On-line course materials

MATH20951 - Financial Mathematics for Actuarial Science 2

Year: 2 - **Semester:** 1 - **Credit Rating:** 10

Requisites

Prerequisites
MATH10951 Financial Mathematics for Actuarial Science 1

Aims

The unit aims to provide further instruction in simple financial transactions as used in actuarial science and the mathematics involved.

Brief Description

The unit covers methods of describing and assessing simple investments under a range of assumptions.

Learning Outcomes

On successful completion of this module students will be able to

- Retain knowledge and demonstrate understanding of the topics in this course unit. In particular : appreciate a range of investments and projects and assess their value under simple assumptions; understand how the no arbitrage assumption can be used;appreciate the effects of term structure and stochasticity for interest rate calculations.
- Carry out routine calculations on project and investment assessment, no arbitrage, immunization and and term effects.
- Have the basic knowledge and a set of tools and methods that can be used; in subsequent course units; (together with MATH10951) to gain exemption from the Actuarial Profession CT1 examination; in a career involving mathematical and/or actuarial topics.

Syllabus

This unit explores some further simple financial topics from a mathematical point of view.

- The role of finance within actuarial science,
- Appraisal and Comparison of Projects,
- Description of Investments,
- Compound Interest Problems : Fixed and uncertain income, Real Rates of interest, index linked bonds, Capital Gains Tax,
- Arbitrage. The No-Arbitrage Assumption. Forward Contracts,
- Term Structure of Interest Rates. Discrete and continuous time rates. Duratio, Convexity and Immunisation.
- Stochastic Interest Rate Models.

Teaching & Learning Process (Hours Allocated To)

Lectures	Tutorials/ Example Classes	Practical Work/ Laboratory	Private Study	Total
22	11	0	67	100

Assessment and Feedback

- Coursework; two in-class tests, weighting within unit 10% each.
- Examination at end of semester 1, 2 hours, 80%.

Further Reading

- Core Reading : Subject CT1, Financial Mathematics. Produced by the Actuarial Profession
- JJ McCutcheon and WF Scott, An Introduction to the Mathematics of Finance. Heinemann, 1986

Staff Involved

Prof Paul Glendinning - Lecturer

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