

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>).