Appendix A

Assignments

6 assignment sheets are issued, on Monday of week 1, Tuesdays of weeks 2 and 3, and Mondays weeks 5 to 7. They are also made available on the website of the course at

http://www.stats.ox.ac.uk/∼winkel/bs3a.html.

Scripts are to be handed in at times to be announced, into the appropriate drawer in the Department of Statistics, 1 South Parks Road, a Victorian house next to Rhodes House opposite the Hooke Library. There are 6 class sessions of one hour each in weeks 3-8. The Department of Statistics has *not* adopted the system of 4x1.5 hour classes that the Mathematical Institute uses. The times and locations are as follows.

- Wednesdays 1.55-2.55pm, Room 104, Department of Statistics
- Wednesdays 2.55-3.55pm, Room 104, Department of Statistics
- Thursdays 8.55-9.55am, Room 104, Department of Statistics
- Thursdays 10.05-11.05am, Room 104, Department of Statistics
- Fridays 9.00-10.00am, Room 104, Department of Statistics
- Fridays 2.00-3.00pm, Room 104, Department of Statistics
- Fridays 3.05-4.05pm, Room 104, Department of Statistics

Class distribution is made after the first lecture and can then be found at

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

as well as during the second lecture. 3rd year undergraduate students enter their college as College. MFoCS students enter as College MFoCS. Other M.Sc. students, PRS students, D.Phil students etc. cannot register for classes in this scheme.

Exercises on problem sheets vary in style and difficulty. If you find an exercise difficult, do not deduce that you cannot solve the following exercises, but aim at giving each exercise a serious try. You may use results from the lectures and previous exercises, provided that you state them clearly. If you cannot solve an exercise, it is very important that you spend time to understand the solution presented in the class, and you should be able to reproduce it. Understanding and being able to reproduce (not just learn by heart, though) solutions of exercises and (particularly shorter) proofs in lectures, gives

you an excellent preparation for the exam. Sketches of proof are not examinable but are meant to suggest why a result is true.

Most of you full-time students follow four half-units this term, and should therefore all spend *at least* nine hours per week on Applied Probability. This includes two hours of lectures and one hour of classes. The remainder should be a good mix of revising your lecture notes, with the help of the references given, and solving exercises. Lecture notes are meant to be useful when solving exercises. You may use any result from the lectures, except where the contrary is explicitly stated.

Finally, it is my personal opinion that the material taught in this course, is fascinating. Being fascinated by something provides the best environment to learn about it. There are several aspects that may fascinate you: the underlying probability theory, the applications, the interplay between the two. The latter is what we call "Applied Probability". Each one of them should be able to motivate you to learn about all three. Lectures and classes (and lecturers and class tutors) should guide your learning. The excellent books in the references, which are very different from one another, can also help you become fascinated. Make sure, you don't miss any of these opportunities.

Norris: Markov chains. CUP 1997

Mathematically this is the most satisfactory treatment of Markov chains, both in discrete and continuous time, with an emphasis on parallels between the two, and explicit constructions. This book will be used as the main reference for about half the course. It does not cover some parts of the syllabus such as renewal theory. Some of the more technical contents of the book will be avoided in the course to free some time for applications. The text contains some worked examples and exercises.

Grimmett & Stirzaker: Probability and Random Processes. OUP 2001

This is the textbook to guide you from Part A Probability through this course and beyond. The authors took a lot of care to make the text accessible to students, addressing some technical issues on an informal level but focussing on the ideas why arguments should work. This book will be the main reference for the second half of the course. Some material of the first half of the course is only treated for discrete-time Markov chains. This text contains some worked examples and many exercises.

Grimmett & Stirzaker: One Thousand Exercises in Probability. OUP 2001

The title speaks for itself, needless to say that many of them are relevant for this course. If you like an example based approach to the subject, you may use it separately from the main textbook above, but I do not recommend this, at least not as an exclusive option.

Stirzaker: Elementary Probability. CUP 1994

This book only contains some parts of the material for the first half. If you find, your background in probability is not strong enough and you find the Grimmett & Stirzaker textbook above too advanced for your revision, you may find this text more accessible.

Ross: Introduction to Probability Models. Acad. Press 2003

This book is example based ("American style"). It covers all topics, in principle, but sometimes in a less mathematical way. I recommend this text for additional clarification if you are unsure about the use of a concept. The text contains many elementary examples and exercises.