



UNIVERSITI TEKNOLOGI MARA

BHS601: Biostatistic

Course Name (English)	Biostatistic APPROVED
Course Code	BHS601
MQF Credit	1
Course Description	The aim of the course is to interactively engage students cognitively and scientifically in areas of biostatistics. Students will define concepts, state and explain theories, perform statistical analyses using statistical software via statistical laboratory exercises and in writing, discuss the results and relationships with peers and facilitators. The designated lecture session is used to discuss common biostatistics techniques related to the existing principles or theories in health sciences research. Lecture sessions employ a mixture of lectures and active learning (self and peer discussions). The outcomes shall be accessed through a variety of tools which include the traditional paper examination, informal interviews and classroom engagement
Transferable Skills	Critical thinking, communication skill, autonomous learning and information management skills
Teaching Methodologies	Lectures, Self-directed Learning
CLO	CLO1 Apply the concepts and theories in descriptive and inferential statistics, commonly used in health sciences research (C3) CLO2 Analyze research data by using statistical software (C4)
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to biostatistics 1.1) The research process 1.2) Concepts and variables 1.3) Levels of measurement 1.4) Research design	
2. Computer-assisted analysis 2.1) Overview 2.2) Introduction to SPSS 2.3) Entering data into SPSS	
3. Descriptive statistics 3.1) Overview 3.2) Descriptive statistics 3.3) Measures of central tendencies 3.4) Measures of variation or dispersion 3.5) Graphical statistics	
4. The basis of statistical testing 4.1) Samples and populations 4.2) Overview of probability concept 4.3) Distribution 4.4) Central limit theorem 4.5) Inferential statistics 4.6) Generating confidence interval in SPSS	
5. Introduction to data screening and cleaning 5.1) Finding errors in a dataset 5.2) Missing data management 5.3) Checking normality of data	

<p>6. Introduction to sample size calculation 6.1) Single proportion sample size calculation 6.2) Single mean sample size calculation 6.3) Sample size calculation for comparing mean and proportion using PS software/ G-Power</p>
<p>7. Differences between the two groups 7.1) Introduction of t-test 7.2) Independent-sample t-test in SPSS 7.3) Cohen's d 7.4) Dependent-sample t-test in SPSS</p>
<p>8. Differences between two or more conditions 8.1) Overview of ANOVA test 8.2) One-way ANOVA using SPSS</p>
<p>9. Testing associations between categorical variables 9.1) Overview 9.2) Contingency table 9.3) Chi-square test and Fisher exact test in SPSS 9.4) Measuring effect size for categorical data analysis</p>
<p>10. Correlation techniques 10.1) Introduction 10.2) Bivariate correlation 10.3) Pearson's correlation in SPSS 10.4) Obtaining a scatter plot using SPSS 10.5) Non-parametric: Spearman's Rho in SPSS</p>
<p>11. Linear regression 11.1) Introduction to simple linear regression 11.2) Linear regression in SPSS 11.3) Obtaining a scatter plot with a regression line and confidence interval using SPSS 11.4) Assumptions underlying linear regression</p>
<p>12. Non-parametric test 12.1) Mann-Whitney for an independent group in SPSS 12.2) Wilcoxon signed-rank test for a dependent group in SPSS 12.3) Kruskal-Wallis test in SPSS</p>

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Group Project	Scientific article report	20%	CLO2
	Writing Test	Number of tests and timing varies	20%	CLO1
	Written Report	Statistical report (Independent t-test)	30%	CLO2
	Written Report	Statistical report (Chi-square test)	30%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> Dancey 2012, <i>Statistics for the health sciences. A non-mathematical introduction</i>, SAGE California
	Reference Book Resources	<ul style="list-style-type: none"> Portney L. G., Watkins M. P. 2000, <i>Foundation of clinical research: application to practice</i>, 2nd Ed., Prentice Hall Daniel W. W. 2010, <i>Biostatistics: basic concept and methodology for the health sciences</i>, Wiley Rosner B. 2014, <i>Fundamental of biostatistics</i>, 6th Ed., Thomson Brooks California

Article/Paper List	Recommended Article/Paper Resources	<ul style="list-style-type: none"> Sullivan L. M 2014, Effective practices for teaching the biostatistics core course for the MPH using competency based approach, <i>Public Health Report</i>, 129, 381
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Other References	This Course does not have any other resources
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