

MS4504: STATISTICS FOR ECONOMIC AND FINANCIAL MODELLING

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Statistics for Economic and Financial Modelling

Subject Code

MS - Management Sciences

Course Number

4504

Academic Unit

Management Sciences (MS)

College/School

College of Business (CB)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

CB2200 Business Statistics

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to:

- Provide students with a solid understanding of the range of statistical modelling techniques used in economic and financial analysis; Special emphasis is placed on the analysis of economic and financial data;
- Demonstrate the relevance of these statistical modelling techniques through examples and case studies;
- Acquaint students with the necessary computing knowledge to execute the analysis;

Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Apply the statistical modelling techniques learnt in the course to solve real world problems in economics and finance		x	x
2	Select the most appropriate statistical modelling techniques for a given problem	x	x	
3	Evaluate the validity of the statistical modelling findings	x	x	
4	Appreciate the relevance of statistics in economics and finance		x	
5	Understand the basic operations of financial markets and apply such knowledge in investment and in making other financial decisions		x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture / Tutorial	Presents theories and software demonstrations to a large group	1, 2, 3, 4, 5
2	Computer laboratory	Software demonstrations, computer assignments	1, 2, 3, 4, 5
3	Group discussions	Group discussions on major issues in class	1, 2, 3, 4, 5

4	Reading assignments	Students are assigned to read selected pages of compulsory and additional texts	2, 3, 4, 5	
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Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Computer assignment / problem set Students work individually or in small groups to analyse real-world data set(s) using a software taught in lectures.	1, 2, 3, 4	20	
2	Test The test is designed to assess students' knowledge of selecting and applying the most suitable statistical technique to solve real-world problems.	1, 2, 3, 5	20	

Continuous Assessment (%)

40

Examination (%)

60

Examination Duration (Hours)

2

Additional Information for ATs**Examination**

The exam is designed to assess students' knowledge of selecting and applying different statistical methods to solve problems. Computer output may be used for students' interpretation.

Assessment Rubrics (AR)**Assessment Task**

Computer assignment / problem set

Criterion

RECOGNIZE the most appropriate model to model a data set and INTERPRET software printouts

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal level

Assessment Task

Test

Criterion

GRASP of subject and UNDERSTANDING of course materials

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal level

Assessment Task

Written Examination

Criterion

Capacity to ANALYZE and ORGANISE ; and GRASP of subject material

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal level

Part III Other Information

Keyword Syllabus

Regression Analysis

Least squares estimates; inference about regression parameters; residual analysis

Model Building and Variables Selection

Criteria for comparing models; sequential F-test; variables selection strategies

Forecasting Methods

Moving averages; exponential smoothing; models for seasonal data

Time Series Analysis

Stationarity of time series; autocorrelations and partial autocorrelations; ARIMA models

Selected Advanced Topics

Transfer function models / intervention analysis / cointegration / ARCH & GARCH models / option pricing models

Reading List

Compulsory Readings

Title	
1	Dielman, T.E. Applied Regression Analysis for Business and Economics, Duxbury, latest edition
2	Bowerman, B.L. and R.T. O'Connell, Forecasting and Time Series: An Applied Approach, Duxbury, latest edition

Additional Readings

Title	
1	Brooks, C. Introductory Econometrics for Finance, Cambridge, latest edition
2	DeLurgio, S.A., Forecasting Principles and Applications, McGraw-Hill, latest edition
3	Pindyck, R.S. and K.L. Rubinfeld, Econometric Models and Economic Forecasts, McGraw-Hill, latest edition
4	Watsham, T.J. and K. Parramore, Quantitative Analysis in Finance, Thomson Publishing Asia, latest edition