PH5102: INTRODUCTION TO BIOSTATISTICS IN ONE HEALTH

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Introduction to Biostatistics in One Health

Subject Code
PH - Infectious Diseases and Public Health
Course Number
5102

Academic Unit
Infectious Diseases and Public Health (PH)

College/School
Jockey Club College of Veterinary Medicine and Life Sciences (VM)

Course Duration
One Semester

Credit Units
3

Level
P5, P6 - Postgraduate Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

Students will recognize the pivotal role of statistics in public health research and practice, and explore the application of statistical tools and methods to health and biological data collected through medical observations and epidemiological studies. They will acquire the basic knowledge and skills required for the collection, management, visualization, and analysis of health data, while learning key concepts in statistical inference and hypothesis testing. Students will demonstrate the ability to understand, describe, and visualize health data sets, design experimental studies, conduct basic statistical analyses, and attain the necessary foundation for learning more sophisticated statistical methods in the field of public health and epidemiology.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain the key statistical concepts applied to public health		x	x	
2	Collect, organize, and interpret public health and epidemiological data		x	x	
3	Draw inferences about health-related parameters in different populations		x	x	x
4	Design various types of studies and analyse the resultant data		x	x	x

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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Students will introduce to the fundamental 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), analysis of variance, correlation analysis, and basic statistical tests of hypothesis.	1, 2, 3, 4	2/h per week

2	Hands-on practical exercises	Students will engage in hands-on, problem-based exercises (data manipulation and analysis) to facilitate conceptual understanding, using JASP, R software and STATA	2, 3, 4	1/h per week

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Classroom assessment	1, 2, 3, 4	20	Students will demonstrate their class attendance and active participation in the course.
2	Midterm examination	1, 2	40	This will include all topics covered by the end of Week 6

Continuous Assessment (%)

60

Examination (%)

40

Examination Duration (Hours)

2

Assessment Rubrics (AR)

Assessment Task

Classroom assessment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Students will demonstrate their class attendance and active participation in the course.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not reaching basic levels

Assessment Task
Midterm examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
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.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not reaching basic levels

Assessment Task
Final examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
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.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not reaching basic levels

Assessment Task
Classroom assessment (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
The attendance and active participation of students in the classes and hands-on exercises.

Excellent

(A+, A, A-) Participation in >90% of the classes

Good

(B+, B) Participation in 85-90% of the classes

Marginal

(B-, C+, C) Participation in 70-85% of the classes

Failure

(F) Limited participation in classes (<70%)

Assessment Task

Midterm examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

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

Excellent

(A+, A, A-) Students achieve $\geq$ 86% of the mark in the examination

Good

(B+, B) Students achieve $\geq$ 70 and < 86 of the mark in the examination

Marginal

(B-, C+, C) Students achieve $\geq$ 50 and < 70 of the mark in the examination (C letter grade is at least 50% or greater)

Failure

(F) Students achieve <50% of the mark in the examination

Assessment Task

Final examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

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

Excellent

(A+, A, A-) Students achieve $\geq$ 86% of the mark in the examination

Good

(B+, B) Students achieve $\geq$ 70 and < 86 of the mark in the examination

Marginal

(B-, C+, C) Students achieve $\geq$ 50 and < 70 of the mark in the examination (C letter grade is at least 50% or greater)

Failure

(F) Students achieve <50% of the mark in the examination

Part III Other Information

Keyword Syllabus

Biostatistics; public health; data visualization, data analysis; study design; statistical inference

Reading List

Compulsory Readings

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

Additional Readings

	Title
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.