

MATH/STAT 2600, Theory of Interest
Fall 2014
Toby Kenney

Instructor: Toby Kenney
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Course Website: www.mathstat.dal.ca/~tkenney/2600/2013/

Office Hours: Monday 14:30-15:30, Wednesday 14:30-15:30 & Thursday 14:30-15:30

Lectures: TT: 10:05-11:25 101 Dunn Building

Topics: Nominal and effective rates of interest/discount, Annuities, Perpetuities, Bonds

Textbook: "Mathematics of Investment and Credit" (Fifth Edition)
by Samuel A. Broverman
published by Actex, 2010

Course Work and method of assessment

There will be a midterm exam and a final exam. The midterm will be held in class on Thursday 16th October, and should cover the material in Chapters 1–3. This may be changed, depending on the progress in lectures. The final exam will be scheduled by the Registrar's Office during the examination period: Thursday 4th to Sunday 14th December.

There will also be (approximately) weekly homework assignments, which must be handed on Thursdays in the lecture. After this, I will put the model solutions on the course website. **No credit can be given for late homework.** The overall homework mark will be made up of an average of the weekly homework marks, with the exception of the worst mark for each student.

Sometimes a question may be started on one sheet, but continued on the following sheet, after the relevant material has been covered. In this case, the full question will be given on the earlier sheet, but the parts that should only be attempted with the later sheet are clearly marked, and are repeated on the later sheet. For some questions, I may occasionally give out a hint, rather than a complete model solution. Revised answers to these questions may then be submitted with the following week's homework.

Grades will be determined by performance in the exams and the weekly homeworks. The midterm exam counts for 30%, the final counts for 55%, while the homework counts for the remaining 15%. You must pass the final exam to obtain a passing grade in the course.

Weekly Readings

Since class time is limited, I will be using it for explaining concepts and going over examples, rather than reading through the textbook. You should therefore read through the relevant sections of the textbook *before* the lecture, in order to gain the full benefit from the lecture. The sections of the textbook that will be covered each lecture will be listed on the website. This list may be updated from time to time, depending on the progress made in earlier lectures. Here is the current plan.

| Week beginning | Tuesday | Thursday |
|----------------|---|--|
| 1st September | | Introduction |
| 8th September | 1.1 Interest Accumulation and Effective Rates of Interest, 1.2 Present Value | 1.3 Equations of Value, 1.4 Nominal Rates of Interest |
| 15th September | 1.5 Effective and Nominal Rates of Discount, 1.6 The Force of Interest, 1.7 Inflation and the “Real” Rate of Interest | 2 Valuation of Annuities 2.1 Level Payment Annuities |
| 22nd September | 2.2 Level Payment Annuities — some Generalisations | 2.3 Non-constant Annuities, 2.4 Applications and Illustrations |
| 29th September | 3 Amortisation 3.1.1 General form of Amortisation, 3.1.2 The Amortisation Schedule, 3.1.3 Retrospective form of Outstanding Balance, 3.2 Amortisation of Loans with Fixed Payments | 3.1.5 Additional Properties of Amortisation, 3.3 The Sinking-fund Method of Loan Repayment |
| 6th October | 3.4 Applications and Illustrations | Revision: Chapters 1—3 |
| 13th October | Revision: Chapters 1—3 | MIDTERM EXAMINATION |
| 20th October | 4 Bonds 4.1 Determination of Bond Prices | 4.2 Amortisation of a Bond, 4.3 Applications and Illustrations |
| 27th October | 5 Measuring the Rate of Return of an Investment 5.1 Internal Rate of Return | 5.2 Dollar-weighted and Time-weighted rate of Return, 5.3 Applications and Illustrations |
| 3rd November | 6 The Term Structure of Interest Rates 6.1 Spot Rates of Interest, 6.2 The Relationship Between Spot Rates of Interest and Yield to Maturity of Coupon Bonds | 6.3 Forward Rates of Interest, 6.4 Applications and Illustrations |
| 10th November | STUDY DAY | 7 Cashflow Duration and Immunisation 7.1 Duration of a set of cashflows and bond duration |
| 17th November | 7.2 Asset-Liability Matching and Immunisation | 7.3 Applications and Illustrations |
| 24th November | Revision | Revision |
| 1st December | Revision | END OF LECTURES |

Sections of the text covered

We expect to cover most of the material in Chapters 1–7 in the textbook.

Students with disabilities

Students with disabilities are encouraged to register as quickly as possible at the Student Accessibility Services if they want to receive academic accommodations. To do so, please 'phone 494-2836, email access@dal.ca, drop in at the Killam, G28, or visit our website at www.studentaccessibility.dal.ca.

Plagiarism

Plagiarism is a serious academic offense which may lead to loss of credit, suspension or expulsion from the university. Please read the Policy on Intellectual Honesty contained in the Calendar or on the Dalhousie web site at: <http://www.registrar.dal.ca/calendar/ug/UREG.htm#12>.

Dalhousie Writing Centre

Writing expectations at university are higher than you will have experienced at high school (or if you are entering a master's or PhD program, the expectations are higher than at lower levels). The Writing Centre is a Student Service academic unit that supports your writing development. Make an appointment to discuss your writing. Learning more about the writing process and discipline-specific practices and conventions will allow you to adapt more easily to your field of study.