

Course Outline Form: Winter 2021

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via Courselink and/or class email. All University-wide decisions will be posted on the [COVID-19 website](#) and circulated by email.

General Information

Course Title: STAT*2060: Statistics for Business Decisions

Course Description: This course is designed for students interested in the application of statistics in a business setting. Topics covered will include the role of statistics in business decisions, organization of data, frequency distributions, probability, normal and sampling distributions, hypothesis tests, linear regression and an introduction to time series, quality control and operations research.

Prerequisites: (4U mathematics or equivalent) or 0.50 credit in mathematics

Restrictions: STAT*2040, STAT*2080, STAT*2120. Not available to B.Sc. students

Credit Weight: 0.5 credit

Academic Department (or campus): Mathematics & Statistics

Campus: Guelph

Semester Offering: Winter

Class Schedule and Location: M/W/F 3:30 – 4:20pm via Zoom

Instructor Information

Instructor Name: Dr. Lorna Deeth

Instructor Email: ldeth@uoguelph.ca

Office location and office hours: Monday & Wednesday, 1:30 – 3:30pm via Webex

GTA Information

Test and assignment regrade requests only can be sent to stat2060@uoguelph.ca. Instructions for submitting a regrade request will be posted on Courselink. Note that questions regarding course content or general course questions will not be answered through this email account.

Course Content

Specific Learning Outcomes:

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

1. create and properly interpret numerical and graphical data summaries.
2. properly interpret probability and carry out basic probability calculations.
3. carry out probability calculations for various discrete and continuous probability distributions, and choose the appropriate probability distribution in different scenarios.
4. explain statistical inference concepts and methods, including concepts related to sampling distributions, confidence intervals, and hypothesis tests.

5. choose an appropriate statistical inference procedure in a variety of situations, carry out the procedure, and effectively communicate a proper interpretation of the results.
6. explain the design of some basic experiments and observational studies, and describe how statistical conclusions differ between experiments and observational studies.
7. conduct a linear regression analysis, including statistical inference procedures on the model parameters, and provide a proper interpretation of the results.
8. use industry-relevant software to assist in conducting the above-mentioned learning outcomes.

Lecture Content:

Week 1: January 11 – 15	<ul style="list-style-type: none"> • Course overview, Introduction (Chapter 1) • Gathering & Types of Data (Chapter 2) • Plotting Data (Chapter 3, Sections 3.1 – 3.2)
Week 2: January 18 – 22	<ul style="list-style-type: none"> • Summary Statistics, Boxplots, and Linear Transformations (Chapter 3, Sections 3.3 – 3.5)
Week 3: January 25 – 29	<ul style="list-style-type: none"> • Basics of Probability and Probability Rules (Chapter 4, Sections 4.1 – 4.4, 4.6) • Discrete Probability Distributions (Chapter 5, Sections 5.1 – 5.3)
Week 4: February 1 – 5	<ul style="list-style-type: none"> • The Binomial and Poisson Distributions (Chapter 5, Sections 5.5, 5.7) • Continuous Probability Distributions (Chapter 6, Sections 6.1 – 6.2)
Week 5: February 8 – 12	<ul style="list-style-type: none"> • The Uniform and Normal Distribution (Chapter 6, Sections 6.3 – 6.5) • Sampling Distributions and the Central Limit Theorem (Chapter 7, Sections 7.1 – 7.4)
READING WEEK: February 15 - 19	
Week 6: February 22 – 26	<ul style="list-style-type: none"> • Confidence Intervals for a Single Population Mean (Chapter 8, Sections 8.1 – 8.4)
Week 7: March 1 – 5	<ul style="list-style-type: none"> • Hypothesis Tests for a Single Population Mean (Chapter 9, Sections 9.1 – 9.7, 9.10)
Week 8: March 8 – 12	<ul style="list-style-type: none"> • Inference for the Difference Between Two Population Means with Known Population Standard Deviations (Chapter 10, Sections 10.1 – 10.3) • Welch Approximate t Procedures (Chapter 10, Section 10.4)
Week 9: March 15 – 19	<ul style="list-style-type: none"> • Paired Difference t Procedures (Chapter 10, Section 10.6) • Inference for One Population Proportion (Chapter 11, Sections 11.1 – 11.3)
Week 10: March 22 – 26	<ul style="list-style-type: none"> • Inference for Two Population Proportions (Chapter 11, Sections 11.4 – 11.5) • Chi-Square Tests for Independence (Chapter 13, Section 13.3)

Week 11: March 29 – April 5 NOTE: No class on Friday, April 2 due to statutory holiday	<ul style="list-style-type: none"> Inference for Simple Linear Regression and Correlation (Chapter 15, Sections 15.1 – 15.4)
Week 12: April 7 – 12	<ul style="list-style-type: none"> Inference for Simple Linear Regression and Correlation cont'd (Chapter 15, Sections 15.5 – 15.7, 15.9, 15.11)

*Note: Not all topics in every section will be covered. Textbook sections and corresponding supplemental exercises that can be excluded are listed in the document *STAT2060 Textbook Notes*, available on Courselink.

The schedule above is approximate, and subject to minor changes. Material covered in lecture will provide an overview of the course concepts, however students are expected to supplement the lectures with textbook readings and associated videos. A number of textbook sections will be assigned as independent study, for which this material will not be covered in lecture and students are expected to learn this information on their own. A detailed schedule of the readings and videos required will be posted on Courselink.

Most of the lectures will be recorded and posted to Courselink after the class. Recorded lectures will be available for two weeks before being removed from Courselink, after which students are responsible for the lecture material on their own. Excel Help Sessions will not be recorded, and students are expected to be available during these times.

Course Assignments and Tests:

Course Component	Date	Time	Location	Weight
Data Project 1	Friday, January 29	Due by 11:59pm	Online	Project #1: 7% Projects #2 & #3: 10% each Total: 27%
Data Project 2	Friday, March 12	Due by 11:59pm	Online	
Data Project 3*	Thursday, April 1*	Due by 11:59pm	Online	
Term Test 1	Friday, February 5	3:30 – 4:20pm	Online	Best Test: 18% Middle Test: 14% Worst Test: 10% Total: 42%
Term Test 2	Friday, March 5	3:30 – 4:20pm	Online	
Term Test 3	Friday, March 26	3:30 – 4:20pm	Online	
Weekly Mini Quiz	Thursday, Jan. 14, Jan. 21, Jan. 28, Feb. 4, Feb. 11, Feb. 25, Mar. 4, Mar. 11, Mar. 18, Mar. 25, Apr. 1, Apr. 8	Due by 4:30pm	Online	Best 11 out of 12 at 1% each Total: 11%
Final Exam	Monday, April 19	2:30 – 4:30pm	Online	Total: 20%

*Note change in date.

Course Resources

Required Text:

Introductory Statistics Explained, by J. Balka. This document is available in PDF format on Courselink.

Other Resources:

Lecture notes: A set of incomplete lecture slides will be posted on Courselink each week before lecture. Students are encouraged to have a copy of these in advance of the scheduled lecture time.

THE LECTURE SLIDES AND VIDEOS OF LECTURES ARE FOR INDEPENDENT USE ONLY AND ARE NOT TO BE RE-DISTRIBUTED IN ANY FORM WITHOUT MY WRITTEN PERMISSION.

Unit Exercises: There are exercises and solutions available on Courselink for all topics in the course. It will be assumed students are working through these exercises after each lecture, to help consolidate the information discussed in class. Students are strongly encouraged to seek help as soon as possible when problems arise.

Microsoft Excel: This course will make use of Microsoft Excel, available as part of Office 365 package to which all University of Guelph students have access. Information about how to access Microsoft Excel through Office 365 is on the CCS website:

<https://www.uoguelph.ca/ccs/office365/training/online-training-resources/getting-started-with-office365#howInstall>

IMPORTANT NOTE: Students are expected to use the latest version of Microsoft Excel available through the Office 365 package. All instructions and support for using Microsoft Excel within the course will only be available for the latest version of the software. Students who choose to use an older, unsupported version of Microsoft Excel will be required to find their own resources.

Microsoft Excel Help: Some lecture times will be reserved as Excel Help Sessions. Information about, and a schedule of these sessions, will be posted on Courselink. Attendance at these sessions is strongly recommended for students who wish to strengthen their skills using the software. These sessions will also serve as the primary source of Excel support for the course.

Learning Centre: The Statistics Learning Centre (SLC) provides free, online support for students in STAT*2060 via Discussion Boards, instant messaging, and live chat with a Teaching Assistant. The hours of operation for the SLC are:

- Monday & Wednesday, 9:30am – 3:30pm
- Tuesday & Thursday, 10am – 4pm
- Friday, 9:30am – 2:30pm

You can access the SLC through Courselink, by clicking on the “Resources” link and then the Statistics Learning Centre site.

Courselink: Course information and resources will be available on Courselink. Students are encouraged to check the website regularly for updated information and announcements.

Course Policies

Communication Policies: Questions regarding course content, practice problems, general administrative questions, or anything of a non-personal / private nature should be posted on the Courselink Discussion Boards. This allows all students with similar questions to benefit from the posted answer(s), either from myself, the course TA, or a fellow classmate. Any inquiries sent via email that are general (i.e. not private / personal) will be posted (anonymously) on the Courselink Discussion Board for response.

Private inquiries or issues, or a request for a virtual meeting, can be sent via email. Emails must be sent from your University of Guelph email account, and include STAT*2060 in your subject line, and include your name and student ID number in all correspondence. Emails that do not include a name and ID number, or from non-uoguelph accounts, will not be answered; otherwise, I will try to respond to emails within 3 business days.

Grading Policies:

Data Projects: Details regarding each of the data projects will be posted on Courselink. Projects must be handed in by the posted due date/time. Late projects will be accepted at a penalty of 5% per day late, up to a maximum of three days after the posted deadline. Projects submitted beyond the three-day grace period will receive a grade of 0. **NO EXCEPTIONS.**

Data projects are required to be submitted to both Crowdmark (for grading) and Courselink (for Turnitin). Failure to submit to both locations will result in a 5% penalty per day that the project is late to one of the two locations, up to a maximum of three days after the posted deadline. Projects not submitted to both locations after this grace period will receive a grade of 0. **NO EXCEPTIONS.**

Weekly Mini Quiz: A question or short set of questions based on the week's (Friday – Wednesday) lectures and material will be posted as a Courselink Quiz after each Wednesday lecture. Students will have 24 hours to complete the question(s); late submissions will not be accepted and will receive a grade of 0. **NO EXCEPTIONS.** The best 11 of 12 Self-Assessment marks will be used towards your final grade. This is to account for busy schedules, computer problems, illness, or any other reason why this assessment could not be completed on time and is the only accommodation that will be provided for this course component.

Turnitin: In this course, we will be using Turnitin, integrated with the CourseLink Dropbox tool, to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to maintain academic integrity at the University of Guelph.

All submitted data projects and parts of each unit test and / or final exam will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

Data projects or tests that are flagged on Turnitin will be subject to further examination, however this does not automatically mean that academic misconduct has occurred. In the event that a more detailed examination does in fact suggest academic misconduct may have occurred, an official investigation will be launched through the CEPS Dean's Office.

Term Tests: Term tests are scheduled during class time, and therefore no student should have a conflict with a test. If a conflict does exist, **it is your responsibility to resolve it.** Students who miss a test for medical illness must contact me within 3 business days of the missed test. In the case of absence due to medical illness, you may be required to complete an alternative assessment in a format of my discretion. If you cannot write a test for mental health reasons or are seeking accommodation on compassionate grounds, you must speak with your Program Counsellor (and include them in all communication with me) before any accommodations will be considered.

The final exam (date, time and location) is scheduled by the Registrar's Office. Students who miss the final exam due to a valid, documented reason must contact their program counsellor for advice on University regulations regarding final exams. These procedures are based on University policy, and are not under the control of the course instructor.

The format of the term tests and the final exam will be posted at a later date. Students are permitted to use their lecture notes, textbook, old tests and / or practice questions during the test. Students may be expected to make use of Microsoft Excel during the test and submit some or part of any output obtained from the software as part of their solutions.

Students are NOT permitted to post test questions to discussion boards (including the course discussion board, the SLC discussion boards, or chat groups on Facebook, Google, etc.), nor are students allowed to post test questions to websites such as Chegg in an attempt to solicit answers. These websites will be monitored for such activities, and students who violate these permissions may face an academic integrity investigation.

Regrade and Accommodation Request Policies:

Regrade requests must be submitted within two weeks of a project or test being returned, after which regrade requests may no longer be submitted, and the project or test grade is considered final. Note that in the event that a student submits a test for regrading, I reserve the right to regrade the entire test, not just the question under consideration. Procedures for submitting a regrade request will be posted on Courselink.

Requests for accommodation due to illness, personal circumstances, etc. should be made before the assessment is due. If this is not possible, the request should be made within 3 business days of the due date / test date. Accommodation will be provided at my discretion and should not be assumed. In the event that an accommodation is not granted, students will be expected to complete the test or project.

Course Policy on Group Work:

Students are encouraged to work together to discuss course content, share ideas, and ask/answer questions. However, all term tests and the final exam are to be completed independently, and without collaboration with other individuals, regardless of whether they are registered in the course.

The data projects can be completed in groups of no more than 3 people, with explicit instructions regarding this group work posted on Courselink. Note that in the event one (or more) group member is unable to complete a data analysis project (due to illness, personal circumstances, etc.), all remaining group members are expected to complete and submit the data analysis project with the unavailable group member removed.

Any unauthorized collaboration, completing another student's work, or having another student complete your work, will constitute academic misconduct.

Recording of Lecture Materials:

By enrolling in a course, unless explicitly stated and brought forward to their instructor, it is assumed that students agree to the possibility of being recorded during lecture, seminar or other "live" course activities, whether delivery is in-class or online/remote.

If a student prefers not to be distinguishable during a recording, they may:

- turn off their camera
- mute their microphone
- edit their name (e.g., initials only) upon entry to each session
- use the chat function to pose questions.

Students who express to their instructor that they, or a reference to their name or person, do not wish to be recorded may discuss possible alternatives or accommodations with their instructor.

University Policies

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.

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>

Accommodation due to Illness:

The University will not normally require verification of illness (doctor's notes) for Fall 2020 or Winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.

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 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>

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. Recorded material that is posted on Courselink or elsewhere cannot be redistributed without the permission of the Instructor.

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>

Mental Health Services:

One out of every five students in Canada experiences some sort of mental health issue at some point in their academic career. If you find yourself facing a mental health crisis, or just need to talk to someone, please consider taking advantage of one of the following resources available to University of Guelph students:

Counseling Services: (x53244) is located at Health Services (J.T. Powell Building) and offers individual and group counselling sessions by appointment or walk-in.

Student Support Network: is located in Raithby House (across from the cannon and offers confidential, peer-based, drop-in support.

Good2Talk: ([1-866-925-5454](tel:1-866-925-5454)) is a free, 24/7 student hotline that provides professional counselling and referrals for mental health, addictions and well-being.

Here 24/7: ([1-844-437-3247](tel:1-844-437-3247)) specializes in assessment, referral and appointment booking and is available 24/7 for crisis support.

You are not alone and you will not be judged for asking for help.