Minnesota State College Southeast

MATH 1090: STATWAY Statistics 2

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:
This course requires the following prerequisite
   MATH 0990 - STATWAY Statistics 1

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course is the second in a two-semester statistics sequence. Students progress through topics in both algebra and college-level introductory statistics in one year. Statway 2 covers sampling distributions, Central Limit Theorems, confidence intervals, and hypothesis testing for population proportions, population means, and means of paired differences. Chi-square tests for one and two way tables and ANOVA methods are covered, as well as topics from algebra. This curriculum is based on student collaborative group learning. Students must commit to completing Math 0990 in the Fall semester and Math 1090 in the following Spring semester. Completion of the 2 course sequence satisfies MnTC Goal 4. (Prerequisite: MATH0990) (4 credits: 4 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 01/22/2015 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Sampling distributions, Central Limit Theorem, and introduction to confidence intervals for: a population proportion, for a population mean and for means of paired differences.

2. Constructing confidence intervals and constructing a hypothesis test for: a population proportion; for the difference of two population proportions and regarding the slope, intercept, and correlation coefficient for a linear model.

3. Chi-square tests for one-way tables (goodness of fit) and for two-way tables (independence and homogeneity), and one-way ANOVA methods for detecting differences in several means.

4. Necessary algebra concepts such as linear and exponential functions, exponents, graphing functions, solving equations, and working with rational expressions.

D. LEARNING OUTCOMES (General)

1. Use simulations: to explain the properties of a sampling distribution for a proportion, to construct and interpret confidence intervals for a population proportion distribution, to explain the properties of a sampling distribution for a sample mean and use sampling distributions to construct and interpret confidence intervals for a population mean.
2. Construct a hypothesis test for the value of a population proportion.
3. Interpret the use of evidence in drawing a conclusion, including interpreting the means and consequences of Type I, Type II and Type III errors.
4. Construct a hypothesis test for the value of a population mean and for the mean of the differences between paired data.
5. Calculate and interpret the chi-square value for both one-way tables (goodness of fit) and two-way tables (independence and homogeneity).
6. Apply one-way ANOVA methods to test for possible differences between several population means.
7. Choose the appropriate linear, proportional, power, or exponential model to best summarize bi-variate data.
8. Interpret confidence intervals and hypothesis tests for linear regression parameters of slope, intercept, and correlation coefficient.
9. Be able to use the appropriate tools of algebra, such as graphing of linear and exponential functions, solving equations, use of basic functions and exponents and rational expressions.
10. Perform simple statistical procedures related to the above using a statistical software package or a statistical calculator.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Apply higher-order problem-solving and/or modeling strategies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted