

COURSE OUTLINE

ECE 412 – Electronic Devices: II

Term – FALL 2020 (202009)

Instructor

Dr. Makhsud Saidaminov
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Office Hours

Days: W
Time: 4-5 pm

Location/Platform/link: Zoom (see the link below)

<https://uvic.zoom.us/j/93567767653?pwd=bEh5MERwTUg1MnpZR3N1VnJCNDJzUT09>

Meeting ID 935 6776 7653; Password 129205

Course Objectives

To provide an updated perspective and understanding on modern electronic materials and devices and future trends.

Learning Outcomes

Ability to analyze the principles of operation of electronic and optoelectronic devices and apply the knowledge to determine factors that drive their performance. Gain practical knowledge on fabrication and characterization of modern and emerging electronic materials and device concepts.

Syllabus

- Module 1: review of electronic devices
- Module 2: optoelectronic devices
- Module 3: unconventional semiconductors and thin-film devices
- Module 4: fabrication of thin film solar cells and simulation of their efficiency
- Module 5: emerging device concepts and novel electronic materials

A-Section(s): A01 / CRN **11029**

Days: TW

Time: 2:30 – 3:50

Location/Platform/link: Zoom <https://uvic.zoom.us/j/93567767653?pwd=bEh5MERwTUg1MnpZR3N1VnJCNDJzUT09>

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Required Textbook

Title: Solid State Electronic Devices
Author: B.G Streetman, S. Banerjee
Publisher: PEARSON, Prentice Hall
Year: 2015

Optional Textbook

Title: Fundamentals of Semiconductor devices
Author: B. L. Anderson, R. Anderson
Publisher: McGraw-Hill Education
Year: 2018

Online Course Delivery:

As this course will be conducted online during this term, students will need to complete assignments/labs online. The students will require access to a computer which has the following software installed:

- Zoom <https://zoom.us/>
- SCAPS <http://scaps.elis.ugent.be/>

References:

- Jenny Nelson. The Physics of Solar Cells. Imperial College Press, 2003
- <https://www.pveducation.org/>

Assessment:

Assignments	30%	Due Dates: to be posted
Mid-term	20%	Date: Oct 7, 2020, in class time
Labs (simulations)	20%	Due Date: to be posted
Research paper	30%	Due Date: to be posted

Important: All deadlines and schedules for this course will reference Pacific Daylight Time until November 1, 2020, and then Pacific Standard Time.

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://www.uvic.ca/calendar/archives/202009/undergrad/index.php#/policy/S1AAgoGuV?bc=true&bcCurrent=14%20-%20Grading&bcGroup=Undergraduate%20Academic%20Regulations&bcltemType=policies>

There will be no supplemental examination for this course.

https://www.uvic.ca/calendar/archives/202009/undergrad/index.php#/policy/S12RxoZ_N?bc=true&bcCurrent=13%20-%20Examinations&bcGroup=Undergraduate%20Academic%20Regulations&bcltemType=policies

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.

Course Withdrawal Deadlines:

- September 22, 2020: Withdrawal with 100% reduction of tuition fees
- October 13, 2020: Withdrawal with 50% reduction of tuition fees
- October 31, 2020: Last day for withdrawal (no fees returned)

Accommodation of Religious Observance:

<https://www.uvic.ca/calendar/archives/202009/undergrad/index.php#/policy/r1q0gofdN?bc=true&bcCurrent=10%20-%20Accommodation%20of%20Religious%20Observance&bcGroup=Undergraduate%20Academic%20Regulations&bcltemType=policies>

Policy on Inclusivity and Diversity:

Engineering: <https://www.uvic.ca/engineering/about/equity/index.php>

Academic Calendar:

<https://www.uvic.ca/calendar/archives/202009/undergrad/index.php#/policy/HkQ0pzdAN?bc=true&bcCurrent=%20General%20University%20Policies&bcGroup=General%20University%20Policies&bcltemType=policies>

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>

Academic Integrity

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://www.uvic.ca/calendar/archives/202009/undergrad/index.php#/policy/Sk_0xsM_V?bc=true&bcCurrent=08%20-%20Policy%20on%20Academic%20Integrity&bcGroup=Undergraduate%20Academic%20Regulations&bclItemType=policies

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 an appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building. <https://www.uvic.ca/services/cal/>. The University of Victoria is committed to promoting, providing, and protecting a positive, 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.

Sexualized Violence Prevention and Response at Uvic:

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119

Phone: 250.721.8021

Email: svpcoordinator@uvic.ca

Web: www.uvic.ca/svp

Office of the Ombudsperson:

The [Office of the Ombudsperson](http://www.uvic.ca/ombudsperson) is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: ombuddy@uvic.ca, Website: <https://uvicombudsperson.ca/>