STAT 302- Introduction to Probability

University of British Columbia - Winter 2020/2021 - Term 2

Course Description

Basic notions of probability, random variables, expectation and conditional expectation, discrete and continuous probability distributions, limit theorems.

Note: **STAT 302** is equivalent to **MATH 302**. Proofs are an important component of the course.

Prerequisites

One of MATH 200, 217, 226, 253 or 254.

Audience

Undergraduates majoring in Mathematics or Statistics, and students from other disciplines seeking an exposition of the basic elements of probability theory and an introduction to probabilistic modelling.

Textbook

A First Course in Probability (9th ed.) by Sheldon Ross, Prentice Hall, 2014. The 10th edition of the book is also acceptable.

Instructors

Matias Salibian Barrera
Anthony-Alexander Christidis

Contact information will be available on Canvas.

Course Evaluation

- Quizzes (15%): There will be a minimum of 9 quizzes. The schedule and topics for the quizzes will be available on Canvas.

- WebWork (10%): There will be 6 WebWork assignments. The schedule will be available on Canvas.

- Midterm Exam (30%): There will be one Midterm Exam, which will cover all material discussed in the lectures from **Chapter 1 to Chapter 4, inclusive.** The schedule will be available on Canvas.

- Final Exam (45%): The Final Exam will include all materials covered in the course.

Policy regarding exams

Students must write their Midterm Exam during the lecture time slot in which they are registered.

There will be no make-up Exams.

Students who miss a Midterm Exam:

1. Should notify the instructor prior to (if possible) or immediately after the midterm; and

2. Must, within 48 hours of the missed Midterm Exam, fill out and submit to a course instructor a "Student Declaration of Academic Concession" form (available on the Canvas page of the course). Failure to do this may result in a grade of zero in the Midterm Exam.

Students who miss the Final Exam:

1. Must report to their Faculty Advising Office within 48 hours of the missed Final Exam and must supply supporting documentation;

2. Faculty of Science students please refer to https://science.ubc.ca/students/advising/concession/deferredstanding;

3. Must notify your instructor prior to (if possible) or immediately after the Final Exam;

4. Deferred exams will ONLY be provided to students who have applied for and received Deferred Standing from their Faculty Advising Office;

5. If you are granted Deferred Standing you will be expected to write your Deferred Exam with the next offering of STAT 302. Note that you may not have access to the Canvas website after the Term in which you were registered in this course ends.

Syllabus

The syllabus below is a tentative schedule. The topics covered and the order in which they will be presented in this course may change.

1. Definition and rules of probability (Chapter 2).

2. Combinatorial Analysis: permutation and combination (Chapter 1).

3. Conditional probability, conditional independence (Chapter 3).

4. Discrete and continuous probability distributions: random variables and their expected values, discrete distributions, continuous distributions, functions of random variables (Chapters 4 & 5).

5. Bivariate and multivariate probability distribution: Joint, marginal and conditional distributions, conditional expectations, multinomial distribution, moment generating functions (Chapters 6 & 7).

6. Limit theorems: Convergence in probability, convergence in distribution, the Central Limit Theorem (Chapter 8).

Statement of Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

Discipline for Academic Misconduct
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0

Academic Misconduct
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959

Faculty of Science - A Letter to Students Regarding Academic Integrity
https://science.ubc.ca/students/blog/letter-students-academic-integrity-oct2020

UBC policies and resources to support student success

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here:
https://senate.ubc.ca/policies-resources-support-student-success

More UBC resources for student success

Academic and learning resources
https://students.ubc.ca/enrolment/academic-learning-resources

Academic Concessions
https://students.ubc.ca/enrolment/academic-learning-resources/academic-concessions
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0

Academic Honesty and Standards
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,286,0,0

Attendance
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,36,0,0

Grading Practices
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,42,0,0

Student Conduct and Discipline
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,0,0

Viewing Marked Work
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,41,93,0