

Course Overview

Welcome to BS4/OBS4 Actuarial Science. There is a website for the course at

<http://www.stats.ox.ac.uk/~clarke/teaching.htm>,

where lecture slides, specimen exam questions and all assignment sheets and solutions will be made available.

Classes for UNDERGRADUATES are in groups of about/up to twelve students, we will run five sessions of 60 minutes each in weeks 3-8 this term. The Department of Statistics has NOT adopted the structure of 4x1.5 hour classes of the Mathematical Institute. Please hand in scripts into the appropriate drawer at the Department of Statistics, 1 South Parks Road. The drawers will be labelled by your class time, so you will need to know when your class is. Please also mark your work by your class time. Times and rooms for the classes are as follows:

- Wednesdays 11am-12pm, Seminar Room, 1 South Parks Road, weekly, weeks 3-8
- Wednesdays 12-1pm, Seminar Room, 1 South Parks Road, weekly, weeks 3-8
- Wednesdays 1-2pm, Seminar Room, 1 South Parks Road, weekly, weeks 3-8
- Fridays 9:30-10:30am, Seminar Room, 1 South Parks Road, weekly, weeks 3-8
- Fridays 10:30-11:30am, Seminar Room, 1 South Parks Road, weekly, weeks 3-8

Class distribution FOR UNDERGRADUATES will be made straight after the first lecture and the result made available on the Minerva database of the Statistics Department, which you can find at

<https://minerva.stats.ox.ac.uk/perl/classlists.pl>

GRADUATE STUDENTS on the MSc in Applied Statistics CANNOT participate in the intercollegiate class scheme. Separate and less frequent classes will be offered by the Department of Statistics. Lectures 8-16 are *not* examinable for MSc students in Applied Statistics.

An understanding of risk and how to deal with it is essential to any actuarial work. This course presents models of financial decision making under uncertainty, mostly within the expected utility model. The first part of the course introduces expected utility theory, risk aversion, and decision-theoretic notions of risk measurement. This framework is then applied to insurance decisions and portfolio choice in one- and multi-period models. This is not a purely mathematical course, and you will need to develop some non-mathematical skills, which some of you will find easy, others hard, at first.

You are advised to improve your understanding of the subject taking into consideration the following references. It is intended that lectures cover all the material required for the exam, but reading the same with other words or further developments often leads to more efficient learning.

L. Eeckhoudt, C. Gollier and H.Schlesinger, Economic and Financial Decisions under Risk, Princeton University Press Princeton and Oxford, (2005)

This book is strongly recommended for students wanting a detailed account of the material in this course, including discussion of the economic intuition behind results. Chapters 1-6 and 10-11 form the core of the course and we will briefly touch on some topics from chapters 12 and 13 in the final week. The book does not cover axiomatic foundations for EUT, index funds or ruin probabilities but otherwise spans the whole course.

C. Gollier: The Economics of Risk and Time, MIT Press (2001), Chapters 1-4, 13, 15, 21-22

Chapters 1-4, 13, 15 and 21-22 span most of the course, with axiomatic foundations for EUT in sections 1.1-1.3. This is an excellent reference for the formal statements in the course. Most chapters go beyond what is required for this course.

Faculty & Institute of Actuaries: CT8 Financial Economics 2011

The material in this course draws from material underlying a number of Professional Examination (CT2, CT7, CT8 and ST5). Much of this material expands on the first half of the Core Reading for the Professional Examination CT8. In most places, the presentation is more practically oriented than the lectures. Core Reading for Professional Exams is available from the

Publications Unit
Institute of Actuaries
4 Worcester Street
Oxford OX1 2AW.

between Worcester College and Gloucester Green.