Minnesota State College Southeast

MATH 0990: STATWAY Statistics 1

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: *.*

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:
This course requires either of these prerequisites
    A score of 46 on test Accuplacer Elementary Algebra
    A score of 240 on test Accuplacer NG Quantitative Reasoning

Corequisites: None

MnTC Goals: None

This course is the first in a two-semester statistics sequence. Students progress through topics in both algebra and college-level introductory statistics in one year. Statway 1 covers sampling methods, descriptive statistics, graphing methods, linear and exponential models, and an introduction to probability, as well as necessary topics from Introductory and Intermediate 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: Minimum Elementary Algebra ACCUPLACER score of 46) (4 credits: 4 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 01/30/2015 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Understanding of the statistical analysis process to include: populations, sampling, studies and experiments
2. Graphical and numerical summaries of data: histograms, dot plots, mean, median, standard deviation
3. Scatterplots, correlation and regression
4. Linear and non-linear (exponential) models
5. Two-way tables, marginal, joint and conditional probabilities
6. Discrete and continuous probability distributions, z-scores and the normal distribution
7. Algebra concepts: linear and exponential functions, exponents, graphing functions, solving equations, and working with decimals and fractions in applied problems

D. LEARNING OUTCOMES (General)

1. Distinguish between observational studies and experiments, and distinquish among random, simple random, and other types of sampling procedures
2. Identify different sources of bias in sampling and devise different methods of random assignment for experiments
3. Compute mean, median, modes, standard deviation, inter-quartile range, z-scores and percentile ranks from data, and give simple common sense interpretations of these numerical measures
4. Construct histograms and dot plots as graphical descriptions of quantitative data, and interpret what these visual summaries imply about the data
5. Interpret scatter plots as describing form, direction and strength of relationships in bi-variate data, and compute and interpret the correlation coefficient for linear bi-variate data
6. Use technology to compute the least squares regression line and use it to make predictions, interpret the meaning of the slope and intercept of the regression line, and compute and interpret the residuals to decide on the appropriateness of the regression line model
7. Use exponential regression to fit certain non-linear data
8. Construct and interpret two-way tables for data, and calculate marginal, joint, and conditional probabilities from two-way tables
9. Use the various definitions and interpretations of probability and the laws of probability to solve problems
10. Use theoretical discrete and continuous probability distributions to calculate probabilities, including using z-scores to calculate probabilities for a Normal distribution
11. 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, decimal and fraction operations, and percents to solve applied problems in each of the above outcomes
12. 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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted