

COURSE OUTLINE

ECE 519C – Selected Topics in Secure Communications- Blockchain Technologies

Term – SUMMER 2020 (202005)

Instructor

Dr. Riham AlTawy
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Office Hours

Days: Monday and Thursday
Time: 13:30 – 14:30
Location: Skype meetings, account details will be pinned on CourseSpaces Announcements section

Course Objectives

- Introduce students to blockchain technologies, modern cryptocurrencies, and decentralized immutable financial systems.
- Enable students to build a foundational reasoning about the difference between cryptocurrency pseudonymity and cash-transactions anonymity in real life.
- Introduce students to smart contract-based application development using blockchains.

Learning Outcomes

By the end of this course, students should be able to

- Understand the conceptual cryptographic foundations they need to engineer secure applications using blockchain technologies.
- Reason about the capabilities and limitations of blockchain-based solutions
- Develop the knowledge of how blockchain technologies favour customer oriented applications.
- Define the concept of pseudonymity and privacy in blockchain-based cryptocurrencies.

Syllabus

The following topics will be covered in the order below.

- Overview on monetary systems and history of cryptocurrencies
- Hash Functions and digital Signatures
- Immutability and consensus protocols.
- Sybil and 51% attacks on blockchains
- Introduction to Bitcoin
- Ethereum virtual machine
- Smart contracts
- Anonymity of blockchain transactions.

A-Section(s): A01 / CRN 31619, A02 / CRN 31620

Days: Monday and Thursday

Time: 14:30 - 15:50

Location: Blackboard Collaborate session link will be pinned on CourseSpaces Announcements section

TA information will be pinned on CourseSpaces Announcements section

Required Text

Online open access textbook: [Bitcoin and Cryptocurrency Technology](#) (Narayanan et al)

Lecture notes: Students are responsible for attending the lectures and taking notes.

Assessment:

Assignments:	30%	Due Dates: 1 st (resp. 2 nd) assignment is due on Jun. 05 (resp. Jul. 17)
Mid-term	30%	Date: Held on one or two lectures in the week of June 15 th .
Project	40%	Date: Last day of classes.

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

Notes:

- The due dates for the assignments and midterm are all **tentative**. Exact dates will be announced in class after we have covered the required material.
- There will be **NO** makeup for the midterm. In the case of a serious illness or emergency, the weight of the midterm will be moved towards the project proportionally. Be prepared to provide written documentation (e.g., a medical excuse from your doctor) to verify the emergency and its seriousness.
- **Late policy for assignments and project**
Cumulative of 10% times number of days late
 - 1 day late: lose 10%
 - 2 days late: lose 30% (10% + 20%)
 - 3 days late: lose 60% (30% + 30%)
 - Greater than 4 days late not accepted.

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 Graduate Calendar.

<https://www.uvic.ca/calendar2020-05/grad/index.php#/policy/B13jeiMdE?bc=true&bcCurrent=07%20-%20Grading&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 Secretary 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/grad/index.php#/policy/SkmigiMOV?bc=true&bcCurrent=17%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/grad/index.php#/policy/HkQ0pzdAN>

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.

<http://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 Graduate Calendar for the UVic policy on academic integrity.

https://www.uvic.ca/calendar2020-05/grad/index.php#/policy/BJujesM_E?bc=true&bcCurrent=02%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 for 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, 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.

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/](http://uvicombudsperson.ca/)