MODULE SPECIFICATION

KEY FACTS

Module name	Essentials of Quantitative Methods
Module code	BS0102
School	Bayes Business School
Department or equivalent	Undergraduate Programme
UK credits	15
ECTS	7.5
Level	3
Delivery location (partnership programmes only)	

MODULE SUMMARY

Module outline and aims

Through this module, you will extend your existing knowledge of mathematics to develop your analytical and problem-solving skills. The programme of study will be divided into lectures in number, algebra and statistics. If we find that a large proportion of the class already has a knowledge of mathematics which goes beyond the material taught on this module, we will run separate tutorials which will emphasise the methods required when you are systematically working towards a solution; the standard sessions will concentrate on providing you with a practical understanding of mathematical techniques.

Content outline

Mathematics

- Revision of number, fractions, decimals, and percentages.
- Powers (exponents) and roots.
- Simplification and re-arrangement of algebraic expressions, Factorisation.
- Quadratics: graphical representation, solution by quadratic formula or factorisation.
- Simultaneous equations in 2 variables: both linear.
- Inequalities: simplification and solution.
- Function notation.
- Coordinate geometry in 2d: straight lines, gradient and intercept.
- Sequences and Series: Arithmetic, geometric, use of sigma notation. Application: future values of regular savings.

Statistics

- Populations and observations. Types of variates. Outliers.
- Statistical displays and sample statistics. Measures of central tendency and spread. Application: measuring financial risk and return.
- Scatter diagrams, linear models, correlation.

- Probability: Venn diagrams, independent events, complements, conditional probability, tree diagrams.
- Random variables and their distributions.
- Parametric distributions; Binomial, Poisson and Normal distributions. Tables of percentage points.

WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this module, you will be expected to be able to:

Knowledge and understanding:

- Select and apply mathematical facts, concepts and techniques in a variety of contexts.
- Select and apply standard mathematical models to represent situations in the real world.
- Recognise and understand representations of real-life situations in terms of standard mathematical models.

Skills:

- Employ logical deduction and inference to construct rigorous mathematical arguments and proofs.
- Manipulate mathematical expressions.
- Demonstrate the ability to construct extended arguments for handling substantial problems presented in unstructured form.
- Present and interpret results from mathematical models in terms of the situation which is being modelled.
- Describe the assumptions which underlie a mathematical model and demonstrate how a model might be refined if they are not satisfied.

Values and attitudes:

- Demonstrate the ability to present the outcomes of mathematical and, especially, statistical investigations in a way which accurately reflects the analysis performed and bases conclusions solely on the evidence uncovered.

HOW WILL I LEARN?

The teaching will consist of a mixture of explanatory sessions, in which the lecturer will discuss mathematical theories and present examples of how they are applied, and exercise sessions, during which you will be expected to work through the exercises which have been prepared to accompany the explanations, with the assistance of your tutor if you need it.

The self-directed hours should be used to engage in online learning, reading for the programme and developing your assessments.

Teaching pattern:

Teaching component	Teaching type	Contact hours (scheduled)	Self-directed study hours (independent)	Placement hours	Total student learning hours
Lectures	Lectures	20	80		100
Tutorials	Tutorials	10	40		50
Totals		30	120		150

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessments

Assessment will consist of:

- A 30-minute coursework quiz weighted at 40%
- A 60-minute written exam weighted at 60%.

Assessment pattern:

Assessment component	Assessment type	Weighting	Minimum qualifying mark	Pass/Fail?
Coursework quiz	Set exercises	40%	0	N/A
Written exam	Written Exam	60%	0	N/A

Assessment criteria

Assessment Criteria are descriptions of the skills, knowledge or attributes you need to demonstrate in order to complete an assessment successfully and Grade-Related Criteria are descriptions of the skills, knowledge or attributes you need to demonstrate to achieve a certain grade or mark in an assessment. Assessment Criteria and Grade-Related Criteria for module assessments will be made available to you prior to an assessment taking place. More information will be available from the module leader.

Feedback on assessment

Following an assessment, you will be given their marks and feedback in line with the Assessment Regulations and Policy. More information on the timing and type of feedback that will be provided for each assessment will be available from the module leader.

Assessment Regulations

The Pass mark for the module is 60%. Any minimum qualifying marks for specific assessments are listed in the table above. The weighting of the different components can also be found above. The Programme Specification contains information on what happens if you fail an assessment component or the module.

INDICATIVE READING LIST

Mathematics: any books designed to cover subjects A-level maths or one of the following textbooks:

- Sydsaeter, K., Hammond, P., Strom, A., and A. Carvajal (2021). *Essential Mathematics for Economic Analysis, 6th edition.* Pearson.
- Jacques, I. (2023). *Mathematics for Economics and Business, 10th edition*. Pearson.

Statistics:

- Anderson, D., Sweeney, D. J., Williams, T., Camm, J.D., Cochran, J.J, Fry, M.J., Ohlmann, J.W., Freeman, J., and E. Shoesmith (2024). *Statistics for Business and Economics, 6th edition.* Cengage.
- Newbold, P., Carlson, W.L., and B. Thorne (2023). *Statistics for Business and Economics, 10th edition.* Pearson.

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Appendix: *see* http://www.hesa.ac.uk/component/option,com_studrec/task,show_file/Itemid,233/mnl,12051/href,JACS3.html/ *for the full list of JACS codes and descriptions*

CODES

HESA Cost Centre	Description	Price Group
122	Mathematics	C

HECOS Code	Description	Percentage (%)
100403	The rigorous analysis of quantities, magnitudes, forms and their relationships, using	66%

	symbolic logic and language, both in its own right and as applied to other disciplines.	
100406	The study of the collection and analysis of numerical data.	34%