IP110-15 Quantitative Methods for Interdisciplinary Research

26/27

Department
Liberal Arts
Level
Undergraduate Level 1
Module leader
Lauren Bird
Credit value
15
Module duration
10 weeks
Assessment
55% coursework, 45% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

On this module, we explore quantitative approaches to researching topics across a broad range of primarily social science disciplines and reflect on the foundational theories of knowledge underpinning quantitative methods.

We examine data types and sources, engage with different methods for presenting and communicating quantitative data, and compare and contrast the benefits and challenges of quantitative data compared to qualitative data.

Overall, this module focuses on key skills for understanding basic quantitative methods and provides a valuable foundation for conducting effective, and engaging quantitative research and analysis throughout your undergraduate degree.

Module web page

Module aims

The module aims to introduce first year students in the Liberal Arts, Liberal Arts and Sciences and other students of Cross-Faculty Studies to the statistical and data foundations of quantitative

research methods broadly employed in the social and other statistical sciences and to offer them opportunities to practise using some of these skills in tests and practical assignments.

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.

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Across the module, we explore quantitative methods through four key themes

- Why we use quantitative methods:
  We examine the philosophical and practical foundations of quantification, including:
  -- The role of numbers in society and decision-making
  -- The epistemological assumptions behind measurement and generalisation
  -- The strengths and limitations of quantitative approaches
  -- Core principles of quantitative research design
- How complex information can be communicated clearly:
  We focus on how data becomes meaningful through summarisation and representation:
  -- Key descriptive statistics and what they reveal
  -- Types of data and their implications
  -- Effective and ethical data presentation
- How we judge certainty and uncertainty in results:
  We explore the logic of variation, probability, and inference:
  -- Data and sampling distributions
  -- Probability and its calculation
  -- How probability underpins statistical inference
- How data should be collected — and what goes wrong when it isn’t:
  We consider the generation of data and the consequences of poor practice:
  -- Data sources, collection methods, and common pitfalls
  -- The relationship between samples and populations
  -- Using samples to infer population characteristics
  -- Confidence intervals and hypothesis testing

Learning outcomes

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

- Understand the strengths of quantitative research methods and their complementarity with other research methods.
- Demonstrate an understanding of key descriptive statistics, data distributions, probabilities, and implications for analysis.
- Demonstrate an understanding of different data types, sources, methods of collection, and issues to be considered in data collection.
- Use computer software to analyse data, produce descriptive statistics, and present data in an appropriate and intuitive way.

- Demonstrate understanding of the relationship between sample and population data, challenges associated with bias and non-representative data, and how we use sample data to make inferences about the entire population.
- Draw on appropriate statistical techniques to support quantitative research and dissemination.

Indicative reading list

Reading lists can be found in Talis

Research element

This is a core module on the Liberal Arts course which aims to facilitate the acquisition by students of a range of methods of enquiry from various disciplines and equip them to deploy those skills in research. Research skills are embedded into the teaching strategy of all of the course's modules which, collaboratively, seek to develop and enhance students' capacity to conduct independently original research into a current problem.

Interdisciplinary

This is a core module on the Liberal Arts course which adopts an interdisciplinary approach spanning the arts, humanities, social and natural sciences fields in order to engage with debates on topical, local national and international issues.

Subject specific skills

Students will learn to understand different data types, sources, methods of collection, issues to be considered in data collection, and be able to undertake collection and analysis of primary data.
They will acquire an understanding of the relationship between sample and population data, challenges associated with bias and non-representative data, and how we use sample data to make inferences about the entire population.
They will have an awareness of data distributions, the way key variables are distributed, and their implications for the analysis of data.
They will be able to demonstrate an understanding and calculation of simple, compound, and conditional probabilities, and understand the relationship between probability and data distribution
They will learn to read and understand basic data descriptions and analysis in published academic literature such as journals or textbooks

Transferable skills

As a module delivered with a problem-based learning approach, this module will develop enhanced skills of problem identification, articulation and analysis as well as highly developed skills of data analysis. They will be able to articulate the usefulness of quantitative analysis as a mode of research within the broader portfolio of research techniques — demonstrating an understanding of its strengths and advantages, but also understanding weaknesses, and where

alternative complementary approaches may be more appropriate
Other skills supported by this module are:
Oral and written communication
Digital literacy
Professional communication
Working with others
Information technology
Numeracy
Research across various disciplines and using a variety of methods

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Study

Study time

Type	Required
Seminars	10 sessions of 2 hours (13%)
Online learning (independent)	8 sessions of 2 hours (11%)
Private study	48 hours (32%)
Assessment	66 hours (44%)
Total	150 hours

Private study description

Reading and research in preparation for workshops, independent learning and assessment

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group D4

	Weighting	Study time	Eligible for self-certification
Assessment component			
Group Presentation	40%	25 hours	No

	Weighting	Study time	Eligible for self-certification

In class or recorded group presentation. Individual assessment equivalent is possible upon request and discussion with the instructor. (Individual assessment would be same presentation design but reduced duration).

Reassessment component

Presentation			Yes (extension)

Students will prepare an individual presentation of a research analysis.

Assessment component

Mini-quizzes	15%	6 hours	No

Set of quizzes to be completed online related to independent practical worksheets. (low preparation and completion time relative to weighting because related to worksheets that are otherwise accounted for in total study hours)

Reassessment component is the same

Assessment component

Final test	45%	35 hours	No

Students are tasked with a test and problem set to assess the knowledge gained from the class.

Reassessment component is the same

Feedback on assessment

- \tWritten feedback for written assignments (individual and group) will be provided via Tabula\r\n·\tWritten feedback will be provided for presentations via Tabula in addition to feedback and discussion in class at time of presentation\r\n·\tFeedback on the course test will be provided individually with written comments via Tabula.

Past exam papers for IP110

Availability

Courses

This module is Core optional for:

- Year 1 of UVCA-LA99 Undergraduate Liberal Arts

This module is Optional for:

- Year 1 of UIPA-L8A1 Undergraduate Global Sustainable Development

This module is Core option list A for:

- Year 1 of UVCA-LA99 Undergraduate Liberal Arts