Liverpool John Moores University

Title:	DATA ANALYSIS
Status:	Definitive
Code:	**4001NATSCX** (101362)
Version Start Date:	01-08-2011
Owning School/Faculty:	Natural Sciences & Psychology
Teaching School/Faculty:	Natural Sciences & Psychology

Team	Leader
Graham Sherwood	Y

Academic Level:	FHEQ4	**Credit Value:**	12.00	**Total Delivered Hours:**	36.00
Total Learning Hours:	120	**Private Study:**	84		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	15.000
Workshop	21.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Reflection	AS1	Phase tests	50.0	
Reflection	AS2	Report (data analysis assignment)	25.0	
Reflection	AS3	Poster	25.0	

Aims

To provide a firm grounding in key aspects of the collection, handling, processing, analysis and presentation of numerical & spatial data

Learning Outcomes

After completing the module the student should be able to:

1	Appraise, formulate and manipulate simple numerical and algebraic expressions and equations
2	convert raw data to results by arranging them into meaningful subsets, and, when appropriate, applying suitable graphical and statistical packages
3	correctly present the results of descriptive and analytical statistics as text, tables and/or figures, and interpret the results of these analyses

Learning Outcomes of Assessments

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

CW	1
CW	2
CW	3

Outline Syllabus

Numerical reasoning - working with numbers. Basic numeracy inlcuding units, powers, exponentials, linear equations and relationship to graphical plots.

Introduction to statistics. The nature of data - probability distributions - normal and non-normal. Sources of variation.

Descriptive statistics: testing for normality. Means, standard deviations and 95% confidence limits. Medians and quartiles.

Experimental design. Data collection, handling and manipulation. Introduction to databases.

Displaying data - appropriate use of tables and graphs. Handling spatial data - introduction to Geographical Information Systems.

Hypothesis testing (analytical statistics). Choosing the appropriate parametric or equivalent non-parametric test: one sample t-test; two independent sample t-test and Mann-Whitney-Wilcoxon test; paired t-test & Wilcoxon signed ranks test; Spearman's Rank and Pearson's product-moment correlation; goodness of fit and contingency table tests based on the Chi-squared distribution; Linear regression; Interpreting the test result.

Communicating research results.

Learning Activities

The module will be taught by a combination of lectures and workshops.

References

Course Material	Book
Author	McKillup, S.
Publishing Year	2005
Title	Statistics explained
Subtitle	an introductory guide for life sciences
Edition	
Publisher	Cambridge University Press
ISBN	0521543169

Course Material	Book
Author	Walford, N.
Publishing Year	2007
Title	Introductory statistics for geographers and earth scientists
Subtitle	
Edition	
Publisher	Wiley
ISBN	0470849150

Course Material	Book
Author	Dytham, C.
Publishing Year	2003
Title	Choosing & using statistics
Subtitle	a biologists guide
Edition	2nd
Publisher	Blackwell Science
ISBN	1405102438

Notes

This module aims to provide a basic introduction to data handling and statistical analysis. It will be taught by a combination of lectures and workshops.