



## COURSE OUTLINE

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

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

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

#### 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.

**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).

**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** 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 2020)-Introduction to Probability

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

Any material that is posted on 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 (Dec. 9, 2020). Download any material you would like to your personal devices before they are removed from the website.

### 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 either Engineering 319 or Mathematics 321 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.

### 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 %	Weighting break-down	Date
Assignments (6)	25%	(Assignment scores will be taken out of 95%; meaning that scores $\geq 95\%$ will be recorded as 100%; eg. 57% will be recorded as $57/95=60\%$ , this is to account for any assignment rounding errors. No further rounding adjustments will be made.)	Assignments are only available through WebAssign (you must purchase a WebAssign code - See Section 6 - Course Materials)  While it is the intention of these assignments to keep you current and up to date with course concepts the due date for all the assignments is Dec. 9, 2020.
Practice Quizzes (*best 5 of 6 will count)	10%		**written bi-weekly via WebWork Sep. 24 Oct. 8 Oct. 22 Nov. 5 Nov. 26 Dec. 8 (24 hour given to complete an expected 60 min. assessment)
Quizzes (*best 4 of 5 will count)	50%	(20% from the highest scoring Quiz, 12.5% from the 2nd highest, 12.5% from the 3rd highest, 5% from the 4th highest )	***written via GradeScope (digital hand marking, not computer marked) so that your supporting work can be assessed (24 hour given to complete an expected ~50-100 min assessment)  Test 1: Week 3, Oct. 1 Test 2: Week 5, Oct. 15 Test 3: Week 7, Oct. 29 Test 4: Week 9, Nov. 19 Test 5: Week 11, Dec. 3
Term Exam	15%		***written via GradeScope (digital hand marking, not computer marked) so that your supporting work can be assessed (24 hour given to complete an expected ~120-180 min assessment)  Dec. 9

**\*If Quiz(zes) or Practice Quiz(zes) is/are missing they will count as the assessment(s) that do not count. If more than 1 (respectively) are unaccounted for, scores of 0% will be inputted in as the assessment(s) that do count.**

\*\*The Quizzes and Practice Quizzes will be available the whole registered lab calendar 24hr. day (eg. the start of a Thursday 12:00 a.m. till the end of a Thursday 11:59 p.m. if you have labs scheduled on Thursdays). Your Quiz day will be determined as the day of your registered lab (LXX; not lecture, not TXX).

\*\*\*If these 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.

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%	54.99 %	50 %

Any course components that are **late or missing will be given a score of 0%**.

The grade will be calculated as stipulated above, any/all requests to have **alternate grade weighting or assignments 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 **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:**

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

#### 6. **Course Materials:**

Required Textbook(s):

*Wackerly, ebk Mathematical Statistics with Applications Webassign 7E (5 month): Nelson.*

This term we will be using WebAssign for an online homework component. The book store has the digital e-text and WebAssign access code bundle for \$74.95.

The book store also has the hard cover text bundled with the WebAssign access code for \$197.35.

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:**

Canadian Institute of Actuaries Ethics: In addition to the university's internal policies on conduct, including academic misconduct ([Section K of the online calendar](#)), candidates pursuing credits for writing professional examinations shall also be subject to the Code of Conduct and Ethics for Candidates in the CIA Education System and the associated Policy on Conduct and Ethics for Candidates in the CIA Education System. For more information, please visit [Obtaining UAP Credits and the CIA FAQ](#)

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

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

A WebAssign code will be required to complete the Assignments component of this course. see Course Materials.

## 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 that is submitted via grade scope, 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 of 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.

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).

## 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](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 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](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 (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](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:

- 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 - Sep 08 2020 11:52

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**Department Approval**

Electronically Approved - Sep 08 2020 13:31

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**Associate Dean's Approval**