

Liverpool John Moores University

Title: STATISTICS FOR SCIENTISTS
Status: Definitive
Code: **3004BELSC** (101153)
Version Start Date: 01-08-2011

Owning School/Faculty: Arts, Professional and Social Studies
Teaching School/Faculty: Bellerby's College - Brighton

Team	Leader
Jarmila Hickman	Y

Academic Level: FHEQ3 **Credit Value:** 12.00 **Total Delivered Hours:** 69.00
Total Learning Hours: 120 **Private Study:** 51

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	66.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Module Examination	100.0	3.00

Aims

To provide an alternative module to Pure Mathematics 2 for those Science students (particularly those aiming for Pharmacy or Biological Sciences degrees) who would benefit from a study of the techniques of data analysis and hypothesis testing.

Learning Outcomes

After completing the module the student should be able to:

- 1 Display an understanding of how uncertainty is a feature underlying many natural

- processes and how probability theory can be used in these circumstances.
- 2 Use the concept of a random variable to construct various probability distributions which model real physical processes.
 - 3 Explain how to deal with variables which are linearly related to some extent and with categorical data.
 - 4 Carry out various tests of hypotheses which arise in the study of real systems and discuss experimental design at a very simple level in this context.

Learning Outcomes of Assessments

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

EXAM 1 2 3 4

Outline Syllabus

1. *Review of elementary statistics (as covered in Pure Mathematics 1).*
2. *Probability, including basic definitions, Venn Diagrams, mutually exclusive, complementary, dependent and independent events, relevant formulae and tree diagrams.*
3. *Basic idea of a discrete random variable.*
4. *Three important standard discrete distributions – Uniform, Binomial and Poisson.*
5. *The mean and variance of a discrete probability distribution in general.*
6. *Basic idea of a continuous random variable.*
7. *The cumulative distribution function (c.d.f.) for a general continuous random variable X .*
8. *Two important standard continuous distributions – Uniform and Normal.*
9. *Linear combinations of independent Normal random variables.*

Learning Activities

Explanatory lessons to and working examples with small classes, regular formative homework assignments, class tests and terminal module examination.

References

Course Material	Book
Author	Attwood, G et al
Publishing Year	2000
Title	Statistics 1
Subtitle	
Edition	
Publisher	Heinemann Education
ISBN	9780435510824

Course Material	Book
Author	Attwood, G et al
Publishing Year	2000
Title	Statistics 2
Subtitle	
Edition	
Publisher	Heinemann Education
ISBN	9789435510831

Notes

This module builds on basic statistical work introduced as part of the module, Pure Mathematics 1, and aims to provide students who wish to study Science degree subjects at university with the theoretical background, methods and techniques required to display and manipulate relevant statistical data.