MS4254: STATISTICS FOR ECONOMICS AND FINANCE

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Statistics for Economics and Finance

Subject Code
MS - Management Sciences
Course Number
4254

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
MS3252 Regression Analysis and MS4212 Predictive Analytics and Forecasting

Precursors
Nil

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 models used for economic and financial analysis; Demonstrate the relevance of these models and techniques throughexamples and case studies;
- Acquaint students with the contemporary computer software including SAS and R to execute the analysis;
- Provide students with a basic knowledge of economics and finance.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	apply the statistical models and techniques learnt in the course to solve real world problems;	40		x	x
2	select the most appropriate statistical techniques for a given problem;	10	x		
3	translate a general question into specific questions for technical analysis;	10	x		
4	attain a working knowledge of the relevant academic literature in econometrics;	10	x		
5	evaluate the validity of the statistical findings;	10		x	x
6	appreciate the relevance of statistics in economics and finance;	10		x	x
7	understand the basic operations of financial markets and apply such knowledge in investment and in making other financial decisions;	5		x	x
8	communicate and explain the findings to non-specialists	5		x	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	Formal classes where the course lecturer presents the course material	1, 2, 3, 4, 5, 6, 7	

2	Computer Laboratory	Software demonstrations, computer assignments	1, 2, 3, 5, 6, 7	
3	Group Presentation	Group of students are asked to present certain topics in class.	8	
4	Group Discussion	Group discussions on major issues in class.	1, 2, 3, 5, 6, 7	
5	Reading Assignments	Supplementary reading to assist understanding of the course material	2, 3, 4, 5, 6, 7	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Computer assignmentStudents will analyse the problems with the data provided using an appropriate software package; students should demonstrate their analytical ability and computing skills.	1, 2, 5	5	
2	Group projectStudents will work in groups; prepare and deliver presentations on selected topics; students are required to search information for the topics from multiple information sources.	8	5	
3	TestThe test will assess the students' basic understanding of the material learnt in the first half of the course.	1, 2, 3, 4, 5, 6, 7	20	

Continuous Assessment (%)

30

Examination (%)

70

Examination Duration (Hours)

2

Additional Information for ATs

Written Examination
The exam will assess the students' understanding of the material learnt in the course and their ability to apply subject related knowledge.

Assessment Rubrics (AR)

Assessment Task
Computer Assignment

Criterion
Assignment is designed to enforce students' understanding of the economic models and econometric techniques learnt in the course.

Excellent (A+, A, A-)
Strong evidence of knowing how to apply the relevant software in performing econometric analysis.

Good (B+, B, B-)
Evidence of knowing how to apply the relevant software in performing econometric analysis

Fair (C+, C, C-)
Some evidence of knowing how to apply the relevant software in performing econometric analysis

Marginal (D)
Sufficient familiarity with the subject matter to enable the student to progress without repeating the assignment

Failure (F)
Little evidence of familiarity with the subject matter

Assessment Task
Group project

Criterion
Group of students are asked to present the findings of the project in class.

Excellent (A+, A, A-)
Clearly and correctly states most critical points and important findings of the project. Discusses issues critically. Demonstrates awareness of relevant implications for practical issues. Good presentation skills. Evidence of familiarity with literature.

Good (B+, B, B-)
Clearly and correctly states some critical points and important findings of the project. Discusses issues critically. Demonstrates some awareness of relevant implications for practical issues. Good presentation skills.

Fair (C+, C, C-)
Clearly and correctly states some critical points and the findings.

Marginal (D)
States a few critical points and the findings.

Failure (F)
Little evidence of familiarity with the subject matter; weakness in critical and analytic skills.

Assessment Task
Test

Criterion

A test is given to assess students' professional knowledge of the concepts, the techniques and the applications they have learned in the past weeks.

Excellent (A+, A, A-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

Some evidence of grasp of subject, little evidence of critical capacity and analytic ability; reasonable understanding of issues.

Marginal (D)

Sufficient familiarity with the subject matter to enable the student to progress without repeating the case report.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Assessment Task

Written examination

Criterion

The examination is designed to assess students' professional knowledge and ability in applying econometric techniques to solve economics and finance problems.

Excellent (A+, A, A-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

Some evidence of understanding the subject; ability to develop solutions to simple problems.

Marginal (D)

Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Part III Other Information

Keyword Syllabus

Transfer Function Models

Impulse response function; pre-whitening; cross-correlation; lead time; intervention analysis

Spurious Regression

Non-stationarity; random walks

Cointegration

Long-run relationship; testing of cointegration

Vector Autoregression (VAR)

VAR for Forecasting; advantages of VAR over univariate forecasting models

ARCH and GARCH Models

Volatility; heteroscedasticity; high frequency financial data; joint estimation of expected return and volatility

Factor Models and Factor-based Investing

Risk anomalies, capital asset pricing model (CAPM), Fama-French factor models, factor-based portfolio optimization

Generalised Methods of Moments (GMM)

Essence of GMM; applications of GMM in Economics & Finance

Econometric Models of Count Data

Poisson regression; negative binomial model; truncation and censoring

Reading List

Compulsory Readings

	Title
1	Bowerman B L, O'Connell R T and Koehler A B, Forecasting, Time Series and Regression: An Applied Approach, 4/e, Thomson, 2005
2	Tsay, R S. An Introduction to Analysis of Financial Data with R, Wiley, 2013
3	Cameron, A.C. and Trivedi, P.K. Microeconometrics: Methods and Applications Cambridge, New York 2006

Additional Readings

	Title
1	Online Resources: Econometriclinks.com: http://www.feweb.vu.nl/econometriclinks/
2	Tsay, R S, Analysis of Financial Time Series, 3rd edition, Wiley, 2010