Module Specification

Research Methods

Version: 2025-26, v2.0, Approved

Contents

Part 1: Information

Module title: Research Methods

Module code: UFMFGV-15-M

Level: Level 7

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

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: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module is concerned with the careful use of scientific method, qualitative research and the application of statistical techniques in empirical research. Research Governance including ethics, health and safety, use of human tissue, animal welfare and genetic medication will be delivered. It covers the principles of data quality and method validation.

Features: This module is available as CPD.

Educational aims: The aim of this module is to develop research skills required to deliver evidence-based analysis that underpins each core module, where research governance plays a central role.

Outline syllabus: Advanced modelling techniques:
Binary, ordinal and nominal logistic regression models: application, theoretical underpinning, model diagnostics.
Discriminant Analysis: applications and interpretation, theoretical underpinning, model diagnostics.
Multivariate Analysis of Variance.
Survival Analysis.

Biomedical research techniques:
Principles of experimental designs relating to medical studies.
Determination of sample size for a given study
Measures of reliability including Intra Class Correlations, Bland-Altman plots, Cohen's kappa
Analysis of survival data including the proportional hazards survival model, estimation of survival probabilities, Kaplan-Meier survival curves, log rank tests.

Industrial Studies:
Two-level full and fractional factorial designs, central composite and rotatable designs and process optimisation.
Taguchi methods and their role in product design and quality improvement
Missing data.

Meta-analysis:
Introduction to meta-analysis. Systematic reviews, publication bias, effect sizes, random and fixed effects models; examples taken from the empirical literature.

Research Governance:
Students will gain an overview of research governance including bioethics and ethical standard frameworks and committees.

Part 3: Teaching and learning methods

Teaching and learning methods: Lectures: This module will be delivered in discrete sections, following the subject areas outlined in the syllabus. Each topic area will be introduced with underpinning lectures followed by a series of tutorials where extensive use of case studies will be made.

Tutorials: Tutorials will use indicative lists of questions to guide student learning. It is expected that the tutorial work will be completed before the tutorial. Therefore, the tutorial will engage active discussion on individual and group findings.

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

MO1 Apply advanced statistical techniques in empirical research using modern day software.

MO2 Evaluate model diagnostics to inform empirical model building.

MO3 Interpret and explain a wide variety of empirical statistical models in different context.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufmfgv-15-m.html

Part 4: Assessment

Assessment strategy: Assessment: Written Assignment (15 pages maximum) Statistical modelling of data and design concepts.
The assessment is designed to develop students' understanding of how quantitative

data is currently used in the Healthcare Technology field and will test statistical modelling of data and second design concepts. This piece of coursework will involve a written report featuring a comprehensive statistical analysis designed to showcase core learnings using a large real-world dataset within the healthcare field.
Students are supported through dedicated guidance, access to relevant resources, and opportunities for feedback to ensure they succeed in applying statistical modelling effectively.

Assessment tasks:

Written Assignment (First Sit)
Description: Statistical modelling of data and design concepts (15 pages)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Written Assignment (Resit)
Description: Statistical modelling of data and design concepts (15 pages)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Health Technology [Frenchay] MSc 2025-26

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