Effective: Fall 2019
Last Reviewed: 12/07/2018

Course Outline

BASIC COURSE INFORMATION

Course Number: MATH 147S

Course Title: STATISTICS SUPPORT

Total Student Hours and Credit			
		Hours/Week	Hours/Term
Lecture Hours	in-class	1.00	18.00
	out-of-class	2.00	36
Lab Hours	in-class	0	0
	out-of-class	0	0
Activity Hours	in-class	0	0
	out-of-class	0	0
TBA Hours Per Term			0
Total Student Hours Per Term:			54.00
Hours-per-unit Divisor			54.00
Units of Credit:			1.00

Fall semester term is 18 weeks. Spring semester term is 17 weeks. The term length multiplier is 17.5 weeks. Curriculum is calculated based on 18 weeks.

Catalog Description:
Provides instruction and review of core prerequisite skills, competencies, and concepts necessary for success in Math 247, Introduction to Statistics. Topics include concepts from prealgebra, elementary and intermediate algebra, and the development of critical thinking skills needed for statistical analysis. Intended for students who are concurrently enrolled in Math 247.

Schedule Description:
Provides instruction and review of core prerequisite skills, competencies, and concepts necessary for success in Math 247, Introduction to Statistics. Includes topics from prealgebra, elementary and intermediate algebra. Intended for students concurrently enrolled in Math 247.

Division: Mathematics

Department: Mathematics

Minimal Qualification Discipline Designation (MQDD): Mathematics

Degree Applicability: Credit - Degree Applicable

Methods of Instruction:

- Lecture and/or discussion

Grading Method:

- P/NP Only

Repeatability:

Course Cap: 40

STUDENT LEARNING OUTCOMES

1. Apply numerical algebra skills necessary for statistical analysis.
2. Apply critical thinking skills necessary for statistical analysis.

COURSE CONTENT

Objectives:

Upon completion of this course the student will be able to:

1. Perform basic arithmetic with real numbers including integer exponents, square roots, and order of operations.
    - Quizzes/Exams
    - Written/Typed Homework
2. Recognize, generate, and fluently use equivalent forms of fractions, decimals and percentages.
    - Quizzes/Exams
    - Written/Typed Homework
3. Perform calculations involving ratios, proportions, and percent.
    - Quizzes/Exams
    - Written/Typed Homework
4. Interpret the meaning of inequality symbols and how they relate to interval notation.
    - Quizzes/Exams
    - Written/Typed Homework
5. Solve linear equations and linear inequalities.
    - Quizzes/Exams
    - Written/Typed Homework
6. Evaluate and solve formulas.
    - Quizzes/Exams
    - Written/Typed Homework
7. Graph points and lines in the rectangular coordinate system.
    - Quizzes/Exams
    - Written/Typed Homework

8. Construct, use, and interpret linear models to represent and communicate relationships in quantitative data.
    - Quizzes/Exams
    - Written/Typed Homework
9. Evaluate formulas written in series notation as it applies to statistics.
    - Quizzes/Exams
    - Written/Typed Homework
10. Consistently apply effective learning strategies for success in college.
    - Written/Typed Homework

Topics & Scope:

1. Arithmetic with Real Numbers
    a. Operations with integers, fractions, and decimals
    b. Integer exponents
    c. Square roots (using technology)
    d. Order of operations
    (Obj 1)
2. Fractions and Decimals
    a. Converting fractions to decimals (using a calculator)
    b. Comparing fractions and decimals
    c. Place value of decimals
    d. Converting fractions and decimals to percent
    (Obj 2)
3. Ratios, proportions and percent
    a. Ratios and proportions
    b. Percent as a fraction
    c. Percent as a decimal
    d. Solve percent problems
    (Obj 3)
4. Inequalities and Intervals
    a. Inequality symbols
    b. Interval notation
    (Obj 4)
5. Solving equations and inequalities
    a. Linear equations
    b. Linear inequalities
    c. Applications in statistics
    (Obj 5)
6. Formulas
    a. Evaluating formulas
    b. Solving formulas for a specific variable
    c. Using statistical formulas along with technology
    (Obj 6)
7. Rectangular Coordinate System
    a. Graphing points
    b. Slope-intercept form of a line
    c. Graphing lines

d. Interpreting slope as a rate of change
(Obj 7)

8. Linear models
   a. Construct a linear model given quantitative data
   b. Evaluate the linear model and interpret the results
   c. Interpret slope and intercepts in context to the data
   (Obj 8)
9. Series
   a. Summation notation
   b. Finite series
   c. Applications in statistics formulas
   (Obj 9)
10. Learning strategies
   a. Study skills (organization, time management, note taking, test preparation, and test taking)
   b. Group work (rationale, roles, and responsibilities)
   c. Self-assessment (learning styles, performance criteria, and productive struggle)
   d. Resource utilization (peer groups, student success center, technology resources)
   (Obj 10)

Assignments:
Examples of independent assignments to fulfill 36 total hours of required out-of-class work:

1. An example of a typical problem which requires students to practice concepts learned in class: Let $W(t) = -0.20t + 59.74$ be the percentage of women who are married and let $M(t) = -0.27t+64.01$ be the percentage of men who are married, both at t years since 1990. During what year will the percentage of men who are married be equal to the percentage of women who are married? (Obj 1, 2, 3, 8)
2. An example of a typical problem which requires students to practice concepts learned in class: Evaluate the formula: $X = (O - E)^2/E$ using a) $O = 95$ and $E = 90.1$ and b) $O = 18$ and $E = 22.9$. (Obj 1, 6)

Class participation and assignments require and develop critical thinking.

1. Students will be expected to use data and the concepts taught in class to solve a "real-world" application. For example, given data a student will a) construct a scatter plot, b) determine and graph the line of best fit c) use their model to predict and comment on the validity of the answer and d) interpret the meaning of slope from their equation. (Obj 7, 8, 10)
2. Students will be expected to apply the concepts of percent and ratios to statistical analysis. For example, If 722 females are surveyed on an upcoming ballot measure and responded with 577 voting Yes, 45 voting No, and 100 that are unsure, then find the following: a) Percent of females that are voting yes. b) Percent of females that are voting no or unsure. c) Describe the complement of your answer in part b. (Obj 1, 2, 3)

Methods of Evaluation:

- Written/Typed Homework
- Quizzes/Exams

Texts, Readings, and Materials:

- **Textbooks**
  Lehmann, J. *A Pathway to Statistics* (2nd/e). Pearson Education, (2016).