

**City University of Hong Kong  
Course Syllabus**

offered by Department of Public and International Affairs  
with effect from Semester A 2022/23

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**Part I Course Overview**

**Quantitative Methods**

**Course Title:** \_\_\_\_\_

**Course Code:** **PIA8621**

\_\_\_\_\_

**Course Duration:** \_\_\_\_\_

**3**

**Credit Units:** \_\_\_\_\_

**R8**

**Level:** \_\_\_\_\_

**English**

**Medium of Instruction:** \_\_\_\_\_

**English**

**Medium of Assessment:** \_\_\_\_\_

**Nil**

**Prerequisites:**  
(Course Code and Title) \_\_\_\_\_

**Nil**

**Precursors:**  
(Course Code and Title) \_\_\_\_\_

**POL8621 Quantitative Methods**

**Equivalent Courses:**  
(Course Code and Title) \_\_\_\_\_

**Nil**

**Exclusive Courses:**  
(Course Code and Title) \_\_\_\_\_

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

This course introduces doctoral students to basic statistical concepts using real-world examples and hands-on data manipulation. Within this course, students will learn about the practical uses of statistics in social science, public policy, management, and everyday life. The course explores topics such as multiple regression, logistic regression, factor analysis, and structural equation modelling, with a particular focus on understanding the conditions under which various statistical techniques may be properly used. Since virtually all of the computations are done with computers, a portion of class time will be devoted to becoming familiar with statistical packages such as STATA. At the end of this course, students will 1) be able to interpret statistical findings of various kinds, 2) become a qualified “consumer” of statistics presented in scholarly journals, and 3) prepare themselves for future research projects with a quantitative component.

### 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.	Demonstrate a good understanding of major quantitative techniques often used in social science research		x	x	
2.	Become conversant with statistical software		x	x	
3.	Interpret and communicate quantitative results to lay readers			x	x
4.	Think critically about statistical data discussed in reports and newspapers		x	x	x
5.	Apply analytic skills learned in the class to solving real problems in social science research				x
			* If weighting is assigned to CILOs, they should add up to 100%.		
		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		
Structured seminars/computing lab sessions	Structured seminars/computing lab sessions	x	x	x				
Preparation of materials for discussion in seminars/computing lab sessions	Preparation of materials for discussion in seminars/computing lab sessions	x		x	x			
Individual consultation and inquiry together with teachers	Individual consultation and inquiry together with teachers		x	x		x		
Completion of problem sets and final exam	Assess students' understanding of materials covered during the course	x		x	x	x		
Individual project	Student can either conduct an individual research project with learned quantitative method, or replicate an existing quantitative research published in a top journal	x	x	x	x	x		

#### 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: <u>100</u> %								
Problem Sets	x	x	x	x	x		30%	
Individual Project Paper	x	x	x	x	x		30%	
Attendance and Participation	x	x	x				10%	
Final Test	x	x	x	x	x		30%	
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.)

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C-)	Failure (F)
1. Problem Sets (30%)	Ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Excellent ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Good ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Poor ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Inadequate ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios
2. Individual Project (30 %)	Ability to apply what has been learned for an independent research project or assessing the advantages and shortcomings of an existing quantitative research.	Excellent demonstration of knowledge, understanding, and interpretation of quantitative methods	Good demonstration of knowledge, understanding, and interpretation of quantitative methods	Poor demonstration of knowledge, understanding, and interpretation of quantitative methods	Inadequate demonstration of knowledge, understanding, and interpretation of quantitative methods
3. Final Test (30%)	Levels of understanding of materials covered during all thirteen weeks of the course	An excellent level of understanding of materials covered during all thirteen weeks of the course	A good level of understanding of materials covered during all thirteen weeks of the course	A poor level of understanding of materials covered during all thirteen weeks of the course	An inadequate level of understanding of materials covered during all thirteen weeks of the course
4. Attendance and Participation (10%)	Attend all classes and participate actively in class discussions	Attend all classes with very active class participation	Miss less than 3 classes without reasons, and have active class participation	Miss up to 4 classes without reasons, and have few class participation	Miss more than 4 classes without reasons, and almost have no class participation

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Problem Sets (30%)	Ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Excellent ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Good ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Basic ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Poor ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios	Inadequate ability to apply what has been learned over the semester to analyse or address issues in real-world scenarios
2. Individual Project and Presentation (30%)	Ability to apply what has been learned for an independent research project or assessing the advantages and shortcomings of an existing quantitative research.	Excellent demonstration of knowledge, understanding, and interpretation of quantitative methods	Good demonstration of knowledge, understanding, and interpretation of quantitative methods	Basic demonstration of knowledge, understanding, and interpretation of quantitative methods	Poor demonstration of knowledge, understanding, and interpretation of quantitative methods	Inadequate demonstration of knowledge, understanding, and interpretation of quantitative methods
3. Final Test (30%)	Levels of understanding of materials covered during all thirteen weeks of the course	An excellent level of understanding of materials covered during all thirteen weeks of the course	A good level of understanding of materials covered during all thirteen weeks of the course	A basic level of understanding of materials covered during all thirteen weeks of the course	A poor level of understanding of materials covered during all thirteen weeks of the course	An inadequate level of understanding of materials covered during all thirteen weeks of the course
4. Attendance and Participation (10%)	Attend all classes and participate actively in class discussions	Attend all classes with very active class participation	Miss less than 3 classes without reasons, and have active class participation	Miss up to three classes without reason, and have satisfactory class participation	Miss up to 4 classes without reasons, and have few class participation	Miss more than 4 classes without reasons, and almost have no class participation

**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.)*

Measures of Central Tendency; Measures of Variation; the Chi-Square Distribution; Hypotheses Testing; Analysis of Covariance; Linear Regression; MLE; Causal Inference; Panel Data

**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.	Angrist, Joshua D., and Jörn-Steffen Pischke. <i>Mostly harmless econometrics: An empiricist's companion</i> . Princeton university press, 2008.
2.	Wooldridge, Jeffrey M. <i>Introductory econometrics: A modern approach</i> . Cengage learning, 2015.
3.	Gujarati, D. 2012. <i>Econometrics by Example</i> , McGraw-Hill Education

**2.2 Additional Readings**

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

1.	Babbie, Earl R. 2010. <i>The Practice of Social Research</i> . Belmont, Calif: Wadsworth Cengage.
2.	Wang, Xiaohu, 2010, <i>Performance Analysis for Public and Nonprofit Organizations</i> . Jones and Bartlett Publishers
3.	Berry, W. D. (1993). <i>Understanding Regression Assumptions: Series Quantitative Applications in the Social Sciences</i> . Thousand Oaks.
4.	Imai, Kosuke, <i>Quantitative Social Science: An Introduction</i> ,