UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Mathematics & Statistics
MS 476
403 220-5210
math@ucalgary.ca

COURSE OUTLINE

1. **Course:** STAT 217, Introduction to Statistics II - Winter 2023

   Coordinator(s)

Name	Email	Phone	Office	Hours
Scott Robison	sarobiso@ucalgary.ca	N/A	MS 590	TBA

   Section(s)

   Lecture 01 : MWF 09:00 - 09:50 in ST 140

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

   Lecture 02 : TR 09:30 - 10:45 in KNB 132

Instructor	Email	Phone	Office	Hours
Madeline Ward	TBA	TBA	TBA	TBA

   Lecture 03 : TR 12:30 - 13:45 in KNB 132

Instructor	Email	Phone	Office	Hours
Dr. Thuntida Ngamkham	thuntida.ngamkham@ucalgary.ca	403 220-6305	MS 550	TBA

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:

Lectures will be held in-person so long as it makes sense to do so. As you will read, efforts will be made to be as flexible as possible for those who cannot join in-person.

Office hours/Home Work help will be available during your registered lab. Office hour(s) availability may be subject to changing modalities and schedules contingent on the holders health, comfort, and circumstances.

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found here. **Online Delivery Details:**

This course is being offered online in real-time via scheduled meeting times, 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.

This course has a registrar scheduled, asynchronous final exam. The writing time is 2 hours + 50% buffer time, but the exam can be written any time in a 24-hour window.

Course Materials including: readings, notebooks, videos, and R-Studio software code etc. will be posted via the D2L course website. Although, students are not required to be online simultaneously (synchronously) it will be required that students view/complete all scheduled course components on the same day that they are assigned (reference the D2L calendar for details). These materials are previously recorded (not new) and to be considered **supplementary**; in-person lecture attendance is encouraged/preferred when plausible, however, students (and members of the teaching team) should stay home if ill.

Asking Questions: many students will have additional questions, especially regarding assignment problems or

course content. These questions should be asked on the relevant **Discussion Boards or Online Chats** on D2L, where Instructors, TA's, and peers can contribute and curate answer(s) to these questions centralizing, reducing duplication, and improving answer consistency.

Conversations of a personal or private nature may be conducted through email, and we will make every effort to respond in a timely manner within one working day. We ask for your patience, professionalism, and respect during communication.

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.

Course Site:

D2L: STAT 321 L01-(Fall 2022)-Introduction to Probability

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

Any material that is posted of the D2L website is under copyright protection, students are not permitted to redistribute any of the material they find there to anyone not in this semester's class.

Any material that is posted on D2L is subject to be taken down within two weeks of the posted date, so do not use D2L as your digital storage space. Do not expect that you will have access to the D2L page beyond the End of Classes date (Apr. 12, 2023). Download any material you would like to your personal devices before they are removed from the website.

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):
Statistics 213.

Antirequisite(s):
Credit for Statistics 217 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, Engineering 319 or Digital 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)[1]	5%	Ongoing		
Lab Quizzes (*best 6 of 8 will count)[2]	15%	Ongoing		
Assignments (5)[3]	25%	Ongoing		
Midterm 1[4]	12.5%	Ongoing		
Midterm 2[5]	12.5%	Ongoing		
Registrar Scheduled Final Exam[6]	30%	Will be available when the final exam schedule is released by the Registrar	online	Will be available when the final exam schedule is released by the Registrar

[1] Lab exercise due dates will be: Jan. 25, Feb. 1, Feb. 15, Mar. 1, Mar. 8, Mar. 22, Mar. 29, Apr. 5, Apr. 12. Any exercises less than 3 days late will receive a 30% penalty. No assignments longer than 3 days late will be accepted. Final scores will be assessed out of 95% instead of 100%. Meaning your scores will be divided by 0.95 (which will increase them) but capped at a 100% max. This is to account for possible rounding issues, therefore, all rounding grade adjustments will be redundant, unnecessary, and disregarded.

[2] Lab quiz due dates will be: Jan. 26, Feb. 2, Feb. 16, Mar. 2, Mar. 9, Mar. 23, Mar. 30, Apr. 6, Apr. 13. Any exercises less than 3 days late will receive a 30% penalty. No assignments longer than 3 days late will be accepted. Final scores will be assessed out of 95% instead of 100%. Meaning your scores will be divided by 0.95 (which will increase them) but capped at a 100% max. This is to account for possible rounding issues, therefore, all rounding grade adjustments will be redundant, unnecessary, and disregarded.

[3] Assignment due dates will be: Feb. 8, Mar. 1, Mar. 15, Apr. 5, Apr. 12. Any assignments less than 3 days late will receive a 30% penalty. No assignments longer than 3 days late will be accepted. Assignment scores will be assessed out of 95% instead of 100%. Meaning your scores will be divided by 0.95 (which will increase them) but capped at a 100% max. This is to account for possible rounding issues, therefore, all rounding grade adjustments will be redundant, unnecessary, and disregarded.

[4] Midterm 1, will be written on Feb 9. You will have 75 minutes to complete the exam (50 minutes for the exam itself and 25 additional minutes to deal with any technical difficulties. The window to start your 75 minute exam will open at 8am and close at 8pm. Please see footnotes for additional details.

[5] Midterm 2, will be written on Mar. 16. You will have 75 minutes to complete the exam (50 minutes for the exam itself and 25 additional minutes to deal with any technical difficulties. The window to start your 75 minute exam will open at 8am and close at 8pm. Please see footnotes for additional details.

[6] See the footnotes for additional details.

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
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	54.99 %	50 %

This course will have a Registrar Scheduled Final exam that will be delivered on-line. The Final Examination Schedule will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

Per section G.5 of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm.

- the latest you should start an asynchronous exam would be 8 am in order to be able to submit the exam at 11am and have the full 3 hours.

*If these any dates cannot work for you please arrange (sarobiso@ucalgary.ca) an alternate time to write these exams **prior (at least one week) to the date(s) in question.** Of course, valid reasons will be accommodated, however, simple matters of preference will not be accommodated.

In the event that a student legitimately fails to submit any assessment on time (e.g. due to illness etc...), please contact the course instructor **within 48 hours of the due date! 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.

***After any Midterm a re-write option will be made digitally available on the following Saturday and Sunday. If desired, the student may re-write all or any collection of complete problems of the original exam, however, the **re-writes will only be eligible for up to 70% of the original score. Once a re-write is attempted the original score will not be considered.** The final combination of original scores at 100% credit and scores reduced (by 30%) from re-writes will then comprise your recorded grade. Re-writes are encouraged to be considered open book, but will need to be completed individually without another's assistance. Please note that your re-write questions are subject to being varied versions of the original.

****The final exam will have a similar re-write option as described for the Midterms, however, the date cannot yet be determined.

*****If any assessments is/are missing and unaccounted for they will be graded as zeros and count toward any assessment(s) that do not count.

******Any grade appeals after 14 days from initial grade posting, will be denied.

The University of Calgary offers a [flexible grade option](#), 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:**

   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, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

   It is **your** job to communicate clearly with your instructor **before** (if possible) or **directly after (<48 hours) crisis or extenuating circumstance has occurred.** Simply missing or not being aware of time (time zones) is not a valid justification. This includes: any **course conflicts** or **work schedules** etc.

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

   The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm - 1	Online Exam with 12 hours window	Thursday, February 9, 2023 at 8:00 am	75 Minutes
Midterm - 2	Online Exam with 12 hours window	Thursday, March 16, 2023 at 8:00 am	75 Minutes

   REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. **Course Materials:**

   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:**

   Any requests to for a deferred exam must be submitted within 48 hours of the exam date.

   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.

   For graded assessment work, you are expected to **show your supporting work** for full marks. Correct answers that fail to display **clear and concise** evidence and explanation of answers will not be given full credit.

   Your work must be submitted correctly to the **Gradescope** and **WeBWorK** platforms to be eligible for any credit. Attempting to not submit on time (before deadlines, even if only second(s) late) will result in zero earned credit. Inability to submit/upload the assessments correctly will also result in zero credit. Regardless of typos or what was "meant to be submitted" all that can be graded is what was actually submitted. This, unfortunately, includes if time limits or other errors were incurred resulting in blanks being submitted on behalf of the student.

   Any submitted work must be **legible,** display an organized expected and **readable flow**, contain a consistent and **singular solution**. Any solutions that appear to contain multiple answers or attempt to commit to multiple inconsistent answers will result in zero credit. ex. trying to indicate both True and False; selecting A and B in multiple choice format; or Answers that contain both correct and incorrect answers the correct final answer must be **clearly be indicated** (with supporting work that lead to that response). This applies to cumulative answers that appear to "change consistency" at some point of the response. How the question is started will be given precedence in the event of inconsistencies.

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 t o 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.

    Grade appeals must be submitted to the Teaching Assistant (TA) of their registered lab. If the TA agrees they may pass on the record of the account to the instructor of record.

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 ([svsa@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](#), [science2@su.ucalgary.ca](#), [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 Mark Bauer by email [bauerm@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:

- Conduct appropriate parametric and/or non-parametric single and multiple population comparisons (for both qualitative and quantitative data types), applying confidence interval estimation and hypothesis testing. Verify the necessary conditions of: the Normality, the equality of variance, and the dependence of the data structure(s)
- Recognize and distinguish between Type I and Type II errors that accompany statistical hypothesis testing. Displaying the ability to calculate the probabilities associated with these errors, for both single population proportions and large sample sized population means
- Evaluate the correlation between bivariate data for two qualitative variables
- Determine the 'Goodness-of-Fit' of an empirical data set to the well-known probability models: Binomial, Poisson, as well as any specified well-defined model.
- Model and verify the statistical significance of the model relating two quantitative variables (least- squares estimation). Demonstrate awareness of the conditions of the linear model and validate that these conditions are met through various techniques. Produce confidence interval estimation of both the mean and an individual value of the response variable
- Display and interpret the least-squares-estimate for Multiple Linear Regression. To defend, model, and verify the statistical significance of the regression equation's estimate from two or more quantitative and/or qualitative independent variables.
- Conduct population parameter comparisons between three or more quantitative variables through the employment of the balanced: One-Way-ANOVA/Post Hoc inference (Tukey's HSD), Two- Way-ANOVA (including repetition), and with selected Non-parametric counterparts.
- Demonstrate how to use critical thinking, formulae, and statistical software to provide solutions for both theoretical and practical applications of course material.

Electronically Approved - Jan 04 2023 13:17

Department Approval

Electronically Approved - Jan 06 2023 15:49

Associate Dean's Approval