

ACT350 H1F - APPLIED PROBABILITY FOR ACTUARIAL SCIENCE

- Lecture:** Tuesday 13:00 — 16:00, online
- Instructor:** Silvana Pesenti, Hydro Building 9105
silvana.pesenti@utoronto.ca
- Office hours:** online; Thursday's weekly alternating between 8 - 9am and 2-3pm, or by appointment.
- Teaching assistants:** Sebastian Calcete

Course description: The course offers an introduction to probability theory and stochastic processes. The main goal of the course is to help actuarial students understand the concept of stochastic processes with particular emphasis on Markov chains which are of great importance in Life Contingencies and Property and Casualty insurance. Specifically, the course will cover:

- conditional probabilities and expectations
- Poisson processes
- discrete-time Markov chains
- continuous-time Markov processes
- renewal theory (if time allows)

Prerequisite: ACT240H1 (minimum grade 63%); ACT245H1 (minimum grade 63%); ACT247H1 (minimum grade 63%); STA257H1; MAT223H1/MAT240H1, MAT237Y1/MAT257Y1 (preferable).

Course materials: The course is based on the book *Stochastic processes* by Sheldon M. Ross, 2nd ed., ISBN: 978-0-471-12062-9, which is available in the bookstore.

Academic integrity: We adhere to the Academic Integrity policy of the University of Toronto, accessible on the course homepage of Quercus and the U of T homepage.

Course outline: The lecture takes place every Tuesday from 13.00-16.00. However, in the weeks indicated below there will be either tutorials or computer lab. Week number 1 corresponds to the week of the first lecture.

Week No.	Tutorials (T) / Lab (L)	Location	Time
week 2	T	online	15.10-16.00
week 4	T	online	15.10-16.00
week 5	L	online	14.10-16.00
week 6	T	online	15.10-16.00
week 7	L	online	14.10-16.00
week 8	T	online	15.10-16.00
week 11	T	online	15.10-16.00
week 12	T	online	15.10-16.00

Grading scheme (detailed in the table below):

Assessment	Due date	Grade count
Quiz 1	Sunday 4. Oct. 9pm	3%
Quiz 2	Sunday 18. Oct. 9pm	3%
Group Project 1	Sunday 1. Nov.	23%
Group Project 2	Sunday 22. Nov.	23%
Quiz 3	Sunday 29. Nov. 9pm	3%
Final exam	TBC	45%
		100%

Quizzes: The quizzes are done directly through Quercus. They will be available on weeks 3, 5, and 11 on Friday and are due on Sunday 9pm of the weeks 3, 5, and 11, respectively.

Group Project: The project may include both theoretical questions as well as implementations in the programming language R.

Missed quizzes and projects: There will be no make-up tests. Any missed project due to illness requires a [University of Toronto Student Medical Certificate](#), completed by a doctor, and handed in to the course instructor within one week of the assessment's deadline date. A missed project, with an under U of T guidelines *accepted* reason, will have their grading weights shifted to the final exam. Missed quizzes will have their grading weights shifted to the final exam.

Communication: Announcements will be given during lectures or through Quercus; messages through the Inbox of Quercus will not be responded.

For any questions about the course content including assessments, please come to my office hours. Emails to the instructor need be from a U of T address and should only be of private matters (e.g missed tests, ...).