

**ACT 370H1S W2017, Financial Principles for Actuarial Science II**  
(Jan 9, 2017 version )

<b>Lecture Section</b>	L0101/A&S and L2001/ASE	
<i>Lecture times</i>	M11 W 11-1	LM162
<i>Instructor</i>	Xuancheng (Bill) Hung xuancheng.huang@mail.utoronto.ca	
<i>Office hours Jan -Mar</i>	W 2:00-4:00	SS6011
<i>TA</i> Philippe Casgrain Alex Yang	Th 1 :00-2 :00pm	SS 1091
<i>TA office hours (for all students)</i> <i>in SS1091 Stat Aid Centre</i>	Will be arranged before tests and final.	
<b>Approximate Coverage ACT370H1S</b>	<b>Lecture week</b>	
Arbitrage and Forward Contracts	Week 1	McDonald Ch. 02/Ch. 05
Forwards/Options	Week 2	McDonald Ch. 09
Put-Call Parity/Binomial Model	Week 3	McDonald Ch. 10
Replicating Portfolio/Risk-Neutral Probability	Week 4	McDonald Ch. 10
Multi-Period Binomial Model/Futures	Week 5	McDonald Ch. 11
Risk-Neutral Return	Week 6	McDonald Ch. 11
MIDTERM	February 15, 11:10 pm-1:00 pm	PB B250
Binomial Trees with Dividends/Continuous Model for Stocks	Week 7	McDonald Ch. 12
Black-Scholes Model/Brownian Motion	Week 8	McDonald Ch. 12
Black-Scholes and Delta Hedging	Week 9	McDonald Ch. 13
Black-Scholes Greeks	Week 10	McDonald Ch. 14
Exotic Options	Week 11	McDonald Ch. 24
Interest Rate Derivatives	Week 12	McDonald Ch. 25
FINAL EXAM	A&S Exam period April 10-28	

**Calculator:**

A non-programmable financial calculator is needed at each lecture, tutorial, test and exam. "Financial" can be defined here as "Can solve  $3.803=(1-(1+i)^{-4})/i$  to get interest rate  $i$ ". The Texas Instruments BA II PLUS calculator is one of the calculators allowed on the Society of Actuaries exams and on the CFA Chartered Financial Analyst exams: see [www.cfainstitute.org](http://www.cfainstitute.org); it has the financial functions that would be needed for this course and is recommended. U of T Bookstore is worth trying – sometimes it's at the northeast cash. If you have trouble finding it, you can buy it on the web or phone 'bank core' *Grand and Toy* or *Staples* stores. The HP12C is acceptable for this course and for CFA exams, is the traditional favourite of CFAs, but is not allowed on SoA exams.

**Texts**

*Derivatives Markets* 3<sup>rd</sup> edition by McDonald R.L. Chapters 9-14, 24, 25

**Course Objective:**

This course is designed to teach the fundamental principles of financial mathematics as well as the concepts used in the SoA exam MFE. Students will be taught both the theory and applications for discrete and continuous time finance in a mathematical setting. (Note: This course will not assume anything beyond a second year level understanding of statistics, probability and mathematics.)

**Canadian Institute of Actuaries (CIA)'s University Accreditation Program (UAP):**

ACT370 is an accredited course under the UAP program. The minimum grade needed to apply for an exemption is 75%. For detailed information on UAP, please visit the following webpages:

University Accreditation Program description (<http://www.cia-ica.ca/membership/uap>)

List of accredited courses offered by University of Toronto: <http://www.cia-ica.ca/membership/uap/accredited/toronto>

How to apply for CIA exemptions: <http://www.cia-ica.ca/membership/uap/information-for-students>

**Marking Scheme:**

Quizzes		15%
Term Test		35%
Final Exam		50%

**Medical certificates are carefully and skeptically investigated in accordance with University regulations:**

A few years ago, 20 out of every 100 students would produce doctors' certificates. Now University policy is very strictly interpreted and very strictly enforced. Medical certificates must be signed by an Ontario-registered MD, with registration number and phone number, and the date of certificate relative to claimed sickness must be within the limit imposed by University rules. It is essential that the doctor specifically indicates that in his/her opinion there was a disabling health problem on the day of the test. Certificates saying "Needs rest" or "respiratory tract infection" or "injured foot" or similar will be rejected, as will certificates from chiropractors and acupuncturists. The doctor should be contactable by us for verification. It is expected that each student with accepted documentation will be required to take a rigorous make-up test at a chalkboard. If documentation is not provided or is not accepted, your test mark for the missed test will be zero. Note that no excuses, medical or otherwise, are accepted by the Society of Actuaries or CFA Institute if a professional exam is missed.