CMPT 981 - G100 Special Topics in Theoretical Computing Science

Instructor(s): Antonina Kolokolova

SFU Burnaby

Calendar Objective/Description:
None

Instructor's Objectives:
This course focuses on cryptographic primitives and cryptosystems underlying secure communication and information protection. We will study private-key and public-key encryption, authentication, digital signatures, and commitment schemes, and see how they are used in practice, analyse what it means for them to be secure, and look at why widely-used schemes such as SSL may be insecure. We will cover a range of cryptographic applications from wifi protocols to electronic voting and blockchains.

Prerequisites:
None

Topics:
- Basic cryptographic primitives and respective computational assumptions
- Private-key encryption, block ciphers
- Public-key encryption, certificates and certificate authorities
- Message authentication, digital signatures and hashing
- Secure communication protocols
- Commitment schemes, blockchains
- Time permitting: post-quantum cryptography

Grading:
Will be discussed in the first week of classes.

Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C- or better).

Recommended Books:

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student...
Conduct Policies ( http://www.sfu.ca/policies/gazette/student.html ).