Xi'an Jiaotong-Liverpool University
西交利物浦大学

International Business School Suzhou

ECO111 Quantitative Methods

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Office: BB454
Office Hours: By appointment only

Lecture Times: Friday 14:00–16:00hrs Room: SC176

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-ACC-A1, Y2-ACC-A2, Y2-ACC-A3, Y2-ACC-A4 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Thurs. 15:00-16:00hrs Tutorial Room: BA216
2. Groups: Y2-ACC-A5, Y2-ACC-A6 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Thurs. 14:00-15:00hrs Tutorial Room: BA216
3. Groups: Y2-ACC-B1, Y2-ACC-B2, Y2-ACC-B3 - Tutor: Tiago Freire (e-mail: Tiago.Freire@xjtlu.edu.cn) Tutorial Time: Wed. 11:00-12:00hrs Tutorial Room: BA216

4. Groups: Y2-ACC-B4, Y2-ACC-B5, Y2-ACC-B6 - Tutor: Bo Yang (e-mail: Bo.Yang@xjtlu.edu.cn) Tutorial Time: Mon. 13:00-14:00hrs Tutorial Room: BA305
5. Groups: Y2-BAD-A - Tutor: Bo Yang (e-mail: Bo.Yang@xjtlu.edu.cn) Tutorial Time: Mon. 11:00-12:00hrs Tutorial Room: BA305

You should, however, check the updated list on your own schedule 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) tutorial assignments through ICE. You will be required to hand in your tutorial assignment at the beginning of the tutorial. 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 8th 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.

ECO111- Quantitative Methods								
Week	Lecture		Instructor	Topics	Description	Burton, Carrol & Wall	Tutorial	Project
1	1	06/09/12	Simon Rudkin	Basic Maths; Linear Programming	Simple Algebra, solving Equations, Simultaneous Equations, Inequalities, Graphs and Functions. Solving Linear Program; Break Even Analysis	Ch 12 & Ch 10		
2	2	13/09/12	Tiago Freire	Calculus	Differentiation; Rules of Differentiation; Turning Points; Partial Differentiation; Integration	Ch 11		
3	3	20/09/12	Simon Rudkin	Time Value of Money	Simple and Compound Interest; Discount and Present Value; Investment Appraisal; Depreciation; Annuities and other financial instruments.	Ch 9		
4	4	27/09/12	Tiago Freire	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	
		04/10/12		National Day (No Lectures)				
5	5	11/10/12	Tiago Freire	Central Location and Dispersion	Measures of Central Dispersion; Normal and Skewed Distribution; Measures of Dispersion; Coefficient of Variation	Ch 2		
6	6	18/10/12	Tiago Freire	Probability	Probability Calculations; Mutually exclusive events; Independent Events; Conditional Probability; Expected Value; Permutations and Combinations	Ch 5	2	Submit Group Composition
7		25/10/12		Midterm Week (no midterm)	No Midterm			
8	7	01/11/12	Tiago Freire	Probability	Probability Calculations; Mutually exclusive events; Independent Events; Conditional Probability; Expected Value; Permutations and Combinations	Ch 5		
9	8	08/11/12	Tiago Freire	Probability Distributions	Normal Distribution; Binomial Distribution; Poisson Distribution	Ch 6	3	
10	9	15/11/12	Tiago Freire	Probability Distributions	Normal Distribution; Binomial Distribution; Poisson Distribution	Ch 6		
11	10	22/11/12	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	
12	11	29/11/12	Tiago Freire	Sampling and Test of Hypothesis		Ch 7		
13	12	06/12/12	Tiago Freire	Regression and Correlation	Regression Analysis; Correlation Spearman's Coefficient of Rank Correlation; Multiple Regression	Ch 3	5	Mapping Exercise Due
14	13	13/12/12	Tiago Freire	Review	TBA			