysis and design.

**COURSE LAYOUT**

This course will consist of three lectures, one tutorial per week, and one lab every other week. Schedules are set as per the registrar's timetable for the respective sections.
## REQUIRED COURSE MATERIALS AND READINGS

**Texts:**

## EVALUATION/ASSESSMENT

The course will be marked on the basis of 1100 points. The final percentage mark is calculated by dividing points earned by 10, the maximum being 100%. This builds in a measure of flexibility for the student to prioritize learning activities according to individual benefit.

Only the standard McMaster Calculator can be used on tests and exams.

*Assessment: (subject to change)  
Labs 200  
2EI5 Test 100  
2 Term Tests 400  
Final Exam 400

## COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Outline of Topics (Subject to Change)</th>
<th>No. Of Lectures (Approximate)</th>
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<tbody>
<tr>
<td>1. Introduction and review</td>
<td>2</td>
</tr>
<tr>
<td>2. Differential amplifiers</td>
<td>6</td>
</tr>
<tr>
<td>3. Multistage amplifiers</td>
<td>3</td>
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<tr>
<td>4. Frequency response of amplifiers</td>
<td>4</td>
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<td>5. Filters</td>
<td>6</td>
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<tr>
<td>6. Feedback</td>
<td>6</td>
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<tr>
<td>7. Oscillators</td>
<td>3</td>
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<tr>
<td>8. Data converters (A/D and D/A)</td>
<td>3</td>
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<tr>
<td>9. Modulators &amp; mixers (time permitting)</td>
<td>2</td>
</tr>
<tr>
<td>10. Review</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Lectures 37

## COMMUNICATION

I will use Avenue to Learn to post instructions on various components of the course. It is critical that you consult Avenue frequently.

I will use mass emails from Mosaic if I wish to communicate to the entire class urgently. It is your responsibility to regularly check your McMaster email or forward to an account you do check and to ensure that your forwards are delivered to you and do not go into a SPAM folder or get otherwise misdirected.

If you wish to communicate with me in this course, you must do so by sending email to my university email: yaser@mcmaster.ca. Put the tag [3EJ4] in the subject line. Emails to my Avenue account, emails to my McMaster account without the appropriate tag in the subject line, and any other forms of communication may not be received by me and may not receive a reply.
Announcements:

The instructor(s) reserves the right to choose the format (i.e. written or oral) of any deferred or missed work, midterms, or exams in this course.

Please note that announcements concerning any type of graded material may be in any format (e.g. announcements may be made only in class). In particular, any announcement made in class, posted on Avenue, or emailed via Mosaic is considered delivered and students are responsible for the material or assessment announced.

What this means is that if you skip class and an announcement for a quiz, lab, test, etc. is made in that class, then you are still responsible for that material. If you miss it, then you get a zero.

Faculty of Engineering Policy Reminders:

Senate and the Faculty of Engineering require all course outlines to include the following reminders:

“The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem, that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.”

“Students are reminded that they should read and comply with the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office.”

“Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: ‘Grade of F assigned for academic dishonesty’), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senate/academic/ac_integrity.htm

“The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.”