

University of Guelph
Department of Mathematics and Statistics

Stat*2040 Statistics I
Course Outline for Fall 2019

Instructor Information

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Office hours: Monday 3:00PM-5:00PM and Friday 10:00AM-Noon. Any necessary changes will be posted on Courselink.

General Information

Course Description (from the Undergraduate Calendar 2019-2020)

This course focuses on the practical methods of Statistics and the topics include: descriptive statistics; univariate models such as binomial, Poisson, uniform and normal; the central limit theorem; expected value; the t, F and chi-square models; point and interval estimation; hypothesis testing methods up to two-sample data; simple regression and correlation; introduction to analysis of variance. Assignments will deal with real data from the natural sciences and involve the use of statistical software for computing and visualization.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): 1 of 4U Calculus and Vectors, Advanced Functions and Calculus, OAC Calculus, [MATH*1080](#)

Restriction(s): [STAT*2060](#), [STAT*2080](#), [STAT*2120](#), [STAT*2230](#)

Department(s): Department of Mathematics and Statistics

Credit Weight: 0.5

Class Schedule and Location: MWF 1:30PM-2:20PM, in Rozanski Hall 104.

Course Content

Specific Learning Outcomes:

I try to optimize the educational outcomes for each student in the course. In this course you are expected to:

- Strengthen your problem-solving skills, particularly for problems that are quantitative or quantitative-verbal in nature.
- Build your understanding of basic statistical language.
- Learn core statistical methodologies that are employed in almost every field that requires quantitative data analysis.
- Gain a basic understanding of the logic of statistical inference, including its roots in elementary probability.
- Improve your capabilities to critically interpret results in research papers or other reports that include statistical analysis and reasoning.
- Develop key skills for communicating statistical results to others.

Lecture Content:

We follow the order of Chapters 1-13 in the text by Kokoska fairly closely but not exactly. If you are a student who likes to read ahead (or you are a student who needs to catch up), following the text order is a very reasonable thing to do. Sometimes I rearrange the order of topics a bit to expedite the learning process for most students.

Lectures will vary in style and content, you need to be there to understand what is going on!

More on Course Content:

This course is aimed at students who will apply statistical thinking and methodology in their own disciplines. Therefore, I will be attempting to optimize the course content such that it emphasizes application and conceptual ideas, rather than the rigorous mathematical development of statistical theory.

Many of the examples I use in class will be biological, reflecting not only my own interests and the majority of the students but also, I hope, the interests of all of us as biological entities! However, all components of this course are very broadly applicable to essentially all disciplines.

Labs:

Some statistical computing is introduced in this course so that you will be able to analyze data in higher-level courses and after you leave university. We currently use R software, which is available free and installs on both Windows-based PC's and Macs.

Instead of a “closed” lab, you will have access to an open “R” lab, weekdays 10:30AM-12:30PM; on Monday the lab is in SSC 1306 and Tuesday-Friday the lab is in SSC 1305. The lab is staffed by a GTA with a high level of ability in the use of R statistical software. This is NOT a “required attendance” lab, rather it is a resource for those seeking assistance with the R components of the course.

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, 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:

Your final grade in this course is determined as follows.

Graded Assignments	30%
Term test #1	20%
Term test #2	20%
Final exam	30%

If you miss a term component for a validly documented reason (such as illness), the weight for the missed component will be transferred to the final exam.

Test Dates and Times:

Test 1 is on Wednesday October 16, 2019 at 5:30PM–6:45PM (75 minutes, 20 multiple choice).

Test 2 is on Wednesday November 6, 2019 at 5:30PM–6:45PM (75 minutes, 20 multiple choice).

Room assignments will be announced.

Some students will have a conflict with a dinner-hour lecture in another course. Alternate times to write will be offered to these students who have such a conflict, either immediately before or immediately after the dinner-hour.

Final examination date and time:

Tuesday December 10, 2019 at 11:30AM–1:30PM. (2 hours, 30 multiple choice).
Room assignments will be announced by the Office of the Registrar on WebAdvisor.

Test Archive:

Check the "Test Archive" on our course website for past tests I have given in this course. Past exam questions will come later in the semester.

Crib Sheets for Tests and Exam:

You are allowed a crib sheet for the first test: one 8.5×14 " sheet (legal size) or smaller, double-sided. For the second test you can use two double-sided 8.5×14 " (or smaller) sheets. You can bring in either three double-sided 8.5×14 " (legal size) or four double-sided 8.5×11 " (letter size) sheets for the final exam. You can put anything you want on these sheets.

Calculator:

A good calculator, preferably with regression and correlation functions, is essential. Bring this to your tests and exam. It's a good idea to have a backup calculator available during tests that you know how to use.

Graded Assignments:

Each of your Graded Assignments will be submitted in two places: to Dropbox on the Stat*2040 Courselink website and also to Crowdmark. You will type your Graded Assignment solutions with some form of word processing software (such as Word) and save to pdf format. For Crowdmark submission you'll receive a template via email to your University of Guelph email account; you will upload pdf files with your solutions to this template. If you do not submit to both Dropbox and Crowdmark you may not receive a grade or a penalty of up to 20% may be imposed. Details on submission will be posted on our course website, and I'll discuss the reasons for this unusual submission procedure in class.

This semester we will have three Graded Assignments; these will be equally weighted and worth 30% of your final grade. The Graded Assignments are a separate course component from the (ungraded) Question Sets. Graded Assignments will be posted at least one week before the due date on our Courselink website. Late submissions will be subject to a 20% penalty per day and

will not be accepted once they are more than two days late unless academic consideration for extenuating circumstances is granted. Sometimes I extend due dates a day or so due to (for example) midterm scheduling in other courses. Instructions for completing and submitting each Graded Assignment will come when it is assigned.

The due dates for the Graded Assignments are:

Graded Assignment #1 – due Monday September 30, 2019

Graded Assignment #2 – due Monday October 28, 2019

Graded Assignment #3 – due Wednesday November 27, 2019

Question Sets:

Question Sets will be posted at regular intervals through the semester. Full solutions for most problems will be posted soon thereafter. These are not graded, but you are expected to do your best to solve the problems on your own prior to checking your solutions against the posted solutions. To improve your problem-solving skills, you must try to solve problems, including some tough ones that can be very frustrating to work on. It is an error to try to speed up the learning process by reading the solutions without trying your best to solve the problems on your own; almost all problems look easy when you see the solutions first!

Course Resources

Text (Recommended, not Required):

Introductory Statistics: A Problem-Solving Approach, second edition, by Stephen Kokoska. Hard cover, loose-leaf, and electronic versions are available. This edition was used in Fall 2015, Fall 2016, and Winter 2018, so used copies should be available. Two copies of the text are on reserve in the Library. We will cover almost all of the material in chapters 1–13.

Mathematics and Statistics Learning Centre:

Located on the 3rd floor of the McLaughlin Library. Assistance for our statistics course will be available 9:30–3:30 on Monday & Wednesday, 10:00–4:00 Tuesday & Thursday, 9:30–2:30 Friday. This is staffed by a select team of TAs.

Supported Learning Group (SLG):

A Supported Learning Group is available for this course. More info on the SLG will be provided in class and on the course website.

JBSTATISTICS Youtube Videos:

A great resource is a series of videos (well over 100 of them) on Youtube produced by the University of Guelph's own Dr. Jeremy Balka. Check them out!

Other Resources:

I post most slides on our course website and I like short in-class handouts. Most slides are posted after each class (within a day or so) rather than prior to class. I do not post full notes; I expect you to be at class to make your own notes to supplement the slides. If you are absent from a class for any reason you need to negotiate with a class colleague to get the notes you missed.

I'll have more to say about other resources as we go through the semester.

Course Policies

Course Policy on Group Work:

Some Graded Assignments may allow group work on one or more components. Explicit rules for such components can vary; guidelines will be set for each Graded Assignment as required..

Class Attendance:

I expect you to be able to attend class, this is not a DE course. A DE version of this course is offered in all semesters.

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 this semester, without academic penalty, is **Friday, November 29, 2019**. For regulations and procedures for Dropping Courses, see the Academic Calendar.

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. 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>

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>

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.

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>

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.

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>

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.