City University of Hong Kong
Course Syllabus

offered by College/School/Department of _Mathematics_____
with effect from Semester __B____ 20_17_ / _18_

Part I Course Overview

Course Title:	**Applied Statistics for Sciences and Engineering**
Course Code:	**MA2172**
Course Duration:	**1 semester**
Credit Units:	**3 CUs**
Level:	**B2**
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
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)*	**MA2005, Probability and Statistics for Sciences and Engineering**
Exclusive Courses: *(Course Code and Title)*	**MA2506 Probability and Statistics** **MA2177 Engineering Mathematics and Statistics** **MA3181 Financial Mathematics II**

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course aims to introduce statistics and its applications for science and engineering students. The objective is intended for students to solve some practical by statistical l methods. It will help students develop skills in thinking and analysing problems from a probabilistic and statistical point of view.

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.	explain clearly concepts from probability and statistics.	10%	√		
2.	evaluate various quantities for probability distributions and random variables.	20%		√	
3.	perform statistical computations.	30%		√	√
4.	develop probabilistic and statistical models for some applications, and apply statistical methods to a range of problems in science and engineering.	20%		√	√
5.	the combination of CILOs 1-4	20%	√	√	√
		100%			

** If weighting is assigned to CILOs, they should add up to 100%.*

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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		
Lectures	Learning through **teaching** is primarily based on lectures.	✓	✓	✓	✓	✓		39 hours in total
Tutorials	Learning through **tutorials** is primarily based on interactive problem solving allowing instant feedback.	✓						2 hour
			✓					3 hours
				✓				4 hours
					✓	✓		4 hours

	Learning through **take-home assignments** helps students understand basic concepts and techniques of statistics, and some applications in engineering.	✓	✓	✓	✓	✓		after-class
Online applications	Learning through **online examples for applications** helps students apply statistical and computational methods to some problems in engineering applications.				✓			after-class
Math Help Centre	Learning activities in **Math Help Centre** provides students extra help.		✓	✓	✓			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			
Continuous Assessment: _30___%								
Test		✓	✓				15-30%	Questions are designed for the first part of course to see how well the students have learned basic concepts and techniques of probability and estimation of parameters and some applications.
Hand-in assignments	✓	✓	✓	✓			0-15%	These are skills based assessment to see whether the students are familiar with the basic concepts, techniques of probability and statistics and related applications in science and engineering.
Formative take-home assignments	✓	✓	✓	✓	✓		0%	The assignments provide students chances to demonstrate

								their achievements on statistics and its applications learned in this course.
Examination: __70__% (duration: 2 hrs, if applicable)								Examination questions are designed to see how far students have achieved their intended learning outcomes. Questions will primarily be skills and understanding based to assess the student's versatility in probability and statistics.
** The weightings should add up to 100%.*							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. Test	Capacity to evaluate various quantities for probability and statistical distributions	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Hand-in assignments	Ability to understand basic concepts of probability and statistics	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Formative take-home assignments	Ability to explain basic concepts of probability and statistics, and perform statistical computations	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	Ability to apply probability and statistical methods to a range of problems in science and engineering	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.)

Random variables. Distribution. Data and sample description. Estimation of parameters. Tests of hypothesis. Regression. ANOVA.

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.	For further detailed information, please refer to http://www6.cityu.edu.hk/ma/ug/serv/ma2172.htm
2.	
3.	
…	

2.2 Additional Readings

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

1.	Nil
2.	
3.	
…	