

**JEFFERSON COLLEGE**

**COURSE SYLLABUS**

**MTH 168**

**PROBABILITY AND STATISTICS**

3 Credit Hours

Prepared by:  
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## MTH168: Probability and Statistics

### I. CATALOG 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)
- D. Fulfills Mathematic Sciences for AA, AAT, AFA, and select AAS degrees general education requirement, NOT part of MOTR CORE 42\*\*.  
\*\*Students who directly place into and successfully complete (C or better) an advanced mathematical sciences 3+ credit hour course with one of the MTH general education MOTR courses as a prerequisite meet the general education CORE 42 requirement of a minimum of 3 credit hours in Mathematical Sciences. Three credit hours from this course may apply to meet the Mathematical Sciences and overall total of 42 credit hours for CORE 42 completion. Credits in excess of these three apply to degree requirements/electives.  
Students have the option of having the prerequisite course credit hours posted to their transcript for the normal credit hour posting fee.  
Elective course applies toward AA and AAT degree requirement.  
May not apply both BUS168 and MTH168 toward graduation.

### II. EXPECTED LEARNING OUTCOMES / CORRESPONDING ASSESSMENT MEASURES

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

### 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. METHODS OF INSTRUCTION

- A. Lecture

- B. Class discussion
- C. In-class exercises
- C. Textbook

V. REQUIRED TEXTBOOK

Freund, J. E., & Perles, B. M. *Statistics: a first course* (Current Edition). Upper Saddle River, NJ: Pearson Prentice Hall.

VI. REQUIRED MATERIALS

Notes and in-class exercises  
Graphics calculator (TI-83 Plus is recommended)

VII. SUPPLEMENTAL REFERENCES

Solution Manual

VIII. METHODS 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 (Technology Center 101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at

least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. 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.

## XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.