

Course Description**STA2023 | Statistical Methods | 3.00 credits**

In this course, students will utilize descriptive and inferential statistical methods in contextual situations, using technology as appropriate. The course is designed to increase problem-solving abilities and data interpretation through practical applications of statistical concepts. This course is appropriate for students in a wide range of disciplines and programs. Computational course.

Course Competencies:

Competency 1: The student will demonstrate knowledge of terminology by:

1. Defining statistical terms

Competency 2: The student will be able to describe, explore, and compare data by:

1. Constructing and interpreting frequency tables and graphs such as bar graphs, pie charts, and stem and leaf plots
2. Computing and interpreting the centrality measures: the mean, median, mode, and midrange
3. Computing and interpreting the measures of dispersion: the range, variance, and standard deviation

Competency 3: The student will be able to apply the measures of positions by:

1. Computing z-scores
2. Applying the Empirical Rule to the Normal Distribution
3. Applying Chebyshev's Rule to the Non-Normal (or Unknown) Distributions

Competency 4: The student will be able to apply the counting principles by:

1. Defining the Fundamental Counting Principle
2. Computing the possible outcomes of compound events
3. Computing Combinations and Permutations

Competency 5: The student will demonstrate knowledge of probability by:

1. Describing a sample space and an event
2. Calculating probabilities of simple, compound, and conditional events

Competency 6: The student will demonstrate knowledge of random variables by:

1. Distinguishing between discrete and continuous random variables
2. Constructing a probability distribution for a discrete random variable and be able to compute its mean and standard deviation
3. Computing probabilities for random variables having a binomial distribution
4. Computing probabilities for random variables having a normal distribution
5. Applying the Central Limit Theorem
6. Approximating the Binomial Probability using the Normal Distribution

Competency 7: The student will demonstrate knowledge of confidence intervals by:

1. Constructing confidence intervals for the mean using the Z and t tables
2. Constructing confidence intervals for a proportion
3. Constructing confidence intervals for the difference of two means

Competency 8: The student will demonstrate knowledge of hypotheses testing by:

1. Identifying Type I and Type II errors
2. Identifying and interpreting p-values
3. Testing a single mean for large and small samples
4. Testing the difference between two means
5. Testing a single proportion

Competency 9: The student will demonstrate knowledge of bivariate data by:

1. Constructing and interpreting a scatter plot
2. Computing and interpreting the linear correlation coefficient

Learning Outcomes

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Create strategies that can be used to fulfill personal, civic, and social responsibilities