COURSE OUTLINE OF RECORD

Number: MATH G080  
TITLE: Pre-Statistics

ORIGINATOR: Pete Bouzar  
FORMERLY KNOWN AS: 
CROSS LISTED COURSE: 

EFF TERM: Fall 2018  
DATE OF OUTLINE/REVIEW: 05-01-2018  
TOP NO: 1701.00  
CID:

SEMESTER UNITS: 5.0  
HRS LEC: 90.0  
HRS LAB: 18.0  
HRS OTHER: 0.0  
CONTACT HRS TOTAL: 108.0  
STUDY NON-CONTACT HRS RECOMMENDED: 180.0

CATALOG DESCRIPTION:
This course is designed for students whose education plan calls for Math G160: Introduction to Statistics. It may not be suitable for students on a STEM degree pathway. Please see a counselor for more information. The course covers requisite topics from Intermediate Algebra including linear equations and inequalities, linear regression analysis, exponential functions, exponential equations, descriptive statistics, probability, sampling distributions including the Normal distribution, and the use of graphing calculators and/or computer software.

JUSTIFICATION FOR COURSE:

PREREQUISITES:
- MATH G010: Elementary Algebra with a minimum grade of C or better

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:
- Mathematics

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [ ] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[ ] Not Transferable[X]

BASIC SKILLS STATUS: Yes [X] No [ ] LEVELS BELOW TRANSFER: 1 level below transfer level

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes [ ]

GE AND TRANSFER REQUIREMENTS MET:
- GWC AA - Area B Physical Universe and Its Life Forms
- Group 2 Mathematic Competency

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. Analyze data by producing appropriate descriptive statistics including measures of center, spread, and position, and interpreting the results in context.

2. Construct and analyze relevant algebraic models in one and two variables including linear regression models.

3. Construct and analyze graphs including bar graphs, pie charts, histograms, stem and leaf plots, boxplots, and scatterplots.

**COURSE OBJECTIVES:**

1. Perform order of operations and evaluate algebraic expressions with exponents, square roots, fractions, absolute value, percents, and scientific notation.

2. Solve linear equations, evaluate formulas, and solve a formula for a given variable.

3. Find equation of a line and use linear equations to solve various application problems.

4. Solve linear inequalities, including compound inequalities, and use interval notation.

5. Work with data to perform basic regression analysis including interpretations of slope and y-intercept when appropriate.

6. Understand various sampling methods, types of errors in sampling, types of data, and the design of experiments.

7. Summarize data by constructing tables, charts, and graphs such as pie charts, histograms, stem and leaf plots, boxplots, and scatterplots.

8. Numerically summarize data using measures of central tendency, dispersion, and position.

9. Understand and be able to use various probability rules, formulas, and models including the Binomial and Normal Probability models.

10. Compute probabilities of simple and compound events, and conditional probabilities using counting techniques.

11. Determine the probability distribution of random variables and compute the expected value and standard deviation.

12. Describe the sampling distribution of the sample mean and sample proportion and compute related probabilities.

13. Read, investigate, and effectively communicate both verbally and in written form trends in data and statistical application problems.

14. Use a graphing calculator to perform algebraic and statistical computations.

**COURSE CONTENT:**

**LECTURE CONTENT:**

A. Algebra

1. Simplify Expressions with Fractions, Percents, Exponents (integer and rational), Radicals, Absolute Value, and inequalities using Order of Operations

2. Evaluate Algebraic Expressions, Formulas, and Functions

3. Solve Formulas for Specified Variable

4. Solve Linear Equations and Inequalities

5. Solve Compound Inequalities

6. The Rectangular Coordinate System and Plotting Points

7. Slope, Intercept, and Finding Equations of Lines

8. Represent and Analyze Linear Functions Algebraically, Graphically, Verbally, and with a Table

9. Dimensional analysis as relevant for Statistics

B. Sampling

1. Types of Variables and Data

2. Sampling Methods Including Simple Random, Stratified, Cluster, Systematic, and
Convenience Sampling

Design of Observational Studies and Experiments

Types of Bias, Sampling, and Nonsampling Errors

Graphical Summaries of Data

Frequency Tables, Relative Frequency Tables, and Their Graphs
Pie Charts and Two-way Tables
Graphs of Quantitative Data including Histograms, Dotplots, Stemplots, Time-Series Plots, and Boxplots
Graphical Misrepresentation of Data

Numerical Summaries of Data

Measures of Center

Measures of Spread

Measures of Position

Summarizing Bivariate Data

Scatterplots and Their Characteristics
Correlation and its Interpretation
Equations of Least Squares Regression Line and its use for Prediction
Features and Limitations of the Regression Line including Interpretation of Slope and Intercept, and Residual Analysis

Probability Theory

Basic Concepts of Probability
The Addition Rule and Complements
Conditional Probability and the Multiplication Rule
Counting Principles, Permutations, and Combinations

Discrete Probability Distributions

Discrete Random Variables
Discrete Probability Distributions and their Mean and Standard Deviation
The Binomial Distribution

Continuous Probability Distributions

Continuous Random Variables
The Normal and Standard Normal Distributions
Applications of the Normal Distribution

Sampling Distributions

Commonly Used Parameters and Statistics
Sampling Distribution of Sample Means
Sampling Distribution of Sample Proportions
Probability Involving Sample Statistics

Analyze and Understand Application Problems

Understand the Difference Between Population versus Sample Statistics
Apply Statistical Techniques and Effectively Communicate Trends in the Data in Context
Identify Given Statistics and Write Their Interpretations
Analyze Published Articles and Apply Experimental Design Principles
Use Technology to Perform Statistical Computations and Representations of Data in Applications

LABORATORY CONTENT:

1. Algebra Topics including algebraic expressions, exponents, radicals, inequalities, and equation of lines.

2. Sampling methods

3. Graphical and Numerical Summaries of Data
4. Bivariate data analysis

5. Probability including discrete and continuous probability distributions

6. Sampling distributions and applications

7. Use of technology to perform statistical analysis

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

1. Lecture/Discussion
2. Collaborative Group Learning
3. Article Handouts
4. Multimedia Presentations
5. Web Enhanced
6. Homework Assignments
7. Group or Individual Projects
8. Problem Solving and Technology Sessions

COURSE ASSIGNMENTS:

Reading Assignments

A. Textbook
B. Published Articles
C. Case Studies

Out-of-class Assignments

A. Textbook or Online Homework Assignments
B. Projects
C. Problem solving applications requiring critical thinking

Writing Assignments

A. Projects
B. Reports
C. Exam questions which require written explanation of a topic or a concept

METHODS OF STUDENT EVALUATION:

Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration

**Demonstration of Critical Thinking:**

A minimum of 3 exams, the majority of which shall not be multiple choice or true/false. Students must show their written work and the work must be evaluated.

A comprehensive final exam to be given.

All exams are to be proctored, on campus exams.

**Required Writing, Problem Solving, Skills Demonstration:**

A minimum of 3 exams, the majority of which shall not be multiple choice or true/false. Students must show their written work and the work must be evaluated.

A comprehensive final exam to be given.

All exams are to be proctored, on campus exams.

**TEXTS, READINGS, AND RESOURCES:**

**TextBooks:**

**Other:**
1. It is expected that some amount of supplemental in-class materials will be necessary for this class.

**LIBRARY:**

**Adequate library resources include:** Print Materials

**Comments:**

**Attachments:**

[Attached Files](#)