UNIVERSITY OF GUELPH
SCHOOL OF ENGINEERING

ENGG*3450: ELECTRICAL DEVICES

COURSE OUTLINE - FALL 2007

CALENDAR DESCRIPTION

Conduction in metals and semi-conductors; principles of modern electronic devices and their application in circuits; diodes; bipolar and field effect transistors; circuit integration; operational amplifiers; logic gates.

PREREQUISITE

ENGG*2450: Electric Circuits (previously called Network Theory)

TEXT

Title: Electronic Devices and Circuit Theory, 9th edition
Author: Robert L. BOYLESTAD and Louis NASHELSKY
Publisher: Prentice Hall

COURSE OBJECTIVES

Students who successfully complete this course will be able to:

1. describe the basic principles of operation of semiconductor diodes and transistors and use their specifications in the design of circuits,
2. develop models of operational amplifiers for the design of signal processing circuits,
3. use binary logic circuits to develop decision making systems,
4. become familiar with the operation and characteristics of some of the most commonly used Integrated Circuits units (ICs).

EVALUATION Please refer to **NOTES** for important evaluation details

Laboratory (5 sessions)	25%	Course Calendar, THRN 1126
Midterm (1)	35%	Thu, Oct 11, 2007, 5:30 – 7:00**PM** THRN 1307
Midterm (2)		Thu, Nov 8, 2007, 5:30 – 7:00**PM** THRN 1307
Final Exam	40%	Thu, Dec 6, 2007, 7:00 - 9:00**PM**, TBA

PRESENTATION METHOD

- Three lectures per week on Mon, Wed and Fridays from 8:30 – 9:20 AM in MINS 300
- Labs and tutorials in alternating weeks: 5 labs and 6 tutorials (Course Calendar, WebCT)
- Bi-weekly non-graded problem sets that complement class material (discussed in tutorials)
- Office hours and in class/tutorial consultation. Office hours schedule will be posted on WebCT.

LABS

- Lab experiments will be carried out by groups of **at least 3 and no more than 4 students**. Groups will form in the first week of labs and will not change during the course of the term.
- Safety in the lab is a priority at all times. The labs are designed to be safe (the voltages are low), but be aware of the fact that misconnected devices may get **extremely hot** even to the point of bursting into flames! Please always make sure that your connections are done correctly before turning the power on.
- Each group must finish their experiments in the scheduled lab session. An additional 30 minutes will be granted on the following week for groups who may need extra time to finish their experiments, provided that their work is not disruptive to other students and TAs conducting the tutorial.
- ***Group*** lab reports are to be submitted according to the following schedule:

LAB (1)	Fri, Sep 28, 2:00 PM	LAB (4)	Mon, Nov 12, 2:00 PM
LAB (2)	Mon, Oct 15, 2:00 PM	LAB (5)	Fri, Nov 23, 2:00 PM
LAB (3)	Fri, Oct 26, 2:00 PM		

- The report for each lab will consist of:
  - Section 1: Introduction and Background (combined)
  - Section 2: the procedures used, measurements, results (also combined)
  - Section 3: discussion and concluding remarks
  - Appendix: All data gathered during lab session

COMMUNICATION

All communication for this course is through:

1. Engg3450 listserv (engg3450@listserv.uoguelph.ca)
2. WebCT

TEACHING

Instructor:
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Lab Technician:
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TEACHING ASSISTANTS

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COURSE CONTENTS

Topic	Number of Weeks(*)
Review and introduction to Semiconductors	1
Diodes and their applications	1.5
Bipolar Junction Transistors	3
Field Effect Transistors	2
Operational Amplifiers	2
Oscillator Circuits	1.5
(Examples of IC circuits)	(1) (**)
(Power Supplies)	(1) (**)

(*) The numbers in this column are subject to change based on the class pace and needs.
(**) Potential topics to be covered (time permitting)

NOTES

1. Academic Misconduct: the School of Engineering operates on a zero-tolerance policy. Plagiarism will be reported. Please refer to the Undergraduate Calendar: Section VIII "Undergraduate Degree Regulations and Procedures – Academic Misconduct".

2. If there is any conflict with any of the midterm dates due to religious considerations, the instructor must be made aware of these conflicts, **in writing**, by September 28tt, 2007.

3. The best of Midterm (1) and Midterm (2) is taken to constitute 35% weight of the final grade.

4. To obtain a grade for this course, the final exam **and** at least one midterm must be written. There will be **no make-up dates** for neither Midterm (1) nor Midterm (2). Conflicts with any of the midterm dates must be declared **in writing** to the instructor by September 28th, 2007.

5. If a student misses a lab session, his/her lab mark will not be recorded. It is the student's responsibility to attend and conduct lab experiments with his/her group. In case of absence (due to illness or other legitimate reasons), the student has to obtain the consent from the lab technician and responsible TA for an alternative time slot for the missed lab. The cover page of each lab report must indicate the percentage contribution of each member.