CMPT 711 - G100 Bioinformatics Algorithms

Calendar Objective/Description:
Fundamental algorithmic techniques used to solve computational problems encountered in molecular biology. This area is usually referred to as Bioinformatics or Computational Biology. Students who have taken CMPT 881 (Bioinformatics) in 2007 or earlier may not take CMPT 711 for further credit.

Instructor’s Objectives:
The goal of this course is to provide a solid foundation in the algorithmic techniques, such as dynamic programming, graph theory and probabilistic modelling, that computational biologists use on a daily basis, as well as present a sampling of applications to the analysis of metabolites, proteins, genes, and their interactions. The course targets both graduate and advanced undergraduate students in computing science, molecular biology, biochemistry, biophysics, mathematics and biostatistics with minimal or no background in computational biology.

Prerequisites:
None

Topics:
- Sequence alignment, global and local
- Phylogenetics - inferring evolutionary trees
- RNA secondary structure prediction
- Biological networks analysis

Grading:
Option 1: 10% participation, 30% assignments (best 3 out of 4), 20% midterm, 40% final exam Option 2: 100% final exam
While I highly recommend option 1, you will automatically get the higher of the two grades.

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).