



# **ANSC\*6050 Biometry for Animal Sciences**

Winter 2022

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 24, 2022

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## **1 Course Details**

### **1.1 Calendar Description**

For students involved in animal research. The course will provide outlines of appropriate presentation and analysis of experimental data with emphasis on different analytical techniques.

### **1.2 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.

A pre-requisite of: STAT\*2040 is strongly encouraged for success in this course

### **1.3 Timetable**

WED 1:30-4:20PM (Virtual / ANNU Room 102 starting week of Jan. 31st), Lab WED 11:30AM - 12:30PM + THU 2:30PM-3:30PM Virtual / ANNU Room 102 starting week of Jan. 31st)

## 1.4 Final Exam

Final Assignments due at the end of the semester. See Courselink for the latest information.

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Christine Baes  
**Email:** cbaes@uoguelph.ca  
**Telephone:** +1-519-824-4120 x53363  
**Office:** ANNU 124  
**Office Hours:** by appointment only

**Instructor:** Christina Rochus  
**Email:** crochus@uoguelph.ca  
**Office Hours:** By appointment only.

### 2.2 Teaching Assistants

**Teaching Assistant (GTA):** Lucas Lopes  
**Email:** llopes@uoguelph.ca  
**Office:** Virtual  
**Office Hours:** By appointment only.

### 2.3 Netiquette Expectations

**Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:**

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own

- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your user name and password
- Recording lectures without the permission of the instructor

## **2.4 Communicating with Your Instructor**

During the course, your instructor will interact with you on various course matters on the

course website using the following ways of communication:

- **Announcements:** The instructor will use **Announcements** on the Course Home page to provide you with course reminders and updates. Please check this section frequently for course updates from your instructor.
- **Ask Your Instructor Discussion:** Use this discussion forum to ask questions of your instructor about content or course-related issues with which you are unfamiliar. If you encounter difficulties, the instructor is here to help you. Please post general course-related questions to the discussion forum so that all students have an opportunity to review the response. To access this discussion forum, select **Discussions** from the **Tools** dropdown menu.
- **Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send your instructor a private message by email. The instructor will attempt to respond to your email within 24 hours.
- **Video Call:** If you have a complex question you would like to discuss with your instructor, you may book a video meeting on Teams (or alternate platform being used by your instructor). Video meetings depend on the availability and are booked on a first come first served basis.

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## 3 Learning Resources

### 3.1 Additional Resources

#### Other Resources (Other)

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.

### 3.2 Course Technology and Technical Support

#### System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Zoom
- Teams (via Office 365)

To help ensure you have the best learning experience possible, please review the list of system and software requirements.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

### **CourseLink System Requirements**

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

<http://spaces.uoguelph.ca/ed/system-requirements/>  
<https://courselink.uoguelph.ca/d2l/systemCheck>

### **CourseLink**

This course is being offered using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system (LMS). By using this service, you agree to comply with the University of Guelph's Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

<http://www.uoguelph.ca/web/privacy/> <https://www.d2l.com/legal/privacy/>  
<https://www.d2l.com/accessibility/standards/>

## **Technical Support**

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

Email: [courselink@uoguelph.ca](mailto:courselink@uoguelph.ca)

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

## **Support Hours (Eastern Time):**

Monday thru Friday: 8:30 am–8:30 pm

Saturday: 10:00 am–4:00 pm

Sunday: 12:00 pm–6:00 pm

## **Teams (via Office 365)**

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for one on one meetings with your Instructor. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and it's features.

For Teams Support visit the CCS website for more information.

<https://www.uoguelph.ca/ccs/services/office365/teams>

## **Zoom**

This course will use Zoom for lectures. Check your system requirements to ensure you will be able to participate.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

## 3.2 Technical Skills

As part of your learning experience, you are expected to use a variety of technologies for assignments, lectures, teamwork, and meetings. In order to be successful in this course you will need to have the following technical skills:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course);
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
- Perform online research using various search engines (e.g., Google) and library databases.

## 3.2 Library Access

As a student, you have access to the University of Guelph's library collection, including both physical and electronic materials. For information on checking out or couriering physical library items, accessing electronic journals and returning items to the library, visit the library's website.

If you are studying off campus and would like to access the library's electronic resources, use the Off Campus Login and login using your Single Sign On credentials or using your last name and library barcode.

<https://www.lib.uoguelph.ca/>

<https://www.lib.uoguelph.ca/campus-login>

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Present and summarize data using statistical software
  2. Understand and apply classical inference using confidence intervals and hypothesis testing
  3. Explain and apply methods to compare treatments
  4. Apply and interpret variance partition models
  5. Perform analyses using statistical software and interpret the output
  6. Recognize and apply various experimental designs
  7. Demonstrate the ability to convey statistical results to other researchers
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## 5 Teaching and Learning Activities

### 5.1 Lecture

Jan 12



**Topics:** Presenting and Summarizing Data; Probability, Random Variables and their Distributions:  
Discrete Random Variables

**Jan 19**

**Topics:** Random Variables and their Distributions: Continuous Random Variables, Population and Sample; Estimation of Parameters

**Jan 26**

**Topics:** Population and Sample; Estimation of Parameters, Hypothesis Testing (Part 1)

**Feb 2**

**Topics:** Hypothesis Testing (Part 2), Simple Linear Regression (Part 1)

**Feb 09**

**Topics:** Simple Linear Regression (Part 2), Correlation

**Feb 16**

**Topics:** Multiple Linear Regression, One-Way Analysis of Variance (Part 1)

**Mar 2**

**Topics:** One-Way Analysis of Variance (Part 2 & 3)

**Mar 09**

**Topics:** Concepts of Experimental Design, Blocking

**Mar 16**

**Topics:** Change-Over Designs, Factorial Experiments

**Mar 23**

**Topics:** Heirarchical / Nested Designs, More on blocking

**Mar 30**

**Topics:** Split-Plot Design, Analysis of Covariance

**Apr 06**

**Topics:** Repeated Measures, Analysis of Numerical Treatment Levels, Discrete Dependent Variables

## **5.2 Lab**

**Jan 19/20**

**Topics:** Lab 1

**Jan 26/27**

**Topics:** Lab 2

Lab 1 due on Jan 26

**Feb 02/03**

**Topics:** Lab 2

**Feb 09/10**

**Topics:** Lab 3

Lab 2 due Feb 9

**Feb 16/17**

**Topics:** Discussion/Reading Assignment

**Mar 02/03**

**Topics:** Lab 4

Lab 3 due Mar 2

**Mar 9/10**

**Topics:** Discussion/Reading Assignment

**Mar 16/17**

**Topics:** Lab 5

Lab 4 due Mar 16

**Mar 23/24**

**Topics:** Discussion/Reading Assignment

**Mar 30/31**

**Topics:** Final Project

Lab 5 due Mar 30

**Apr 6/7**

**Topics:** Question period (Final Project)

**Apr 13**

**Topics:** Final Project due

## 6 Assessments

### 6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Lab Assignments	60
Final Project	40
Total	100

### 6.2 Assessment Details

**Lab Assignments (60%)****Date:** Tue, Jan 19 - Wed, Mar 31**Learning Outcome:** 1, 2, 3, 4, 5, 6, 7

Lab assignments contribute 60% to the final grade and are composed of both computational assignments (45%) and reading / literature critique assignments (15%). Assignments will be posted on CourseLink/Teams 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/Teams.

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 (40%)****Date:** Tue, Apr 13**Learning Outcome:** 1, 2, 3, 4, 5, 6, 7

The project will incorporate both lab and lecture material.

## 7 Course Statements

### 7.1 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.

### 7.2 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.

## 8 University Statements

## 8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

## 8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

## 8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

## 8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared

responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website  
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 8.6 Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student,

or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

## 8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

## 8.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

## 8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

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