

ACTU 256
Mathematics of Finance
Fall 2014

Instructor: Dr. Mélina Mailhot, Office: LB 921-29 (SGW), Phone: 514-848-2424, Ext. 3830
Email: melina.mailhot@concordia.ca

Office Hours: Monday-Wednesday, 12:45-14:45.

Class Schedule: Wednesday-Friday, 10:15-11:30.

Textbook: *Mathematics of Investment and Credit*, by Broverman, S. A., 5th Edition, ACTEX 2010.

Outline: This course is an introduction to the mathematics of compound interest. The topics covered approximately correspond to the interest theory of Exam FM of the Society of Actuaries. The topics include (but are not limited to):

- **Measurement of Interest:** simple interest, compound interest, accumulation functions, present value, effective and nominal rates, forces of interest;
- **Equations of Value:** basic problem, numerical results, unknown time, unknown rate of interest;
- **Basic Annuities:** payments at a different frequency than interest is convertible, continuous annuities, varying annuities;
- **Amortization Schedules and Sinking Funds:** outstanding loan balance, varying series of payments, continuous payments;
- **Bonds and Other Securities:** types of securities, price of a bond, premium and discount, yield rates, callable bonds, serial bonds;
- **Yield Rates:** cash flow analysis, reinvestment rates, portfolio and investment year methods;
- **Applications and others:** modern financial instruments, inflation, duration, immunization, asset liability management, term structure of interest rates, other topics.

The most recent detailed syllabus and learning objectives for Exam FM can be found at:
<http://www.beanactuary.com/exams/preliminary/exams/syllabi/2013-08-exam-fm.pdf>

- Course Evaluation:**
- **Assignments:** counting for 10% (each student should submit their assignments before the beginning of class on the announced due date). Solutions must be written up carefully, showing all work, for full credit. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**
 - **Two mid-term exams:** (scheduled tentatively for October 1st, 2014 and November 5, 2014) counting for 41% (21% and 20% respectively), and
 - **One final exam:** counting for the remaining 49%.

IMPORTANT: **THERE WILL BE NO SUPPLEMENTAL EXAM AND NO 100% OPTION FOR THE FINAL EXAM.**

Calculators: Only calculators approved by the Department or approved by the Society of Actuaries (SOA) are permitted in the class test(s) and final examination. The calculators approved by the department are the **Sharp EL 531** and the **Casio FX 300MS**, available at the Concordia Bookstore. See the current Basic Education Catalog for information on SOA approved calculators.

The list of calculators approved by the Society of Actuaries is here:

<http://www.beanactuary.com/exams/rules/?fa=identification-and-calculators#calculators>