



### COURSE OUTLINE

1. **Course:** STAT 213, Introduction to Statistics I - Winter 2021

Lecture 01: MWF 09:00 - 09:50 - Online

Instructor	Email	Phone	Office	Hours
Claudia Mahler	claudia.mahler@ucalgary.ca	403 220-7717	VIA ZOOM	Mondays and Wednesdays 9:00 - 9:50

Lecture 02: MWF 15:00 - 15:50 - Online

Instructor	Email	Phone	Office	Hours

Lecture 03: TR 11:00 - 12:15 - Online

Instructor	Email	Phone	Office	Hours
Dr. Thuntida Ngamkham	thuntida.ngamkham@ucalgary.ca	TBA	VIA ZOOM	STAT213:Tue/Thu 11:00 am -12:00pm, STAT327:Tue/Wed 3:00pm-4:00pm

Lecture 04: MWF 14:00 - 14:50 - Online

Instructor	Email	Phone	Office	Hours
Qingrun Zhang	qingrun.zhang@ucalgary.ca	TBA	VIA ZOOM	Tuesday & Thursday 9:00 am -10:00 am

**Coordinator(s)**

Name	Email	Phone	Office	Hours
Claudia Mahler	claudia.mahler@ucalgary.ca	403 220-7717	VIA ZOOM	Mondays and Wednesdays 9:00 - 9:50

**Online Delivery Details:**

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor’s permission.

**Delivery of the course material will be done primarily through pre-recorded lecture videos posted on D2L.** As there will be no live lecture component, students are not required to attend live (scheduled) lectures.

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

While students will not be required to be online simultaneously (synchronously), **it will be required that students complete scheduled course components within the time period they are available** (please refer to the schedule posted on D2L for further details).

**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 Zoom meeting times.

**Course Site:**

**D2L:** STAT 213 - ALL - (Winter 2021) - Introduction to Statistics I

**WeBWork:** STAT 213 (all sections)

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

2. **Requisites:**

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

**Prerequisite(s):**

Mathematics 30-1 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 or 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:

Component(s)	Weighting %	Dates
Assignments (7)	30%	Assignment 1: February 8 Assignment 2: February 22 Assignment 3: March 1 Assignment 4: March 15 Assignment 5: March 29 Assignment 6: April 9 Assignment 7: April 15
Lab Exercises (best 6 of 8)	10%	Weekly
Lab Quizzes (best 6 of 8)	15%	Weekly
Term Exams (3)	45%	Exam 1: February 10 Exam 2: March 17 Exam 3: April 14
Bonus (optional)	2%	April 15

All graded components will be completed and submitted through WeBWork.

**All assignments will be made available on WeBWork at least two weeks before they are due.**

Assignments are not timed and can be accessed as many times as a student wishes before the due date.

**Each lab exercise will be made available on WeBWork a week before they are due** (for example, Lab Exercise 1 will be available from 12 AM Wednesday, January 13 until 11:59 PM Wednesday, January 20). The exercises are designed to take approximately 25 minutes, but students may use as much time as they wish during the week-long availability to complete them. A student can access a lab exercise as many times as they wish within the week-long period. **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%.

**Each lab quiz will be available for a given 24-hour period** (for example, Lab Quiz 1 will be available from 12 AM Wednesday, January 20 until 11:59 PM Wednesday, January 20). The quizzes are designed to take approximately 25 minutes, but students may use up to 24 hours to complete them. A student can access a lab quiz any time during the given 24-hour period, but once they open the lab quiz, they have only one attempt to complete it (it cannot be closed and re-opened). **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%.

**Each term exam will be available for a given 24-hour period** (for example, Exam 1 will be available from 12 AM Wednesday, February 10 until 11:59 PM Wednesday, February 10). The term exams are designed to take between 50 and 100 minutes, but students may use up to 24 hours to complete them. A student can access a term exam any time during the given 24-hour period, but once they open the term exam, they have only one attempt to complete it (it cannot be closed and re-opened). **All three term exams will be counted towards the term exam grade component.** A missed term exam will be given a grade of 0%.

The **bonus component** will be in the form of an additional WeBWork "assignment." This component is optional as students can choose to complete it or not. **If a student chooses to complete it, they can earn up to an additional 2% to their final course grade.** Note that this bonus component takes the place of any rounding adjustments that may be made; thus, **requests for grade rounding or alterations to grade component weighting will not be considered.**

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.

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

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.

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

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness 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. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the 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 (including confusion over time zones), other course conflicts, 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 term exams. 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 Winter 2021 STAT 213 course.** This includes (but is not limited to) posting material/questions to 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:**

Exams and quizzes will be written via WebWork. Only one submission per assessment will be permitted.

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.

- a. **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 [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel: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](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **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](#)  
[Research Integrity Policy](#)

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

- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Mathematics & Statistics, Mark Bauer by email [bauerm@ucalgary.ca](mailto:bauerm@ucalgary.ca) or phone 403-220-4189. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). 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.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- h. **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.
- i. **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.

### 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 - Dec 19 2020 13:27

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**Department Approval**

Electronically Approved - Jan 04 2021 12:18

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**Associate Dean's Approval**