

Course Outline: ACSC 216 001 Winter 2014

Mathematics of Finance II

Tuesdays and Thursdays, 11:30-12:45 am ED230
Final Exam Tuesday April 22nd 9-12 Location TBA



Instructor

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Office Hours

Mondays, Tuesdays and Thursdays 9:00-11:00 am
Other times by appointment (note that I am off campus on Wednesdays and many Fridays)

Text: *Mathematics of Investment and Credit* (Fifth Edition), 2010, by Broverman, S.A. (or Fourth Edition, 2008) Chapters 4, 6-9

While the class will be structured to follow the Broverman text, there are alternate texts listed on the course of reading for Society of Actuaries Exam FM. All of these texts cover similar material and therefore students may use one of the alternate texts for ACSC216.

Other Materials: A class website will be maintained on URCourses. This will contain electronic copies of assignments, solution sets and other items of interest. There will be no paper handouts provided in class.

Overview

ACSC 216 covers the solution to basic problems involving the time value of money. At the end of the term, students will be expected to:

- 1) Given sufficient information about a bond, calculate the remaining item(s).
- 2) Calculate the duration and convexity of a set of cash flows.
- 3) Construct an investment portfolio to fully immunize, duration match or exactly match a set of liability cash flows.
- 4) Evaluate an investor's margin position based on changes in asset values.
- 5) Evaluate the payoff and profit of basic derivative contracts and hedging strategies
- 6) Given sufficient partial information about call premium, put premium, forward price, strike price and interest rate, calculate any remaining item using the put-call parity formula.
- 7) Demonstrate an understanding of the definitions related to the above topics.

This material forms part of Society of Actuaries Exam FM, under learning objectives I.D-F, and II.A-E. Students who obtain a minimum grade of 80% in ACSC116 and 80% in ACSC216 will be eligible for exemption from exam FM under the Canadian Institute of Actuaries University Accreditation Program.

Course Requirements

- 1) An awareness of the U of R General Calendar.
- 2) Completion of class assignments (there will be 10 as indicated in the schedule).
 - a. These should be legible, on 8.5×11" paper and stapled together. Please ensure that you clearly identify your assignments with your name and student number. Assignments are due at the start of class on the assigned date (generally on Tuesdays).
 - b. Electronic submissions are acceptable. In fact students may wish to use Excel or similar packages for many assignments. However, students need to provide a document (Word or PDF) as their submission.
 - c. No credit will be granted for late papers.
 - d. At least one assignment will take the form of a group project including an in class presentation.
 - e. The tenth assignment will take the form of a 30-minute in class quiz using Society of Actuaries questions.

- 3) One midterm exam to be written in class time. The midterm will be on March 5th.
- 4) One 3-hour final exam scheduled for Tuesday April 22nd, 9am-12 pm (location to be announced).
- 5) A class schedule will be maintained on UR Courses. This will be updated during the term as required.
- 6) Alternate arrangements for midterm and final exams may be made at the discretion of the instructor for students who provide prior notice and adequate documentation. However, the instructor reserves the right to deny such arrangements for students who have not completed the course assignments to date.
- 7) For the midterm and final exams, students are required to bring photo ID and a non-programmable pocket calculator. Students should note that the instructor will not provide calculators for the midterms or final exam.
- 8) Programmable calculators, laptop PCs, tablets, smart phones and other electronic devices will not be permitted in the exams room.
- 9) Students interested in writing actuarial exams in the future may wish to purchase an approved Society of Actuaries calculator. Further details on approved SOA calculators may be found on the SOA website.
- 10) **No tables or formula sheets may be used for the midterms or final exam.**

Actuarial Science Program

Students interested in the Actuarial Science program are encouraged to contact the instructor for additional information. Actuarial Science students should ensure that they complete the pre-requisites for later ACSC courses in a timely manner. In particular, note that ACSC 217 (offered only in the Winter term) requires the completion of STAT 251 (offered only in the Fall term).

Students who meet the minimum grades required in University of Regina courses may apply for exemptions from the Exams FM, MLC, MFE and C under the CIA's University Accreditation Program. In addition, ACSC students are strongly encouraged to write the Society of Actuaries exam P and any of the above named exams for which they do not receive a CIA exemption. Information on preliminary SOA exams can be found through the Be An Actuary website at <http://www.beanactuary.org/exams/>

Grading

Final grades will be calculated as follows:

- i) Assignments 20%
- ii) Midterm 30%
- iii) Final Exam 50%

The instructor reserves the right to

- a) Fail a student who does not pass the final exam
- b) Refuse to allow a deferred final to a student who has not completed the requirements of the course, or who does not receive a passing average for the two midterms.