

## STAT\*3100 : Introductory Mathematical Statistics I

### Course Outline

**Instructor:** Ayesha Ali                      **Email:** aali@uoguelph.ca  
**Office:** MACN 509                              **Phone:** Ext. 53896

**Office Hours:** Wed.      1:15 – 2:15pm (subject to change)  
**Lectures:**              Tu,Th      8:30 – 9:50pm      MCKN 029

**Teaching Assistant:** Glen Reavie ([greavie@uoguelph.ca](mailto:greavie@uoguelph.ca), MACN 527)  
**TA Office Hours:** TBA

**Pre-requisites:** (1 of IPS\*1510, MATH\*1210, MATH\*2080), (STAT\*2040 or STAT\*2120)

**Recommended Texts:**

*Mathematical Statistics with Applications*, 8<sup>th</sup> Ed., J.E. Freund, Miller & Miller, Pearson Education Canada.  
*Probability and Statistical Inference*, 8<sup>th</sup> Ed., Hogg and Tanis, Pearson Education, Inc. or  
*Probability and Statistical Inference*, 9<sup>th</sup> Ed., Hogg, Tanis and Zimmerman, Pearson Education, Inc.

**Calendar Description:** Topics covered in this course include: Probability spaces; discrete and continuous random variables; multivariate distributions; expectations; moments, Chebyshev's inequality, product moments; sums of random variables, generating functions; Gamma, Beta, t and F distributions; central limit theorem; sampling distributions.

**Course Objectives and Outcomes:** The objective of this course is to provide students with a solid foundation in mathematical statistics, continuing from STAT\*2040. Students who have successfully completed this course will be expected to:

- Define random variables associated with outcomes of an experiment or a data generating process,
- Identify appropriate distribution to model behaviour of several types of random variables,
- Calculate expected values and variances of random variables associated with a given distribution,
- Calculate arbitrary moments of a distribution and product moments,
- Identify or derive the distribution of sums of random variables,
- Understand and apply Chebyshev's inequality to statistical problems, and
- Understand the concept of the central limit theorem and the sampling distribution of a statistic.

**Course Assessment:**

Assignments (5, equally weighted)	30%
Midterm (Thurs. Oct. 17, in-class)	25%
Final Exam (Thurs., Dec. 5, 2:30-4:30pm)	45%

**Schedule of Important Dates:**

Thurs. Sept. 26	Assignment 1 due
Thurs. Oct. 10	Assignment 2 due
<b>Tues. Oct. 15</b>	<b>NO CLASS</b> – Fall Study Break
<b>Thurs. Oct. 17</b>	<b>MIDTERM EXAM</b> , in-class

Thurs. Nov. 1	Assignment 3 due
Thurs. Nov. 14	Assignment 4 due
Thurs. Nov. 28	Assignment 5 due
<b>Thurs. Dec. 5</b>	<b>FINAL EXAM 2:30 – 4:30, room TBA</b>

**Assignments:** Assignments will be posted on Courselink and due by 5pm approximately every other week. No late assignments will be accepted, and late or missed assignments will receive a grade of 0 automatically. Some, or perhaps all, assignments will be submitted through the Crowdmark system. Assignments will be marked by TA and returned through Crowdmark when appropriate. Therefore, queries on assignments should be presented to the TA. If you are unable to submit an assignment with a valid reason (appropriate documentation may be needed), then your mark will be based on the remaining assignments. Students are encouraged to discuss assignment questions with each other, but you are expected to complete the assignments yourself and to submit your own work. See below for the University of Guelph policies on Academic Misconduct.

The Midterm test will be held in class and therefore no student should have a conflict with the date or time. If a conflict does exist, it is your responsibility to resolve it immediately. Students who miss the midterm for a valid reason (e.g., medical illness) must contact me within 3 business days of the midterm and provide the appropriate documentation (if requested) for approval. In this situation, the weight of the missed midterm test will be added to the final exam.

Any work that is submitted for regrading, I reserve the right to regrade the entire written component of the assignments and test, not just the question under consideration. The final exam (date, time and location) is scheduled by the Registrar's Office. If you miss the final exam for any reason, you must contact your program counsellor for advice. University regulations require specific procedures to be followed regarding the conduct of final examinations, including resource, if any, for missed final examinations. These procedures are out of my control.

**Courselink:** Class announcements, assignments, handouts and partial lecture notes will be posted on Courselink and students are expected to regularly check the course website on Courselink for updates.

**E-mail Communication:** As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

**When You Cannot Meet a Course Requirement:** When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. [See the undergraduate calendar for information on regulations and procedures for Academic Consideration.](#)

**Drop Date:** Students will have until the **last day of classes** to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars. Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

**Accessibility:** The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

**Academic Misconduct:** The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

*Please note:* Whether a student intended to commit academic misconduct or not is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

[The Academic Misconduct Policy is detailed in the Undergraduate Calendar.](#)

**Recording of Materials:** Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

**Resources:** The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.