

**City University of Hong Kong
Course Syllabus**

offered by College/School/Department of Infectious Diseases and Public Health

with effect from Semester B 2020/21

Part I Course Overview

Course Title: Statistics for Evidence-based Biological and Veterinary Sciences

Course Code: VM2100

Course Duration: 1 semester

Credit Units: 3 credits

Level: B2

Arts and Humanities

Proposed Area: Study of Societies, Social and Business Organisations

(for GE courses only)

Science and Technology

Medium of Instruction: English

Medium of Assessment: English

Prerequisites:
(Course Code and Title) _____

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

(A 150-word description about the course)

This course aims to introduce statistics and its applications to veterinary students. The objective is for students to develop the necessary skills to understand and apply basic statistical concepts and quantitative research strategies, to critically assess veterinary literature and appreciate the use of statistics in evidence-based veterinary medicine.

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.	Understand, explain and apply basic statistical concepts, ideas and techniques	10%		✓	
2.	Describe, summarise and interpret data in order to identify patterns and trends	20%	✓	✓	✓
3.	Identify the principles of quantitative research design and explain concepts such as bias, sampling and non-sampling error, and sample size	20%		✓	
4.	Apply commonly used data analysis techniques as appropriate for the data-set in order to solve problems and prove hypotheses (descriptive statistics, confidence interval, hypothesis testing, regression, ANOVA)	30%		✓	
5.	Conduct a systematic literature search and critically evaluate the scientific literature in order to demonstrate the application of scientific evidence to decision-making	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.

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

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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.	✓	✓	✓	✓	✓	1.5 hr/wk
Practicals	Learning through computer-based practical classes is primarily based on interactive problem solving allowing instant feedback.	✓	✓	✓	✓	✓	1.5 hrs/wk
Take-home assignments	Learning through take-home assignments helps students understand basic concepts, techniques and interpretation of statistics, and some applications veterinary medicine.	✓	✓	✓	✓	✓	After-class
Online applications	Learning through online examples for applications helps students apply statistical and computational methods to some problems in biology and clinical sciences.	✓	✓	✓	✓	✓	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: <u>50%</u>							
Test	✓	✓	✓			20%	Questions are designed for the first part of the course to assess students' progress in understanding basic statistical concepts and techniques
Assignments	✓	✓	✓	✓	✓	30%	These are skills based assessment to assess whether the students are familiar with the basic statistical concepts, techniques and interpretation of statistics and related applications in veterinary medicine and provide students chances to demonstrate the application of statistics .
Formative take-home assessment	✓	✓	✓	✓	✓	0%	The assignments give students the opportunity to demonstrate their achieved skills in statistics and its applications acquired in this course.
Examination: <u>50%</u> (duration: 2 hours)							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 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 statistical methods	High	Significant	Basic		Not even reaching marginal levels
2. Assignments	Ability to understand and explain basic concepts of statistics, and perform and interpret statistical analyses	High	Significant	Basic		Not even reaching marginal levels
4. Examination	Ability to apply statistical methods to a range of problems in veterinary medicine	High	Significant	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, Probability, Distributions, Significance, Hypothesis, Statistical Test, Applications in Evidence-Based Biomedical and Veterinary Sciences.

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.	Petrie, A. and Watson, P. (2013). <i>Statistics for Veterinary and Animal Science</i> . Wiley-Blackwell. ISBN-13: 978-0470670750 ISBN-10: 0470670754
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2.2 Additional Readings

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

1.	Lane, D. Introduction to Statistics: Online Textbook http://onlinestatbook.com/Online_Statistics_Education.pdf
2.	McDonald, J. <i>Handbook of Biological Statistics</i> http://www.biostathandbook.com
3.	Pfeiffer, D. (2010). <i>Veterinary Epidemiology: An Introduction, 1st Edition</i> . Wiley-Blackwell.
4.	Evans, R. and O'Connor, A. (2007). <i>Statistics and evidence-based veterinary medicine: Answers to 21 common statistical questions that arise from reading scientific manuscripts</i> . <i>Veterinary Clinics: Small Animal Practice</i> 37: 477–486.