Xi'an Jiaotong-Liverpool University

西交利物浦大学

Department of Business, Economics and Management

ECO111 Quantitative Methods

Instructor: Tiago Freire (TF) and Haifeng Fu (HF)
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Office: TF: BB-454   HF: BB-434
Office Hours: TF: Tuesday 17:30–18:30hrs   HF: Friday 14:00–15:00hrs

Lecture Times: Tuesday 11:00–13:00hrs   Room: B2:B102
                  Tuesday 15:00–17:00hrs   Room: B2:B102

Course Description

Aims: The module aims to provide an introduction to quantitative methods that will develop mathematical, quantitative and statistical skills for the study of Accounting, Finance, Economics and related subjects.

Learning outcomes: Upon completion of this module, students should be able to: (i) demonstrate a basic understanding of mathematical tools and their applications to accounting, finance and economics; (ii) understand the fundamental concepts of statistics and probability; (iii) understand basic principles of random sampling, the nature of sampling error and the need for estimation; (iv) explain the rules of hypothesis testing; and (v) explain the relation between two random variables using correlation and regression analyses.

Syllabus: We will cover the following topics: (i) Linear equations (graphs, algebraic solution of simultaneous equations, supply and demand analysis, algebra, transposition of formulae); (ii) Non-linear equations (quadratic, exponential, and natural logarithmic functions); (iii) Revenue, cost and profit functions and break-even analysis; (iv) Time value of money (simple and compound interest,

discounting and present value, investment appraisal, annuities and other financial instruments); (v) Data presentation using various visual approaches (bar charts, pie charts etc.); (vi) Measures of central locations and dispersion; (vii) Fundamental concepts of probability; (viii) Probability distributions (normal distribution, binomial distribution, Poisson distribution); (ix) Sampling, distribution of sample means and the central limit theorem; (x) Hypothesis testing (null vs. alternative hypothesis, one- and two-tailed tests); (xi) Regression and correlation analyses.

Textbooks

There is a required reading for this module:

- Burton, G., Carrol G., and Wall S. 2001. *Quantitative Methods for Business and Economics* 2nd Edition. Prentice-Hall

You may also want to use the following books to improve your understanding of certain topics:

- Waters, D. 2011. *Quantitative Methods for Business*. 5th Edition. Prentice-Hall.
- Jacques I. 2009. *Mathematics for Economics and Business*. 6th Edition. Pearson.

Lecture Schedule

The schedule for this module is attached at the end of the syllabus. This is a tentative schedule and may be subject to changes without notice.

Tutorials

You tutors are currently the following:

1. Groups: Y2-ECO-A1, Y2-ECO-A2 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Wed. 10:00-11:00hrs Tutorial Room: B4:BA218

2. Groups: Y2-ACC-B5, Y2-ACC-B6, Y2-ACC-A1 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Wed. 11:00-12:00hrs Tutorial Room: B4:BA218

3. Groups: Y2-ECO-A5, Y2-ECO-A6 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Fri. 12:00-13:00hrs Tutorial Room: B4:BA218

4. Groups: Y2-ACC-A2, Y2-ACC-A3 - Tutor: Haifeng Fu (e-mail: Haifeng.Fu02@xjtlu.edu.cn) Tutorial Time: Fri. 9:00-10:00hrs Tutorial Room: B4:BA305

5. Groups: Y2-ECO-A7, Y2-BAD-A3, Y2-BAD-A4 - Tutor: Haifeng Fu (e-mail: Haifeng.Fu02@xjtlu.edu.cn) Tutorial Time: Fri. 10:00-11:00hrs Tutorial Room: B4:BA218

6. Groups: Y2-ECO-B, Y2-ECO-C - Tutor: Haigen Fu (e-mail: Haifeng.Fu02@xjtlu.edu.cn) Tutorial Time: Fri. 12:00-13:00hrs Tutorial Room: B4:BA318

7. Groups: Y2-ACC-B1, Y2-ACC-B2 - Tutor: Chongcheul Cheong (e-mail: Chongcheul.Cheong@xjtlu.edu.cn) Tutorial Time: Fri. 9:00-10:00hrs Tutorial Room: B4:BA105

8. Groups: Y2-ACC-A4, Y2-ACC-A5 - Tutor: Chongcheul Cheong (e-mail: Chongcheul.Cheong@xjtlu.edu.cn) Tutorial Time: Thurs. 10:00-11:00hrs Tutorial Room: B4:BA205

9. Groups: Y2-ECO-A3, Y2-ECO-A4 - Tutor: Simon Rudkin (e-mail: Simon.Rudkin@xjtlu.edu.cn) Tutorial Time: Wed. 10:00-11:00hrs Tutorial Room: B4:BA105

10. Groups: Y2-ACC-B3, Y2-ACC-B4 - Tutor: Simon Rudkin (e-mail: Simon.Rudkin@xjtlu.edu.cn) Tutorial Time: Thurs. 12:00-13:00hrs Tutorial Room: B4:BA418

11. Groups: Y2-BAD-A1, Y2-BAD-A2 - Tutor: Bo Yang (e-mail: Bo.Yang@xjtlu.edu.cn) Tutorial Time: Fri. 10:00-11:00hrs Tutorial Room: B4:BA318

12. Groups: Y2-ENF-A - Tutor: Bo Yang (e-mail: Bo.Yang@xjtlu.edu.cn) Tutorial Time: Thurs. 14:00-15:00hrs Tutorial Room: B4:BA205

You should, however, check the updated list on XJTLU's intranet before your first tutorial.

Assignment Details

During the semester you will be given two types of assignments:

Formative

During the semester you will be given five (5) topic quizzes and five (5) tutorial assignments through ICE. These will not be marked, but you are strongly encouraged as they are essential for the understanding of the material. Furthermore, during tutorials we will be asking students at random to answer questions from the tutorial assignment.

Summative

There is a final project for this module, where you will be asked to make a map of the course content. This final project consists of 10% of your final grade and must be submitted through ICE on the 7th of December. Details on this final project will be provided on ICE.

Students are strongly encouraged to go beyond these assigned questions and also work through all questions in the textbooks mentioned in this syllabus.

Evaluation

The final project is worth 10% of your final grade, while the final exam is worth 90% of your final grade.

Miscellaneous

If you want to meet your lectures (Tiago Freire and Haifeng Fu) or your tutors (see above) during our office hours, please e-mail us first. In every e-mail please start the e-mail with subject heading **ECO111** (for mail filters).

ECO111- Quantitative Methods									
Week	Lecture		Instructor	Topics	Description	Burton, Carrol & Wall	Quiz	Tutorial	Project
1	1	04/09/12	Tiago Freire	Basic Maths; Linear Programming	Simple Algebra, Solving Equations, Simultaneous Equations, Supply and Demand Analysis; Inequalities, Revenue, Cost and Profit functions and Solving Linear Program; Break Even Analysis	Ch 12 & Ch 10			
2	2	11/09/12	Tiago Freire	Calculus	Quadratic Functions; Differentiation; Rules of Differentiation; Turning Points; Partial Differentiation; Integration	Ch 11	1		
3	3	18/09/12	Haifeng Fu	Data Presentation and Collection	Frequency Distribution; Frequency Tables; Discrete or continuous Data; Histograms; Frequency Polygon; Frequency Curve; Cumulative Frequency Curves; Bar Charts; Pie Charts; Lorenz Curve	Ch 1		1	
4	4	25/09/12	Haifeng Fu	Central Location and Dispersion	Measures of Central Dispersion; Normal and Skewed Distribution; Measures of Dispersion; Coefficient of Variation	Ch 2	2		
5		02/10/12		National Day	No Classes				
6	5	09/10/12	Tiago Freire	Index Numbers	Constructing an Index Number; Weighted aggregate Index Numbers; Laspeyres Index; Paasche Index; Changing the base year; Price and Quantity Relative Index Numbers; Retail Price Index	Ch 8		2	
7	6	16/10/12	Tiago Freire	Time Value of Money	Exponential, and Natural logarithmic functions. Simple and Compound Interest; Discount and Present Value; Investment Appraisal; Depreciation; Annuities and other financial instruments.	Ch 9	3		

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Week	Lecture			Instructor	Topics	Description	Burton, Carrol & Wall	Quiz	Tutorial	Project
8		23/10/12			Midterm Week (no midterm)	No Classes/No Midterm				
9	7	30/10/12		Haifeng Fu	Probability	Probability Calculations; Mutually Exclusive Events; Venn Diagrams; Independent Events; Conditional Probability; Decision trees; Expected Value; Permutations and Combinations	Ch 5		3	
10		06/11/12								
11	8	13/11/12		Haifeng Fu	Probability Distributions	Normal Distribution; Binomial Distribution; Poisson Distribution	Ch 6	4		
12	9	20/11/12		Tiago Freire	Sampling and Test of Hypothesis	Types of Sample; Distribution of Means; Central Limit Theorem; Confidence Intervals; Test of Hypothesis; Student t-Distribution	Ch 7		4	
13		27/11/12		Tiago Freire				5		
14	10	04/12/12		Haifeng Fu	Regression and Correlation	Regression Analysis; Correlation Spearman's Coefficient of Rank Correlation; Multiple Regression	Ch 3		5	Mapping Exercise Due
15	11	11/12/12		Tiago Freire	Review	TBA				