



### COURSE OUTLINE

1. **Course:** STAT 213, Introduction to Statistics I - Fall 2023

**Coordinator(s)**

Name	Email	Phone	Office	Hours
Claudia Mahler	claudia.mahler@ucalgary.ca	403 220-7717	MS 376	TBD

**Section(s)**

Lecture 01 : MWF 09:00 - 09:50 in MFH 162

Instructor	Email	Phone	Office	Hours
Claudia Mahler	claudia.mahler@ucalgary.ca	403 220-7717	MS 376	TBD

Lecture 02 : MWF 08:00 - 08:50 in EDC 179

Instructor	Email	Phone	Office	Hours
Scott Robison	sarobiso@ucalgary.ca	N/A	MS 590	Via Discussion Boards

Lecture 03 : TR 09:30 - 10:45 in ENC 70

Instructor	Email	Phone	Office	Hours

Lecture 04 : TR 12:30 - 13:45 in CHC 119

Instructor	Email	Phone	Office	Hours

Lecture 05 : MWF 14:00 - 14:50 in MFH 164

Instructor	Email	Phone	Office	Hours
Bitra Sadeghi	TBA	TBA	TBA	TBA
Scott Robison	sarobiso@ucalgary.ca	N/A	MS 590	Via Discussion Boards

**Students will be encouraged to utilize the D2L discussion boards for asking questions about the course content, assignment problems, etc.** This is to allow instructors, TAs, and other students the opportunity to answer questions and to allow students to see responses to questions that they may have. Questions/concerns of a personal or private nature may be conducted through email, and a sincere effort will be made to respond to these emails within a 24-hour window.

**Office hours** with TAs or instructors will be conducted via scheduled in-person and/or Zoom meeting times.

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

**In Person Delivery Details:**

All **lectures** will be delivered **in-person** during the scheduled days/times in the scheduled lecture rooms.

**All course material** (course note packets, lab material, R code, study guides, additional readings and practice, etc.) **will be available on D2L.**

**Course Site:**

**D2L:** STAT 213 ALL (Fall 2023) - Introduction to Statistics I

**WeBWork:** STAT 213

**Note:** Students must use their U of C account for all course correspondence.

**Equity Diversity & Inclusion:**

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns

harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

**2. Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):**

Mathematics 30-1, 212 or Mathematics 2 (offered by Continuing Education).

**Antirequisite(s):**

Credit for Statistics 213 and either Statistics 205 or 327 will not be allowed. Not available to students who have previous credit for one of Statistics 321, Engineering 319 or Digital Engineering 319 or are concurrently enrolled in Statistics 321 or Engineering 319.

**3. Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Lab Exercises (best 6 of 8)	10%	Ongoing		
Lab Quizzes (best 6 of 8)	10%	Ongoing		
Assignments (best 6 of 7)	30%	Ongoing		
Flex <sup>1</sup>	10%	Ongoing		
Midterm 1 <sup>2</sup>	13.33%	Oct 02 2023 at 12:00 am (50 Minutes)	in-person	During Lab
Midterm 2 <sup>3</sup>	13.33%	Oct 30 2023 at 12:00 am (50 Minutes)	in-person	During Lab
Midterm 3 <sup>4</sup>	13.34%	Nov 27 2023 at 12:00 am (50 Minutes)	in-person	During Lab

<sup>1</sup> 2/3 of this "flex" 10% will come from your highest-scoring midterm; 1/3 of this "flex" 10% will come from your second highest-scoring midterm.

<sup>2</sup> The midterm will be held in-person during your scheduled lab time during the week of October 2 - October 6.

<sup>3</sup> The midterm will be held in-person during your scheduled lab time during the week of October 30 - November 3.

<sup>4</sup> The midterm will be held in-person during your scheduled lab time during the week of November 27 - December 1.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	54 %	50 %

A grade of D (50%) or above is considered "passing." A grade of C- (55%) or above is needed to use this course as a prerequisite for other courses.

**Requests for grade rounding or alterations to grade component weighting will not be considered. Also note that all letter grade cutoffs are fixed and will not be adjusted on an individual basis (e.g., 90.00% is a cutoff for an A, not 89.99%).**

**Assignments:** assignments are not timed and can be accessed as many times as a student wishes before the due date. All assignments will be completed and submitted through WeBWork. **The best-scoring six of seven assignments will be counted towards the assignment grade component. A missed assignment will be given a grade of 0%.**

**Lab Exercises:** lab exercises are not timed and will be completed through WeBWork. Each lab exercise will become available a week before it will be covered in lab (for example, the Lab 1 Exercises will be available on September 11 and will be covered during the labs that run from September 18 - September 22). Lab exercises

will be worked through by the teaching assistant (TA) during the first 20-25 minutes of the scheduled lab time. Lab exercises can be completed during the scheduled lab time in the scheduled lab room, or can be completed independently. Students can attempt the lab questions as many times as they wish before they are due at the end of the week (for example, the Lab 1 Exercises will be due by 11:59 PM on Friday, September 22). **The best-scoring six of eight lab exercises will be counted towards the lab exercise grade component.** A missed lab exercise will be given a grade of 0%. Note that the "best 6 of 8" policy will act in place of any makeup/deferred lab exercises.

**Lab Quizzes:** each lab quiz will be available on WeBWorK during a student's scheduled lab time. The last 20 minutes (approximately) of each lab will be dedicated to completing the lab quiz. **Lab quizzes are timed and must be completed in the scheduled lab room at the scheduled time. The best-scoring six of eight lab quizzes will be counted towards the lab quiz grade component.** A missed lab quiz will be given a grade of 0%. Note that the "best 6 of 8" policy will act in place of any makeup/deferred lab quizzes.

**Midterms:** Each midterm will be available on WeBWorK during a student's scheduled lab time. The midterms are designed to take approximately 35-40 minutes, but students may use all available 50 minutes of the scheduled lab time to complete them. **All three midterms will be counted towards the midterm grade component.** A missed midterm will be given a grade of 0%.

**Flex:** The **flex component** will be based on the performance on the midterms. 2/3 of this 10% flex component will come from the best scoring of the three midterms; the remaining 1/3 of this 10% flex will come from the second-best scoring of the three midterms.

Course components that are missing or late will be given a score of 0%. Any requests to have alternate grade weighting or assessments will be denied.

**For timed assessments (quizzes, midterms), time and other accommodations will be adjusted for SAS students if needed. In addition, accommodations for students with issues with scheduled times/dates (e.g., university-recognized schedule conflicts, caregiving responsibilities) will be applied on a case-by-case basis. Please email the course coordinator, Claudia Mahler (claudia.mahler@ucalgary.ca) at least one week prior to the assessment(s) in question in order to arrange accommodations. Please note that only valid reasons will be accommodated.**

The University of Calgary offers a [flexible grade option](https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

#### 4. Missed Components Of Term Work:

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

It is the responsibility of the student to clearly communicate with your course coordinator **before** (if possible) or **directly after (within 48 hours)** any crises or extenuating circumstances have occurred so that proper arrangements can be made for missed work.

Note that **missing a due date as a result of not being aware of when the component is due, other course due dates, or work schedule conflicts is not considered a valid justification for additional arrangements.**

#### 5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.

## 6. Course Materials:

There is no textbook associated with this course. Students should instead plan on utilizing the materials (note packets, lecture videos, R code, etc.) on D2L.

**WeBWork:** WeBWork will be used for online assignments, labs, lab quizzes, and midterms. There is no cost to use WeBWork.

**R Software:** students will make use of R statistical software throughout the course. R is free and can be downloaded at <https://www.r-project.org/>.

Any material posted to the D2L website is under copyright protection. **Students are not permitted to redistribute any of the material they find there to anyone who is not registered in the Fall 2023 STAT 213 course.** This includes (but is not limited to) posting material/questions online to such sites as Chegg, StuDocu, Course Hero, etc.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

## 7. Examination Policy:

Midterms will be written via WeBWork. Only **one submission per assessment attempt** will be permitted.

In the event that a student cannot write a midterm due to **illness or a university-recognized conflict**, it is the student's responsibility to contact the course coordinator ([claudia.mahler@ucalgary.ca](mailto:claudia.mahler@ucalgary.ca)) as soon as possible (within 48 hours of the exam in the case of illness; at least 24 hours before the exam in the case of a time conflict). In such cases, the weight of the missed midterm will be shifted to the other two midterms (e.g., if a student is ill for Midterm 2, the weight of Midterm 2 will be distributed equally between Midterm 1 and Midterm 3).

If a student **misses two or more midterms** due to illness or a university-recognized conflict, it is the student's responsibility to contact the course coordinator as soon as possible to discuss alternative means of assessment.

Students should also read the Calendar, [Section G](#), on Examinations.

## 8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

## 9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

## 10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work [form](#) to the department in which the course is offered within 2 business days of

receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

- b. **Final Exam:**The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see their [website](#) or call [403-210-9355](#).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([syva@ucalgary.ca](mailto:syva@ucalgary.ca)) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca), [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca),
- f. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Jerrod Smith by email [jerrod.smith@ucalgary.ca](mailto:jerrod.smith@ucalgary.ca) preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)  
[Student Academic Misconduct Policy](#) and [Procedure](#)  
[Faculty of Science Academic Misconduct Process](#)  
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- h. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a

course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- j. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

### Course Outcomes:

- Identify the population of interest, or the target population. Differentiate between the population and the sample; differentiate between a parameter and a statistic.
- Make the distinction between a quantitative and qualitative variable. Explain the three different properties of any population variable: the distribution shape, the center of the distribution, and the spread of the distribution. Construct various graphical techniques to make conclusions of the shape of the underlying distribution, the different measures of center and dispersion. Compare the concepts of percentiles and quartiles, and what they mean with regards to the population of interest.
- Compute the probabilities of simple and compound events. Give examples of the concepts of mutually exclusive events, independent events, and conditional events. Illustrate how an event can be transformed into a real number through the use of random variables; show that a random variable has a distribution, with a measure of center and a measure of dispersion.
- Compute the expected value, the variance and the standard deviation of a generic discrete and continuous random variable. Compute the expected total and its standard deviation of a linear function of certain random variables.
- Illustrate that certain random events can be described by probability models. Differentiate between the probability models (the Binomial, Poisson, Uniform /Exponential, Hypergeometric and Normal distributions) and apply each to find probabilities. Find a percentile under the Normal distribution. A knowledge of each distribution -shape, measure of center, and measure of dispersion -is also expected.
- Describe the Central Limit and apply to both the sample mean and sample proportion to determine how likely they are to fall within a given range of values
- Take a bivariate data set and (i) determine the strength of a linear relationship between the two variables of interest based on a scatter plot and the correlation coefficient, (ii) build a simple linear regression line and interpret the meaning of the slope and intercept parameter estimates, (iii) outline and check assumptions behind the simple linear model, and (iv) find the coefficient of determination and explain its meaning.
- Construct and interpret the confidence interval for a population mean and a population proportion. Confidence interval estimation of the population mean will emphasize the use of the Student's T -distribution.
- Compute the required sample size for a given confidence level and tolerable amount of sampling error when the statistical investigation involves estimation of either a population mean or a population proportion.
- Execute statistical hypothesis testing for a population mean and a population proportion. This includes (i) set up the statistical null and alternative hypotheses (ii) identify the appropriate version of the test statistic and compute the value of this test statistic, (iii) state the rejection region, calculate the P -value, (iv) tell whether the data supports the null hypothesis or not, and (v) interpret the meaning of the P -value in the context of the data. That is, describe the event that the P -value finds the probability of

Electronically Approved - Sep 04 2023 10:16

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**Department Approval**