Xi'an Jiaotong-Liverpool University

西交利物浦大学

International Business School Suzhou

ECO111 Quantitative Methods

Instructor: Tiago Freire
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Office: BB454
Office Hours: By appointment only

Lecture Times: Friday 11:00–13:00hrs   Room: SA169

Teaching Assistant: Ya Lv   E-mail: Ya.Lv13@student.xjtlu.edu.cn

Tutorial Times:	Room
(02) Tues. 9:00-10:00hrs	P218
(03) Tues. 10:00-11:00hrs	P202
(04) Mon. 10:00-11:00hrs	P221
(05) Mon. 15:00-16:00hrs	P223
(06) Tues. 10:00-11:00hrs	P218
(07) Tues. 14:00-15:00hrs	P215
(08) Mon. 9:00-10:00hrs	P221
(09) Tues. 16:00-17:00hrs	P215
(10) Tues. 17:00-18:00hrs	P215

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: (L1) demonstrate a basic understanding of mathematical tools and their applications to accounting, finance and economics; (L2) understand the fundamental concepts of statistics and probability; (L3) understand basic principles of random sampling, the nature of sampling error and the need for estimation; (L4) explain the rules of hypothesis testing; and (L5) explain the relation between two random variables using correlation and regression analyses.

Syllabus: We will cover the following topics: (T1) Linear equations: graphs, algebraic solution of simultaneous equations, supply and demand analysis, algebra, transposition of formulae; (T2) Non-linear equations: quadratic, exponential, and natural logarithmic functions. Revenue, cost and profit functions and break-even analysis; (T3) Time value of money: simple and compound interest, discounting and present value, investment appraisal, annuities and other financial instruments; (T4) Fundamental concepts of probability; (T5) Probability distributions: normal distribution, binomial distribution, Poisson distribution; Sampling, distribution of sample means and the central limit theorem; (T6) Hypothesis testing: null vs. alternative hypothesis, one- and two-tailed tests; (T7) 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.

- David S. Moore, George P. Mccabe, Bruce A. Craig *Introduction to the Practice of Statistics.* W.H. Freeman and Company

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.

Assignment Details

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

Formative

During the semester you will be given six (6) 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 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 midterm exam is worth 20%, while the final exam is worth 70% of your final grade.

Schedule

Week	Lecture	Date	Instructor	Topics	Description	Burton, Carrol & Wall	Tutorial	Project
				ECO111- Quantitative Methods				
1	1	05/09/14	Tiago Freire	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	12/09/14	Tiago Freire	Calculus	Differentiation; Rules of Differentiation; Turning Points; Partial Differentiation; Integration	Ch 11		
3	3	19/09/14	Tiago Freire	Time Value of Money	Simple and Compound Interest; Discount and Present Value; Investment Appraisal; Depreciation; Annuities and other financial instruments.	Ch 9	1	
4	4	26/09/14	Tiago Freire	Time Value of Money				
		03/10/14		National Day				
5	5	10/10/14	Tiago Freire	Probability	Probability Calculations; Mutually exclusive events; Independent Events; Conditional Probability; Expected Value; Permutations and Combinations, Measures of Central Dispersion; Normal and Skewed Distribution; Measures of Dispersion; Coefficient of Variation	Ch 5 & 2	2	
6	6	17/10/14	Tiago Freire	Probability				

					ECO111- Quantitative Methods			
Week	Lecture	Date	Instructor	Topics	Description	Burton, Carrol & Wall	Tutorial	Project
7		TBA		Midterm Week	Midterm Exam			
8	7	31/10/14	Tiago Freire	Probability Distributions	Normal Distribution; Measures of Central Dispersion; Normal and Skewed Distribution; Measures of Dispersion; Coefficient of Variation	Ch 6	3	
9	**8**	**07/11/14**	**Tiago Freire**	**Sampling Distributions**	**The Sampling Distribution of a Sample Mean; Sampling Distributions for Counts and Proportions**			
10	**9**	**14/11/14**	**Tiago Freire**	**Introduction to Inference**	**Estimating with Confidence; Tests of Significance**	**Ch 7**		
11	**10**	**21/11/14**	**Tiago Freire**	**Inference for Distributions**	**Use and Abuse of Tests; Inference for the Mean of a Population**		**4**	
12	11	28/11/14	Tiago Freire	Regression and Correlation	Regression Analysis; Correlation Spearman's Coefficient of Rank Correlation; Multiple Regression	Ch 3	5	
13	12	05/12/14	Tiago Freire					Mapping Exercise Due
14	13	12/12/14	Tiago Freire	Review	TBA		6	