Module 2

6. 2.1. Business Maths and Research Techniques

Module title	Business Maths and Research Techniques
Module NFQ level (only if an NFQ level can be demonstrated)	8
Module number/reference	BS02
Parent programme(s)	Bachelor of Arts (Honours) in Business Studies
Stage of parent programme	Stage 1
Semester (semester1/semester2 if applicable)	Semester 1
Module credit units	ECTS
Module credit number of units	10
Duration of the module	One Academic Semester, 12 Weeks Teaching.
Average (over the duration of the module) of the contact hours per week (see * below)	6.

Allocation of marks (within the module)					
	Continuous assessment	Supervised project	Proctored practical examination	Proctored written examination	**Total**
Percentage contribution	30%			70%	**100%**

Minimum intended module learning outcomes

On the successful completion of this module, students should be able to:

MIMLO 2.1   Describe and discuss a range of key mathematical techniques and financial tools commonly used in the contemporary business environment.

MIMLO 2.2   Demonstrate a thorough understanding of the applications of mathematics and quantitative research methods in business settings.

MIMLO 2.3   Analyse and interpret economic and financial information and use appropriate quantitative techniques in representative business problem-solving and decision-making contexts.

Module content, organisation and structure

Indicative Syllabus:

Compounding and Discounting

- Simple and compound interest
- Nominal and effective interest rates
- Annuities, mortgages and sinking funds
- Discounting
- Net present value and internal rate of return

Index Numbers

- The simple aggregate price index
- The Laspeyre index
- The Paasche index
- The consumer and retail price indices

Equations

- Linear equations
- Solving simultaneous equations
- Quadratic equations
- Differential calculus
- Cost, revenue and profit functions
- The economic order quantity

Linear Programming

- The production problem and the mathematical model
- Optimisation subject to constraints
- Graphical approach

Collection and Presentation of Data

- Data types and sampling methods
- Tables, diagrams and graphs

- Frequency distributions

Analysis of Data

- Measures of central tendency
- Measures of dispersion
- The normal distribution
- Confidence intervals for population mean
- Sample error and sample size
- Comparing two sample means

Hypothesis Testing

- Hypothesis testing for single samples
- Hypothesis testing with two samples
- The t-distribution
- Hypothesis testing with small samples

Correlation and Regression

- Scatter graphs
- Correlation coefficient
- The coefficient of determination
- The least squares regression equation
- Interpolation and extrapolation

Time Series

- Time series graphs
- Trends and seasonal variation
- Forecasting

Probability

- Permutations and combinations
- The laws of probability
- Calculating binomial, Poisson and normal probabilities

6.2.11 Reading lists and other information resources

Essential:

Curwin, J. and Slater, R. (2007) Quantitative Methods for Business Decisions. 6th edn. London: Thomson Learning.

Francis, A. (2004) Business Mathematics and Statistics. 6th edn. London: Thomson Learning.

Recommended:

Saunders, M., Lewis, P. and Thornhill, A. (2009) Research Methods for Business Students. Harlow, Essex: Prentice Hall (Always learning).

Waters, D. and Waters, C. D. J. (2008) Quantitative Methods for Business. Harlow, Essex: Financial Times/Prentice Hall.

Reference:

- Journal of Applied Management Studies
- Journal of Marketing Research
- Journal of General Management