McGill University
Department of Electrical and Computer Engineering

# ECSE334 INTRO. TO MICROELECTRONIC CIRCUITS [3 CREDITS]

## WINTER 2010

**Instructor** Prof. Anas A. Hamoui

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**Web Page** www.ece.mcgill.ca/~hamoui

**Office Hours** The weekly schedule for the office hours of Prof. Hamoui will be posted on the course WebCT page. If the scheduled office hours are inconvenient for you, please e-mail for an appointment.

**Lectures** Tuesday & Thursday 11:35-12:55 ENGTR 0100

**Course Web Page** http://www.mcgill.ca/mycourses/
Course material will be posted on WebCT *my*Courses (starting Jan. 12, 2010).

**Textbook** A.S. Sedra and K.C. Smith, *Microelectronic Circuits*, 5th edition, 2004.
(Engineering Library, 2-hour loan: TK7867 S39 2004)

**Course Description** ECSE334 begins with a brief review of single-stage BJT and MOSFET amplifiers (Ch. 4, 5), which were studied in ECSE330.
The course is then directed towards the design of analog microelectronic circuits having more than one transistor. The course emphasis is on the design of analog integrated-circuits (ICs). The following topics in *Microelectronic Circuits* - Sedra & Smith (5/e) will be covered:

- Differential and Multi-Stage Amplifiers (Ch. 7)
- Nonideal Characteristics and Frequency Response (Ch. 4, 5, 6, 7)
- Feedback Amplifiers (Ch. 8)
- Other selected topics will be addressed (*as much as time permits*), including:
  - Output Stages (Ch. 14)
  - Digital CMOS Logic Circuits (Ch. 10)

SPICE simulation techniques of ICs will be described throughout the course.

**The sections covered in class will be listed weekly on the course web page.**

**Practice Problems**

Practice problems will be assigned through out the term and posted on the course web page. The problem solution will also be posted (a week later).

**Tutorial Schedule**

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|---|---|---|---|
| Thursday | 17:35-19:25 | ENGTR 0100 | (Section 3) |
| Thursday | 17:35-19:25 | ENGTR 1090 | (Section 4) |

- Tutorials will start on Thursday January 7, 2010.
- On selected weeks (announced in class and posted on the course web page), tutorials will be presented by Prof. Hamoui to the entire class in TR0100.

**Teaching Assistants**

- P. Chopp (philip.chopp@mail.mcgill.ca)
- M. Shaheen (mohamed.shaheen@mail.mcgill.ca)

**TA E-mails**

Please e-mail your questions to:

- **ecse334-tutorial@campus.mcgill.ca**

*Please specify the name of your TA in your e-mail.*

**TA Office Hours**

The weekly schedule for the office hours of the teaching assistants will be posted on the course WebCT page.

**Course Grading**

The course grading will be based on two quizzes, a mid-term test, and a final examination. The following is a *tentative* weighting for determining the overall course grade:

| | | |
|---|---|---|
| Final Exam: | 50% | |
| Mid-term Test: | 30% | |
| Quiz 1: | 10% | (on Feb. 9 in class) |
| Quiz 2: | 10% | |

- The quizzes, mid-term test, and final examination will include problems similar to the **practice problems** assigned in class.
- A **summary of the BJT and MOSFET characteristics** will be attached to the quizzes, mid-term test, and final examination.
- The quizzes and the mid-term test will be given **during the scheduled tutorial times**. The dates will be announced early **in advance** in class and will posted on the course web page.
- The final examination will be scheduled by the Faculty of Engineering.

**Academic Integrity**

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism, and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/integrity for more information).

**Language**

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.