

**The London Institute  
of Banking & Finance**

# Introduction to Quantitative Methods



The London Institute of Banking & Finance is a registered charity, incorporated by Royal Charter.

© The London Institute of Banking & Finance

**MODULE SPECIFICATION**

<b>1. Title</b>	<b>Introduction to Quantitative Methods</b>	
<b>2. Start date</b>	2016	
<b>3. Level of module</b>	Level 4 FHEQ	
<b>4. Number of credits</b>	15 Credits	ECTS Value
		7.5
<b>5. Status</b>	<p>A compulsory module within:</p> <ul style="list-style-type: none"> <li>• BSc (Hons) in Finance and Accounting for Financial Services (full- and part-time)</li> <li>• BSc (Hons) in Finance, Investment and Risk (full- and part-time)</li> <li>• BSc (Hons) in Politics, Finance and Economics (full- and part-time)</li> </ul> <p>An option module within:</p> <ul style="list-style-type: none"> <li>• Professional Certificate in Banking (PCertB®)</li> <li>• Professional Certificate in Financial Services (PCertFS®)</li> </ul>	
<b>6. Recommended prior modules</b>	N / A	
<b>7. Programmes of study to which module contributes</b>	<ul style="list-style-type: none"> <li>• Professional Certificate in Banking (PCertB®)</li> <li>• Professional Certificate in Financial Services (PCertFS®)</li> <li>• BSc (Hons) in Finance and Accounting for Financial Services</li> <li>• BSc (Hons) in Finance, Investment and Risk</li> <li>• BSc (Hons) in Politics, Finance and Economics</li> </ul>	
<b>8. Campus / Partner</b>	N / A	
<b>9. Syllabus overview</b>	<p>This module provides students with an understanding of the quantitative methods for finance and investment at an introductory level. This includes the ability to formulate problems into quantitative models, to aid the successful resolution of the problem. Students will learn how to apply statistical methods to analyse past data and infer future trends. Using output from mathematical and statistical models, students will learn to analyse, interpret and derive potential outcomes from quantitative information.</p> <p>Upon completion of this module students will be able to demonstrate an understanding of applying quantitative techniques to a range of problems in the accounting, finance and investment environment. Students will also be able to communicate the results of quantitative analyses in the contexts of accounting, finance and investment, to both specialists and non-specialists, recognising any limitations of the underlying models.</p> <p>It covers:</p> <ul style="list-style-type: none"> <li>• formulating problems into quantitative models;</li> <li>• applying statistical methods of analysis;</li> <li>• recognising limitations of the quantitative models; and</li> <li>• communicating the results of quantitative analysis.</li> </ul>	

**10. Intended subject specific learning outcomes and, as appropriate, their relationship to programme learning outcomes**

On completion of this module, students will be able to:

- a) formulate problems into quantitative models using IT applications eg Excel;
- b) demonstrate competency in numeric skills;
- c) apply statistical methods to analyse past data and infer future trends;
- d) derive outcomes, analyse and interpret output from mathematical and statistical models;
- e) select appropriate mathematical and statistical techniques for application to problems in the contexts of accounting, finance and investment;
- f) implement the analysis and evaluation of numerical solutions to business problems;
- g) demonstrate an understanding of appropriate application of quantitative techniques to a range of problems in accounting, finance and investment contexts;
- h) communicate the results of quantitative analyses into both specialists and non-specialists, recognising any limitations of the underlying models; and
- i) conduct basic mathematical and statistical investigations within the contexts of finance and investment.

These intended subject specific module learning outcomes contribute to the following programme learning outcomes:

- Professional Certificate in Banking: 01, 02, 03, 04, and 05.
- Professional Certificate in Financial Services: A3.
- BSc (Hons) in Finance and Accounting for Financial Services: A2, A3 and A6.
- BSc (Hons) in Finance, Investment and Risk: A3, A5 and A6.
- BSc (Hons) in Politics, Finance and Economics: A5.

**11. Intended generic learning outcomes and, as appropriate, their relationship to programme learning outcomes**

On completion of this module, students will be able to demonstrate achievement of the following generic learning outcomes:

1. Ability to analyse problems, identify appropriate solutions and advise on decisions.
2. Ability to communicate effectively in a manner appropriate to the context and audience.
3. Ability to find, select and organise data, abstract meaning from information and disseminate to others.
4. Development of critical thinking skills.
5. Development of numeric and quantitative skills.
6. Ability to learn through reflection on practice and experience.
7. Ability to work independently as well as apply skills of organisation and time management.

These intended generic learning outcomes contribute to the following programme learning outcomes:

- Professional Certificate in Banking: 02 and 03.
- Professional Certificate in Financial Services: B–D.
- BSc (Hons) in Finance and Accounting for Financial Services: B–D.
- BSc (Hons) in Finance, Investment and Risk: B–D.
- BSc (Hons) in Politics, Finance and Economics: B–D.

## **12. Learning and teaching**

### **A. Learning hours**

For a module of study worth 15 credits, the total expected study hours are 150 (ie ten hours per credit). The contact hours will depend upon the student's mode of study.

### **B. Tuition support**

#### Distance learning

Distance learning allows students to study independently within a clear framework, but at a pace that suits their personal circumstances and study needs. Over their course of study (24 weeks), students will be provided with comprehensive learning materials, study guides and will be assigned to a subject specialist academic tutor to support their studies. Distance learners will have regular contact with The London Institute of Banking & Finance Academic Tutor and further practical support is available from The London Institute of Banking & Finance Student Services.

#### Flexible learning

Flexible learning allows distance learners to opt for two face-to-face workshops of approximately six hours each, evenly spread at appointed dates in each session (24 weeks).

#### Dispersed campuses

Dispersed campus students will have regular face-to-face sessions over each session of study. The timing will depend upon local timetabling arrangements (eg via evening classes).

#### Full-time students

Full-time students will study on a semester basis supported by their module lecturer. The weekly timetable will be advised at the start of the programme.

### **C. Learning materials and learning outcomes**

The learning and teaching strategy is designed to ensure that the students achieve the learning outcomes by the end of the module. The learning and teaching methods include formal lecture and tutorial (full-time), online learning support from an appointed lecturer (distance / flexible learning), private study of text and other supporting materials, a formal coursework assignment, informal exercises (both individual and group-based), and pooling of experience and knowledge through class / forum and individual discussion. The assessment strategy is designed to achieve a balance between testing the student's skills of knowledge recall and understanding, and those of research and application.

### **D. Reading**

Students will be provided with a core text or equivalent, as detailed below, but will also be expected to read and research the recommended reading on the course website. Lecturers may also recommend additional reading throughout the module.

#### Essential reading

- Oakshott, L. (2012) *Essential Quantitative Methods for Business, Management and Finance*, Palgrave Macmillan. 5<sup>th</sup> Edition

Each student will have access to the Virtual Learning Environment (VLE) and to *KnowledgeBank* learning resources (an electronic library service). A list of further readings relating to the syllabus, coursework and end of course assignments can be found on the VLE.

It should be noted that due to the rapidly changing environment that encapsulates the financial services sector, the reading list above is indicative only. It is subject to review and update at the discretion of the module team. An up-to-date reading list is published in the Student Study Guide issued at the commencement of the module.

### 13. Assessment

Component	Duration / Length	Weighting
Component 1 Examination	Two hours	100%

There is one summative assessment component for this module. A variety of question styles and approaches may be included in the examination.

The question paper will be structured as follows:

- **Section A** consists of five compulsory questions worth 6 marks each.
- **Section B** consists of two 20-mark questions, **one** of which must be answered.

The pass mark for this component is 40%.

Time allowed: Two hours.

A scientific calculator may be used but it must not be programmable, nor have a wireless-communications capability, nor be capable of storing textual information. It must also not require a mains electricity supply. Calculators with any further functions are not allowed in the examination room.

Students should be aware of the regulations governing the award of credit and the arrangements for compensation, condonement and the capping of marks. Students should also be aware of the regulations relating to the resitting of assessment components and / or the retaking of modules. This information is contained within The London Institute of Banking & Finance's General and Academic Regulations for Students sections 7, 8 and 9.

#### Module Grading

A student's module performance grade is determined by their overall weighted average percentage score in accordance with the following conversion table:

Distinction: 70% – 100%  
Pass: 40% – 69%

### 14. Syllabus

#### 1. Introduction to basic mathematical concepts

- Definition of key terms.
- Order of mathematical operations.
- Rounding – decimal places / significant figures.
- Roots and powers.
- Percentages, proportions and fractions.
- Introduction to variables and algebraic functions.
- Algebraic rearrangement.
- Linear, simultaneous and quadratic equations and their solution.
- Breakeven analysis.

## **2. Data collection and presentation**

- Definition of discrete and continuous data.
- Frequency distributions.
- Data tabulation.
- Methods of data presentation.
- Correct application of presentation methods in the business world.
- Interpretation of data in the business world.

## **3. Summarising data**

- Measures of central tendency and their correct selection and application.
- Calculation of averages for different types of data / data sets.
- Measure of dispersion and their calculation.
- Application of summarised values to different data sets.
- Skewed data.

## **4. Index numbers**

- Identification of indices in the business environment.
- Price and quantity indices.
- Creation of single-item indices.
- Deflation of index series.
- Laspeyre and Paasche indices.
- Usefulness within a business context.

## **5. Probability**

- The concept of probability.
- Simple and General laws of probability.
- Basic binomial probability.
- Expected values.
- Payoff tables.
- Continuous probability distributions / normal distributions.

## **6. Financial Mathematics**

- Simple and compound interest.
- Reducing balance depreciation calculations.
- The time value of money (APR).
- Payoff tables and decision trees.
- Simple decision rules for evaluating alternative projects.
- Internal rate of return.
- Annuity and pensions.
- Loans and mortgages.
- Application to business.

## **7. Introduction to forecasting**

- The usefulness of regression analysis.
- Scatter diagrams.
- Simple least squares regression.
- Simple linear forecasting.
- Moving averages.
- Time series analysis.
- Link to decision-making in the business environment.