

# University of Guelph - Bioinformatics

## Biosequence Pattern Analysis (BINF\*6420) – Winter 2019

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Class Schedule: 19/01/07 – 19/04/05

(Winter Break: 19/02/18 – 19/02/22) - No classes

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### Course descriptions:

This course focuses on concepts and algorithms to solve problems in bioinformatics. It is also an overview on major approaches to pattern analysis, applicable to discrete-valued data such as sequences, especially in multiple sequences aligned. It emphasizes computational design, analytical understanding, rather than the mathematical theory, or the coding part of programming. Major themes include: pattern classification, performance evaluation, Bayesian methods, data mining, connectionist and adaptive methods, feature selection, unsupervised learning, information theory.

### Course References (recommended optional):

Duda R.O., P.E. Hart, D.G. Stork, Pattern Classification, Second Edition, Wiley-Interscience, 2001 (QE327.D83 2000)

Witten, I.H., E. Frank, M.A. Hall, Data Mining, (at least) Third Edition, Morgan Kaufmann, 2011 (QA76.9D343W58 2011)

**\*\*\* It is very important that students attend the lectures during the term. Lecture notes are available from the Courselink website. All submissions should be done using Courselink, and only the latest copy before the deadline will be used.**

### Late assignment or missing exam:

No late assignment or missing exam will be accepted. For late assignment or missing exam with legitimate reasons (such as illness), an email should be sent to the instructor within seven (7) days, indicating: (1) the name of the student, (2) date of the missing exam or assignment, and (3) a brief explanation. If acceptable, the weight of the missing grade will be allocated to the rest of the term work proportionally (by using mathematical calculation adjustment).

### Academic Misconduct:

The University takes a serious view of academic misconduct and will severely penalize students who are found guilty of offenses associated with academic dishonesty, misrepresentation of personal performances. Details can be found in the appropriate section, Academic Misconduct of the University of Guelph, Undergraduate Calendar, or General Regulations of the University of Guelph, Graduate Calendar.

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct.

Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. The Academic Misconduct Policy is detailed in the Graduate Calendar: [http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec\\_d0e1702.shtml](http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e1702.shtml)

In the case of the graduate academic misconduct policy, the Graduate Calendar states: "It should not be possible for a student to claim that he/she was not warned about the University's academic misconduct regulations, what constitutes academic misconduct and the potential consequences of transgressing."

### **Evaluations and Grading:**

- Project proposal - 2-page overview+outline in powerpoint (part 1) 10% (2019/02/04) 8am  
– Brain-storming session with instructor (2019/02/12-13) (TBD)
- Mid-term exam 20% (2019/02/26) class time
- Project presentation – Tentative powerpoint file (part 2a) (2019/03/25) 8am
- – Oral presentation (part 2b) with updated PP file 15% (2019/03/26) (TBD)
- Final exam 30% (2019/04/09) class time
- Project written report (part 3) 20% (2019/04/14) 8am
- Project self-evaluation/log book+ peer evaluations/class discussion ~5% (2019/04/14) 8am

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**\*\*\* A student must attain at least 50% of the exam portion to pass the course. For students who fail the criterion, the grade will be assigned the lesser of the calculated grade or 69%.**