Random processes – 2023/24   Module Information

Lecturer: Dr Robert Johnson (email: R.Johnson@qmul.ac.uk)

Timetable:

Lectures:	Tuesday 12:00–13:00 (Skeel LT)
	Thursday 15:00–17:00 (Skeel LT)
Seminars:	Monday 13:00–14:00 (Peoples Palace PP1) Group A
	Tuesday 9:00–10:00 (Peter Landin 3.02) Group C
	Friday 14:00– 15:00 (Bancroft 4.04/4.08) Group B
Learning Support Hour:	Thursday 13:00–14:00 (Maths Building Social Hub)

Learning Sessions: The lecture slots will be used to present the mathematical material which makes up the module. Lectures will contain interactive elements: there will be tasks for you embedded in each lecture and I will encourage you to raise questions. Another way to be active in lectures is to take your own notes. To supplement these, lecture notes for the full module will be provided. I will release these in sections before the lectures. Lectures will be recorded and live-streamed. However, this is intended as a back-up to in-person learning rather than the primary mechanism for it. I strongly encourage you to attend in person and you will get the most out of the module by doing this.

The seminar slots will be used to go through examples to illustrate the theory including problems from the previous weeks problem sheet. We will also review material from the previous weeks lectures and give more explanations. Like lectures, this will all be done in an interactive way. Seminars can be aimed at what is most useful for you so do give me suggestions for questions or topics that you would like to cover. You can do this either in the seminar or via a QMplus poll. You will be assigned to one of three seminar groups (A,B or C) and should attend your assigned slot.

The Learning Support Hour gives an opportunity to get individual help. Please come along with any questions or concerns.

Problem Sheets: There will be a weekly problem sheet of questions on the material lectured. Some of these will be for assessment but most will be purely to aid your learning (see assessment details below). Maths is hard to learn passively, so do make a serious attempt at the problems.

Quizzes: Each week there will also be a mini-quiz on the QMplus page. This will contain multiple choice or short answer questions covering the key points of the week. You will get instant feedback after attempting the quiz and you can attempt it as many times as you like. I encourage you to do these quizzes soon after the material is lectured to check that you are on top of things.

Assessment: 20% in-term assignments, 80% final examination. There will be two assessed assignments during the semester due in Week 6 and Week 11 (exact dates to be decided). You will need to submit your work on these for assessment via QMplus. They will be marked and returned to you with feedback. The mark for each of these

assignments will contribute 10% of your final mark for the module. The remaining 80% will be given by the final exam in January. The final exam will be on campus. It will be 3 hours in duration with SpLD accommodations handled separately. You will be allowed 3 sheets of handwritten A4 notes to bring to the exam.

Module webpage: The module webpage is on QMplus:

https://qmplus.qmul.ac.uk/course/view.php?id=23203

All resources (handouts, notes, mini-quizzes, assignments, etc.) will be put on the webpage.

Books: The lecture notes will be self-contained so there is no need to buy a textbook for this module. If you would like to see an alternative presentation of similar material or read beyond the material we cover, some suggestions are below. These are all on the Talis Reading List entry for the module. If you find any other books to be useful then please let me know.
The first suggestion covers material from the module at a similar level:

- S. Karlin and M. Pinsky, *An Introduction to Stochastic Modelling.*

For some of the background material (random variables, conditional probability etc.) as well as the material on discrete Markov chains from the first half of this module see:

- C.M. Grinstead and J.L. Snell, *Introduction to Probability*, AMS. Freely available here:

https://chance.dartmouth.edu/teaching_aids/books_articles/probability_book/amsbook.mac.pdf

The final suggestion is mainly for enthusiasts who would like to read beyond the material in the module This book is rather more technical but still fairly readable and contains all the material of the module and much more as well.

- G. Grimmett and D. Stirzaker, *Probability and Random Processes*, OUP.

Feedback: I welcome any comments or suggestions you have for improving any aspect of the module.

Robert Johnson
September 2023