City University of Hong Kong
Course Syllabus

Department of Infectious Diseases and Public Health
with effect from Semester A 2023/2024

Part I Course Overview

Course Title:	Advanced Epidemiology
Course Code:	PH6201
Course Duration:	One Semester
Credit Units:	3 credits
Level:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	PH5103 Principle of Epidemiology and One Health, and PH5102 Introduction to Biostatistics in One Health or equivalent
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

Epidemiology is the study of the distribution and determinants of health-related states and events (e.g., diseases) in specified populations. Epidemiology provides public health scientists and researchers with tools and methods to investigate the outbreak and spread of diseases at various scales. In this course, graduate students in Public Health and Epidemiology who have already gained an appropriate understanding of the principles of epidemiology and general statistics will take on more advanced topics, focusing on quantitative techniques and regression models in order to manipulate and analyse complicated public health data collected through research studies and surveys. A range of practical modelling techniques, such as multivariable regression models, addressing continuous, binary, count, and survival (time-to-event) outcomes/data, as well as quantitative bias analysis will be covered. In Public Health, clustering of diseases in certain locations and points in time is very common. Thus, general techniques to handle and analyse such aggregate-level data will also be introduced; e.g., multilevel (mixed-effects) regression modelling as well as systemic reviews and meta-analyses.

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.	To understand the features of different epidemiological study designs, the strength and limitations and analytical methods used in each study type.		✓	✓	✓
2.	To assess potential biases in epidemiological studies		✓	✓	✓
3.	To describe the statistical model-building process and to address a specific public health issue/question		✓	✓	✓
4.	To describe the fundamental concepts of environmental and occupational epidemiology, molecular epidemiology and outbreak investigation.		✓	✓	✓
		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	
Lectures	Lectures introduce the fundamental features of different epidemiological study designs, and key principles of environmental, occupational and molecular epidemiology.	✓	✓	✓	✓	2/h per week
Tutorials	Tutorials will be conducted to facilitate the conceptual understanding including critical appraisal of the literature and study design.	✓	✓	✓	✓	1/h per week

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: 50%						
Classroom assessment	✓	✓	✓	✓	10%	This assessment will be based on the student's attendance and active class participation
Midterm examination	✓	✓			40%	This will include all topics covered by the end of Week 6
Final examination (duration: 2 hours)			✓	✓	50%	This will include all topics covered from Week 7 to the end of the semester
					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. Classroom assessment	The attendance and active participation of students in the classes and tutorials	Participation in >90% of the classes	Participation in 85-90% of the classes	Participation in 70-85% of the classes	Limited participation in classes (<70%)
2. Midterm examination	The comprehension of the concepts and topics taught in the classes (end of Week 6), and ability to communicate that in the written format and using relevant computer software	Students achieve ⩾ 86% of the mark in the examination	Students achieve ⩾ 70 and < 86 of the mark in the examination	Students achieve ⩾ 50 and < 70 of the mark in the examination (C letter grade is at least 50% or greater)	Students achieve <50% of the mark in the examination
3. Final examination	The comprehension of the concepts and topics taught in the classes (from Week 7 to the end), and ability to communicate that in the written format and using relevant computer software	Students achieve ≥ 86% of the mark in the examination	Students achieve ⩾ 70 and < 86 of the mark in the examination	Students achieve ⩾ 50 and < 70 of the mark in the examination (C letter grade is at least 50% or greater)	Students achieve <50% of the mark in the examination

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.)

Epidemiology, regression model building, survival analysis, clustered data, mixed-effects models, quantitative bias analysis

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.	Dohoo, Ian Robert, S. Wayne Martin, and Henrik Stryhn. 2012. Methods in Epidemiologic Research. Charlottetown, P.E.I.: VER, Inc.
2.	Szklo M, Nieto FJ. 2014. Epidemiology: beyond the basics. Jones & Bartlett Publishers

2.2 Additional Readings

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

1.	Boland, A., Dickson, R. and Cherry, G., 2017. Doing a systematic review: A student's guide. Doing a Systematic Review, pp.1-304.