1. General Information

Course Code: ANSC*6050

Course Title: Biometry in Animal Science

Course Description: Biometry (or biostatistics) refers to the statistical methods applied to biological sciences. Biological measurements are variable, not only because of measurement error, but also because of the natural variability from genetic and environmental sources – a characteristic which distinguishes biometry within the field of statistics. These sources of variability must be taken into account when making inferences about biological material.

"Biometry in Animal Science" is a graduate course for students and researchers of the animal sciences. The primary goal of this course is to give students a deeper understanding of appropriate experimental designs and statistical methods commonly used in animal science. Students will be introduced to a number of statistical procedures and will learn how to apply them to data from laboratory and field experiments using appropriate software. Emphasis will be placed on statistical concepts and principles, design of experiments, error control, testing of hypotheses, and communication of findings to other scientists, as well as data management.

Credit Weight: 0.5

Academic Department: Animal Biosciences

Campus: Guelph

Semester Offering: Winter 2020

Class Schedule and Location:

Lectures: Tuesdays 11:30am – 2:20pm in ANNU 101

Labs: Wednesdays 2:30pm – 4:20pm in ANNU 102

2. Instructor Information

Instructor Name: Dr. Christine Baes

Instructor Email: cbaes@uoguelph.ca

Instructors Phone Ext.: 53363

Office location and office hours: ANNU 124, by appointment only

Instructor Name: Dr. Michelle Edwards
Instructor Email: edwardsm@uoguelph.ca
Instructors Phone Ext.: 54104
Office location and office hours: JH 107; TBA

3. GTA Information

GTA Name: Sarah Adams
GTA Email: sadams05@uoguelph.ca
GTA office location and office hours: ANNU 128, by appointment only

4. Course Content

Specific Learning Outcomes:

This course is designed to contribute to your achievement in three of the five university-wide learning outcomes: Critical and creative thinking, Literacy, and Communication. The lab assignments will enhance your understanding and application of the course material.

By the end of the course the student should be able to:

- Present and summarize data using statistical software
- Understand and apply classical inference using confidence intervals and hypothesis testing
- Explain and apply methods to compare treatments
- Apply and interpret variance partition models
- Perform analyses using statistical software and interpret the output
- Recognize and apply various experimental designs
- Demonstrate the ability to convey statistical results to other researchers

Lecture Content:

The following is an **approximate** schedule of lecture topics:

Lecture	Weekday	Date	Time	Topic
1	Tuesday	Jan. 07	11:30	Presenting and Summarizing Data; Probability; Random Variables and their Distributions: Discrete Random Variables
2	Tuesday	Jan. 14	11:30	Random Variables and their Distributions: Continuous Random Variables; Population and Sample; Estimation of Parameters
3	Tuesday	Jan. 21	11:30	Hypothesis Testing
4	Tuesday	Jan. 28	11:30	Simple Linear Regression
5	Tuesday	Feb. 04	11:30	Correlation; Multiple Linear Regression
6	Tuesday	Feb. 11	11:30	One-Way Analysis of Variance
****READING WEEK (NO CLASSES SCHEDULED WEEK OF FEB 17)****				
7	Tuesday	Feb. 25	11:30	One-Way Analysis of Variance (Part 2); Concepts of Experimental Design
8	Tuesday	Mar. 03	11:30	Blocking; Change-Over Designs
9	Tuesday	Mar. 10	11:30	Factorial Experiments; Hierarchical/Nested Designs
10	Tuesday	Mar. 17	11:30	Blocking (Part 2); Split-Plot Design
11	Tuesday	Mar. 24	11:30	Analysis of Covariance; Repeated Measures
12	Tuesday	Apr. 30	11:30	Analysis of Numerical Treatment Levels; Discrete Dependent Variables

Labs:

Students are expected to bring their own laptop computer. The following is a schedule of labs:

Lab	Weekday	Date	Time	Topic
1	Wednesday	Jan. 8	2:30	Lab 1
2	Wednesday	Jan. 15	2:30	Lab 1 due, Lab 2
3	Wednesday	Jan. 22	2:30	Lab 2
4	Wednesday	Jan. 29	2:30	Lab 2 due, Lab 3

5	Wednesday	Feb. 5	2:30	Discussion/Reading Assignment
6	Wednesday	Feb. 12	2:30	Lab 3 due, Lab 4
7	Wednesday	Feb. 26	2:30	Discussion/Reading Assignment
8	Wednesday	Mar. 04	2:30	Lab 4 due, Lab 5
9	Wednesday	Mar. 11	2:30	Discussion/Reading Assignment
10	Wednesday	Mar. 18	2:30	Lab 5 due, Final Project
11	Wednesday	Mar. 25	2:30	Question period (Final Project)
12	Wednesday	Apr. 01	2:30	Final Project due

Seminars: (None)

Course Assignments and Tests:

Lab Assignments:

- Lab assignments contribute 60% to the final grade and are composed of both computational assignments and reading / literature critique assignments.
- Assignments will be posted on CourseLink and discussed during labs. I expect students to make full use of lab time to learn methods and techniques needed in the assignments.
- You will have two weeks to work on the assignments (except for Lab 1, for which you will have one week) and hand them in during the next lab. **Late assignments will not be accepted.**
- Marked assignments will be returned during labs. Solutions will be discussed during labs and grades will be posted on CourseLink.
- It is in your best interest to do all assignments, as they reinforce concepts introduced in class.
- If you miss more than one assignment for a valid reason your mark will be re-weighted on the basis of those that were handed in. Otherwise, missed assignments will receive a grade of 0.

Final Project:

- The final project is worth 40% of your final grade.
- The project will incorporate both lab and lecture material.

Additional Notes: (None)

Marking scheme:

Assignment	Contribution to Final Mark (%)	Learning Outcomes Assessed
Lab Assignments	**60**	1-9
	Computational Assignments: 45	
	Reading / Critiques: 15	
Final Project	**40**	1-9

1. Course Resources

Required Texts: (None)

Recommended Texts: (None)

Lab Manual: (None)

Other Resources: Notes, lecture slides, assignments, data sets, programming scripts, etc. will be posted on CourseLink. Most of the assignments will require the use of statistical software. Please see the Links section for additional materials. Students are advised to take their own notes during lectures.

Field Trips: (None)

Additional Costs: (None)

2. Course Policies

Grading Policies:

- You will have two weeks to work on the assignments (except for Lab 1, for which you will have one week) and hand them in during the next lab.
- **Late assignments will not be accepted.**
- Marked assignments will be returned during labs. Solutions will be discussed during labs and grades will be posted on CourseLink.
- It is in your best interest to do all assignments, as they reinforce concepts introduced in class.

- If you miss more than one assignment for a valid reason your mark will be re-weighted on the basis of those that were handed in. Otherwise, missed assignments will receive a grade of 0.

Course Policy on Group Work:
While you are encouraged to discuss the assignment problems with fellow students, each student must hand in an individual solution that is the result of his/her own efforts.

Course Policy regarding use of electronic devices and recording of lectures:
Electronic recording of lectures or labs is not permitted.

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 II (General Regulations, Grounds for Academic Consideration) of the Graduate Program 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 II (General Regulations, Academic Misconduct) of the Graduate 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. Course evaluation will occur online. Time will be given in class, if deemed necessary, at the end of the semester.

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 I (Schedule of Dates) of the Graduate 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.