Module Details for PROBABILITY AND THEORETICAL STATISTICS I

**Current Record**

Module Details

- **Module Code**: ST2351
- **Module Name**: PROBABILITY AND THEORETICAL STATISTICS I
- **ECTS weighting**: 5
- **Semester/term taught**: Michalemas
- **Contact Hours**
  - Lecture hours: 27
  - Lab hours: 0
  - Tutorial hours: 6
  - Total hours: 33

**Module Personnel**

- Professor Simon Wilson

**Learning Outcomes**

At the end of this module, students should be able to:

- Derive the probability space for simple experiments, and prove simple properties of probabilities from its definition;

- Identify when random variables are independent, and derive conditional distributions and expectations;
Define the most common discrete and continuous random variables, and compute their moments and probabilities, moment and characteristic generating functions where appropriate;

Define a multivariate distribution and calculate marginal and conditional distributions from it;

State and prove the laws of averages and of central limit;

Module Learning Aims
This module will describe the fundamentals of probability theory, from the basic axioms of probability to the most commonly used aspects and theorems of the theory.

Module Content
Events and probabilities

The laws of probability

Independence and conditional probability

Discrete random variables

Continuous random variables

Multivariate distributions & independence
Moment and characteristic generating functions

The law of averages and the central limit theorem

Examples and past exam questions

**Recommended Reading List**


**Module Pre Requisite**
ST1351, ST1352

**Module Co Requisite**

**Assessment Details**
Exam: 100%, Coursework 0%, 2 hour examination

**Module Website**

**Module approval date**

**Approved By**

**Academic Start Year**
2014/15

**Academic Year**
of Data