SOPHIA Learning

STAT1001: Introduction to Statistics (3 semester credits)

COURSE DESCRIPTION
Students in the Introduction to Statistics course gain mastery of the basic principles of statistics. Students will learn a variety of topics, including statistical principles, research methodologies, data analysis, and hypothesis testing. Students will demonstrate the application of these topics within statistics to everyday situations.

Course Effective Dates: October 2012 – Present

Prerequisite(s): Entry level Gen Ed course – no prerequisites

Length of course: This is a self-paced course. Students have 60 days with an additional 30 day extension (if needed) to complete the course.

ACE CREDIT® Recommendation: In the lower-division baccalaureate/associate degree category, 3 semester hours in mathematics or statistics (3/16).

LEARNING OUTCOMES
Upon completion of the course, the student will be able to:
1. Understand and identify key principles of statistical reasoning and statistical methods.
2. Apply concepts of data and data representation in a real world context.
3. Calculate variation and central tendency and recognize patterns in distributions.
4. Apply concepts of probability and risk in real life scenarios.
5. Determine correlation and causation and distinguish between them in context.
6. Apply concepts of hypothesis testing and utilize t-tests, z-tests, and ANOVA in real world situations.

OUTLINE OF MAJOR CONTENT AREAS
- Statistics Fundamentals
- Sampling
- Experiments
- Conducting Surveys
- Evaluating Studies
- Data Types
- Sources of Error
- Percentages in Statistics
- Representations of Qualitative Data
- Interpreting Graphical Displays
- Measures of Central Tendency
- Data Distributions
- Variation
- Paradoxes
- Normal Distribution
- Central Limit Theorem
- Probability
- Simple Combined Probability Rules
- Conditional Probability

- General Combined Probability Rules
- Probability Distributions and Risk
- Correlation
- Interpreting Correlation
- Line of Best Fit
- Causation
- Sampling Distributions
- Hypothesis Testing
- Testing for Means with t-tests
- Testing for Proportions with z-tests
- Analysis of Variance
- Chi-square Tests

GRADING

This is a pass/fail course. Students are required to complete all 18 formative and 6 summative assessments with an overall course average of 70% or better.