

**City University of Hong Kong
Course Syllabus**

**offered by Department of Mathematics
with effect from Semester B 2017 / 18**

Part I Course Overview

Course Title: Statistical Data Analysis

Course Code: MA5617

Course Duration: 1 semester

Credit Units: 3 CUs

Level: Level 5

Medium of Instruction: English

Medium of Assessment: English

Prerequisites:
(Course Code and Title) Nil

Precursors:
(Course Code and Title) Nil

Equivalent Courses:
(Course Code and Title) Nil

Exclusive Courses:
(Course Code and Title) Nil

Part II Course Details

1. Abstract

Statistical data analysis in financial business often involves with using sample data to investigate relationships between financial variables and instruments, with an ultimate goal of creating a statistical model for future prediction. This course offers an introduction to a wide spectrum of statistical modelling techniques, ranging from linear regression, ANOVA, model selection, logistic regression, to nonlinear and nonparametric models.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Understand the assumptions and context for a simple linear regression, and use it to estimate and predict likely values.	25	V	V	
2.	Understand the assumptions and context for a multiple predictors, and use a regression model to estimate and predict likely values	25	V	V	
3.	Understand how categorical predictors can be included into a regression model	25	V	V	
4	Develop strategies transform data in order to deal with problems identified in the regression model, handle various problems typically encountered in regression contexts	25	V	V	V
		100%			

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5	6	
teaching	Learning through teaching is primarily based on lectures.	V	V	V	V			3 hours/week
take-home assignments	Learning through take-home assignments helps students implement advanced theory for better understanding	V	V	V	V			After-class

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4	5	6		
Continuous Assessment: 40%								
Hand-in assignments	V	V	V	V			20	
Project	V	V	V	V			20	
Examination	V	V	V	V			60	
Examination: 60% (duration: 3 hrs, if applicable)								
							100%	

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Hand-in assignments	Comprehensive understanding	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Project	Real data analytic ability	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Examinations	Creativity and problem solving ability based on comprehensive understanding	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

linear regression; ordinary least squares; ANOVA; model selection; logistic regression; nonlinear regression; smoothing

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Applied Linear Statistical Models by Kutner, Nachtsheim, Neter, and Li
2.	
3.	
...	

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	The Statistical Sleuth by Ramsey and Schafer
2.	
3.	
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