Faculty of Engineering

COURSE OUTLINE

ELEC 412 – Electronic Devices: II

Term – Spring 2018 (201801)

Instructor

Dr. H.L. Kwok
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Office Hours

Days: Thursdays
Time: 16:00-17:00
Location: EOW425

Webpage: https://www.ece.uvic.ca/~elec412 **Password**: Devices11.

Course Objectives

This course deals with the principle of operation and design issues related to modern electronic devices. The advancement of electronics has been primarily due to the invention of new devices and it is desirable for practicing engineers to have an updated perspective and understanding on state-of-the-art electronic devices and the future trends.

Learning Outcomes

LO-1: Study the operation of advanced bipolar and field-effect transistors

SLO-1.1: Examine the state-of-the-art of advanced transistors, their performance and operation in the context of Very-Large Scale Integration Circuits

LO-2: Study the operation of novel photonic and opto-electronic devices

LO-3: Study the operation of non-conventional semiconductor devices and their future trends

LO-4: Study the principles, construction and design of semiconductor lasers and related applications

LO-5: Study the operation of state-of-the-art display devices; thin-film devices; imaging devices; energy conversion devices; transducers; and micro-machines and their interfacing

Syllabus

- Topics to cover:

a. Operation of bipolar and field-effect devices in VLSI deign
b. Photonic and optoelectronic devices
c. Organic semiconductor devices and their upcoming trends
d. Principles, construction and design of lasers and related light sources
e. Display devices, thin-film devices, imaging devices, transducers and micro-machines
f. Interfacing, sensor arrays and related system-level design

A-Section(s): A01 / CRN 21114

Days: MT
Time: 10:00-11:20
Location: Clearihue D131

Required Text

Title: Electronic Materials
Author: H. Kwok
Publisher: Trans Tech Publishing
Year: 2010

Optional Text

Title: Physics of Semiconductor Devices
Author: M. Shur
Publisher: Prentice-Hall
Year: 1990

References:

Title: Semiconductor Devices, Physics and Technology
Author: S.M. Sze
Publisher: J. Wiley
Year: 1985

Assessment:

Assignments:	20%	Due Dates: To be announced
Mid-term	30%	Date: Mar 1 (Thurs)
Final Exam	50%	

Note:

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/grading.html

There will be no supplemental examination for this course.

Assignment of E grade and supplemental examination for this course will be at the discretion of the Course Instructor. The rules for supplemental examinations can be found in the current Undergraduate Calendar.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/exams.html#

Note to students: 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 feel free to contact the Chair of the Department by email or the Chair's Assistant to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/religious-observanc.html

Policy on Inclusivity and Diversity:

https://web.uvic.ca/calendar2018-01/general/policies.html

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.
https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.
The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.