Course Outline Form: Winter 2018 General Information

Course Title: ANSC*6240 Topics in Animal Genetics and Genomics

Course Description:
Current literature and classical papers pertaining to quantitative genetics, animal breeding and animal genomics are reviewed in detail through presentation, discussion and critical analysis.

Credit Weight: 0.5

Academic Department (or campus): Department of Animal Biosciences

Campus: Guelph

Semester Offering: Winter

Class Schedule and Location: Wednesdays and Fridays from 10:00 to 11:20 am. MCKN building, Room 314

Lab schedule and location: TBD

Instructor Information

Instructor Name: Dan Tulpan
Instructor Email: dtulpan@uoguelph.ca
Office location and office hours: ANNU 127, Wednesdays from 13:00-14:00 pm

GTA Information

GTA Name: NA
GTA Email: NA
GTA office location and office hours: NA

Course Content

The course will cover major topics and methods in bioinformatics and computational biology for animal sciences. Topics include alignments, phylogenetics, genomics, data mining, databases, DNA, RNA and protein structures, DNA sequence analysis, data curation, pipeline construction and data visualization. This is a project-based course and will have a computational component and possibly a lab component focused on bioinformatics programming, too (depending on resource availability).
Specific Learning Outcomes:

To help you achieve that overall outcome, by the end of the course students will be able to:

1. Understand bioinformatics data formats and types, and be able to manipulate them using computer programming.
2. Perform and understand sequence alignments, gene predictions, phylogenetics and omics analyses.
3. Appreciate differences among bioinformatics methods and algorithms for both data curation and data analyses.
4. Be able to integrate different biological data sets via programming.
5. Discuss the relative merits of methods and designs used in bioinformatics and computational biology.
6. Be able to contribute to a team project and perform various types of data analyses.
7. Accurately and effectively communicate scientific analyses in written form.
8. Have a proficient command terminology common in bioinformatics and computational biology.

Lecture Content:

- Block 1
  – Biological data and databases.
- Block 2
  - Bioinformatics Programming
- Block 3
  – Sequence alignments.
- Block 4
  – Gene and promoter prediction.
- Block 5
  – Molecular phylogenetics.
- Block 6
  – Structural bioinformatics.
- Block 7
  – OMICS.
- Block 8
  - Machine learning in bioinformatics

Labs:

Computer lab: location and time - TBD

Seminars:
Course Assignments and Tests:

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<th>Assignment or Test</th>
<th>Due Date</th>
<th>Contribution to Final Mark (%)</th>
<th>Learning Outcomes Assessed</th>
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<td>Project report</td>
<td>April 18</td>
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Additional Notes (if required):

The project presentation will be 30 minutes long and will have a 5-10 minutes questions period. Presentation slides will be made available to the instructor and students two days in advance.

The project report will be structured as a journal article using the template of the IEEE/ACM Transactions on Computational Biology and Bioinformatics journal and will be submitted approx. one week after the presentation (April 18, 2018 at or before noon). This will allow students to integrate feedback from presentations into reports. While groups of up to 4 students can work on the same project, the reports will be written individually. The topic of each project will be decided between students and shared with the instructor on the week of February 25, 2019. Alternatively, the instructor can also provide project topics to students who cannot decide.

Midterm examination date and time: NA

Final examination date and time: NA

Final exam weighting: NA

Course Resources Required Texts: NA


Other Resources:

- Course notes will be used during the course (both available in the course’s webpage).
• Extra pertinent information, such as papers, chapters of books, etc. will be accordingly recommended.
• Students are advised to take their own notes during lectures.

Field Trips: NA

Additional Costs: NA

Course Policies

Grading Policies:

All assignments must be submitted by 5:30 pm of the due date. Late assignments will receive zero (0) marks.

Course Policy on Group Work: NA
Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted, they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

University Policies

Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar.

Academic Misconduct:

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. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Detailed information regarding the Academic Misconduct policy is available in Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar.

Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the Student Accessibility Services website (http://www.uoguelph.ca/csd/).

Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the Course and Instructor Evaluation Website for more information.

Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester
courses without academic penalty) which is listed in Section III (Schedule of Dates) of the Undergraduate Calendar.

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar.

Additional Course Information

None