CMPT 318 - D100 Special Topics in Computing Science

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Calendar Objective/Description:
Special topics in computing science at the 300 level. Topics that are of current interest or are not covered in regular curriculum will be offered from time to time depending on availability of faculty and student interest.

Instructor's Objectives:
This course introduces cybersecurity concepts and discusses cyber intelligence and threat analysis methods in the context of Big Data analytics. Cyber situational analysis and anomaly detection based on probabilistic modelling will play a central role. This includes using the R language and software environment for statistical computing. Fundamental concepts and applied aspects of cybersecurity risk assessment and management will be discussed in detail.

Prerequisites:
CMPT 225. Additional prerequisites to be determined by the instructor subject to approval by the undergraduate program chair.

Topics:
- Probability theory
- Time series analysis and forecasting
- Discrete Markov process modelling
- Intrusion detection and prevention
- Complex vs. simple anomalies
- Critical infrastructure protection
- Advanced persistent threats
- Cyber risk mitigation

Grading:
The course has a midterm examination (worth 30% of the total grade), two tests (worth 20%), two graded assignments (worth 10%) and a course project organized as group project with a project report and presentation in class (worth 35%). There will also be two reading assignments and several tutorials. Class participation accounts for 5% of the total grade.

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).