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 cyber situational awareness concepts and discusses cyber intelligence in the context of big data. 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 concepts and principles of cybersecurity risk assessment, intrusion detection and prevention, critical infrastructure protection and beyond will be discussed in detail.

**Prerequisites:**  
see go.sfu.ca

**Topics:**
- Probability theory  
- Discrete Markov processes  
- Threat analysis and modeling  
- Advanced persistent threats  
- Time series analysis and forecasting  
- Anomaly detection and scoring methods  
- Cyber risk mitigation strategies  
- Blockchain technology

**Grading:**
The course has three tests (worth 30% of the total grade), three graded assignments (worth 15%) and a term project organized as group project with a project report and presentation in class (worth 50%). 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 will be finalized during the first week of classes, also depending on external circumstances.

**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 ).