

Macao Polytechnic Institute
School of Health Sciences and Sports
Bachelor of Science in Biomedical Technology
(Medical Laboratory Technology and Pharmacy Technology)

Module Outline

Academic Year 2021 / 2022 Semester 1

Learning Module	Biostatistics			Class Code	BSST3101
Pre-requisite(s)	Nil				
Medium of Instruction	English and Cantonese			Credit	3
Lecture Hours	39 hrs	Lab/Practice Hours	6 hrs	Total Hours	45 hrs
Instructor	Dr Xin Wang, Amy Dr Loi Hoi Ngan, Edmund		E-mail	amywang@ipm.edu.mo hnloi@ipm.edu.mo	
Office	Room M729, Meng Tak Building, Main Campus		Telephone	8599 3439, 8399 8638	

Description

This is a necessary learning module for year three nursing students. There are total 45 hours in 15 lectures for this learning module. The learning module will focus on the data collection, management and analysis and other statistic application. The students will get more understanding theoretically and practically in the statistics which include statistical tables, index, probability concepts and distributions, statistical hypothesis, correlation, regression, chi-square, t-test, ANOVA, multiple regression and non-parametric analysis etc.

Learning Outcomes

After completing the learning module, students will be able to:

1. understand statistical methods and concepts
2. use the statistical skills in research projects
3. think critically based on the evidence

Content

- 1 Basic concepts for statistics and data description (14 hours)
 - 1.1. Introduction to Medical Statistics; Concepts of biostatistics (population, sample, variables, types of data)
 - 1.2. Review of descriptive statistic (Frequency distribution, graphics, and percentile, central tendency and dispersion) , Confidence interval
 - 1.3. Normal distribution, Probability, Definition of statistical hypothesis, its classification and testing
 - 1.4. Errors (Type I errors, Type II errors), Powers; Sample size calculation
2. Bivariate and multivariate analysis (24 hours)
 - 2.1. SPSS basic and data management (1)
 - 2.2 SPSS basic and data management (2)
 - 2.3 t test and Analysis of Variance
 - 2.4 Chi-square test
 - 2.5 Linear regression and correlation coefficient
 - 2.6 Multiple regression and Logistic regression
 - 2.7. SPSS data analysis and practice (1)
 - 2.7 Other Nonparametric Statistical Methods
 - 2.8. SPSS data analysis and practice (2)
3. SPSS test and group presentation (5 hours)

Class Practice (6 hours)

Date & Time	Practice Item	Practice Title	Students / Group	Mode of Practice	Practice Requirement
1/11/2021	SPSS	Data management	all	SPSS	Statistic software using and analysis result presentation.
22/11/2021	SPSS	Data analysis	all	SPSS	Statistic software using and analysis result presentation.

Teaching Method

Power point presentation, Computer software practice

Attendance

Attendance requirements are governed by the “Academic Regulations Governing Bachelor’s Degree Programmes of Macao Polytechnic Institute”. Students are not eligible to attend the final examination and re-sit examination if the absence rate exceeds 30%. Moreover, an “F” will be given as the final grade to students who have less than the stated attendance for this enrolled learning module.

Assessment

This learning module is graded on a 100 point scale, with 100 being the highest possible score and 50 the pass score. **Any students scoring less than 35% of the total mark in the final examination will be given an “F” grade for the learning module even if the overall grade is 50% or higher).**

	Item	Description	Percentage
1.	Group Project	Use the available data to select a topic and conduct literature review, study design, data analysis, result report and do presentation	15 %
2.	Quiz	Multiple choices, short questions and case studies	15%
2.	SPSS test	Data management and analysis	20%
3.	Final exam	Content of the course	50 %
		Total Percentage:	100 %

Teaching Material(s)

Reference:

李康, 賀佳. (2017). *醫學統計學 (第七版)*. 北京: 人民衛生出版社 ISBN: 9787117266765
Scott I, Mazhindu D (2014). *Statistics for Healthcare Professionals (Second Edition): An Introduction*. SAGE Publications. ISBN-13: 978-1446208939 or ISBN-10: 1446208931.

Timetable:

Session	Date	Time	Teacher	Topic
1	25/8/2021	14:30-17:30	Wang	Introduction to Medical Statistics; Concepts of biostatistics (population, sample, variables, types of data)
2	30/8/2021	14:30-17:30	LOI	Descriptive statistic (Frequency distribution, graphics, percentile, central tendency and dispersion); Confidence interval
3	6/9/2021	14:30-17:30	Wang	SPSS basic and data management (1)
4	13/9/2021	14:30-17:30	Wang	SPSS basic and data management (2)
5	20/9/2021	14:30-17:30	LOI	Normal distribution; Probability; Definition of statistical hypothesis, its classification and testing
6	29/9/2021	14:30-17:30	Wang	t test and Analysis of Variance
7	13/10/2021	14:30-17:30	Wang	Chi-square test
8	20/10/2021	14:30-17:30	Wang	Linear regression and correlation coefficient
9	28/10/2021	14:30-17:30	Wang	Multiple regression and Logistic regression
10	1/11/2021	14:30-17:30	Wang	SPSS practice (1)
11	8/11/2021	14:30-16:30	LOI	Errors (Type I errors, Type II errors); Powers; Sample size calculation *
12	15/11/2021	14:30-17:30	Wang	Quiz and Nonparametric Statistical Methods
13	22/11/2021	14:30-17:30	Wang	SPSS practice (2)
14	25/11/2021	14:30-16:30	Wang	SPSS test*
15	29/11/2021	14:30-17:30	Wang	Group Project presentation
16	10/12/2021	14:30-16:30	Wang	Final exam*.

*. 2 hour course.