UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

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

COURSE OUTLINE

1. **Course:** STAT 423, Statistical Analysis of Sample Survey - Winter 2021

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

Instructor	Email	Phone	Office	Hours
James Stallard	jbstall@ucalgary.ca	403 220-3953	MS 582	TBA

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, synchronous final exam. The writing time is 2 hours + 50% buffer time.

The synchronous, or 'live class', will be held at the regularly scheduled time of 09:00 - 09:50AM on the following dates:

Live Class Meeting Schedule

Date	Time
Monday, January 11th	**09:00 - 09:50***
Friday, January 22nd	**09:00 - 09:50**
Friday, January 29th	**09:00 - 09:50**
Friday, February 5th	**09:00 - 09:50**
Friday, February 12th	**09:00 - 09:50**
Friday, February 26th	**09:00 - 09:50**
Friday, March 5th	**09:00 - 09:50**
Friday, March 12th	**09:00 - 09:50**
Friday, March 19th	**09:00 - 09:50**
Friday, March 26th	**09:00 - 09:50**
Wednesday, Apr 7; Fri. April 9; Monday, April 12 **(Virtual Group Project Presentations)**	**09:00 - 09:50**
Wednesday, April 14th	**09:00 - 09:50**

*all times are MST

Zoom coordinates for each synchronous class can be found in D2L.

Course Site:

D2L: STAT 423 L01-(Winter 2021)-Statistical Analysis of Sample Survey

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):
   3 units from Statistics 217, 323, 327, Data Science 305, Engineering 319, Psychology 300, 301, 312, or Sociology 311.

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 %	Date
Assignments (8)	**35%**	**A1: Due Monday, January 18th @ 09:00AM** **A2: Monday, January 25th @ 09:00AM** **A3: Monday, February 1st @ 09:00AM** **A4: Monday, February 8th @ 09:00AM** **A5: Monday, March 8th @ 09:00AM** **A6: Monday, March 15th @ 09:00AM** **A7: Monday, March 22nd @ 09:00AM** **A8: Monday, March 29th @ 09:00AM**
Term Group Project	**35%**	**Wednesday, April 7**
Final Exam	**30%**	**Registrar Scheduled**
Top Hat	**(Additional 3%)**	**Daily**

Assignments are to be submitted to Gradescope (https://www.gradescope.ca). A course code will be provided in D2L.

Please ensure you register with your @ucalgary.ca email address.

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%	52.5 %	50 %

This course will have a final exam that will be scheduled by the Registrar. 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.

The final exam will be administered using an on-line platform. 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. – **updated April 6, 2021**

A passing grade (at least 50%) on the final exam is required in order to earn a minimum grade of C- in this course.

Completion of the term project is required in order to receive a passing grade in this course.

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.

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

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

6. **Course Materials:**

   Recommended Textbook(s):

   Sharon Lohr, *Sampling: Design and Analysis. 2nd Edition*. Brooks/Cole.

   We will be extensively using R Studio in this course. Please see https://rstudio.com/products/rstudio/download/

   It is highly advised that you download R Studio to your laptop/main computer of usage prior to the first class on Monday, January 11th.

   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:**

   The format of the final exam will be **open class notes**. You will also have access to R/R Studio on your final exam.

   Completed assignments or assignment solutions, in whole or in part, are prohibited from the final exam.

   The **final exam** will be online with students having two options within to complete the Final Exam. In D2L, students will be provided with both a 1. pdf-version of the Final Exam and 2. An R Markdown (.Rmd) file of the Final Exams. Students will have the choice of which file-version/platform they will complete the Final Exam within. Students will then upload their attempted Final Exam to the D2L Dropbox prior to the upper-limit of the three-hour final exam window.

   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.

   Each of your submitted assignments to gradescope.ca must be in a .pdf format.

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 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 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 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 (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.

g. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: 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:

- Differentiate between 'good' and 'bad' survey questions and design appropriate questionnaires/surveys to quantify relevant response variables/outcomes.
- Describe the different scales of measurement for measuring relevant survey variables and how they are summarized visually (e.g., histogram, scatterplot)
- Appreciate the difference between 'non -scientific' and 'scientific' surveys and explain the limitation s of inference from the former
- Select and administer either a simple random, a stratified random, cluster (single and multi -stage), and a systematic (1 -in-k) sampling designs for a given level of confidence and sampling tolerance.
- Distinguish among different sampling designs and the consequent design -based estimation of the population mean, population proportion, or population total.
- Incorporate the use of auxiliary variables in ratio and regression estimation of relevant parameters.
- Document various types of survey non -response and missing data, and the different ways of handling them (e.g., call- backs, imputation, weighting adjustments)
- Employment of a statistical package/software (e.g., R, SAS) for selecting a sample using a given sampling design and for carrying out estimation of relevant parameters based on the sample.
- Summarize in written and oral form the design, statistical analysis and conclusions of a survey

Electronically Approved - Apr 08 2021 09:31

Department Approval