City University of Hong Kong
Course Syllabus

offered by Department of Management Sciences
with effect from Semester A 2019/20

Part I Course Overview

Course Title:	Statistical Data Analysis
Course Code:	MS5217
Course Duration:	One semester
Credit Units:	3
Level:	P5
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)*	MS5212 Statistical Methods I
Exclusive Courses: *(Course Code and Title)*	MS5312 Business Statistics

Part II Course Details

1. Abstract

The aims of this course are to

- Provide students with the statistical concepts and methods used in solving business problems;
- Develop students' analytic ability to integrate and apply the knowledge and statistical techniques learned in the course to solve business problems.

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.	Identify the key issues of a business problem; and formulate these issues into statistical models for further analysis.	N.A.	✓	✓	✓
2.	Apply the statistical knowledge acquired through the course to select the most appropriate technique for a given problem.	N.A.	✓	✓	✓
3.	Analyze relevant data effectively using appropriate statistical techniques to solve the problems and evaluate the results in the context of the problems.	N.A.		✓	✓
4.	Develop the ability to use statistical packages to conduct statistical analysis.	N.A.		✓	✓
		N.A.			

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	
Lectures	Concepts and specific subject knowledge are explained	✓	✓	✓		2.0
Class discussion	Students work in groups to discuss real business problems and cases, and to explore possible solutions. The instructor provides instant feedback and support for students' queries.	✓	✓	✓		0.5
In-class exercise	With the teacher acting as a facilitator, students work together on assigned problem sets to consolidate their understanding of the concepts and methods. They are required to formulate the problem into a mathematical model (the concept) and proceed to solve the problem (the method). Although these are standard textbook exercises, these exercises have real-life applications.	✓	✓	✓	✓	0.5

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				
Continuous Assessment: 40 %								
Assignment	✓	✓	✓	✓			20%	
Test	✓	✓	✓	✓			20%	
Examination: 60 % (duration: 3 hours, if applicable)								
Examination	✓	✓	✓				60%	
							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. Assignment	Core concepts, ideas and use of statistical software	Strong evidence of knowing how to apply the relevant techniques and software in performing statistical analysis	Evidence of knowing how to apply the relevant techniques and software in performing statistical analysis	Some evidence of knowing how to apply the relevant techniques and software in performing statistical analysis.	Sufficient familiarity with the subject matter to enable the student to progress without repeating the assignment	Little evidence of familiarity with the subject matter;
2. Test	Core concepts and ideas; use of appropriate statistical methods	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.	Some evidence of grasp of subject, little evidence of critical capacity and analytic ability; reasonable understanding of issues.	Sufficient familiarity with the subject matter to enable the student to progress without repeating the case report.	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.
3. Examination	Core concepts and ideas; use of appropriate statistical methods	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.	Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.	Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature

Part III Other Information

1. Keyword Syllabus

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

1. Introduction

   Data collection methods – survey and experimental studies. Data description.

2. Sampling distribution

   Random sampling, Random variables, Binomial distribution, Normal distribution, Sampling distribution of a statistic, Central Limit Theorem.

3. One Population Case: Estimation

   Point estimation and interval estimation of population mean, proportion and variance.

4. One Population Case: Hypothesis Testing

   Elements of a statistical test, Type I and Type II errors, Test on a population mean, proportion and variance, p-value, Power of a test, Relation between hypothesis testing and confidence interval estimation.

5. Comparison of two populations

   Inference concerning two population means, proportions and variance.

6. Comparison of several populations

   Chi-square tests. Comparison of several population means, proportions and variance.

2. Reading List

2.1 Compulsory Readings

1.	Levine, D.M., Stephen, D.F., Krehbiel, T.C. and Berenson, M.L., Statistics for Managers (most recent edition)
2.	Mendenhall, W., Beaver, R.J. and Beaver, B.M., A Brief Course in Business Statistics (most recent edition)
3.	Keller, G. and Warrack, B., Statistics for Management and Economics, Duxbury (most recent edition)
4.	Carlson, W., Newbold, P. and Thorne, B., Statistics for Business and Economics (most recent edition)

2.2 Additional Readings

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

Nil