University of Guelph
Department of Mathematics and Statistics
Course Outline: Stat*6950 Fall 2018
Statistical Methods for the Life Sciences

General Information

Course Title: Stat*6950: Statistical Methods for the Life Sciences

Course Description: Analysis of variance, completely randomized, randomized complete block and latin square designs; planned and unplanned treatment comparisons; random and fixed effects; factorial treatment arrangements; simple and multiple linear regression; analysis of covariance with emphasis on the life sciences. STAT*6950 and STAT*6960 are intended for graduate students of other departments and may not normally be taken for credit by mathematics and statistics graduate students.

The above is the official description in the course calendar. I will be adding some extra content that I think you should know, such as categorical data analysis and some nonparametric methods.

Credit Weight: 0.5

Academic Department (or campus): Mathematics & Statistics

Campus: University of Guelph

Semester Offering: Fall 2018

Class Schedule and Location: Tuesday & Thursday, 8:30AM to 9:50AM, in Thornbrough 1307. Note that there is a class on Thursday November 29; this is technically a "Tuesday" class as it replaces the class missed on Tuesday October 9.

Instructor Information

Name: Gary J. Umphrey
Email: umphrey@uoguelph.ca
Office Phone: (519) 824-4120 x53288
Office location and office hours: MacNaughton 551, Monday 10:00AM-Noon and Friday 10:00AM-Noon.

GTA Information

Name: Jeffrey Daniel
Instructor Email: jdaniel@uoguelph.ca
R Lab Availability: Jeffrey will be working in the R lab on Tuesdays and Thursdays, also on alternate Fridays starting September 20. More on the R lab follows.

Course Content

Specific Learning Outcomes:

I try to optimize the educational outcomes for each student in the course. Specifically some of the outcomes I consider desirable are:

- Improve your ability to understand, implement and interpret core statistical methodologies, especially in the areas of regression analysis and experimental design.
- Improve your capacity to design experiments and other research studies that will require subsequent quantitative analysis.
- Understand statistical language as employed in your research area and in science in general.
- Improve your capacity to communicate statistical results to other scientists.
- Gain a deeper understanding of the role of statistical inference within the broader sphere of scientific inference.
- Gain an appreciation of some interesting statistical controversies!

Lecture Content:

Lectures vary a lot in style and content, you need to be there to understand what is going on! This is in no way whatsoever a "distance education" course.

Labs:

Instead of a "closed" lab, you will have access to an open "R" lab in SSC 1303, staffed by a GTA with a high level of ability in the use of R statistical software. The R lab is staffed Monday to Friday, 10:30-12:30 (2 hrs each weekday).

The computers in this room have R installed on them. You cannot save files for the longer term on these computers, so you will want to email files to yourself or store them on a memory stick.

The R lab will be used by other courses, such as Stat*2040 and Stat*2050, so at times the GTA will be inundated by students seeking assistance. Try to plan to access the lab in lower demand times and please be patient!

Course Assignments and Tests:

Assignments/Projects: 4 of them, equally weighted, worth: 40%

Assignment due dates are: Thursday September 27, 2018
Tuesday October 16, 2018
Thursday November 8, 2018
Tuesday November 27, 2018

Test (in-class, 75 minutes in length) on Thursday October 25, 2018, worth: 25%

Exam, Friday December 14, 2018, worth: 35%

Final examination date and time:

Friday December 14, 2018 at 7:00PM-9:00PM. Room T.B.A.

Course Resources

Required Texts:

We will make use of texts made available electronically through the library or elsewhere online; these have no cost to you. Here are two very useful books:

Regression Analysis by Example, 4th ed., by S. Chatterjee & A. S. Hadi (Wiley, 2006). Good chapters to download include 1–6, 11, and 12.

Design and Analysis of Experiments in the Health Sciences, by G. Van Belle and K. Kerr (Wiley, 2012). Good chapters to download include 1-5.

In addition to the mentioned chapters, you may want to download the pdfs for the front and back materials. Indeed you might want to download the entire book contents.

Recommended Texts:

At various times I will recommend other potentially useful texts.

Other Resources:

I post data sets and some slides on our course website and I like short in-class handouts. I do not post full notes; I expect you to be at class to make your own notes. If you are absent from a class for any reason you need to negotiate with a class colleague to get the notes you missed!

Course Policies

Grading Policies

Assignments/Projects will be submitted electronically, details to be posted on our course website. Deadlines are strictly enforced, unless I decide otherwise. Failure to submit an assignment/project on time will result in a grade of 0.

The Test and Exam are "open notes". You will want a hand calculator but computers, cellphones and other such devices are not allowed.

Remember that a graduate course, including this one, requires a minimum grade of 65% to pass.

Course Policy on Group Work:

Some assignments/projects may allow group work on one or more components. Explicit rules for such components can vary, and will be detailed with the assignment/project guidelines.

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.

Additional Course Information

I expect you to be able to attend class, this is not a DE course!

Course Evaluation Information

Please see:
https://mathstat.uoguelph.ca/sites/uoguelph.ca.mathstat/files/public/TeachevaluationformW16_1.pdf

Drop date

The last date to drop one-semester courses, without academic penalty, is **Friday, November 2, 2018**. For regulations and procedures for Dropping Courses, see the Academic Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

University Policies

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

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. See the Graduate calendar for information on regulations and procedures for Academic Consideration.

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.

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 book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

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.

The Academic Misconduct Policy is detailed in the Graduate Calendar.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

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