

## ACT370 H1S - FINANCIAL PRINCIPLES FOR ACTUARIAL SCIENCE II

<b>Lecture:</b>	Monday 10:00—13:00
<b>Instructor:</b>	Prof. Silvana Pesenti, Hydro Building 9105 <a href="mailto:silvana.pesenti@utoronto.ca">silvana.pesenti@utoronto.ca</a>
<b>Office Hours:</b>	TBC.
<b>Teaching Assistants:</b>	Sebastian Calcetero Vanegas

**Course description:** The course covers financial derivatives, their pricing and hedging. The course is composed of three parts, the first is an overview / review of financial instruments, such as forward, futures, and options. The second part is devoted to pricing of financial instruments in discrete time using the Binomial asset pricing models. The third part covers pricing of financial instrument in continuous time using the Black-Scholes formula.

1. Introduction to pricing financial instruments (forwards, future, option pricing, no arbitrage)
2. Binomial asset pricing model (replicating portfolios, risk neutral pricing, multi-period Binomial model)
3. Black-Scholes Model (Brownian Motion, Black-Scholes formula, Greeks)

**Prerequisite:** ACT240H1 (minimum 63%); ACT245H1 (minimum 63%); ACT247H1 (minimum 63%);

**Corequisite:** STA257H1; MAT237Y1/MAT257Y1.

**Course materials:** Recommended (but not required) textbook *Derivatives Markets* by Robert L. McDonald, 3<sup>rd</sup> ed., Pearson, 2013. ISBN-13: 9780137612864.

**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.

**Tutorials:** Tutorials take place in the weeks and times indicated below:

<b>Date</b>	<b>Time</b>
23.01.2023	12.10-13.00
06.02.2023	10.10-13.00
06.03.2023	11.10-13.00
20.03.2023	11.10-13.00
03.04.2023	11.10-13.00

**Grading scheme:**

<b>Assessment</b>	<b>Due date</b>	<b>Grade count</b>
Mid term	Monday February 13	35%
Final exam	TBC	65%
		100%

**Missed mid term:** There will be no make-up test. Any missed mid term test 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 test date. If a mid term test, with a under U of T guidelines *accepted* reason, is missed, there will be a *minimum of a 30 minutes oral mark-up 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, ...).

**Canadian Institute of Actuaries (CIA)'s University Accreditation Program (UAP):** This course is one of the mandatory courses under Canadian Institute of Actuaries (CIA)'s University Accreditation Program (UAP). UAP has moved away from the course-by-course accreditation method and towards program accreditation method (the "Pathway 1 of CIA qualification"). Under the new pathway, in order to obtain ACIA (Associate of CIA) professional credential, students need to:

1. Complete a degree from an actuarial program (ACT Specialist or Major) at University of Toronto and pass a list of mandatory courses. No minimum course grade or GPA is required as long as students pass all the mandatory courses. The full list of UofT's 16 mandatory courses are: ACT240, ACT245, ACT247, ACT348, ACT349, ACT370, ACT451, ACT452, ACT466, STA257, STA261, STA302, STA314, ECO101, ECO102, MGT201/RSM219.

**For transition:** CIA will accept an actuarial degree from UofT completed between

June 30, 2015 and October 31, 2023 without all the specified mandatory courses.

2. Complete the ACIA Module (administered by CIA, projected Spring 2023).

**For transition:** a student can be exempt from the ACIA Module if they complete SOA exam PA and the 8 FAP Modules and assessments by December 31, 2023.

3. Complete an open-book ACIA Capstone Exam (administered by CIA, projected Fall 2023).

**For transition:** a student can be exempt from the capstone exam by completing any combination of UAP credits or exams for P, FM, IFM, LTAM, STAM and SRM by October 31, 2023. The deadline to apply for UAP credits is September 30, 2023. Details on the new pathway for students can be found here: <https://education.cia-ica.ca/acia/acia-for-accredited-university-students/>