FP014-30 Mathematics for Finance

21/22

Department
Warwick Foundation Studies
Level
Foundation
Module leader
Chris Jones
Credit value
30
Assessment
40% coursework, 60% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

FP014-30 Business Mathematics and Statistics

Module web page

Module aims

This module provides students with the mathematical and statistical training necessary for successful degree-level study of Finance-related courses. Students will become more competent and grow in self-confidence by practising these techniques under supervision, and will develop intuition and gain valuable insight by applying these techniques to 'real-world' problems.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Pure Mathematics

- Equations and Inequalities
  (solving and applying linear, quadratic, and simultaneous equations/inequalities)
- Straight Line Graphs
  (relationship between an equation and its graph; gradients, parallel and perpendicular lines)

- Exponentials and Logarithms
  (laws of indices, surds and logarithms; solving exponential equations; e and ln)
- Functions and Sketches
  (domain and range; composite and inverse functions; graph sketching techniques)
- Vectors and Matrices
  (vector properties and arithmetic; dot product and perpendicular vectors; matrix operations; 2x2 determinants and inverse matrices; solving systems of equations)
- Differentiation
  (finding derivatives of polynomials, reciprocals, exponentials, logarithms and trigonometric functions; gradients of curves and stationary points; the chain, product and quotient rules)
- Integration
  (indefinite integration as a reverse of differentiation; evaluation of definite integrals)
- Numerical Methods
  (determining whether a solution exists in a given range; use methods such as interval bisection and Newton-Raphson to approximate solutions)
- Sequences and Series
  (making calculations involving arithmetic and geometric series, including sums to infinity)
- Expansions
  (using binomial, Maclaurin and Taylor series formulae to approximate functions)

Statistics and Probability

- Averages and Spread
  (calculating/estimating measures of average and spread from various presentations of data)
- Quartiles and Box Plots
  (estimating quartiles and IQR from continuous data; drawing and interpreting box plots)
- Histograms
  (frequency density; interpreting histograms and using them to make calculations)
- Correlation and Regression
  (calculating and using the product moment correlation coefficient and least squares regression line for a set of bivariate data)
- Probability
  (simple theoretical and experimental probability including sample spaces; Venn diagrams; expected values)
- Binomial and Poisson Distribution
  (identifying Binomial and Poisson situations, and using the formulae to calculate probabilities)
- The Normal Distribution
  (using given tables to find standard Z probabilities; converting to general normal distributions)
- Confidence Intervals
  (calculating confidence intervals for means and proportions, using various confidence levels)
- Hypothesis Testing
  (testing one-tailed and two-tailed hypotheses for population means and proportions; conducting a chi-squared test on some categorical data)

Learning outcomes

By the end of the module, students should be able to:

- Apply their repertoire of mathematical and statistical tools and techniques to a variety of contexts.
- Construct rigorous arguments by framing precise statements that lend themselves to mathematical deduction or statistical inference.
- Use a calculator or spreadsheet to perform calculations to an appropriate level of accuracy.
- Undertake basic statistical analyses of data.
- Interpret the results of mathematical calculations and statistical analyses, and use them to inform decision-making.
- Critically appraise reported mathematical and statistical results, carefully considering the validity of the underlying assumptions.

Indicative reading list

Mathematics and Statistics for Business, Management and Finance (Swift, 1997)

Pure Mathematics:
Mathematics for economics and finance: methods and modelling (Anthony and Biggs, 1996)
Elements of Mathematics for Economics and Finance (Mavron and Phillips, 2010)

Statistics:
Probability and Statistics for Finance (Fabozzi et al, 2011)
Statistics for Economics, Accounting and Business Studies (Barrow, 2017)

[View reading list on Talis Aspire](#)

Subject specific skills

No subject specific skills defined for this module.

Transferable skills

No transferable skills defined for this module.

Study

Study time

Type	Required
Seminars	25 sessions of 3 hours (75%)
Online learning (independent)	25 sessions of 1 hour (25%)
Total	100 hours

Private study description

Private Study.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D3

	Weighting	Study time
Class Test 1	10%	5 hours
Class Test 2	15%	5 hours
Class Test 3	15%	5 hours
On-campus Examination	60%	

- Answerbook Pink (12 page)
- Students may use a calculator

Feedback on assessment

Students to view marked scripts in class.

[Past exam papers for FP014](#)

Availability

Courses

This module is Core for:

- FIOE Warwick International Foundation Programme
  - Year 1 of FP09 Warwick International Foundation Programme - Business Studies and Economics
  - Year 1 of FP15 Warwick International Foundation Programme - Finance