

Liverpool John Moores University

Title: RESEARCH METHODS AND STATISTICS
Status: Definitive
Code: **7131NATSCI** (126191)
Version Start Date: 01-08-2021

Owning School/Faculty: Biological and Environmental Sciences
Teaching School/Faculty: Biological and Environmental Sciences

Team	Leader
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Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 42
Total Learning Hours: 200 **Private Study:** 158

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	4
Workshop	36

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam on statistical analysis	40	2
Portfolio	Grant	Research grant proposal	60	

Aims

To present students with key statistical methods relevant to the study of plant, animal and human health and disease, and to enable them to further develop research skills in order to become independent researchers.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify and apply the appropriate statistical test to analyse a dataset
- 2 Effectively elaborate a research proposal, considering ethical aspects, costs and pathways to impact

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam	1
Research grant proposal	2

Outline Syllabus

Descriptive stats, hypothesis testing, false positives and negatives, multiple testing and power calculations, association studies (GWAS), epidemiological statistics, systematic reviews and meta-analysis.

Types of study (observation, intervention, case-control, RCT etc.), computational skills, literature search, experimental design, task management, ethics, pathways to impact.

Learning Activities

The module is mostly practical; students will learn through groups and individual workshops.

Notes

This module builds on the students' previous knowledge on basic statistics and experimental planning acquired during their degrees, in order to help them develop as independent researchers. They will learn to conduct more advanced descriptive statistics, power calculations, epidemiological statistics, and systematic reviews and meta-analyses; different statistical software options (focusing primarily upon R) will be taught. They will also learn to design and plan a research project, considering different types of study, ethical aspects, estimation of costs, time management and task planning, and impact assessment.