Module Details

Module Title	Statistics And Databases For Forensic Scientists
Module Code	ARC5022-B
Academic Year	2024/5
Credits	20
School	School of Archaeological and Forensic Sciences
FHEQ Level	FHEQ Level 5

Contact Hours

Type	Hours
Lectures	24
Practical Classes or Workshops	12
Supervised time in studio/workshop	10
Directed Study	154

Availability

Occurrence	Location / Period
BDA	University of Bradford / Academic Year

Module Aims

To provide a basis for understanding and performing standard descriptive and inferential statistics appropriate to forensic data. To develop an understanding of probability and Bayesian likelihood ratios which are commonly employed in forensic evidence. To provide an understanding of the nature of different potential data sets of evidence types for addressing fundamental questions in forensic science.

Outline Syllabus

Types of data: qualitative/quantitative/discrete/continuous
Presenting data: graphs and tables (including review of use of spreadsheets for collating numerical data)
Normally distributed data: frequency/arithmetic mean/standard deviation and variance. Confidence limits and confidence intervals.
Hypothesis testing: use of t-tests, regression analysis; chi-square tests.
Parametric and non-parametric tests.
Likelihood ratios and the Bayesian approach.
Databases in forensic science that underpin Likelihood ratios.
Use of Bayesian approach in Court.
Calibration and error calculations in analytical data; and appropriate use of data and statistics.

Learning Outcomes

Outcome Number	Description
O1	Understand the different types of data (qualitative/quantitative; nominal/ordinal/discrete/continuous).
O2	Select and use appropriate statistical approaches to interpret and evaluate numerical data.
O3	Understand the application of Likelihood ratios and the Bayesian approach to the interpretation of data in forensic science.
O4	Understand the use and limitations of statistics as well as databases and data sets and their relationship to Likelihood ratios used in the Bayesian approach.

Learning, Teaching and Assessment Strategy

Lectures, workshops/practical

The formative self evaluation coursework will be linked to the workshop sessions. Assessment 1 concentrates on handling numerical data, the selection of appropriate statistical approaches and the interpretation of the data. This will include the use of graphs and tables where appropriate. Assessment 2 introduces an in depth approach to the use of competing propositions (prosecution and defence) the use of Likelihood ratios and the Bayesian approach to the interpretation of forensic data in a court context. The supplementary assessments will be as original.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework - Written	Bayesian approach to data evaluation (2000 words)	50%
Summative	Coursework - Written	Coursework exercise in numerical data handling and presentation (2000 words)	50%
Formative	Coursework	Coursework self evaluation exercise in numerical data handling and presentation.	N/A

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html