Module Definition Form (MDF)

Module code: MOD011196	**Version:** 1 **Date Amended:** 17/Jun/2025

1. Module Title
Research Methods

2a. Module Leader
Roy Browne

2b. School
Writtle School of Agriculture, Animal and Environmental Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	AAES courses		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module is designed to develop the knowledge, understanding, skills and thought processes necessary for effective original research by studying the nature and fundamentals of the research process. You will begin by learning how to review literature, followed by how to design a research project, including techniques for collection of research data.

You will learn statistical techniques for analysing research data and draw reliable evidence-based conclusions. By the end of the module, you'll have a solid foundation in research design and analysis, skills that will be essential for your final-year project and for any future work in scientific, conservation, or animal-related careers.

6b. Outline Content

RESEARCH PLANNING: establishing a theoretical framework for research; literature search and review; defining a research question/hypothesis; establishing research objectives; defining information requirements; identifying types of data; research design; overview of piloting, timetabling, organising, data processing and analysis; identifying potential constraints and sources of error; research ethics.

SAMPLING: sampling methods (e.g. random, stratified random, cluster, systematic, quota); sample size; response rates and sources of bias; estimation of sampling error and precision; standard error and confidence intervals.

QUALITATIVE AND QUANTATIVE DATA COLLECTION & ANALYSIS: questionnaire/interview design (e.g. structured and semi-structured); observation and experiments; measurement versus counting; types and importance of data distributions (e.g. normal); error and reliability; techniques for quantitative analysis of questionnaire/survey research.

INFERENTIAL STATISTICS: principles of hypothesis testing; the concept of probability and proof; principles of statistical significance testing; parametric and non-parametric tests; selection of appropriate tests for various test statistics and circumstances (e.g. means, percentages, frequencies, small and large samples, independent or matched samples); types of error; calculation examples of Student's t-test, matched-pair tests, ANOVA, non-parametric tests; identifying associations, relationships and making predictions; calculation examples of chi-squared goodness-of fit and contingency tables, bivariate correlation and regression analysis.

APPLICATION OF COMPUTERS: introduction to data handling/analysis computer packages; Excel (statistical functions and Excel analysis toolpack); statistical software packages as identified by the School

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

None

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Intellectual, practical, affective and transferrable skills	Plan research projects, define research questions and develop appropriate research strategies based on evaluation of current theories, prior research and industry needs.
2	Intellectual, practical, affective and transferrable skills	Appreciate and identify potential sources of error in research, and constraints to research such as resource limitations, logistical and ethical issues.
3	Intellectual, practical, affective and transferrable skills	Demonstrate ability to apply appropriate statistical analysis techniques to manipulate and interpret data to examine relationships, test hypotheses and draw critically valid conclusions.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	24	24	Formal Scheduled Teaching - Lectures, seminars and workshops
Other teacher managed learning	12	12	Computer workshops and tutorials - Weekly workshops (e.g. literature search, data analysis) mainly using computer software packages such as Excel, and/or SPSS.
Student managed learning	114	114	Set reading, critical summaries, online statistics activities, background reading and study for formative and summative assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-2	50 (%)	Fine Grade	30 (%)

Proposal (1500 Words) - Research problem definition, literature review and research design for an original research project.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Examination	3	50 (%)	Fine Grade	30 (%)

Exam (2 Hours) - open-book examination (online); data analysis and short or long answer questions.

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]