

## *QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS*

<b>Theme:</b>	Finance
<b>Assessment Weighting:</b>	30% Coursework 70% Examination

### **INTRODUCTION**

This module provides students with the essential quantitative skills to support an analytical approach to decision making. Emphasis is placed on developing problem solving skills relevant to a modern business environment. The module is specifically designed to develop the student's ability to use mathematical models as an aid to decision making.

### **AIMS**

The aims of this module are to:

- Ensure students understand the applicability of mathematics and statistics to decision making in a range of business disciplines (e.g. finance, economics, marketing etc)
- Provide students with the essential mathematical skills required to support their ability to manipulate and interpret numerical data
- Develop on the part of students mathematical skills relevant to the business sector
- Develop students' confidence in the application of mathematics and statistics to support them in their analysis of business information.

### **LEARNING OUTCOMES**

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

- Carry out and analyse a simple random sample, drawing inference from the sample data regarding the population
- Distinguish between various probability techniques
- Apply appropriate mathematical tools to data to facilitate forecasting and further understanding of the raw data
- Demonstrate a clear understanding of the time value of money
- Confidently apply mathematical techniques to problem solving
- Analyse data using measures of location and dispersion
- Undertake investment appraisal using discounting techniques

## INDICATIVE MODULE CONTENT

### 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 and proportion
- Sample error and sample size
- Hypothesis testing: Z-tests, t-tests and  $\chi^2$ - tests

### Probability

- Permutations and combinations
- The laws of probability
- Calculating probabilities using Binomial, Poisson and Normal distributions
- Bayes Theorem

### Financial Mathematics

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

### Modelling Business/Economic Problems

- Linear equations
- Solving simultaneous equations
- Quadratic and cubic equations
- Differential calculus
- Supply and demand curves
- Cost, revenue and profit functions
- The economic order quantity
- Linear Programming

### Correlation and Regression

- Scattergraphs
- The correlation coefficient
- The coefficient of determination
- The least squares regression equation
- Interpolation and extrapolation
- Spearman's rank correlation coefficient