Course Specification

(Bachelor)

Course Title:	**Fundamentals of Biostatistics**
Course Code:	**STA-222-2**
Program:	*Enter Program Name.*
Department:	**Shared Courses**
College:	**Faculty of Nursing and Health Sciences**
Institution:	**Jazan University, Jazan , Saudi Arabia**
Version:	Version 5
Last Revision Date:	**15th August 2024**

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A. General information about the course:

1. Course Identification

1. Credit hours: (2 (1theory +1 practical); Contact: (1theory +2 practical))					
2. Course type					
A.	☐University	☒ College	☐Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (3rd.)					
4. Course general Description:					

- **The purpose of this course is to familiarize students with the basics of biostatistics topics based on sources, scope, collection, classification, and presentation of descriptive data; Probability; Sampling; Inference; measures of population and vital statistics, Research with Statistical Package.**
- **The course will empower students to write statistical part of, data collection and statistical analysis plans for grants, enable to read most of the relevant health related literature with understanding of the statistical content, publications and to organize results in appropriate visual displays or tables.**
- **Hence forth, it revolves on the application of basic techniques as well as main concepts of inferential statistics.**

5. Pre-requirements for this course (if any)**:**

Principles of Mathematics

6. Co-requisites for this course (if any)**:**

NA

7. Course Main Objective(s):

- **Describe the scope and role of biostatistics in the discipline of applied medical sciences, pharmacy and nursing fields healthcare professionals**
- **Distinguish among the different measurement scales and the implications of these distinctions in selection of statistical methods used in dealing with data.**
- **Differentiate between populations and samples & demonstrate different methods for**

selecting simple random samples.

- Apply descriptive techniques commonly used to summarize data.
- Apply basic rules of probability. Concept of Binomial and Normal probability distributions.
- Calculate and interpret the one-sample Z Confidence Interval for the mean.
- Calculate and interpret the hypothesis testing for means using the one-sample Z test.
- Interpret results of statistical analyses found in scientific studies for healthcare professionals.
- Use of basic techniques for scientific research purposes and interpret data from relevant literature for healthcare professionals.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	%100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	15
2.	**Laboratory/Studio**	30
3.	**Field**	-
4.	**Tutorial**	
5.	**Others (specify)**	
Total		**45**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Define and Describe Biostatistics - Scope and Role for Healthcare Professionals	K1	Lecture, Tutorial, In-lab. Presentation of illustrative techniques.	Assignments, Examination (MCQ's, short answers, True/False, matching)
1.2	**Identify sources and Types of data and its presentation and summarization**	**K2**	Lecture, Tutorial, In Lab, practical exercises	Assignments, Examination (MCQ's, short answers, True/False, matching)
1.3	Describe Measures of Location, Normal curve, Variability, Sampling Variability, Significance ,Probability , population and vital statistics	K3	Lecture, Tutorial, In Lab, practical exercises	Assignments, Examination (MCQ's, short answers, True/False, matching)
2.0	**Skills**			
2.1	Calculate measures of central tendency and variability	S1	Lecture, Tutorial, In Lab, practical exercises	Examination (MCQ's, short answers, True/False, matching)
2.2	Analyze the data with a one sample T-Test, Chi square Test and interpretation the obtained results.	S2		
...				
3.0	**Values, autonomy, and responsibility**			
3.1	Communicate concepts and techniques in person and within a team	V1	Lecture, Tutorial, In Lab, practical exercises	Assignment & Examination (Problem solving)
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Theory • Introduction to Biostatistics • Definitions & Common terms used • Notations used in Biostatistics • Application and Uses of Biostatistics as Science and Figures Practical Practice with Examples of Figures in Health Sciences	3
2.	Theory • Sources of data • Types of Data- Qualitative and Quantitative Data, • Presentation of Quantitative and Qualitative Data – Practical • Illustration of examples of data from real life situation of Saudi Arabia preferably Presentation of quantitative and qualitative data above forms	3
3.	Theory • Presentation of Quantitative and Qualitative Data – A. Narrative Form (or Textual Form) B. Tabular Form C. Graphical Form 1. line graph or frequency polygon 2. bar graph 3. pie graph 4. histogram Practical Presentation of quantitative and qualitative data above forms	3
4. .	Theory Measures of Location – Average and Percentiles • Measures of Central Tendency – Averages, Mean, Median and Mode, Weighted Mean, Measures of Location – Percentiles Practical Exercises to calculate all measure	3
5. .	Theory Variability and its Measures • Types	3

	• Measures Practical Exercise to calculate all measures	
6.	Theory Normal Distribution and Normal Curve, Relative or Standard Normal distribution, Asymmetrical distribution Problems	3
7.	Theory • Sampling characteristics and techniques, probability (chance) , Sample size calculations, technique for sampling of probability and Non-probability methods Practical Exercises to select sampling type with merits	3
8.	Theory • Sampling variability and significance – tests of significance. A. Variability of a Sampling Distribution B. Sampling Distribution of the Mean C. Sampling Distribution of the Proportion D. The significance concept a test. Practical Exercised in solving medical problem using sampling distribution for mean and proportion, and writing Null hypothesis examples.	3
9	Theory • Significance of difference between two means • T-test for one sample case • T-Test for two sample cases Practical Applying T-test for solving problems of health care cases.	3
10	Theory • Significance of difference between two proportions, Chi-square test 1 Test of difference between Two Proportions, Z-test ▪ Criteria for applying Z-test ▪ How to run Z-Test 2 Chi-Square test ▪ in a one-sample case ▪ in two-sample cases	3

	3 Fischer's Exact Test Practical Exercises and application using contingency tables	
11.	Theory • Correlation and Regression 1 Pearson's Coefficient of Correlation 2 Simple linear regression 3 Calculation of regression coefficient Practical Exercises for solving, calculating and interpreting the results	3
12.	Theory • Measures of Population and Vital Statistics ○ Measures of Demography Practical Exercises to calculate important measures	3
13	Theory • Measures of Population and Vital Statistics ○ Measures of Morbidity Practical Exercises to calculate important measures	3
14.	Theory • Introduction to SPSS. Installing SPSS. Practical • Main Windows of SPSS. • Entering data and defining variables. Saving and extensions of SPSS files.	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mid-term Examination	6th	20%
2.	Student Discipline & Behavior*	1-15th	5%
3.	Course work & Practical submission	1-15th	15%

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	Assignment and Homework	5th & 10th	10%
	Quiz1&Quiz2	3th&9th	10%
5.	Final Examination	15th	40%
	Total		**100**

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

*3 Marks for attendance [Based on attendance in Edugate – Green (3)\ Yellow (2)\ Red (1)\ Black (0)],
2 Marks for being late [by 10 minutes and more]

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	***Mahajan's* Methods in Biostatistics** for Medical Students and Research Workers, , Jaypee, *The Health Sciences Publisher* New Delhi | London | Philadelphia | Panama , Eighth Edition, **2016** -- ISBN 978-93-5152-909-5
Supportive References	Wayne W. Daniel: Biostatistics: A Foundation for Analysis in the Health Sciences, Wiley, Seventh Edition.
Electronic Materials	• http://www.sjsu.edu/faculty/gerstman/StatPrimer/ • http://www.brixtonhealth.com/pepi4windows.html http://www.cytel.com/Software/StaTable.aspx
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Class rooms Laboratories
Technology equipment (projector, smart board, software)	Data show SPSS, Open-Epi
Other equipment (depending on the nature of the specialty)	Not applicable

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (Course

Assessment Areas/Issues	Assessor	Assessment Methods
		Evaluation Survey (CES))
Effectiveness of Students assessment	Reviewer (faculty from the same department) Department Head	Direct
Quality of learning resources	Students	Direct(Rubrics) , Indirect (Course Evaluation Survey (CES))
The extent to which CLOs have been achieved	Faculty	Direct(Rubrics),musing a program created in AMS Faculty for evaluation
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Shared unit council
REFERENCE NO.	
DATE	15th August 2024