

**City University of Hong Kong
Course Syllabus**

**offered by Department of Infectious Diseases and Public Health
with effect from Semester A 2024/25**

Part I Course Overview

Course Title:	<u>Basic Biostatistics in Public Health</u>
Course Code:	<u>PH5105</u>
Course Duration:	<u>1 semester</u>
Credit Units:	<u>3 credits</u>
Level:	<u>P5</u>
Medium of Instruction:	<u>English</u>
Medium of Assessment:	<u>English</u>
Prerequisites: <i>(Course Code and Title)</i>	<u>Nil</u>
Precursors: <i>(Course Code and Title)</i>	<u>Nil</u>
Equivalent Courses: <i>(Course Code and Title)</i>	<u>Nil</u>
Exclusive Courses: <i>(Course Code and Title)</i>	<u>Nil</u>

Part II Course Details

1. Abstract

Students will be introduced to the foundational concepts and applications of biostatistics in the field of public health. This course will provide an overview of various statistical methods used in public health practice and research, with a strong emphasis on the appropriate application of these methods and the interpretation of the results. Examples and problems from real-world public health settings will be included to reinforce the practical relevance of the material. Students will have the opportunity to work with various statistical software, such as Excel, STATA, JASP, and others, to analyze public health data, even if they have limited prior computing experience. The course aims to equip graduate students in public health with the essential knowledge and skills required for the collection, management, visualization, and analysis of public health data. Key concepts in statistical inference and hypothesis testing will be covered, including methods for summarizing data, estimation techniques, and hypothesis testing procedures such as the t-test, the chi-square test, the analysis of variance, correlation analysis, and linear regression.

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.	Introduce biostatistical methods and underlying principles of performing and interpreting statistical analysis of public health problems.		✓	✓	
2.	Collect, organize, and interpret public health and epidemiological data		✓	✓	✓
3.	Draw inferences about public health-related parameters in different populations		✓	✓	✓
4.	Design various types of clinical experiments and analyse the resultant data		✓	✓	✓
		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 real-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. Learning and Teaching Activities (LTAs)

(LTAs designed to facilitate students' achievement of the CILOs.)

LTA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4			
Lectures	Students will be introduced to the basic concepts and methods applied in biostatistics, including data collection, organization, and visualization, descriptive statistics, sampling (sample size and power), key concepts of probability, estimation of population parameters (proportions and means), experimental study designs, basic statistical tests of hypothesis.	✓	✓	✓	✓			2/h per week
Hands-on practical exercises	Students will engage in hands-on, problem-based activities (Public health data manipulation and analysis) to facilitate the conceptual understanding, using JASP, R software and STATA		✓	✓	✓			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: 60%								
Classroom assessment	✓	✓	✓	✓			20%	Students will demonstrate their class attendance and active participation in the course.
Midterm examination	✓	✓	✓				40%	This will include all topics covered by the end of Week 6
Examination: 40% (duration: 2 hours)								
							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 before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Classroom assessment	Students will demonstrate their class attendance and active participation in the course.	High	Significant	Moderate	Basic	Not reaching basic levels
2. Midterm examination	Students will explain the concepts and topics taught in the classes (end of Week 6), communicate their knowledge in written format, and utilize relevant computer software to demonstrate their knowledge.	High	Significant	Moderate	Basic	Not reaching basic levels
3. Final examination	Students will explain the concepts and topics taught in the classes from Week 7 to the end, communicate their understanding of the course content in written format, and utilize relevant computer software to demonstrate their knowledge.	High	Significant	Moderate	Basic	Not reaching basic levels

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1. Classroom assessment	The participation of students in the classes	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	Students achieve \geq 86% of the mark in the examination	Students achieve \geq 70 and < 86 of the mark in the examination	Students achieve \geq 50 and < 70 of the mark in the examination (C letter grade is at least 50% or	Students achieve <50% of the mark in the examination

	in the written format and using relevant computer software.			greater)	
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 $\geq 86\%$ 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.)

Biostatistics; public health; data visualization, data analysis; experimental study design; statistical Inference

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.	Burt Gerstman. 2014. Basic Biostatistics: Statistics for Public Health Practice, Second Edition; Jones & Bartlett Learning. ISBN-13: 978-1284036015
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2.2 Additional Readings

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

1.	Wayne W. Daniel & Chad L. Cross. 2013. Biostatistics: A Foundation for Analysis in the Health Sciences, Tenth Edition, Wiley. ISBN-13: 978-1118302798 http://docshare02.docshare.tips/files/22448/224486444.pdf
2.	Dohoo, Ian Robert, S. Wayne Martin, and Henrik Stryhn. 2012. Methods in Epidemiologic Research. Charlottetown, P.E.I.: VER, Inc.