Module Specification

Statistical Data Analysis

Version: 2025-26, v1.0, Approved

Contents

Part 1: Information

Module title: Statistical Data Analysis

Module code: UFCEJB-30-1

Level: Level 4

For implementation from: 2025-26

UWE credit rating: 30

ECTS credit rating: 15

College: College of Arts, Technology and Environment

School: CATE School of Computing and Creative Technologies

Partner institutions: None

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: In this module we will learn about the comprehensive process of formulating research questions and employing quantitative designs to capture and analyse data effectively. We will cover exploratory data analysis techniques, methods for summarising and illustrating data, and concepts of accuracy through confidence intervals and effect size. Additionally, we will explore hypothesis testing using various statistical tests, correlation, simple linear regression, and an

introduction to multiple regression, all within the context of discovering insights through data.

Features: Not applicable

Educational aims: The aim of this module is to introduce fundamental statistical techniques that underpin the analysis of data.

Outline syllabus: An indicative content is as follows:

The Scientific Method for Knowledge Discovery.

The module will consider the formulation of research questions, quantitative designs, statistical hypotheses, data capture, exploring data with a purpose, the careful statistical analysis of data, and what we may legitimately infer.

Content will include, Exploratory Data Analysis (EDA), methods of exploring, summarising, illustrating data to produce information.

Concepts of accuracy using confidence intervals, and effect size will be developed.

Hypothesis testing: t-tests, F-test for variances, Chi-square tests for contingency tables and goodness of fit, one-way ANOVA, and nonparametric tests will be developed, along with correlation, simple linear regression, and an introduction to multiple regression.

Foundations, principles and illustrative examples of machine learning.

This will all be done in the context of discovery through data.

Part 3: Teaching and learning methods

Teaching and learning methods: The delivery will comprise lectures, computer practicals and classroom workshops. The computer practicals and classroom workshops will include the use of statistical software. Emphasis will be on the choice

of analysis and on the interpretation and communication of results.

Typically the scheduled teaching hours take the form of:

Whole group lectures, used to deliver new material.
Computer labs where consolidation of previous material via the use of statistical software, and through the completion of analysis templates.

TEAL room lectorials to deliver new and supplementary materials via group working.

[SPSS statistics software and Excel will be used for analysis]

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Analyse and solve statistical problems using the basic concepts of probability theory, study design and statistical inference.

MO2 Identify, execute and evaluate appropriate statistical analyses for given research questions and data structures.

MO3 Apply statistical software to aid statistical analyses.

MO4 Communicate the results and conclusions of statistical analyses in a manner suitable for a formal report.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/42D71D9A-9625-4ECB-E621-C092D8C79AFB.html?lang=en-GB&login=1

Part 4: Assessment

Assessment strategy: Formative assessment consists of a series of relevant tasks. The formative tasks will be distributed throughout the year adopting the "little but often" approach.

The final online examination assessed students' understanding of concepts and techniques together with their ability to apply them.

The resit will take the same format at the sit, with equivalent tasks to the sit.

Assessment tasks:

Examination (Online) (First Sit)

Description: Online 1-hour exam to be taken in a 24-hour window

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Examination (Online) (Resit)

Description: 1-hour exam within a 24-hour window

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Data Science [Frenchay] BSc (Hons) 2025-26