COURSE SYLLABUS

LAST REVIEW	Spring 2021
COURSE TITLE	Statistics
COURSE NUMBER	MATH 0115
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Mathematics
CIP CODE	24.0101
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 3
PREREQUISITES	MATH-0104 Intermediate Algebra or above with a grade of "C" or higher. MATH-0111 Contemporary Math or MATH-0112 Trigonometry do **not** satisfy the prerequisite.
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION
Statistics includes the study of basic descriptive statistics, introduction to probability, random variables, special probability functions, random sampling and sampling theory, estimating the mean, hypothesis tests, and linear regression. Students will be expected to use appropriate technology as one tool to achieve competency in Statistics.

KANSAS SYSTEMWIDE TRANSFER: MAT 1020
The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

GENERAL EDUCATION LEARNING OUTCOME
- ☐ Basic Skills for Communication
- ☒ Mathematics
- ☐ Humanities
- ☐ Natural and Physical Sciences
- ☐ Social and Behavioral Sciences

INSTITUTIONAL LEARNING OUTCOMES
- ☐ Communication

☒ Computation and Financial Literacy
☒ Critical Reasoning
☒ Technology and Information Literacy
☐ Community and Civic Responsibility
☐ Personal and Interpersonal Skills

TEXTBOOKS
http://kckccbookstore.com/

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Basic Descriptive Statistics
   A. Dot plot, histogram, stem-and-leaf diagram, box plot
   B. Shape of data
   C. Measures of central tendency
   D. Measures of dispersion
   E. Statistical package or graphing calculator

II. Introduction to Probability
   A. Probability notation
   B. Mutually exclusive events
   C. Independent events
   D. Conditional probabilities

III. Random Variables
   A. Expected value, standard deviation
   B. Discrete random variable

IV. Special Probability Functions
   A. Binomial formula for probability problems
   B. Normal distribution for percent problems
   C. Normal distribution for probability problems

V. Random Sampling and Sampling Theory
   A. Mean
   B. Standard deviation
   C. Normal probability plot
   D. Central Limit Theorem

VI. Estimating the Mean
   A. Known population standard deviation
   B. Unknown population standard deviation
   C. Population proportion

VII. Hypothesis Tests
   A. Known standard deviation
   B. Unknown standard deviation
   C. Sample proportion
   D. Chi-square distribution (optional)
   E. Type I and type II errors (optional)
   F. P-value

VIII. Linear Regression
   A. Calculate
   B. Predictions
   C. Coefficient of determination

COURSE LEARNING OUTCOMES

Upon successful completion of this course, the student will:

1. Create graphical and numerical descriptions of quantitative and qualitative data.
2. Calculate probabilities and percentiles related to a general normal distribution.
3. Distinguish differences in data analysis and interpretation between observational data and data from designed experiments.
4. Calculate and interpret a confidence interval for a single parameter, using both large and small samples.
5. Perform and interpret a test of hypotheses for a single parameter, using both large and small samples.
6. Perform and interpret statistical inference on the difference of two parameters.
7. Fit and interpret a simple linear regression model, including correlation and scatterplots.

Learning Outcomes #1, 2, 4 and 5 have been selected by the KCKCC Mathematics Department for assessment purposes.

ASSESSMENT OF COURSE LEARNING OUTCOMES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook
https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf

College Catalog
https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements
https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations
https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.