

Liverpool John Moores University

Title: FUNDAMENTALS OF SCIENTIFIC RESEARCH
Status: Definitive
Code: **4000NATSCI** (112567)
Version Start Date: 01-08-2015

Owning School/Faculty: Natural Sciences & Psychology
Teaching School/Faculty: Natural Sciences & Psychology

Team	Leader
Mark Feltham	Y
Philip Denton	

Academic Level: FHEQ4 **Credit Value:** 24.00 **Total Delivered Hours:** 62.00
Total Learning Hours: 240 **Private Study:** 178

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	26.000
Tutorial	12.000
Workshop	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Comms	Scientific communication	45.0	
Portfolio	Analysis	Data Presentation & Analysis	45.0	
WoW Skills Bronze	Reflection	Complete a World of Work Skills Bronze statement on Self Awareness and then reflect on your feedback using a standard template.	10.0	

Aims

To enable students to develop a range of academic, research and transferable skills

related to their programme of study.

Learning Outcomes

After completing the module the student should be able to:

- 1 perform independent research and present the results using appropriate techniques, such as graphing, mapping, tables or text.
- 2 recognise scientific approaches and how to apply them in order to solving problems.
- 3 convert raw data to results by arranging them into meaningful subsets, applying appropriate descriptive or statistical tests and correctly interpreting and reporting the results of these analyses.
- 4 develop a range of transferable skills in order to fully exploit learning opportunities in the field of scientific research at University and beyond.
- 5 To identify and reflect upon the following aspects of personal development: strengths and weaknesses, motivations and values, ability to work with others

Learning Outcomes of Assessments

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

Scientific Communication	1	3	4
Data Presentation & Analysis	2	3	4
Bronze Statement & Reflection	4	5	

Outline Syllabus

Written communication: report writing, reviewing scientific literature

Numerical reasoning: data handling and presentation (e.g. graphs, maps, databases) and descriptive statistics (normality testing, mean, SD, median and mode, etc.).

Analytical statistics: parametric and non-parametric tests including Mann-Whitney U, T-tests (one, two and paired samples), Wilcoxon signed ranks test; Spearman's Rank and Pearson's product-moment correlation.

Information literacy & ICT skills: Blackboard, tabulation, graphics, email, internet, images, hyperlinks, presentation software, stats packages, GIS, databases, e-portfolio.

Personal planning, organizing and employment skills: time management: skills auditing and skills development, target setting, action planning, using feedback.

Problem solving: the nature of scientific enquiry, the Scientific Method, experimental design, hypothesis testing and project management.

Learning Activities

The module will be taught by a combination of lectures, workshops, social media, tutorials and directed study.

Notes

This module aims to develop the basic research skills of students on Natural Science programmes. Areas covered include scientific writing, data handling and statistical analysis.