College of San Mateo
Official Course Outline

1. **COURSE ID:** MATH 800 **TITLE:** Just-in-Time Support for Elementary Probability and Statistics
   Units: 2.0 units **Hours/Semester:** 32.0-36.0 Lecture hours; and 64.0-72.0 Homework hours
   Method of Grading: Pass/No Pass Only
   Corequisite: MATH 200, **Prerequisite:** Appropriate score on the College Placement Test or other multiple measures assessment.

2. **COURSE DESIGNATION:**
   Non-Degree Credit
   Basic Skills
   Transfer credit: none

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   A review of the core prerequisite skills, competencies, and concepts needed in statistics. Intended for students who are concurrently enrolled in MATH 200, Elementary Probability and Statistics, at College of San Mateo. Topics include concepts from arithmetic, pre-algebra, elementary and intermediate algebra, and descriptive statistics that are needed to understand the basics of college-level statistics. Concepts are taught through the context of descriptive data analysis. Additional emphasis is placed on solving and graphing linear equations and modeling with linear functions.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Formulate questions that can be addressed with data, then organize, display, and analyze relevant data to address these questions and communicate results.
   2. Apply numerical and algebraic reasoning and computational skills to support statistical analysis.
   3. Construct, use, and interpret mathematical models, specifically linear functions to represent and communicate relationships in quantitative data.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Graphically represent the distribution of categorical and quantitative data.
   2. Compare related data sets using numerical measures and appropriate graphical representations and communicate findings in the context of the data.
   3. Set up two-way tables for bivariate categorical data and use appropriate marginal and conditional percents to investigate relationships and answer questions.
   4. Identify the place-value structure of the base-ten number system and are able to represent and compare rational numbers (including negative rationals) in decimal form and their approximate location on a number line.
   5. Recognize, generate, and fluently use equivalent forms of fractions, decimals, and percentages.
   6. Identify, compare, and explain the contextual meaning of fractions that represent the marginal distribution of a single categorical variable.
   7. Identify, compare, and explain the contextual meaning of fractions that represent the relationship between two categorical variables in conditional distribution.
   8. Explain and apply the concept of variables as representations of quantities.
   9. Explain and apply the concept of a function and interpret functions as communicating relationships between variables.
   10. Recognize the difference between variables and parameters in general forms of linear models;
   11. Identify relationships that are proportional, define the constant of proportionality in the context of the problem, and use proportional reasoning to solve problems.
   12. Relate proportionality to linearity as well as the concept of the slope.
   13. Solve linear equations.
   14. Use the order of operations to evaluate statistical formulas by hand and with technology.
   15. Describe statistical measure (e.g., mean, variance, standard deviation, least squares, correlation coefficient) and its characteristics by referencing symbolic form.
   16. Construct, use, and interpret mathematical models, specifically linear functions to represent and communicate relationships in quantitative data.

6. **COURSE CONTENT:**

Lecture Content:

A just-in-time approach to:
Topics from PreAlgebra and Beginning Algebra

- Order of operations
- Performing arithmetic operations on signed numbers
- Graphing fractions, decimals, and signed numbers on a number line
- Comparing fractions with the same and with different denominators
- Comparing fractions, decimals, and percentages
- Identifying fractions and percentages that describe part of a whole (marginal distributions)
- Identifying fractions and percentages that describe the impact of one quantity on another (conditional distributions)
- Relative versus absolute difference
- Graphing in the Cartesian coordinate system
- A graph as the set of solutions to an equation
- Proportions and linearity

Topics from Intermediate Algebra

- Evaluating expressions
- Scatterplots
- Solving linear
- Linear functions, constant rate of change, graphing, interpreting slope and y-intercept in context

Graphs of distributions of categorical data: bar charts and pie charts
Contingency tables: marginal and conditional distributions
Measures of center and associated measures of spread: mean, variance, standard deviation median, quartiles, percentiles
Graphs of univariate distributions of quantitative data: histograms and boxplots
Topics related to developing effective learning skills:

- Study skills: organization and time management, test preparation and test-taking skills
- Self-assessment: using performance criteria to judge and improve one's own work, analyzing and correcting errors on one's test
- Use of resources: strategies identifying, utilizing, and evaluating the effectiveness of resources in improving one's own learning, e.g., peer study groups, computer resources, lab resources, tutoring resources

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**

Typical methods of instruction may include:

A. Lecture
B. Activity
C. Discussion

8. **REPRESENTATIVE ASSIGNMENTS**

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

Students will write out solutions for 1-3 problem sets per week.

Reading Assignments:

Students will read 1-2 Section of a textbook per week.

9. **REPRESENTATIVE METHODS OF EVALUATION**

Representative methods of evaluation may include:

A. Exams/Tests
B. Homework
C. Quizzes

10. **REPRESENTATIVE TEXT(S):**

Possible textbooks include:

A. Goud, Robert N. and Colleen N. Ryan.. *Introductory Statistics*, ed. Pearson, 2016

Curriculum Committee Approval Date: January 2018
Effective Term: Fall 2018
Course Originator: Christopher Walker