CMPT 829 - G100 Special Topics in Bioinformatics

**Instructor(s):** Leonid Chindelevitch

**SFU Burnaby**

**Calendar Objective/Description:**
Examination of recent literature and problems in bioinformatics. Within the CIHR graduate bioinformatics training program, this course will be offered alternatively as the problem-based learning course and the advanced graduate seminar in bioinformatics (both concurrent with MBB 829).

**Instructor’s Objectives:**
This course will examine selected algorithmic approaches in current bioinformatics research. Topics will be selected from: de Bruijn graphs in genomics, biological data compression, probabilistic models (HMM, SCFG, and MRF), graphical models and Bayesian approaches, information-theoretic methods in bioinformatics, machine learning ideas and linear/integer/combinatorial optimization in bioinformatics. It assumes familiarity with basic bioinformatics, so CMPT 711 or equivalent is a prerequisite. Several guest lectures in the class will provide the opportunity to get exposed to cutting-edge research in bioinformatics.

**Prerequisites:**
permission of the instructor.

**Topics:**
- Biological data compression
- Probabilistic and graphical models
- Information theory in bioinformatics
- Machine learning in bioinformatics
- Combinatorial optimization in bioinformatics

**Grading:**
The research project, to be decided based on the student’s particular interest in the first two weeks of classes, will be worth 60% of the course; the final exam will be worth the other 40%.

**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).