MTH 168

PROBABILITY AND STATISTICS

3 Credit Hours

Prepared by:
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MTH168: Probability and Statistics

I. CATALOGUE DESCRIPTION

A. Course pre-requisites/co-requisites: COMPASS college algebra score of at least 46, COMPASS trigonometry score of at least 31 within the past two years, ACT math score of 25 or higher within the past two years, or MTH 134 / 134H with a grade of “C” or better, and reading proficiency

B. 3 semester credit hours

C. Probability and Statistics covers descriptive statistics, probability, probability distributions, sampling distributions, and hypothesis testing. A graphing calculator is required. (F, S)

II. EXPECTED LEARNING OUTCOMES / CORRESPONDING ASSESSMENT MEASURES

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<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
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<tr>
<td>Demonstrate an understanding of various types of presentation techniques and numerical measures associated with descriptive statistics</td>
<td>In-class exercises, quizzes, midterm exam, final exam</td>
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<tr>
<td>Apply various rules associated with probability</td>
<td>In-class exercises, quizzes, midterm exam, final exam</td>
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<td>Find probabilities for various discrete, normal and sampling probability distributions</td>
<td>In-class exercises, quizzes, midterm exam, final exam</td>
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<td>Demonstrate an understanding of confidence intervals and hypothesis testing</td>
<td>In-class exercises, quizzes, final exam</td>
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<td>Demonstrate a basic understanding of simple linear regression and correlation</td>
<td>In-class exercises, quizzes, final exam</td>
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III. OUTLINE OF TOPICS

A. Introduction (chapter 1)
   1. Define various terms (e.g., statistics, parameters, etc.)
   2. Distinguish between descriptive statistics and inferential statistics
   3. Discuss the four levels of data measurement: nominal, ordinal, interval and ratio

B. Summarizing data (chapters 2 and 3)
   1. Implement various techniques for rearranging and summarizing data
   2. Compute various measures of central tendency and variation
C. Possibilities and probability (chapters 4 and 5)
   1. Implement various rules associated with computing number of possible outcomes (i.e., multiplication of choices, permutations and combinations)
   2. Implement various rules associated with probability

D. Probability distributions (chapters 6 and 7)
   1. Find probabilities for variables associated with the binomial, hypergeometric and Poisson distributions
   2. Compute the mean and standard deviation for any discrete probability distribution
   3. Compute probabilities for a normally distributed variable
   4. Use the normal approximation to compute probabilities for a binomial variable

E. Sampling distributions and estimation (chapters 8 and 9)
   1. Apply the central limit theorem to problems involving sampling distributions
   2. Construct large and small sample confidence intervals for the mean

F. Tests concerning means and proportions (chapters 10 and 11)
   1. Identify the steps associated with hypothesis testing
   2. Conduct tests concerning means, differences between means, proportions, and differences between proportions

G. Regression and correlation (chapter 12)
   1. Use the method of least squares to find a simple linear regression equation
   2. Compute and interpret the correlation coefficient

IV. METHOD(S) OF INSTRUCTION

A. Lecture

B. Class discussion

C. In-class exercises

C. Textbook

V. REQUIRED TEXTBOOK


VI. REQUIRED MATERIAL(S)
Notes and in-class exercises
Graphics calculator (TI-83 Plus is recommended)

VII. SUPPLEMENTAL REFERENCE(S)
Solution Manual

VIII. METHOD(S) OF EVALUATION
A. Closed-book, closed-notes, in-class, chapter quizzes (for each chapter except Chapter 1)
B. Closed-book, closed-notes, in-class, midterm exam (Chapters 1-7)
C. Closed-book, closed-notes, in-class, final exam (Chapters 1-12)

IX. ADA AA STATEMENT
Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-481-3169)

X. ACADEMIC HONESTY STATEMENT
Students who are caught cheating or plagiarizing material in this course will not receive credit for the assignment in question and may be dropped from the course with a failing grade. A detailed description of the Academic Honesty Policy statement can be found in the Jefferson College Student Handbook or online at: http://www.jeffco.edu

XI. ATTENDANCE STATEMENT
Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.