



**Advanced Diploma in Finance (531) – Quantitative Methods for Business**

<b>Prerequisites:</b> Knowledge of Finance.	<b>Corequisites:</b> A pass or higher in Diploma in Finance or equivalence.
<p><b>Aim:</b> The course applies quantitative methods to business problems with emphasis on learning to select the appropriate problem solving method, applying the chosen method, and interpreting the solution. The use of quantitative methods in managerial decision making is a continuous focus of this course. Candidates are introduced to some of the methods used to collect, present and analyse data and to provide illustrative applications to decision problems faced by business managers. Topics include sources of data; sampling and collection of primary data; presentation and summary measures of data; random variation of data and some implications for hypothesis testing and forecasting; an introduction to decision models with uncertainty; the use and interpretation of estimated regression equations; some forecasting methods used by business. The course also reviews on quantitative tools used in business and economics; financial mathematics; linear algebra, linear optimisation with applications and matrix algebra with business applications.</p>	
<b>Required Materials:</b> Recommended Learning Resources.	<b>Supplementary Materials:</b> Lecture notes and tutor extra reading recommendations.
<b>Special Requirements:</b> The course requires a combination of lectures, demonstrations and discussions.	
<p><b>Intended Learning Outcomes:</b></p> <p>1 Understand basic mathematics</p> <p>2 Understand and be able to use percentages</p> <p>3 Understand and be able to use algebraic terms</p> <p>4 Understand ratios and proportions</p>	<p><b>Assessment Criteria:</b></p> <p>1.1 Be able to carry out calculations involving whole numbers</p> <p>1.2 Be able to carry out calculations involving fractions</p> <p>1.3 Be able to carry out calculations involving decimals</p> <p>1.4 Be able to carry out calculations involving exponents</p> <p>1.5 Be able to use scientific notation</p> <p>1.6 Be able to use logarithms</p> <p>2.1 Apply percentages to common commercial situations</p> <p>2.2 Calculate commission (including brokerage)</p> <p>2.3 Calculate discounts (including chain, trade and cash)</p> <p>2.4 Calculate tax (including GST, personal and company)</p> <p>2.5 Calculate profit and loss</p> <p>2.6 Calculate stamp duty</p> <p>3.1 Manipulate algebraic expressions</p> <p>3.2 Solve simple linear equations (including transposition)</p> <p>3.3 Solve simultaneous linear equations (including the graphical technique)</p> <p>3.4 Solve business problems using simple algebra</p> <p>4.1 Calculate ratios and proportions</p> <p>4.2 Calculate and apply profit ratios</p> <p>4.3 Calculate and apply efficiency ratios</p>

5	Understand the effect of inflation on interest rate levels	4.4 Calculate and apply liquidity ratios 5.1 Be able to perform calculations involving simple interest 5.2 Manipulate the simple interest formula 5.3 Distinguish between, and calculate, flat and effective rates of interest 5.4 Estimate the effective rate of interest
6	Distinguish between simple and compound interest	6.1 Be able to calculate compound interest 6.2 Be able to compare calculations of simple and compound interest 6.3 Be able to calculate the present and accumulated values of a principal of money 6.4 Be able to solve problems that involve transposing the compound interest formula
7	Understand and apply annuities	7.1 Distinguish between future and present value of annuities 7.2 Be able to solve problems involving the future value of an annuity 7.3 Be able to calculate the present value of an annuity 7.4 Be able to calculate the periodic payment of a present value annuity (amortisation) 7.5 Be able to calculate the periodic payment of a future value annuity
8	Understand depreciation	8.1 Be able to calculate depreciation rates using the prime cost (straight line) method 8.2 Be able to calculate depreciation rates using the diminishing value (reducing balance) method 8.3 Be able to calculate depreciation rates using the units-of-production method 8.4 Be able to calculate the current written down value (book value) of an asset
9	Understand how to plot graphs	9.1 Be able to solve simple simultaneous equations using graphs 9.2 Be able to use simultaneous equations to solve problems in break-even analysis 9.3 Be able to draw and interpret non-linear graphs (including turning points)
10	Identify and understand various types of statistics	10.1 Describe the types of work undertaken by a statistician 10.2 Illustrate how to apply statistics 10.3 Define statistics in economics and commerce 10.4 Become aware of publications about statistics in economics and commerce 10.5 Understand the role of the Bureau of Statistics 10.6 Become familiar with various types of data
11	Visual presentation of data. Understand sources of information	11.1 Be able to construct tables 11.2 Be able to illustrate data using a graph, pie and bar chart, pictogram

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12	Understand measures of central tendency	11.3	Be able to condense raw data using a frequency distribution
		11.4	Be able to construct a histogram and frequency polygon
		11.5	Understand how statistics are misused
		12.1	Be able to calculate the mode, median and mean from grouped and ungrouped data
		12.2	Be able to calculate quartiles, deciles, percentiles and fractiles
13	Understand measures of dispersion	12.3	Be able to calculate and interpret the geometric mean
		12.4	Determine the significance of the skewness of a distribution
		13.1	Calculate common measures of dispersion from grouped and ungrouped data (including the range, interquartile range, mean deviation, and standard deviation)
		13.2	Calculate and interpret the coefficient of variation
14	Understand elementary probability concepts	14.1	Be able to calculate the probability of events
		14.2	Distinguish between mutually exclusive, dependent and independent events
		14.3	Be able to calculate conditional probabilities
		14.4	Be able to use the general addition law for probabilities
		14.5	Be able to apply Venn diagrams
		14.6	Be able to apply probability tree diagrams
15	Identify the properties of the normal distribution and normal curve	15.1	Identify the characteristics of the standard normal curve
		15.2	Illustrate examples of normally distributed data
		15.3	Be able to read z-score tables and find areas under the normal curve
		15.4	Find the z-score given the area under the normal curve
		15.5	Be able to compute proportions
		15.6	Be able to check whether data follow a normal distribution
16	Understand correlation analysis and relationships between variables	16.1	Be able to draw and interpret a scatter diagram
		16.2	Be able to calculate the product-moment correlation coefficient
		16.3	Be able to calculate the rank correlation coefficient
17	Understand linear regression	17.1	Be able to calculate the least-squares regression equation
		17.2	Be able to calculate the goodness of fit of an equation
		17.3	Be able to use the regression line for prediction
		17.4	Be able to use other forms of regression




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18	Interpret and use a range of index numbers commonly used in the UK business sector	18.1	Define an index number and explain its use
		18.2	Be able to perform calculations involving simple, composite and weighted index numbers
		18.3	Describe the basic structure of the Consumer Price Index (CPI) and perform calculations involving its use
		18.4	Illustrate other indexes used in the UK business sector
19	Describe a time series and explain its use	19.1	Identify and interpret the four basic measures of variation that appear in a time series analysis (secular trend, seasonal variation, cyclical variation and irregular variation)
		19.2	Identify and use common methods of fitting secular trend lines to time series (including semi-averages, moving averages, least-squares, exponential smoothing and a growth model)
		19.3	Be able to make forecasts
20	Understand the meaning of a categorical variable	20.1	Describe the difference between a single variable problem and a two variable problem
		20.2	Be able to construct a table for a single variable problem
		20.3	Be able to construct a contingency table for a two variable problem
		20.4	Be able to analyse single variable data
		20.5	Be able to analyse two variable data

### Recommended Learning Resources: Quantitative Methods for Business

<b>Text Books</b>	<ul style="list-style-type: none"> <li>Quantitative Methods for Business, Management and Finance by Louise Swift and Sally Piff. ISBN-10: 1403935289</li> <li>Quantitative Methods for Business by Donald Waters. ISBN-10: 027364694X</li> <li>Quantitative Methods for Business Decisions by Jon Curwin and Roger Slater. ISBN-10: 1861525311</li> </ul>
<b>Study Manuals</b> 	BCE produced study packs
<b>CD ROM</b> 	Power-point slides
<b>Software</b> 	None

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