

2012-2013

## Applied Statistics for Finance and Economics

Category: **Economics**

Code: **IS 239**

Level: **5**

Credits: **15**

### Teaching Pattern

	Week 1	Week 2	Week 3	Week 4
<b>Seminar</b>	3 x 1.5hrs	3 x 1.5hrs	3 x 1.5hrs	3 x 1.5hrs
<b>Lecture</b>	3 x 1.5hrs	3 x 1.5hrs	3 x 1.5hrs	3 x 1.5hrs
<b>Workshops</b>	✓	✓	✓	✓
<b>Tutorial</b>	✓			

\*you will be expected to do approximately 98 hours of independent study over the 4 weeks in addition to the above formal teaching hours.

### Outline

The primary aim of this module is to introduce a wide range of statistical research methods for the analysis of the financial quantitative; advancing the students research skills through practical experience. The students will improve their skills in reading and evaluating journal articles, research papers and will develop new skills to conduct empirical use of different statistical methods through a financial project.

The students will also learn how to analyse financial data while implementing several forms of appropriate statistical methods with the application of practical statistics, by learning and using two specific statistical econometrical software packages namely STATA and SAS.

At the conclusion of the module the students will be familiar with topics such as ANOVA, Hypotheses testing, Parametric and Non-Parametric testing principles, simple Linear Regression models

### Module Structure

The module investigates 12 important topics in the field of Statistics, which include 12 seminars and 8 Workshops. There will be 3 lectures and 3 seminars per week covering 3 key topics. Each topic includes 1.5 hours of Lecture and 1.5 hours of Seminar (36 Teaching Hours). Each lecture will be based on a set of readings and exercises, focusing on a particular journal article, working paper or an exercise which is designed to help the student to explore each topic in relation to the preceding lecture.

Moreover after each seminar the students will have an outline test to refresh their knowledge, after each week there will be 2 workshops using the STATA and SAS software programme. There will be a 2 hour workshop for each software programme to introduce the student to computer techniques of analysing financial data. At the end of the module the student is required to write an individual statistical report with implementation using the CAPM model on the London Stock Exchange and write a Final Exam.

Week	session	1.5hr Lecture	1.5hr Seminar	Readings
1	1	Basic concepts in statistics analysis	Basic concepts in statistics analysis: Case study research and survey research	Ford & Strange (1999) Brouthers & Bamossy (1997)
	2	Some statistical features of Financial data	Some statistical features of Financial data	Dong, Buckley & Mirza (1997)
	3	Measuring of Dispersion , the shape of distributions and testing for normality	Measuring of Dispersion , the shape of distributions and testing for normality	PN ch. 2
	<b>Workshop (2hrs)</b>	Introduction to SAS and Measuring of Dispersion , the shape of distributions and testing for normality		FM
	<b>Workshop (2hrs)</b>	Introduction to STATA and Measuring of Dispersion , the shape of distributions and testing for normality		AH Ch. 1
2	4	Hypothesis testing of mean with single population	Hypothesis testing of mean with single population	ASW Ch.8 PN 8 and 9 WW 8 and 9
	5	Hypothesis testing of mean with two populations	Hypothesis testing of mean with two populations	ASW Ch.11 PN 8 and 9 WW 17
	6	Hypothesis testing of variances with single population	Hypothesis testing of variances with single population	ASW Ch.19 PN 8 Ch.10 WW Ch. 16
	<b>Workshop (2hrs)</b>	Testing of mean and variances with single population. Hypothesis testing of mean with two populations		FM
	<b>Workshop (2hrs)</b>	Testing of mean and variances with single population. Hypothesis testing of mean with two populations		AH Ch. 1
3	7	Hypothesis testing of variances with two populations	Hypothesis testing of variances with two populations	ASW Ch.19 PN 8 Ch.10 WW Ch. 16
	8	Goodness of fit test	Goodness of fit test	ASW Ch.19 PN 8 Ch.16 MB Ch. 6 WW Ch. 10
	9	No-parametric tests	No-parametric tests	ASW Ch.19 PN 8 Ch.10 WW Ch. 16
	<b>Workshop (2hrs)</b>	Testing of variances with two populations, goodness of fits test, no-parametric test		FM
	<b>Workshop (2hrs)</b>	Testing of variances with two populations, goodness of fits test, no-parametric test		AH Ch. 1- 2
4	10	Introduction to ANOVA and non-parametric alternatives ANOVA: one way and RCR test	Introduction to ANOVA and non-parametric alternatives ANOVA: one way and RCR test	ASW Ch. 19 PN Ch. 16 WW. 10
	11	Linear Correlations analysis	Linear Correlations analysis	ASW Ch. 19 PN Ch. 12 WW. 15
	12	Linear Regression Analysis. Multiple regressions.	Linear Regression Analysis. Multiple regressions.	ASW Ch. 14 PN Ch. 12 WW. 11-12
	<b>Workshop (2hrs)</b>	Analysis of ANOVA and non-parametric, Linear Correlations analysis, multiple regressions		FM
	<b>Workshop (2hrs)</b>	Analysis of ANOVA and non-parametric, Linear Correlations analysis, multiple regressions		AH Ch. 2-5

## Learning Outcomes

On-line test after the seminar class (three times per week)

## Assessed Learning Outcomes

- Demonstrate a critical understanding of the statistical and analytical techniques which are used by economists and financiers to compute CAPM model
- Demonstrate a critical understanding of the conceptual issues and themes related to the basic statistics.
- Write and demonstrate understanding of the simple statistics analysis of market stock exchange data with implementation of CAPM model.

## Contacts

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## Indicative Reading List

## Core Reading List

- Anderson D.R., Sweeny D.J, Williams T.A., Freeman J., Shoemith E. (2007) *Statistics for Business and Economics (ASW)*
- M. Barrow, *Statistics for Economics, Accounting and Business Studies (MB)*
- Newbold P. (1995) *Statistics for Business and Economics, 4<sup>th</sup> Edition (PN)*
- Wonnacott T.H. & Wonnacott R.J. (1990) *Introductory to Statistics for Business and Economics, 4<sup>th</sup> Edition (WW)*
- Field, A. & Miles, J. (2010) *Discovering statistics using SAS*. Sage. (FM)
- Adkins L.C. & Hill R.C. (2007) *Using Stata for Principles of Econometrics, 3th Edition (AH)*
- Brouthers, K.D. & Bamossy, G.J. (1997) 'The role of key stakeholders in international joint venture negotiations: case studies from Eastern Europe.' *Journal of International Business Studies*, 28(2): 285-308.
- Dong, H., Buckley, P.J. & Mirza, H. (1997) 'International joint ventures in China from a managerial perspective: a comparison between different sources of investment.' In G. Chrysochoidis, C. Millar and J. Clegg (eds), *Internationalisation strategies*, pp.171-191. Basingstoke: Macmillan.
- Ford, S. & Strange, R. (1999) 'Where do Japanese manufacturing firms invest within Europe, and why?' *Transnational Corporations*, 8(1): 117-42.  
[Journal available at: [www.unctad.org](http://www.unctad.org)]
- Ghauri, P. & Gronhaug, K. (2010). *Research methods in business studies*. Fourth edition. Pearson.
- Saunders, M, Lewis, P. & Thornhill, A. (2009) *Research methods for business students*. Fifth edition. Prentice Hall.
- Studenmund, A.H. (2001) *Using econometrics: a practical guide*. Fourth edition. Addison-Wesley.
- Yin, R.K. (2009) *Case study research: design and methods*. Fourth edition. Sage.

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