

University of Alberta  
Department of Mathematical & Statistical Sciences

**PROBABILITY & STATISTICS I**  
**STAT 265-A1, LEC-51355**  
**Fall 2026**  
**©Yaozhong Hu**

**Instructor:** Yaozhong Hu  
**Office:** UCommon 4-224  
**E-mail:** [yaozhong@ualberta.ca](mailto:yaozhong@ualberta.ca)  
**Personal Web Page:** <https://sites.ualberta.ca/~yaozhong>

**Office Hours:** TR 9:30am - 10:50am  
or by appointment

**Lecture Room:** ETLC E1-007  
**Lecture Time:** TR 12:30pm - 1:50pm  
(1-Sep-2026 – 8-Dec-2026)

---

**Course Description:**

STAT 265: “Probability and Statistics I” is a calculus-based introductory course focusing on mathematical statistics, requiring to work with calculus like single/double integrals, infinite series, and derivatives.

The core technical topics that this course will cover are foundational properties of probability models and random variables.

- (1) Foundations of Probability: Sample spaces, events, combinatorial probability math, conditional probability, independent events, and Bayes’ Theorem.
- (2) Discrete Random Variables: Probability mass functions (PMFs), expected values, variances, binomial distributions, and moment-generating functions (MGFs).
- (3) Continuous Random Variables: Probability density functions (PDFs), cumulative distribution functions (CDFs), exponential and normal distributions, and continuous expected values.

(4) Multivariate Distributions: Jointly distributed random variables, marginal and conditional distributions, stochastic independence, covariance, and probability inequalities.

(5) Function of random variables: Method of transformations, method of moment generating functions.

### **Course Prerequisites:**

One of MATH 209, MATH 214, or MATH 217 (Calculus III / Intermediate Calculus).

Next Sequence: This course acts as the direct prerequisite for STAT 266: Probability and Statistics II.

### **Course Objectives and Expected Learning Outcomes:**

Students are expected to understand the basic material of stochastic processes and know what is its goals and what is the mathematical tools it uses. stochastic processes can be a very theoretical mathematical branch. But it also has many immediate applications to various fields. Students are expected to have a solid background and analytic skills. This will also be necessary for their future study of some other fields such as statistics, engineering, mathematical finance, machine learning.

### **Lecture Schedule & Assigned Readings:**

The pace of lectures will be adapted accordingly throughout the semester.

### **Required Learning Resources:**

The main book to be used in this course is

Mathematical Statistics with Applications, the 7th Edition

by Wackerly, Mendenhall, and Scheaffer.

©2008 Thomson Learning, Inc.

STAT 265 covers Chapters 2 through 5 of this book.

STAT 266 completes the rest of the text via Chapters 6 through 10.

### Grade Evaluation:

All midterm and final exams will be in the classroom where the lectures are held. Final exam time is decided by the university and will be announced when it decided.

The course mark will be calculated based on the following breakdown:

| Course Component | Weight | Date                                                                                   |
|------------------|--------|----------------------------------------------------------------------------------------|
| Assignments      | 8%     | Due every Monday unless otherwise announced                                            |
| Quizzes          | 32%    | There will be 8 pop-up quizzes near the end of Thursday's classes, each worth 4 points |
| Midterm 1        | 20%    | Thursday, October 8, 2026                                                              |
| Midterm 2        | 20%    | Thursday, November 5, 2026                                                             |
| Final Exam       | 20%    | TBD                                                                                    |

**\*Note: During quizzes, midterm and final exams, all cell phones must be turned off and stored in your bags.**

The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this document. Students must verify this date on BearTracks when the Final Exam Schedule is posted.

Grades are unofficial until approved by the Department and/or Faculty offering the course.

### Assignments:

- (i) Homework will be assigned after each lecture.
- (ii) Homeworks, quizzes, and exams are submitted electronically through canvas website ("Assign2"). You can access to the eclass through <https://canvas.ualberta.ca/courses/34542/assignments> using your ccid.
- (iii) The electronic submission of homework is due on Monday at 23:00pm for the two assignments of the previous week unless otherwise stated.

### Exam and quiz's Format:

The format (not the content) of all midterm exams and final will look like

**TOTAL:** \_\_\_\_\_

Student Name : \_\_\_\_\_

**Exam for Stat 265, Probability and Statistics I**  
**©Fall 2026 by Professor Yaozhong Hu**

Problem 1 A bowl contains twenty cherries, exactly fifteen of which have had their stones removed. A greedy pig eats five whole cherries, picked at random, without remarking on the presence or absence of stones. Subsequently, a cherry is picked randomly from the remaining fifteen.

- (a) What is the probability that this cherry contains a stone?
- (b) Given that this cherry contains a stone, what is the probability that the pig consumed at least one stone?

Problem 2 A purse contains 12 quarters and 2 pennies. All the coins are to be drawn, one at a time, without replacement. You keep all the quarters that are drawn between the two pennies, which is denoted by  $X$  (The total number of quarters between the two pennies). Find  $\mathbb{E}(X)$  and  $\text{var}(X)$ .

**Exam Aids:**

All exams are close book exam. This means it is not allowed to use textbook or any other books. However, Students are allowed to use all kinds of calculators (but no laptop or cellphone can be used). They are also allowed to use one normal size ( $8 \times 11$ ) page of note which can be written on both sides.

All quizzes are close book test and no note is permitted. For each quiz students are asked to bring their own white papers to work with the exam problems, and upload their solutions to course's canvas website.

Each quiz will contain a few problems very similar to the homework problems that has been assigned earlier and submitted.

**Excused Absence Where the Cause is Religious Belief:**

For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Fall or Winter classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request.

**Missed Term Work**

A student who cannot write a midterm To apply for an excused absence, a student must inform the instructor within two working days following the scheduled date of the term work or term exam missed, or as soon as the student is able, having regard to the circumstances underlying the absence. In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

An excused absence is a privilege and not a right; there is no guarantee that an absence will be excused. Misrepresentation of Facts to gain an excused absence is a serious breach of the *Code of Student Behaviour*.

**Missed Final Examination:**

A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Students who failed at the start of term to request exam accommodations for religious beliefs are expected to follow the normal deferred final examination process. Such an application must be made to the student's Faculty office within two working days of the missed examination and must be

supported by a Statutory Declaration (in lieu of a medical statement form) or other appropriate documentation (Calendar section 23.5.6). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of Facts to gain a deferred examination is a serious breach of the *Code of Student Behaviour*.

Any deferred final examinations are scheduled as follows:

**Date:** Saturday 09 January 2027  
**Time:** 2:00pm  
**Location:** TBA

Students required to arrive no later than 13h30 to confirm their identification with their U of A OneCards or other photo identification.

#### **Re-examination:**

A student who writes the final examination and fails the course may apply for a re-examination. Re-examinations are rarely granted in the Faculty of Science. These exams are governed by University (Calendar section 23.5.5) and Faculty of Science Regulations (Calendar section 192.5.3). Misrepresentation of Facts to gain a re-examination is a serious breach of the *Code of Student Behaviour*.

---

## **STUDENT RESPONSIBILITIES**

#### **Academic Integrity:**

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the *Code of Student Behaviour* (online at [www.governance.ualberta.ca](http://www.governance.ualberta.ca)) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All forms of dishonesty are unacceptable at the University. Any offense will be reported to the Senior Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offenses. Anyone who engages in these practices will receive

at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science the sanction for **cheating** on any examination will include **a disciplinary failing grade** (NO EXCEPTIONS) and senior students should expect a period of suspension or expulsion from the University of Alberta.

### **Collaboration on Assignments:**

Students should work alone for each of their assignments. But they can collaborate to work on the homework assignments. However, the midterm exams are not collaborative and close book.

### **Exams:**

Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed. Electronic equipment cannot be brought into examination rooms.

### **Cell Phones:**

Cell phones are to be turned off during lectures, labs and seminars. Cell phones are not to be brought to exams.

### **Audio or Video Recording:**

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

### **Students Eligible for Accessibility-Related Accommodations (students registered with Student Accessibility Services – SAS):**

Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with SAS deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommoda-

tions. Contact SAS ([www.ssds.ualberta.ca](http://www.ssds.ualberta.ca)) for further information.

### **Student Success Centre:**

Students who require additional help in developing strategies for better time management, study skills, or examination skills should contact the Student Success Centre (2-300 Students' Union Building).

### **Decima Robinson Support Centre for Mathematical & Statistical Sciences:**

Students who require additional help with assignments or have questions about the course material in general are encouraged to visit the Decima Robinson Support Centre (528 Central Academic Building). Graduate students will be available to provide one-on-one help. In order to get maximum help during each visit, students are asked to be specific about the problem with which they are seeking help. The Centre is open Monday to Friday, 9:00–15:00.

---

Policy about course outlines can be found in section 23.4(2) of the University Calendar.

### **Important dates of Fall 2026**

|                 |            |                                           |                             |
|-----------------|------------|-------------------------------------------|-----------------------------|
| September 1     | Tuesday    | First day of class                        |                             |
| September 7     | Monday     | Labor day                                 | University buildings closed |
| September 30    | Wednesday  | National Day for Truth and Reconciliation | University buildings closed |
| October 12      | Monday     | Thanksgiving Day                          | University buildings closed |
| November 11     | Wednesday  | Remembrance Day                           | University buildings closed |
| November 9-13   | Whole week | Reading week                              | No class                    |
| December 9      | Wednesday  | Last day of the class                     |                             |
| December 9 - 22 |            | Final exams                               |                             |

### **Disclaimer:**

Any typographical errors in this Course Outline are subject to change and will be announced in class.

**Copyright:**

©Dr. Yaozhong Hu, Department of Mathematical & Statistical Sciences, Faculty of Science, University of Alberta, 2026