

Probability and Statistics (CASP)

Probability and statistics are essential tools in the analysis of data in many fields, from natural sciences to social sciences, finance and economics. In this course we will cover the following topics:

Statistical modelling: why it is important and what its limitations are.

Data description: what measures we use to describe and “centre” and “spread” of our data

Correlation and regression: why straight lines are so important and how to get the best fit line to our data.

Probability: Venn diagrams, tree diagrams and theoretical probability; combinatorics and calculation of chance.

Discrete and continuous random variables: basic statistical measures.

The normal distribution: working with the normal curve; the central limit theorem.

Sampling: how to choose a representative sample from a population and how to deal with bias.

Hypothesis testing: how to find out if the data support a hypothesis or not. The importance of confidence intervals.

Knowledge of basic algebra (linear and quadratic equations) and understanding of very basic probability is all you will need to follow this course.