

**JEFFERSON COLLEGE**

**COURSE SYLLABUS**

**MTH092**

**SUPPORT FOR INTRODUCTORY STATISTICS**

3 Credit Hours

Prepared by:  
Skyler Ross  
January 2018

Dr. Robert Brieler, Division Chair, Math & Science  
Dr. Shirley Davenport, Dean, Arts & Science Education

## MTH092 Support for Introductory Statistics

### I. CATALOG DESCRIPTION

- A. Course pre-requisites/co-requisites: Reading Proficiency. Math requirement by one of the following: High School GPA 3.0 or higher within six-seven years, GED scores of 165-174 within last five years, or JC Non-STEM Math Readiness score of 20-49 within two years. Co-requisite: MTH132 Introductory Statistics
- B. 3 semester credit hours
- C. MTH092 Support for Introductory Statistics is taken concurrently with MTH132 Introductory Statistics to give students additional practice with the numerical, algebraic, and study skills necessary for successful, independent completion of Introductory Statistics. (F, S)
- D. Taken concurrently with MTH132 Introductory Statistics in fulfillment of Mathematics Proficiency requirement; does not count towards degree requirements.

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

Expected Learning Outcomes	Assessment Measures
Develop and execute a plan for passing an Introductory Statistics exam that incorporates planning, preparing for class, efficient practice, self-quizzing, comprehensive review, and self-reflection	Pre-class activities Timely completion of homework Homework and quiz notebook Self- and peer-review activities Quizzes (group and individual)
Create strategies for recognizing types of mathematical situations and then choosing appropriate methods to work with them	Pre-class activities Classroom activities Student-instructor conferences
Fluently apply various mathematical algorithms, pertinent to Introductory Statistics	Quizzes (group and individual) Online homework assignments Classroom activities
Identify and correct their own computational errors	Group activities Self- and peer-review activities Homework and quiz notebook
Identify non-cognitive barriers that may impede their progress toward passing exams and develop effective strategies for avoiding or overcoming such barriers	Class discussions Student-instructor conferences

### III. OUTLINE OF TOPICS

This course is designed such that the instructor will individualize some of the instruction to each student in the class, based on each student's specific needs. All students should demonstrate ability in the following areas, but the amount of time devoted to each area, and the number of activities and assignments for each area, will vary as needed.

- A. Types of data
  - 1. Quantitative and qualitative
  - 2. Continuous and discrete
  - 3. Nominal, ordinal, and cardinal
  
- B. Organizing and presenting data
  - 1. Dot plots
  - 2. Stem and Leaf plots
  - 3. Frequency and relative frequency distributions
  - 4. Histograms
  - 5. Comparing back-to-back population distributions
  
- C. Describing data
  - 1. Measures of center and spread
  - 2. The five number summary and boxplots
  - 3. Percentiles, z-scores, outliers and unexpected outcomes
  - 4. Clusters, gaps and skewness
  - 5. Comparing back-to-back population distributions
  
- D. Collecting data
  - 1. Census, survey, observation, and experiment
  - 2. Random selection and assignment
  - 3. Bias and confounding variables
  - 4. Practical and statistical significance
  - 5. Designing appropriate studies
  
- E. Probability
  - 1. Probabilities of simple events
  - 2. Compound events with and without replacement
  - 3. Conditional probabilities and contingency tables
  - 4. Counting methods
  
- F. Discrete probability distributions
  - 1. Probability distribution functions
  - 2. Binomial and geometric
  - 3. Hypergeometric and poisson
  - 4. Determining the appropriate distribution
  - 5. Probability of specific outcomes and ranges of outcomes
  - 6. The mean, standard deviation, and unexpected outcomes

- G. Continuous probability distribution
  - 1. Uniform, exponential, and normal distributions
  - 2. Determining the appropriate distribution
  - 3. Probability of specific outcomes and ranges of outcomes
  - 4. The mean, standard deviation, and unexpected outcomes
  - 5. Z-Scores and percentiles
  
- H. Inferential statistics
  - 1. The central limit theorem
  - 2. Confidence intervals for a mean
  - 3. Confidence intervals for a proportion
  - 4. Determining required sample size
  - 5. Two-population confidence intervals for the mean
  
- I. Hypothesis testing
  - 1. Null and alternate hypotheses
  - 2. One vs. two tailed tests
  - 3. Test hypotheses for mean and proportion
  - 4. Determining required sample size
  - 5. Two population hypothesis testing
  
- J. Correlation and regression
  - 1. Creating and interpreting scatterplots
  - 2. The correlation coefficient
  - 3. Linear regression

#### IV. METHODS OF INSTRUCTION

- A. Whole-class discussions
- B. Small-group discussions
- C. One-on-one student-instructor conferences
- D. In-class activities
- E. Worksheets and handouts

#### V. REQUIRED TEXTBOOK(S)

- A. *Introductory Statistics*, Openstax.org

#### VI. REQUIRED MATERIALS (STUDENT)

- A. TI 32 or 84 series Graphing Calculator

VII. SUPPLEMENTAL REFERENCES

- A. None

VIII. METHODS OF EVALUATION (basis for determining grade)

- A. Performance in Introductory Statistics: 20 - 30%
- B. Pre-class activities: 10-20%
- C. Classroom Activities: 10-20%
- D. Individual/Group Quizzes: 10-20%
- E. Homework and quiz notebooks: 10 - 20%
- F. Attendance and Participation: 10%
- G. Grading Scale
  - 90-100% = A
  - 80-89% = B
  - 70-79% = C
  - 60-69% = D
  - Below 60% = F

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.