Course Outline Form: Fall 2017

General Information

Course Title: ANSC*6370 Quantitative Genetics and Animal Models

Course Description:
This graduate course is intended to present linear model methodology for the genetic evaluation of livestock and general analysis of livestock data.

Credit Weight: 0.5

Academic Department (or campus): Department of Animal Biosciences

Campus: Guelph

Semester Offering: Fall

Class Schedule and Location: Tuesdays and Thursdays from 1:00 to 2:20 pm. ANNU building, Room 030

Instructor Information

Instructor Name: Flavio S. Schenkel
Instructor Email: Schenkel@uoguelph.ca
Office location and office hours: ANNU 121, Thursdays from 3:00-4:30 pm

GTA Information

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

Course Content

This graduate course will teach linear model methodology and applications for the genetic evaluation of livestock and general analysis of livestock data. By the end of the course, a student will be able to understand and use linear model methodology and the associated quantitative genetics theory for estimation of genetic parameters and genetic evaluation of selection candidates.

Specific Learning Outcomes:

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

1. Understand basic matrix algebra notation and operations.
2. Integrate quantitative genetics and linear model methodology to genetically evaluate livestock.
3. Accurately and effectively communicate scientific analyses in written form.
4. Perform and understand data analyses using linear models in livestock.
5. Appreciate differences among alternate statistical models.
6. Discuss the relative merits of linear models used for estimation of genetic values and genetic parameters.
7. Have a proficient command terminology common in quantitative genetics and breeding values prediction.
8. Integrate knowledge of quantitative genetics and linear models to estimate covariance components and genetic parameters.

Lecture Content:

- Introduction to the course
- Matrix algebra review
- Writing a linear model
- Estimation theory and estimability
- Prediction theory
- Genetic relationships
- Animal model
- Repeated records animal model
- Maternal genetic models
- Random regression models
- Multiple traits
- Estimation of variance and covariance components
    - Likelihood methods
    - Bayesian methods

Labs:
NA

Seminars:
NA

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Assignment 1	October 3	4.1625	1-2
Assignment 2	October 17	4.1625	1-3
Assignment 3	October 24	4.1625	1-4
Assignment 4	November 2	4.1625	1-5
Assignment 5	November 9	4.1625	1-7
Assignment 6	November 16	4.1625	1-7
Assignment 7	November 23	4.1625	1-7
Assignment 8	November 30	4.1625	1-8

Additional Notes (if required): NA

Midterm examination date and time: The midterm is a close book, in class, exam. It will be written on October 26 from 1:00 to 2:20 pm in the room ANNU 030.

Midterm exam weighting: 33.3333%

Final examination date and time: The final exam is a take home assignment. It will be released on December 1 at 1:00 pm and will be due on December 15 by 5:30 pm.

Final exam weighting: 33.3333%

Course Resources

Required Texts: NA

Recommended Texts: NA

Lab Manual: NA

Other Resources:
• Course notes from Dr. Lawrence Schaeffer (Animal Models and Variance Component Estimation) will be used during the course (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

<u>Course Policies</u>

Grading Policies:
All assignments (including the take home final exam) must be submitted by 5:30 pm of the due date. Late assignments will be penalized as follow:
    1 day late – 25% penalty (i.e. discount) applied to the obtained grade
    2 days late – 50% penalty applied to the obtained grade
    3 days late – 75% penalty applied to the obtained grade
    >3 days late – 100% penalty applied to the obtained grade

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.

<u>University Policies</u>

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](#).

<u>Additional Course Information</u>

None