

COURSE OUTLINE

ECE220 – Electrical Properties of Materials

Term –SUMMER 2020 (202005)

Instructor

Anusha Venkataraman
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Office Hours

Days: Wed (or by appointment)
Time: 14:00 – 16:00
Location/Platform/link: <https://ca.bbcollab.com/>

Lectures

Section(s): A01 / CRN 30288
Days: Tue, Wed, Fri
Time: 11:30 - 12:20
Location/Platform/link: <https://ca.bbcollab.com/>

Tutorial

T01 / CRN 30289
Day: Wed
Time: 8:30 - 9:20 TA: (TBA)
Location/Platform/link: <https://ca.bbcollab.com/>

Course Website: <https://coursespaces.uvic.ca/> (NetLink ID required)

Topics

- I. Properties and behaviour of electrons
- II. Band theory of solids
- III. Free electron theory
- IV. Properties of metals, semiconductors and insulators
- V. Simple device applications

Required Textbook

Title: Electronic Properties of Materials
Author: Rolf E. Hummel
Publisher: Springer, New York, NY
Year: 2011

Optional Textbook

Title: Electronic Properties of Engineering Materials
Author: J. D. Livingston
Publisher: Wiley
Year: 1999 (or reprint)

Online Course Delivery

As this course will be conducted online during this term, students will need to complete assignments/exams online. The students will require access to a computer which uses Google Chrome as the web browser.

Assessment:

Assignments	25%	Due Dates: 25 May, 15 June, 6 July and 20 July
Quiz	30%	Due Dates: 10 June (15%), 29 July (15%)
Final Exam	45%	

Upload all assignments directly to Course Spaces before the scheduled deadline. Late assignments will be accepted up to 4 hours after the due time with a penalty of 15% per hour.

Important: All deadlines and schedules for this course will reference Pacific Daylight Time.

Note: Failure to pass the final exam will result in a failing grade for the course.

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/calendar202005/undergrad/index.php#/policy/S1AAgoGuV?bc=true&bcCurrent=14%20-%20Grading&bcltemType=policies>

Assignment of an 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://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/SJ2Rxoz_N?bc=true&bcCurrent=13%20-%20Examinations&bcltemType=policies

Course Objectives and Learning Outcomes

-The objective of this course is to present the fundamental knowledge of the electronic structure of materials and their properties, to understand their behavior in important electronic applications.

- At the end of the course, students will be able to:

- Understand the fundamental concepts and equations of electron theory
- Demonstrate the ability to qualitatively and quantitatively explain the various properties of materials and their applications
- Apply the knowledge of material properties to present day engineering tools and electronic devices

Syllabus

-Materials for engineering, atomic bonding's, crystalline structures, properties of metals, glasses, semiconductors, insulators and magnetic materials. Electronic conduction in solids and simple devices. Materials in engineering design and environmental effects.

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:

- May 16, 2020: Withdrawal with 100% reduction of tuition fees
- June 6, 2020: Withdrawal with 50% reduction of tuition fees
- July 1, 2020: Last day for withdrawal (no fees returned)

Accommodation of Religious Observance:

<https://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/r1qOgofdN?bc=true&bcCurrent=10%20-%20Accommodation%20of%20Religious%20Observance&bcltemType=policies>

Policy on Inclusivity and Diversity:

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

Academic Calendar: <https://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/HkQ0pzdAN>

Standards of Professional Behavior:

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/calendar2020-05/undergrad/index.php#/policy/Sk_0xsM_V?bc=true&bcCurrent=08%20-%20Policy%20on%20Academic%20Integrity&bcltemType=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://uvicombudsperson.ca) 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; Web: <https://uvicombudsperson.ca/>