ROCHESTER COMMUNITY AND TECHNICAL COLLEGE COMMON COURSE OUTLINE

Course discipline/number/title: MATH 2208: Fundamentals of Statistics

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 4
3. Prerequisites (Course discipline/number): MATH 0099 or MATH 0100 or MATH 1111, READ 0990
4. Other requirements: Prerequisites may be satisfied by equivalent Math and/or Reading placement scores
5. MnTC Goals (if any): Goal 4/Mathematical/Logical Reasoning

B. COURSE DESCRIPTION: This course is an introduction and overview of math statistics. Topics will include (but not limited to) descriptive statistics, probability, confidence intervals, hypothesis testing, and linear regression. Computers and graphics calculators will be used extensively throughout the class in the classroom and computer lab setting.

C. DATE LAST REVISED (Month, year): April, 2024

D. OUTLINE OF MAJOR CONTENT AREAS:
1. Statistical Terminology
2. Data Types
3. Sampling Methods
4. Data Summaries: Numeric and Visual
5. Fundamentals of Probability
6. Probability Distributions
7. Confidence Intervals
8. Hypothesis Tests
9. Linear Regression Analysis
10. Analysis of variance (ANOVA): One-way

E. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Understand and apply statistical terminology, identify types of data and sampling.
2. Summarize and interpret data using a variety of techniques and graphical devices.
3. Calculate and interpret measures of center, variation or dispersion, expected value, position and determine the general shape if the distribution when given data, summary statistics, probability distributions, and other information.
4. Calculate and interpret probabilities and probability distributions including normal, binomial, and uniform.
5. Calculate and interpret one and two sample confidence intervals for mean(s), proportion(s), and standard deviation(s) or variance(s).
6. Select the appropriate hypothesis test given data or statistics for mean(s), proportion(s), and standard deviation(s) or variance(s) on a given data set and draw a conclusion from the resulting test statistic using the traditional and/or p-value methods.
7. Calculate and interpret the correlation coefficient and regression line equation for a given data set and make predictions.
8. Perform statistical analysis using a graphing calculator or statistical software on the computer.
   a) Enter data and create statistical outputs.
   b) Accurately analyze and interpret computational work and outputs.

F. LEARNING OUTCOMES (MNTC):
Goal 4/Mathematics/Logical Reasoning: The student will be able to:
1. Illustrate historical and contemporary applications of mathematics/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument (proof).
4. Apply higher-order problem-solving and/or modeling strategies.

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:
1. Exams
2. Homework

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to: Continued. . .

3. Quizzes
4. Computer Labs
5. Activities
6. Projects
7. Comprehensive Final Exam

H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s): Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any):
A graphing calculator is required (Texas Instrument (TI) is recommended and supported).