GBC Class/Course Assessment Report

Course Prefix, Number, and Title: Statistics for Health Sciences
Section Number(s): 1001
Department: Health Sciences and Human Services
Instructor: Dr. Gerardo Wence-Munoz

Academic Year: 2024
Semester: Fall
Is this a GenEd class? Yes___ No_X__

Complete and submit your assessment report electronically to your department chair. As needed, please attach supporting documents and/or a narrative description of the assessment activities. You may use as many or as few outcomes as necessary.

Class/Course Outcomes	Assessment Measures	Assessment Results	Outcome Results Analysis
In the boxes below, summarize the outcomes assessed in your class or course during the last year. If this is a GenEd class, include the appropriate GenEd objectives.	In the boxes below, summarize the methods used to assess course outcomes during the last year. Include the criterion you'll use to judge whether or not students have achieved the expected outcome.	In the boxes below, summarize the results of your assessment activities during the last year. Include your judgement as to whether or not the criterion for student achievement has been met.	In the boxes below, please reflect on this outcome's results and summarize how you plan to use the results to improve student learning.
Outcome #1: Apply relevant mathematical skills in solving real-world problems. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to Health Science and Statistics. 1. **Demonstrate Understanding of Social Scientific Research** – Identify key stages and terms in social scientific research and recognize the role of statistical analyses in various research studies. 2. **Differentiate Statistical Concepts and Applications** – Distinguish between descriptive and inferential statistics and discuss their relevance in quantitative healthcare research. 3. **Analyze Research and Statistical Significance** – Discuss the differences between statistical and clinical significance and explore how statistical results contribute to evidence-based healthcare. 4. **Apply Research Skills in Healthcare** – Search for and identify quantitative healthcare research studies that utilize statistical methods to inform practice and decision-making.	Assessment Measure: Chapter 1 quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as an assessment to measure learning outcomes for Chapter 1. Criterion Met: Yes	1. Results Analysis: Summary statistics for all turned-in submissions. Average Score: 15.05 High Score:18.33 Low Score: 11.02 Standard Deviation: 2.56 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.

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Outcome #2: Demonstrate knowledge of mathematical notations & concepts, Apply relevant mathematical skills in solving real-world problems. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to Health Science and Statistics. 1. **Utilize Descriptive Statistics for Data Interpretation** – Explain how descriptive statistics enhance data comprehension and apply statistical principles in quantitative research analyses. 2. **Organize and Visualize Data** – Construct frequency distributions for variables at each level of measurement and analyze visual data representations, including pie charts, bar charts, histograms, and line graphs. 3. **Perform Basic Statistical Calculations** – Compute percentages, proportions, ratios, rates, and percentage changes for numerical data. 4. **Identify Research and Measurement Variables** – Define and identify variables being measured and examine research principles that impact statistical analyses.	Assessment Measure: Chapter 2 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as an assessment to measure learning outcomes for Chapter 2. Criterion Met: Yes	1. Results Analysis: Average Score: High Score: 18.06 Low Score:13.33 Standard Deviation: 3.19 2. Action Plan: Continue utilizing the assessment tool and current threshold to meet criteria for outcomes achieved.
Outcome #3: Demonstrate knowledge of mathematical notations and concepts; Apply relevant mathematical skills in solving real-world problems. After successful review of course material and participation, students will be able to: 1. **Apply Measures of Central Tendency in Data Interpretation** – Explain how measures of central tendency (mean, median, and mode) enhance data understanding and describe the differences in the types of information they provide. 2. **Calculate and Analyze Central Tendency Measures** – Compute appropriate measures of central tendency for variables at each level of measurement and analyze how the mean is affected by skewness. 3. **Interpret and Communicate Statistical Findings** – Produce and explain measures of central tendency, ensuring clarity in quantitative research analyses. 4. **Assess Measurement Accuracy and Reliability** – Identify different types of measurement error, define validity and reliability, and determine the validity and reliability of measurements, including questionnaires.	Assessment Measure: Chapter 3 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 3 Criterion Met: Yes	1. Results Analysis: Average Score: High Score:17.52 Low Score: 15.78 Standard Deviation: 2.28 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.

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Outcome #4: Demonstrate knowledge of mathematical notations and concepts. After successfully review of course material and participation, students will be able to: 1. **Differentiate Between Populations and Samples** – Describe the characteristics of populations and samples and explain their significance in statistical research. 2. **Identify and Apply Sampling Techniques** – Recognize various sampling techniques and determine their appropriate use in research studies. 3. **Understand and Utilize Power Analysis** – Describe how a power analysis is calculated and applied to determine the appropriate sample size for statistical analyses.	Assessment Measure: Chapter 5 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 5 Criterion Met: Yes	1. Results Analysis: Average Score: 14.75 High Score: 17.22 Low Score: 11.84 Standard Deviation:2.73 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.
Outcome #5: Demonstrate knowledge of mathematical notations and concepts; Apply relevant mathematical skills in solving real-world problems. After successful review of course material and participation, students will be able to: 1. **Apply Statistical Principles in Quantitative Research** – Explore fundamental statistical principles used in quantitative research analyses to ensure accurate and meaningful data interpretation. 2. **Identify and Assess Measurement Errors** – Recognize different types of measurement error and their impact on research findings. 3. **Evaluate Validity and Reliability** – Define validity and reliability and determine their significance in research measurements, including questionnaires.	Assessment Measure: Chapter 6 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 6 Criterion Met: Yes	1. Results Analysis: Average Score: 16.07 High Score: 19.09 Low Score: 13.79 Standard Deviation: 2.06 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.
Outcome #6: Apply mathematical concepts and operations in proper written or graphical form. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to **Health Science and Statistics**: 1. **Examine the Role of Statistics in Healthcare Research** – Analyze how basic statistical analyses are used and reported in healthcare research to support evidence-based decision-making. 2. **Apply Measures of Central Tendency and Dispersion** – Explore and apply the concepts of central tendency (mean, mode, and median) and dispersion to interpret healthcare data effectively.	Assessment Measure: Chapter 7 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 7 Criterion Met: Yes	1. Results Analysis: Average Score: 17.41 High Score:20 Low Score: 13.21 Standard Deviation:3 2. Action Plan: Continue utilizing assessment tool and current threshold to meet

3. **Perform Statistical Calculations** – Calculate measures of central tendency and dispersion, ensuring appropriate application in various research contexts. 4. **Select the Appropriate Measure of Central Tendency** – Determine which measure (mean, mode, or median) is most suitable based on data characteristics and research objectives. 5. **Effectively Visualize Data** – Explore appropriate methods for displaying data to enhance clarity and interpretation in statistical analyses.			criteria for outcomes achieved.
Outcome #7: Apply relevant mathematical skills in solving real-world problems, Demonstrate knowledge of mathematical notations and concepts. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to **Health Science and Statistics:** 1. **Understand Variability in Data** – Define variability, its importance, and its role in data analysis. 2. **Analyze Data Spread** – Calculate and interpret range, identifying outliers and assessing dispersion. 3. **Measure Dispersion with Variance and Standard Deviation** – Compute and interpret variance and standard deviation, understanding their implications. 4. **Apply Variability Measures in Real-world Contexts** – Utilize range, variance, and standard deviation to assess datasets and make informed decisions. 5. **Enhance Statistical Literacy** – Develop critical thinking, interpret statistical results, and effectively communicate findings. 6. **Utilize Data for Decision-making** – Compare datasets using statistical measures to support data-driven conclusions. 7. **Recognize Ethical Considerations** – Identify biases, limitations, and ethical concerns in statistical analysis.	Assessment Measure: Chapter 8 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 8 Criterion Met: Yes	1. Results Analysis: Average Score: 15.36 High Score: 19.64 Low Score: 15 Standard Deviation: 2.06 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.

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Outcome #8: Apply mathematical concepts and operations in proper written or graphical form; Demonstrate knowledge of mathematical notations and concepts. After successful review of course material and participation, students will demonstrate knowledge, understanding, and application of **Health Science and Statistics** in the following area. 1. **Visualizing Data Effectively** – Understand the importance of data visualization in statistical analysis. 2. **Creating and Interpreting Graphs** – Construct histograms and polygons to represent data distributions. 3. **Utilizing Data Analysis Tools** – Use Excel's Data Analysis tools to generate histograms and analyze data. 4. **Applying Statistical Functions** – Utilize SKEW and KURT functions to assess data distribution characteristics. 5. **Designing and Modifying Charts in Excel** – Create, modify, and customize different types of charts for effective data presentation. 6. **Selecting Appropriate Chart Types** – Identify the best chart types for various data sets and analysis needs.	Assessment Measure: Chapter 9 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 9 Criterion Met: Yes	1. Results Analysis: Average Score:15.63 High Score: 17.41 Low Score: 12.1 Standard Deviation: 2.4 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.
Outcome #9: Demonstrate knowledge of mathematical notations and concepts; Apply mathematical concepts and operations in proper written or graphical form. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to Health Science and Statistics. 1. **Apply Inferential Statistics** – Identify appropriate inferential statistical methods for data analysis. 2. **Analyze Relationships Between Variables** – Determine the correct statistical test for assessing linear relationships (correlation). 3. **Understand Regression and Correlation** – Explain how these methods are used for analysis and prediction. 4. **Utilize Statistical Software** – Perform advanced statistical analyses using software tools. 5. **Interpret Statistical Significance** – Analyze and interpret correlation coefficients to determine statistical significance.	Assessment Measure: Chapter 10 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 10 Criterion Met: Yes	1. Results Analysis: Average Score:15 High Score: 16.58 Low Score: 14.09 Standard Deviation: 2.7 2. Action Plan: Continue utilizing assessment tool and current threshold to meet criteria for outcomes achieved.

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Outcome # 10: Apply relevant mathematical skills in solving real-world problems, Demonstrate knowledge of mathematical notations and concepts 1. **Differentiate Between Sample and Population** – Understand key distinctions and their relevance in statistical analysis. 2. **Examine Hypotheses in Research** – Explore the importance of null and research hypotheses. 3. **Evaluate and Apply Hypothesis Criteria** – Understand and apply the standards for developing strong, testable hypotheses.	Assessment Measure: Chapter 11 Quiz Criterion for achievement: Class average 80% or better	Results: Utilized chapter test as assessment to measure learning outcomes for Chapter 10 Criterion Met: Yes	1. Results Analysis: Average Score:24 High Score: 30 Low Score: 18.47 Standard Deviation: 4.77 2. Action Plan: Continue utilizing the assessment tool and current threshold to meet criteria for outcomes achieved.
Outcome # 11: Apply relevant mathematical skills in solving real-world problems. After successful review of course material and course participation, students will be able to demonstrate knowledge, understanding, and application of the following areas of learning related to Health Science and Statistics. 1. **Enhance Evidence-Based Healthcare** – Explore how statistical research results contribute to informed healthcare decisions. 2. **Identify Research Study Types** – Recognize various research studies that utilize statistical analyses. 3. **Apply Statistics in Clinical Practice** – Analyze how quantitative research findings support clinical decision-making. 4. **Understand Systematic Reviews** – Examine the purpose and value of systematic reviews in evidence-based practice.	Assessment Measure: Final research project. Qualitative measurements	Results: Utilized final research project and formally assessed the student's abilities to identify research problem/purpose; research design and methodology; data collection and analysis of articles used; discussion and implications.	1. Results Analysis: Average Score: 89 High Score: 97 Low Score: 74 Standard Deviation: 2.09 2. Action Plan: Continue utilizing the assessment tool and current threshold to meet the criteria for outcomes achieved.

Notes:
Course goals and objectives were met utilizing current tools in place. Students demonstrated mastery of the information presented. No further changes are recommended for materials at this time.

I have reviewed this report. Brian Dankowski

Department Chair

Date 3/4/2025

Dean

Date 3-4-2025

Vice President of Academic Affairs and Student Services

Date

Revised 4/17