Computing Science Course Outlines

CMPT 318 - D100 Special Topics Cmpt. Science

Instructor(s): Uwe Glaesser

SFU Burnaby

Calendar Objective/Description:
Special Topics Cmpt. Science

Instructor's Objectives:
This course introduces cybersecurity and explores cyber situational awareness concepts and threat intelligence models. Cyber security analytics and probabilistic modeling for threat detection and response (mitigative action) will play a central role. Coursework involves using the R language and software environment for statistical computing and graphics. Fundamental principles and practices of cybersecurity risk assessment, intrusion detection and prevention methods and their application to critical infrastructure protection will be discussed in detail.

Prerequisites:
see go.sfu.ca

Topics:
- Cyber threat analysis and intrusion detection
- Advanced persistent threats and zero day exploits
- Probability theory and probabilistic modeling
- Stochastic processes and Markov models
- Anomaly detection and scoring methods
- Time series analysis and forecasting
- Risk assessment and management
- Blockchain technology

Grading:
The course has three tests (worth 30% of the total grade), three graded assignments (worth 20%) and a term project organized as group project with a final report and presentation in class (worth 45%). There will also be reading assignments and several tutorials. Class participation accounts for up to 5% of the total grade. This grading scheme is tentative and to be finalized during the first week of classes.

Recommended Books:
An Introduction to Statistical Learning with Applications in R, G. James, D. Witten, T. Hastie, and R. Tibshirani, Springer, 2017, 978-1461471370

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 ).