Course Outline: ACSC 116 001 Fall 2011
Mathematics of Finance I
Tuesdays and Thursdays, 11:30-12:45 am CL431
Final Exam Dec 20th 9-12am Location TBA

Instructor
Peter Douglas, CW 307.24
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Office Hours
Tuesdays and Thursday 1:00-3:00 pm
Mondays 9-11 am
Other times by appointment (note that I am off campus on Wednesdays and alternate Fridays)

Text: *Mathematics of Investment and Credit* (Fifth Edition), 2010, by Broverman, S.A (or Fourth Edition, 2008) Chapters 1-3, 5

Alternate Texts: While the class will be structured to follow the Broverman text, there are three alternate texts listed on the course of reading for Society of Actuaries Exam FM.
- Daniel, J.W. and Vaaler, L.J.F., *Mathematical Interest Theory,* (Second Edition), 2009, Prentice Hall,
- Kellison, S.G., *The Theory of Interest* (Third Edition), 2008, Irwin/McGraw-Hill,
- Ruckman, C, and Francis, J., *Financial Mathematics: A practical Guide for Actuaries and other Business Professionals* (Second Edition), 2005, BPP Professional

All four texts cover similar material and therefore students may use one of the alternate texts for ACSC116.

Other Materials: A class website will be maintained 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 116 covers the solution to basic problems involving the time value of money. At the end of the term, students will be expected to:
1) Understand various measurements of interest;
2) Calculate the present value and accumulated value of a payment or series of payments;
3) Solve an equation of value for unknown payments, unknown interest rate or unknown time of payment;
4) Calculate time weighted and dollar weighted rates of return;
5) Determine the yield rate for an investment; and
6) Determine the loan payments and interim balances under an amortization or sinking fund schedule.

This material forms part of Society of Actuaries Exam FM, under learning objectives I.A-I.C, and I.E.

Course Requirements
1) An awareness of the U of R General Calendar.

2) Students are assumed to have a working knowledge of calculus.

3) Completion of class assignments (approximately 8-10). 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).   No credit will be granted for late papers.

4) At least one assignment will take the form of a 30-minute in class quiz using Society of Actuaries questions.

5) For some later assignments, students may prefer to use of Excel or similar packages.

6) Two midterm exams to be written in class time. The first midterm is on October 13th, and second will be on November 10th.

7) One 3-hour final exam scheduled for Tuesday December 20, 9-12 am (location to be announced).

8) A tentative class schedule has been posted on the class website. This will be updated during the term.

9) 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.

10) For the midterm and final exams, students are required to bring photo ID a non-programmable pocket calculator. Students should note that the instructor will not provide calculators for the midterms or final exam.

11) Programmable calculators, laptop PCs and other electronic devices will not be permitted in the exams room. 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 .

12) While there will be no tables or formula sheets provided for the exams, some of the approved SOA calculators have built in functions for some formulas covered in ACSC116. However, students will be required to demonstrate the ability to calculate these formulas manually on the midterms and final exam in ACSC116 (i.e. show enough work that it is clear that you know how to calculate the values).

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).

In addition, ACSC students are strongly encouraged to write the Society of Actuaries exams. 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 based in on the higher of:
   A) Class average calculated as follows:
      i)   Assignments 10% (average of best 5 assignments)
      ii)   Midterms 40% (i.e. 20% each)
      iii)   Final Exam 50%
   B) 100% Final exam (i.e. if this is higher than your class average)

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.