

**City University of Hong Kong
Course Syllabus**

offered by College/School/Department of Mathematics
with effect from Semester A 20 20 / 21

Part I Course Overview

Course Title:	Mathematical and Statistical Laboratory
Course Code:	MA2008
Course Duration:	1 semester
Credit Units:	3 CUs
Level:	B2
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	MA2172 Applied Statistics for Sciences and Engineering, and MA2001 Multi-variable Calculus and Linear Algebra
Equivalent Courses: <i>(Course Code and Title)</i>	Nil
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course provides a computer laboratory type training for students on using numerical and statistical software tools.

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.	manipulate mathematical and statistical softwares including MATLAB and EXCEL.	15%	✓	✓	
2.	implement basic commands of MATLAB in algebraic and arithmetic computations.	15%	✓	✓	
3.	write and interpret programs in MATLAB programming language.	15%	✓	✓	
4.	perform statistical calculation and hypothesis testing with EXCEL.	25%		✓	✓
5.	analyze data sets and statistical models with appropriate software packages.	5%	✓	✓	✓
6.	the combination of CILOs 1-5	25%			
		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	6	
Lectures/ Laboratory	Learning through teaching is primarily based on lectures/laboratory sessions.	✓	✓	✓	✓	✓	✓	40 hours in total
Assignments	Learning through take-home assignments helps students perform mathematical	✓	✓	✓	✓	✓		after-class

	computation and draw statistical inference with software packages, as well as solve numerical problems by writing programs.							
Project	Learning through project helps students apply computational techniques in statistics to analyze real-life data sets and formulate appropriate models.	✓			✓	✓		after-class
Lectures/ Laboratory	Learning through teaching is primarily based on lectures/laboratory sessions.	✓	✓	✓	✓	✓	✓	40 hours in total

4. Assessment Tasks/Activities (ATs)

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

100% coursework

Assessment Tasks/Activities	CILO No.						Weighting*	Remarks
	1	2	3	4	5	6		
Continuous Assessment: 100 %								
Test	✓	✓	✓	✓	✓		30--50%	Questions are designed which enable students to demonstrate manipulative skills of using software packages to perform calculations, to write programs and to carry out statistical analyses.
Hand-in assignments	✓	✓	✓	✓	✓		0-20%	These are skills based assessment to see how well the students have learned basic concepts of MATLAB programming and applied EXCEL as data analysis tools.
Project	✓			✓	✓		30--40%	Students are assessed on the ability in applying statistical and computational methods to analyze more sophisticated data sets, as well as on the

								presentation of results and conclusions.
Formative take-home assignments	✓	✓	✓	✓	✓		0%	The assignments provide students chances to demonstrate their manipulative skills of EXCEL and MATLAB learned in this course.
Examination: <u>0</u> % (duration: _____, if applicable)								
* 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	Ability to demonstrate manipulative skills of using software packages to perform calculations, to write programs and to carry out statistical analyses	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Hand-in assignments	Capacity for learning basic concepts of MATLAB programming and applied EXCEL as data analysis tools	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Project	Ability to apply statistical and computational methods to analyze more sophisticated data sets, as well as on the presentation of results and conclusions	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Formative take-home assignments	Ability to demonstrate their manipulative skills of EXCEL and MATLAB learned in this course	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.)

Introduction to Computer Systems, Numerical tools, Statistical packages and Mathematical packages.

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.	http://www6.cityu.edu.hk/ma/ug/serv/ma2008.htm
2.	
3.	
...	

2.2 Additional Readings

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

1.	Nil
2.	
3.	
...	