ACTL20001
Financial Mathematics I

SUBJECT GUIDE

Semester 1, 2015

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Department of Economics
Faculty of Business and Economics
Subject Outline

Introduction

Welcome to your first “real” actuarial subject, Financial Mathematics I. This is a very important subject. Not only does it give you an opportunity to receive the exemption for CT1 from the Actuaries Institute (together with Financial Mathematics II), it enables you to continue your actuarial study, as it is prerequisite to all the third-year actuarial subjects. Take it seriously and do your best, although you may think it looks easy.

Subject Aims

The overall aim of this subject is to provide a thorough grounding in compound interest, and to develop a proficiency in its application in a variety of practical situations.

Textbook

We will go through the first four chapters of Compound Interest and its applications, by Richard Fitzherbert and David Pitt. It is also used in Financial Mathematics II. It is available at the University Bookshop. The slides presented will be available on the LMS, they occasionally refine what is in the textbook. The textbook includes solved exercises as well.

Objectives

On successful completion of this subject you should be able to:

• apply relevant pre-requisite mathematical knowledge in the solution of a range of practical problems;
• describe and apply the main methods of finding the accumulation or present value of money under simple and compound interest and discount;
• derive and apply formulae to calculate the accumulation or present value of a series of payments, including the cases of continuous payments and variable interest rates;
• analyse and solve equations of value for rates of interest;
• construct and analyse a loan schedule, including cases when terms of a loan are altered;
• explain the key features of the main types of financial assets, including shares, bonds, property and derivatives;
• perform compound interest calculations relating to financial assets, including the calculation of price and yield.
Contact Details

Lecturer

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Room: Room 323, FBE Building (111 Barry Street)

Consultation Hours: TBA

Tutors

Eric Huang, Pham Le, Yaozhong Qiu, Dennis Wong

Email Protocol

This is a technical subject, so questions are better answered face to face than by email. Please ask questions during lectures or during consultation hours. Please note that we only reply to emails coming from your University of Melbourne address, for obvious reasons.

Lectures and Tutorials

Lectures

There are two lectures a week, both in room G06 (Prest Theatre), one on Monday at 11 AM, the other on Friday at 1 PM. The lecturer will do his best to make the slides available on the LMS before the lectures, but this may not always be possible, as the slides are being rewritten this year.

Tutorials

Tutorials will be held in each of the 12 weeks. Questions will be posted on the LMS the week before, and solutions the week after. Please use My Unimelb to enroll into the tutorials.
Assessment

Overview

Assessment for this subject comprises:

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Due</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>TBA</td>
<td>10%</td>
</tr>
<tr>
<td>Mid-semester exam</td>
<td>Week 7, subject to confirmation, in lieu of a lecture</td>
<td>10%</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>TBA</td>
<td>10%</td>
</tr>
<tr>
<td>End-of-semester exam</td>
<td>Examination period</td>
<td>70%</td>
</tr>
</tbody>
</table>

Calculators

Electronic calculators may be used in both exams. However, calculators that can be programmed to store or retrieve text or formulae are not permitted. Also, calculators that have been tampered with since manufacture are prohibited. Your calculator must be one of the following:

- Casio FX82 (with or without any suffix)
- Casio FX83 (with or without any suffix)
- Casio FX85 (with or without any suffix)
- Sharp EL531 (with or without any suffix)
- Texas Instruments BA II Plus (with or without any suffix)
- Texas Instruments TI-30 (with or without any suffix)

It is the responsibility of the student to ensure their calculator complies with those requirements.

Mid-semester exam

This is a 50-minute closed-book exam (including 5 minutes reading time).

End-of-semester exam

This is a two-hour closed-book exam, with 15 minutes reading time, that contributes 70% to the assessment in this subject.

Important: satisfactory completion of this subject requires a pass in the end-of-semester exam.
Assignments

Each of the two assignments will be handed in in class, and teams of up to five students will be allowed.

Plagiarism and Collusion

Presenting material from other sources without full acknowledgement (referred to as plagiarism) is heavily penalised. Penalties for plagiarism can include a mark of zero for the piece of assessment or a fail grade for the subject.

Plagiarism is the presentation by a student of an assignment identified as his or her own work even though it has been copied in whole or in part from another student’s work, or from any other source (eg. published books, web-based materials or periodicals), without due acknowledgement in the text.

Collusion is the presentation by a student of an assignment as his or her own work when it is, in fact, the result (in whole or in part) of unauthorised collaboration with another person or persons. Both the student presenting the assignment and the student(s) willingly supplying unauthorised material are considered participants in the act of academic misconduct.


Late Submission

Late assignments, where approval for late submission has not been given, will be penalised at the rate of 10% of the total mark per day, for up to 10 days, at which time a mark of zero will be given.

Special Consideration

Students who have been significantly affected by illness or other serious circumstances during the semester may be eligible to apply for Special Consideration.

The following website contains detailed information relating to who can apply for Special Consideration and the process for making an application:

http://fbe.unimelb.edu.au/csc/assistance/special_consideration

Group Work

Working in groups can sometimes be more difficult than working individually. However, (1) discussing the problems with other students will help your understanding, (2) it helps you formulate ideas verbally, rather than just in writing,
and (3) the skills associated with group work are highly valued by employers. You will have a successful and rewarding experience working in a team.

You should exchange names, phone numbers, and email addresses with your group members straight away.

If you have difficulty with a member of your group, you should contact your lecturer as soon as possible. Do not leave issues unresolved until after your group assignment is due.

All students within your group will be given the same mark unless one or more members have raised an issue during the assignment period. Students who do not contribute to a group assignment may be given a lower mark or even a mark of zero.

Further Assistance

If you need assistance during the semester, short questions can be asked during lectures and/or tutorials. For longer discussions you will need to see the lecturer-in-charge.

Specimen Exam and Practical Exercises

Practical exercises are included in the workbook. A specimen exam paper and the solutions will be available on the LMS.

Learning and Support Services

The University and Faculty provide a wide range of support services to students. Refer to the pages

http://services.unimelb.edu.au/academicskills (Academic Skills)
http://fbe.unimelb.edu.au/csc/experience/academic/learning_support (CELT)

If you are having any difficulty in studying (including English) for this subject you could arrange a consultation with a learning skills specialist. There is online help. You could also contact the Commerce Student Centre.

Exemption from Professional Examinations

Subjects Financial Mathematics I and II allow students who perform well enough in end-of-semester examinations to be recommended for exemption from Actuaries Institute exam CT1. Results in assignments and in the mid-semester test are not taken into account. Exemption lists for CT1 are posted on the Centre’s website after marks are released in November.