Course information 2019–20
ST2133 Advanced statistics: distribution theory (half course)

This half-course is intended for students who already have some grounding in statistics. It provides the basis for an advanced course in statistical inference.

Prerequisites
If taken as part of a BSc degree, the following courses must be passed before this half course may be attempted:

(ST104a Statistics 1 and ST104b Statistics 2)
and (MT1174 Calculus or (MT105a Mathematics 1 and MT105b Mathematics 2) or MT1186 Mathematical Methods)

Aims and objectives
The aim of this course is to provide a thorough theoretical grounding in probability distributions.

The course teaches fundamental material that is required for specialised courses in statistics, actuarial science and econometrics.

Assessment
This half course is assessed by a two-hour unseen written examination.

Learning outcomes
At the end of this half course and having completed the essential reading and activities students should be able to:

☑ recall a large number of distributions and be a competent user of their mass/density and distribution functions and moment generating functions
☑ explain relationships between variables, conditioning, independence and correlation
☑ relate the theory and method taught in the unit to solve practical problems.

Essential reading
For full details, please refer to the reading list Grimmett, G. and D. Stirzaker Probability and Random Processes. (OUP)
Casella, G. and R.L. Berger Statistical Inference. (Duxbury)

Syllabus
This is a description of the material to be examined. On registration, students will receive a detailed subject guide which provides a framework for covering the topics in the syllabus and directions to the essential reading

Multivariate Distributions: Joint distributions. Conditional distributions, conditional moments. Functions of random variables.

Students should consult the appropriate EMFSS Programme Regulations, which are reviewed on an annual basis. The Regulations provide information on the availability of a course, where it can be placed on your programme’s structure, and details of co-requisites and prerequisites.