

Standard Institutionally Developed College: N/A

EDGE Compatible: No

Pre-requisites

Program Admission
MATH 0099 - Intermediate Algebra (201003)
MATH 1101 - Mathematical Modeling (201003)
MATH 1111 - College Algebra (201003)

Co-requisites

Course Description

Emphasizes the concepts and methods fundamental to utilizing and interpreting commonly used statistics. Topics include descriptive statistics, basic probability, discrete and continuous distributions, sampling distributions, hypothesis testing chi square tests, and linear regression.

Course Length

	Minutes	Contact Unit
Lecture:	2250	
Lab 2:	0	
Lab 3:	0	
Practicum/Internship:	0	
Clinical:	0	
Total:	2250	3
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Semester Credit Hours:		3

Competencies

Order	Description	Lecture	Lab2	Lab3	Practicum/ Internship	Clinical	Total Minutes	Semester Credit Hrs
1	Descriptive Statistics	100	0	0	0	0	100	0
2	Basic Probability	300	0	0	0	0	300	0
3	Discrete and Continuous Distributions	500	0	0	0	0	500	0
4	Sampling Distributions	500	0	0	0	0	500	0
5	Hypothesis Testing	500	0	0	0	0	500	0
6	Linear Regression	200	0	0	0	0	200	0

Order	Description	Lecture	Lab2	Lab3	Practicum/ Internship	Clinical	Total Minutes	Semester Credit Hrs
7	Chi Square Tests	150	0	0	0	0	150	0
	Totals for Course MATH 1127 - Introduction to Statistics (version 201003):	2250	0	0	0	0	2250	3

Learning Outcomes

Descriptive Statistics

Order	Description	Learning Domain	Level of Learning
1	Draw stem-leaf diagrams and histograms.	Cognitive	Knowledge
2	Compute mean, median, mode, and standard deviation.	Cognitive	Application

Basic Probability

Order	Description	Learning Domain	Level of Learning
1	Define events, compound events, and complementary events.	Cognitive	Knowledge
2	Compute probabilities for unions, intersections, and complements.	Cognitive	Application
3	Compute conditional probabilities.	Cognitive	Application

Discrete and Continuous Distributions

Order	Description	Learning Domain	Level of Learning
1	Demonstrate the difference between discrete and continuous random variables.	Cognitive	Application
2	Use probability distributions to compute expected value of a discrete random variable.	Cognitive	Application
3	Compute probabilities for binomial distributed random variables.	Cognitive	Application
4	Compute expected value and variance of a binomial distributed random variable.	Cognitive	Application
5	Compute probabilities for normally distributed random variables.	Cognitive	Application
6	Use the normal distribution to estimate probabilities for binomial distributed random variables.	Cognitive	Application

Sampling Distributions

Order	Description	Learning Domain	Level of Learning
1	Use the normal distribution to compute probabilities for samples.	Cognitive	Application
2	Determine the sample size required to meet certain requirements for the standard deviation.	Cognitive	Application
3	Determine large-sample and small-sample confidence intervals for population means.	Cognitive	Application

Hypothesis Testing

Order	Description	Learning Domain	Level of Learning
1	Explain the meaning of the null and alternative hypothesis.	Cognitive	Comprehension
2	Define the meaning of a Type I ($\hat{\alpha}$) error.	Cognitive	Knowledge

Order	Description	Learning Domain	Level of Learning
4	Examine a hypothesis about a population mean using a large sample (normal distribution).	Cognitive	Analysis
5	Examine a hypothesis about a population mean using a small sample (student's t distribution).	Cognitive	Analysis

Linear Regression

Order	Description	Learning Domain	Level of Learning
1	Match a linear function to best represent the relationship between two variable quantities.	Cognitive	Knowledge
2	Compute the correlation coefficient to measure the relationship between two random variables.	Cognitive	Application
3	Evaluate the correlation coefficient to measure the relationship between two random variables.	Cognitive	Evaluation

Chi Square Tests

Order	Description	Learning Domain	Level of Learning
1	Compare two or more population proportions and test for differences in populations.	Cognitive	Analysis
2	Examine how well the binomial or normal distribution fit a data set.	Cognitive	Analysis

References

Order	Reference Type	Description
1	Book with Author(s) Listed	Sullivan, M.. (2008). Fundamentals of statistics. (2nd). Upper Saddle River, NJ: Pearson Education.
2	Book with Author(s) Listed	Triola. (2007). Essentials of statistics. (3rd). Boston, MA: Pearson.