

Course content for MT3320/MT4320, Inference

Prerequisites:

MT2320

Aims:

To provide the theory underlying the main principles and methods of statistics, in particular, to provide an introduction to the theory of parametric estimation and hypotheses.

Learning outcomes:

On completion of the course, students should be able to

- demonstrate a familiarity with the theoretical background of the concepts and results in the theory of estimation and hypothesis testing;
- formulate statistical problems in mathematical terms.
- MT4320: demonstrate a breadth of understanding appropriate for an M-level course.

Course content:

Estimation: Maximum likelihood, method of moments, Bayes estimators, sufficiency, unbiasedness, efficiency, asymptotic properties of maximum likelihood estimators.

Hypothesis testing: Neyman-Pearson framework, uniformly most powerful tests, likelihood ratio tests.

Introduction to decision theory: Formulation, Bayes and minimax rules.