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COURSE INFORMATION AND ASSESSMENT TECHNIQUES

(Check http://www.ece.uvic.ca/~elec330/ for updates)

ELEC 330 ELECTRONIC CIRCUITS: I

January - April 2014

Instructor: Dr. Adam Zielinski, tel.721-8622, Email: adam@uvic.ca,
http://www.ece.uvic.ca/faculty/azielinski.shtml

Class of 2016: 123 students; Class Rep: Daniel Brett Williams (Danielbrettwilliams@gmail.com)

Office Hours:

Days:	**Wednesdays, or any time but confirm by Email or phone**
Time:	**9:30 am - 11:15 a.m.**
Location:	**EOW 411**

Lectures:

Section(s):	A01 (21074) and A02 (21075)
Days:	Tuesdays, Wednesdays, and Fridays
Time:	11:30 a.m. - 12:20 p.m.
Location:	**ECS 125**

Important Dates for 2014:

January 6, Monday	Classes start
February 7, Friday (TBC)	Guest Lecture (Dr. Kris Caputa)
February 11, Monday	Holiday (Family Day)
February 10-14	Reading Break (no labs this week)
February 10, Monday	Family Day
April 18, Friday	Holiday (Good Friday)
April 21, Monday	Holiday (Easter)
April 4, Friday	Last day of classes
April 7-25	Examination Period

Tests: short (10 min) multiple-choice tests (weight in brackets) on at 9:30 am (please bring a pencil for marking the cards and a calculator):

January 8 (Wednesday)	Test 1 (1%)
February 4 (Tuesday)	Test 2 (4%)
February 25 (Tuesday))	Test 3 (5%)
March 18 (Tuesday)	Test 4 (10%)

Laboratory Schedule (location: **ELWB324**)

Labs Section	Days	Time	CRN No	Lab Instructors	*EMail*
B02 (22)	Mondays	1200-1450	21077	Cheraghi Shirazim, Mohammad Amin	*ma.shirazi88@gmail.com*
B012 (06)	Mondays	1500-1750	21087	Sanadgol Nezami, Mohammadreza	*sanadgol@uvic.ca*
B04 (22)	Tuesdays	1330-1620	21079	Edussooriya, Chamira	*chamira@ece.uvic.ca*
B06 (22)	Tuesdays	1630-1920	21081	Sadeghi, Niloofar	*niloufar.sadeghi@gmail.com*
B08 (22)	Wednesday	1330-1620	21083	Mosayyebpour, Saeed	*saeedm@uvic.ca*
B10 (22)	Thursdays	1200-1450	21085	Lohrasbipeydeh, Hannan	*lohrasbi@uvic.ca*

Assessment:

Labs (4)	10%
Tests (4)	20%
Assignments (8)	10%
Final Exam (1)	60%

Teaching assistants (Markers):

Name	***Emails***
Ghonaim, Fahrad	*abumoath30@hotmail.com*
Oladipo, Abimbola	*carolynoladipo@yahoo.com*

Design-teaching assistant (DTA)

Name	***Emails***
Chamira Edussooriya	*chamira@engr.uvic.ca*

Grade Conversion:

The final grade obtained from the above marking scheme will be based on the following percentage-to-grade point conversion (see UVic calendar):

Passing Grades	**Grade Point Value**	**Percentage for Instructor Use Only**	**Description**
A+ A A-	9 8 7	90 – 100 85 – 89 80 – 84	**Exceptional, outstanding** and **excellent** performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter
B+ B B-	6 5 4	77 – 79 73 – 76 70 – 72	**Very good, good** and **solid** performance

C+ C	3 2	65 – 69 60 – 64	**Satisfactory**, or **minimally satisfactory**
D	1	50 – 59	**Marginal** performance
Failing Grades	**Grade Point Value**	**Percentage for Instructor Use Only**	
E	0	35 - 49	Fail, conditional supplemental exam. (For undergraduate courses only)
F	0	0 – 49	Fail, no supplemental.
N	0	0 – 49	Did not write examination, Lab or otherwise complete course requirements by the end of term or session; no supplemental exam.

The rules for supplemental examinations are found on page 80 of the current 2013/14 Undergraduate Calendar.

Term in which E Grade Was Obtained	Application Deadline for Supplemental Exam	Supplemental Exam Date
First term of Winter Session (Sept – Dec)	February 28 in the following term	First week of following May
Second term of Winter Session (Jan – Apr)	June 30 in the following term	First week of following September
Summer Session (May – Aug)	October 31 in the following term	First week of following January

Deferred exams will normally be written at the start of the student's next academic term; i.e., approximately four months following the deferral of the exam.

Electronic Simulation Laboratory:

The Department operates in Laboratory ELW-B326 the Electronic Simulation Laboratory consisting of several PCs utilizing simulation software MICRO-Cap 10 (see laboratory manual for MICRO-Cap 10 Tutorial). Free PC evaluation version of MICRO-CAP 10 can be obtained from website: http://www.spectrum-soft.com.

Other Simulation software:

	Producer/Website	Name	Price ($)	Comments
1	National Instruments http://www.ni.com/academic/multisimse	Multisim	60	Click: "Ready to Buy Canada"
2	http://www.linear.com/designtools/software.	LTSpice	Free	
3	http://qucs.sourceforge.net/screenshots.html Installed in the lab. Type "qucs"	Quite Universal Circuit Simulator (Qucs):	Free	Mac, Windows, Linux
4	http://www.gpleda.org/index.html Installed in the lab. Type: "gschem"	Gnu Electronic Design Automation (gEDA)	Free	Electronic design tools from schematic to PCB.
5	http://www.picaxe.com/Software/Third-Party/PEBBLE/		Free	PC, Mac, Linux
6	http://qucs.sourceforge.net/screenshots.html		Free	
7	Circuit. app		$10	Mac, ipod, ipad

Laboratory Schedule:

Laboratory session in brackets is associated simulation exercise required as a preparation to the laboratory. All simulations can be performed in the Electronic Simulation Laboratory-ELWB324. Students can also use any other simulation software but should indicate what package was used

Laboratory Sessions	Title	Section B02/B12 (Mondays)	Section B04/B06 (Tuesdays)	Section B08 (Wednesdays)	Section B10 (Thursdays)
1. Exp #2 (Sim #2)	Applications of Diodes	Feb. 3	Feb. 4	Feb. 5	Feb. 6
2. Exp #3 (Sim #3)	Transistor Characteristics	Feb. 24 (1)	Feb. 25	Feb. 26	Feb. 27
3. Exp #4 (Sim #4)	Amplifiers	March 10	March 11	March 12	March 13
4. Exp #5 (Sim #5)	JFET Transistors	March 24	March 25	March 26	March 27
	Last Report Due	**March 31**	**April 1**	**April 2**	**April 3**

(1) No labs in week Feb.10-14

Texts

Required:

a. Title: Laboratory Manual for ELEC 330 - Electronic Circuits I
Author: A. Zielinski
Publisher: University of Victoria
Year: 1985-2013, Last Revision: October 2013 (158 pages, $14.50)

b. Title: Class Notes for ELEC 330 - Electronic Circuits I
Author: A. Zielinski
Publisher: University of Victoria
Year: Last Revision: December 2013 (148 pages, $16.75)

c. Title: Electronic Devices – Conventional Flow ($193), rental-180 days: $70),
Author: T.L. Floyd
Publisher: Prentice-Hall
Year: 2012 (9th Edition) - ISBN-9780132549868
Note: 8th edition is available in the Library reserve room

Supplementary:

a. Title: Microelectronic Circuit Analysis and Design
Author: Donald A. Neamen ($198)
Publisher: McGraw Hill
Year: 4th edition, 2010, ISBN 0-07-338064-4

Notes to students:

1. Students who can demonstrate prior experience and background in the material covered in the laboratory experiments should contact course Instructor before the laboratory begins. Some of such students might be given a suitable project that will be marked and used in lieu of regular laboratory. This new initiative is sponsored by the NSERC Chair of Design Engineering, Dr. Peter Wild with the objective to expose students to engineering design process and provide an opportunity to have hands on experience on circuit design and implementation.

Students are expected to design, prototype and test electronic circuits by spending a similar time allocated to the laboratory experiments and to present experience in technical reports. During the process, guidance of a design-teaching assistant (DTA) student) will be available, and students are expected to report progress of their projects to the DTA every other week. Students may work as groups, each having maximum of two students.

2. Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should are free to contact the ECE Chair by email or the ECE Chair's secretary to set up an appointment.

3. Important Information regarding Class Notes:
Class notes as designed to supplement your punctual, active and systematic involvement in each class. By making your own notes you can customize them for your individual preferences. Please report any errors you notice immediately. Note also that some material in class notes is covered deeper than in the required text and might be used in test or/and exam. Similar comments apply to the Laboratory Manual

UNDERGRADUATE CALENDER (2013- 2014) DESCRIPTION

ELEC 330 ELECTRONIC CIRCUITS: I Units: 1.5 Hours: 3-1.5

Nonlinear devices. Modelling and application of diodes: rectifiers, voltage regulators, waveform shaping circuits. Biasing of bipolar and field effect transistors. Small signal amplifiers. Multistage amplifiers. Nonlinear applications of transistors including digital circuits such as inverters, gates and flip-flops. Circuit design, simulation, implementation and testing. Prerequisites: 250

CONTENTS (in brackets pages in the textbook)

Course Objectives:

On completion of this course, you will be expected to:

- Describe nonlinear two-terminal and three-terminal elements
- Know the basic characteristics of diodes, their limitations, and applications
- Analyze and design simple circuits with diodes
- Know the basic characteristics of Bipolar Junction Transistors (BJT), their limitations and their applications
- Analyze and design simple circuits with diodes and transistors

- Know the basics of various types of amplifiers
- Analyze and design simple transistor amplifiers
- Simulate actual circuits, taking into consideration the finite tolerances of the components used and their sensitivity to temperature changes
- Know the basics of Field Effect Transistors (JFET and MOSFET) and their applications
- Analyze and design simple JFET and MOSFET amplifiers and other circuits
- Know how to implement and evaluate circuits in the laboratory including troubleshooting
- Have a familiarity with h- parameters

Attendance at Lectures
(See: 2013/14 calendar p. 30 or http://web.uvic.ca/calendar2013/GRAD/FARe/Atte.html)

Students are expected to attend all classes in which they are enrolled.

Accommodation of Religious Observance
See http://web.uvic.ca/calendar2013/GI/GUPo.html

Policy on Inclusivity and Diversity
See http://web.uvic.ca/calendar2013/GI/GUPo.html

Standards of Professional Behaviour

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour at http://www.uvic.ca/engineering/current/faculty/index.php#section0-13
which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult

http://web.uvic.ca/calendar2013/FACS/UnIn/UARe/PoAcI.html for the UVic policy on academic integrity.

Plagiarism detection software may be used to aid the instructor and/or TA's in the review and grading of some or all of the work you submit.

ELEC 330 – Design Projects
Spring Term 2014

Objectives – This new initiative is sponsored by the NSERC Chair of Design Engineering, Dr. Peter Wild. It is intended to expose students to engineering design process and provide an opportunity to have hands on experience on circuit design and implementation.

Brief Description – Students who can demonstrate prior experience and background in the material covered in the laboratory experiments for ELEC 330 might be given a suitable project that will be marked and used in lieu of regular laboratory. Students are expected to design, prototype and test electronic circuits by spending a similar time allocated to the

laboratory experiments and to present experience in technical reports. Students may work as groups, each having maximum of two students. During the process, guidance of a design-teaching assistant (DTA) will be available, and students are expected to report progress of their projects to the DTA every other week. Access to the ELW B324 electronics laboratory will be available.

Example projects are:

- Linear regulated linear power supply
- Audio power amplifier.

For more examples, see

- ✓ http://www.bowdenshobbycircuits.info/
- ✓ http://www.circuitstoday.com/tag/hobby-circuits

Application: Interested students should contact DTA and apply for this opportunity. In the application please indicate your experience in design, your GPA, the proposed project and its implementation. Bridge students will be accepted due to their educational background subject only to GPA. Other students should describe their prior experience. Students are highly encouraged to come up with their own ideas. The projects will be examined by the course instructor/DTA and will be approved with modifications if necessary. Otherwise, appropriate projects will be given by the DTA with the consent of the course instructor.

DTA – Chamira Edussooriya (work under supervision of course instructor Dr. Adam Zielinski), office – ELW A224, email – chamira@engr.uvic.ca

Schedule:

Jan 20, 2014:	Applications with the project proposals submitted to DTA
Jan. 24, 2014:	Decision on acceptance by the course Instructor:
Apr 04, 2014	Final reports are due on March 31, 2014

Schedule for meetings with the DTA will be provided once the number of groups are finalized.