



COURSE OUTLINE FOR REMOTE LEARNING

1. **Course:** STAT 321, Introduction to Probability - Spring 2020

Lecture 01: MWF 10:00 - 11:50 - Online

Instructor	Email	Phone	Office	Hours
Dr. Sang Kang	sangjin.kang@ucalgary.ca	403 210-8697	MS 364	TBA

Remote Learning Supplemental Information:

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. Please refer to the details below for more complete information.

Remote Learning Details:

Regular Zoom meeting is at 10:00 am-12:00 pm on every Monday and Wednesday.

This time is mostly used for Q&A session and supplemental lectures.

Most of course material is provided the series of video clips for dealing with statistical concepts or illustrative examples.

This hybrid schedule is purposed for students to concentrate on quizzes or mid-term exam on Friday.

Course Site:

D2L: STAT 321 L01-(Spring 2020)-Introduction to Probability

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

Gradescope: Entry code will be provided during the first day meeting on May 6 (Wed)

TopHat: Join Code will be provided during the first day meeting on May 6 (Wed)

R and R Studio: Main statistical software used some part of quizzes, mid-term exam, final exam, and software assignments

2. **Requisites:**

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

Prerequisite(s):

Mathematics 267 or 277.

Antirequisite(s):

Credit for Statistics 321 and Engineering 319 will not be allowed.

Note(s):

- Statistics 205, 213, 217, and 327 are 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. Also known as: (formerly Mathematics 321)

As the prerequisite has specified, the advanced level of calculus (even on the point of multivariate differentiation and its integration) is required to take this course. If you are not get used to this level of mathematical literacy but want to get the credit of this course, I would strongly suggest you to review what you have learned through MATH 267 or 277 course.

At the same time, learning statistics requires conceptual and methodological understanding to approach probability and distribution theory covered in this course. As an instructor, I will suggest you to think over applicable concepts and to be accustomed to any possible scenarios of events or probabilities through practice of exercise problems.

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
Quizzes (Best 3 out of 4)	15%	May 15, May 22, June 5, and June 12 (An hour exam for 24-hour exam window)
Software assignments	10%	To be discussed on the first day of Zoom meeting
Mid-term exam	20%	May 29 (Two-hour exam for 24-hour exam window)
Final exam	45%	To be scheduled by Registrar (Three-and-half hour exam for 24-hour exam window)*
Flexible grade: Highest between mid-term exam and final exam	10%	
TopHat bonus	3%	To be discussed on the first day of Zoom meeting

*For example, if the registrar schedules an exam from 1-4pm on June 20, 2020, the exam must be submitted no later than 4pm on June 20, 2020 to be graded. Students would have a 24 hour window prior to this submission time, in which they may open and begin the exam.

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 has a registrar scheduled final exam.

A passing mark on the final exam, at least 50%, is required to earn a minimum final grade of C-. For example, if your grade going into the final exam is a 93% but you fail the final exam the best grade you can achieve is D+.

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 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.

If students have schedule conflicts for the overlap of exams or quizzes from other course, you should notify the instructor and are permitted to take quizzes or mid-term exam on Thursday.

5. Scheduled Out-of-Class Activities:

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

6. Course Materials:

Recommended Textbook(s):

Dennis D. Wackerly, William Mendenhall III, Richard L. Scheaffer, *Mathematical Statistics with Applications (7th edition)*: Thomson Brooks/Cole.

7. Examination Policy:

In some parts of quizzes, mid-term exam, and final exam, non-programmable/non-graphing calculators are used. The part done by calculation, possibly involving calculus tool, is submitted through Gradescope.

In some other parts of those evaluation components, R Studio are used. What students are required is to submit R code through Dropbox on your works of quizzes, mid-term exam, and final exam done by R studio.

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 Center:** For more information, see 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 (syasa@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 misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**

- 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 (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. SU Faculty Rep., Phone: [403-220-3913](tel: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:

- Define a random experiment; conceptualize its sample space and the various events the random experiment could produce.
- Apply various laws of probability to solve probability problems that are framed in both theoretical and applied contexts
- Read, replicate, and create mathematical proofs of probability theorems covered in the course
- Recognition of quantification of random events through the creation of a random variable ; employment of probability foundations to design a probability model of a random variable
- Differentiation between discrete and continuous random variables, analysis of the random variable' s properties through an examination of its distribution shape, its measure of centre (mean/expected value), and its measure of spread (variance or standard deviation)
- Derivation of a moment generation function and subsequent employment of calculus methods to compute the moments of a random variable.
- Differentiate between when to apply the various probability models covered in the course (Bernoulli, Binomial, Negative Binomial, Geometric, Hypergeometric, Poisson, Normal, Gamma and its special cases (Chi -square and Exponential)). In addition, demonstrate application of such probability models to compute probabilities
- Recognize the synergies between two random variables through the visualization of their joint probability distribution function and its employment to compute simultaneous probabilities and derive conditional distribution functions
- Distinguish between dependence and independence of a pair of random variables and compute the covariance between the random variables.
- Statement and application of the Central Limit Theorem to both the sample mean and the sample proportion in order to consider the probable (and improbable) values of these statistics

Electronically Approved - Apr 30 2020 18:48

Department Approval

Electronically Approved - May 04 2020 12:11

Associate Dean's Approval for arrangements for remote learning