

ECSE-330B: Electronic Circuits I

Winter Session, 2008

<u>Instructor:</u>	Prof. Ramesh Abhari 519 McConnell Engineering ramesh.abhari@mcgill.ca
<u>TAs:</u>	Kasra Payandehjoo (kasra.payandehjoo@mail.mcgill.ca) – (Lead TA) Ruiming Chen (ruiming.chen@mail.mcgill.ca)
<u>Lectures:</u>	Tuesday/Thursday: 8:35 - 9:55, ENGTR 0100 First Lecture: Jan. 3rd Last Lecture: April 10th No lectures on Thursday March 20th
<u>Tutorials:</u>	Tuesday, 4:05pm – 4:55pm ENGTR 2110 Monday, 8:35am – 10:25am ENGTR 0060 (50 min. TBD at the tutorial)
<u>Grading:</u>	Midterm #1: 14 - Feb @ 8:30 – 10:00 16% Midterm #2: 25 - March. @ 8:30 – 10:00 16% Quiz #1: 28, 29 - Jan. @ last 45 minutes of tutorial 4% Quiz #2: 10, 11 - March @ last 45 minutes of tutorial 4% Quiz #3: 3 - April @ 8:30 – 10:00 (during the lecture) 4% Spice Assignment: Due April 10 th @ 4:00pm 6% Final Exam (to be announced): 50%
Note: All exams and quizzes are closed book and closed notes.	
<u>Texts:</u>	"Microelectronic Circuits" by Sedra and Smith, 5th edition
<u>Supplementary Text:</u>	"Spice for Microelectronics" by Roberts and Sedra, 2nd edition
<u>Prerequisites:</u>	A grade of C or better in ECSE-210
<u>Electronic Inf.:</u>	The course will be run using WebCT. The web page for the course is currently up and running at: http://www.mcgill.ca/webct/
<u>Email Policy:</u>	Expect 24 hours to get an answer to your email to the Instructor or the TAs.
<u>Calculator:</u>	The Faculty of Engineering Standard calculator is the only calculator that may be used for the quizzes, the midterms and the final exam.
<u>Office Hours:</u>	Tuesday: 10:30 am – 11:30 am, Thursday: 10:30 am – 11:30 am, Otherwise by appointment.

Assigned Problems, Tutorials, Quizzes and Spice Assignments

Assigned Problems:

All of the assigned problems for the semester will be posted on the web. Students are expected to work out solutions to these problems over the course of the semester. Solutions to the assigned problems will be posted on the web. In addition to the assigned problems, students are encouraged to work out solutions to additional problems listed at the end of each of the assigned S+S chapters, and the "Exercise" problems listed throughout the assigned S+S chapters. Your solutions will not be collected.

Tutorials/quizzes:

Tutorials will be used to work through assigned problems, additional problems created by the Instructor and the TAs, and to answer any questions students may have. The first two quizzes will be conducted during the final 45 minutes of the tutorials on the scheduled dates. For these two quizzes, you should attend the session you have registered for it. Quiz 3 will be held during the lecture.

SPICE assignment:

A SPICE assignment will be handed out during the week before the Study Break. Students work in groups of one, two or three on the assignment. The assignment report should be dropped in the assignment box located at Trotter building by April 10th at 4:00pm.

Viewgraphs

Viewgraphs, which will expedite lectures and note taking, will be posted on the Web. Please download these viewgraphs which will be denoted by topic/chapter prior to the lecture and bring them to lecture.

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 www.mcgill.ca/integrity for more information).

Course Objective

This is the first course in the study of electronic circuits. Topics to be covered include: introduction to amplifier circuits; PN junction diodes and diode circuits; MOS Field Effect Transistors (MOSFETs) and Bipolar Junction Transistors (BJTs), including terminal characteristics, small signal models, amplifier configurations, integrated circuit (IC) applications, frequency response, and operational amplifiers.

By the end of this course you will learn about physics of operation and DC and small signal analysis of diode and transistor circuits, application and design of diode and transistor circuits to rectify signals, to amplify signals and also to implement digital circuits for digital signal processing.

Course Materials

The following chapters from the course textbook, Microelectronic Circuits (5th Ed.) by Sedra and Smith, will be covered:

Chapter 1) Introduction to Analog and Digital Electronics (2 lecture)
Sections 1.4, 1.5, 1.6, 1.7

Chapter 3) The PN Junction and Diodes (4 lectures)
Sections 3.1-3.7

Chapter 4) Field-Effect Transistors (8 lectures)
Sections 4.1- 4.10, (also 10.3, 6.3)

Chapter 5) Bipolar Junction Transistors (8 lectures)
Sections 5.1-5.10, (also 6.3)

Chapter 2) Operational Amplifiers (1 lecture)
Sections 2.1-2.8 (briefly)