ST903-15 Statistical Methods

24/25

Department
Statistics
Level
Taught Postgraduate Level
Module leader
Paul Skerritt
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This module runs in term 1 and is core for students on an MSc in Statistics course. It is not available for undergraduate students.

Module web page

Module aims

The module content will include a thorough grounding in classical and Bayesian methods of statistical inference with an introduction to selected more recent developments in statistical methodology. Since MSc students have different background knowledge in statistics we start afresh. At the end of the course you will have a solid background in basic statistics and knowledge at an advanced level in some areas.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module content includes thorough grounding in classical methods of statistical inference with an introduction to more recent developments in statistical methodology. The following items are

going to be covered: data, probability, random variables, special univariate distributions, joint and conditional distributions, distributions of functions of random variables, methods of inference, inference using simulation, maximum likelihood estimation, Baysian inference, general linear model.

Learning outcomes

By the end of the module, students should be able to:

- Understand basic probability and random variables.
- Make sense of univariate distributions, joint and conditional distributions and functions of random variables.
- Understand the principles of inference in particular Baysian inference and Maximum Likelihood Estimation.
- Apply linear models in general situations.
- Understand principles of and be able to apply statistical testing using the Likelihood Ratio approach.
- Gain familiarity with basic topics in computational statistics such as importance sampling, rejection sampling etc

Indicative reading list

Casella, G. and Berger, R. L., Statistical Inference, 2nd Ed, Duxbury.
Wasserman L.,All of Statistics: A Concise Course in Statistical Inference, Springer
An Introduction to Probability and Statistical Inference (second edition), by G.G. Roussas
Lecture notes will cover everything that is done in the course.

View reading list on Talis Aspire

Subject specific skills

TBC

Transferable skills

TBC

Study

Study time

Type	Required
Lectures	30 sessions of 1 hour (20%)
Private study	104 hours (69%)
Total	150 hours

Type	Required
Assessment	16 hours (11%)
Total	150 hours

Private study description

Weekly revision of lecture notes and materials, wider reading, practice exercises and preparing for examination.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group D5

	Weighting	Study time
Assignment 2	10%	7 hours

Due in Term 1 Week 10.
The assignment will contain a number of questions for which solutions and / or written responses will be required.
500 words is equivalent to one page of text, diagrams, formula or equations; your Assignment 2 should not exceed 2 pages in length.

Assignment 1	10%	7 hours

Due in Term 1 Week 7.
The assignment will contain a number of questions for which solutions and / or written responses will be required.
500 words is equivalent to one page of text, diagrams, formula or equations; your Assignment 1 should not exceed 2 pages in length.

In-person Examination	80%	2 hours

The examination paper will contain four questions, of which the best marks of THREE questions will be used to calculate your grade.

- Answerbook Pink (12 page)
- Students may use a calculator

	Weighting	Study time

- Cambridge Statistical Tables (blue)

Assessment group R3

	Weighting	Study time
In-person Examination - Resit	100%	

The examination paper will contain four questions, of which the best marks of THREE questions will be used to calculate your grade.

- Answerbook Pink (12 page)
- Students may use a calculator
- Cambridge Statistical Tables (blue)

Feedback on assessment

Marked assignments will be available for viewing at the support office within 20 working days of the submission deadline.

Solutions and cohort level feedback will be provided for the examination.

Past exam papers for ST903

Availability

Post-requisite modules

If you pass this module, you can take:

- ST955-60 Dissertation

Courses

This module is Core for:

- Year 1 of TSTA-G4P1 Postgraduate Taught Statistics