

**Miami-Dade College
Wolfson Campus
2009-2**

STA 2023 STATISTICAL METHODS

Reference # 550973

Tuesdays 5:40 - 8:10 p.m.

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Text: Essentials of Statistics 3rd Edition by Mario F. Triola

1. **COURSE DESCRIPTION:** This is an introductory course to the basic statistical methods used in business and the social sciences. Emphasis is on learning to select the appropriate technique for a given situation. Specific topics include: collection, grouping, and presentation of data; measures of center and variation; probability; hypotheses testing; confidence intervals; correlation & regression; Chi Squares and ANOVA. See attached course objectives for details. Pre-requisites: MAT1033 with a grade of at least a C or appropriate placement score prior to enrolling in STA 2023.

2. **Learning Outcomes:** The competencies and objectives included in this course will address outcomes 1, 2, 3, and 4 from a set of 10 learning outcomes that Miami Dade College graduates are expected to achieve.
 1. Communicate effectively using listening, speaking, reading, and writing skills.
 2. Use quantitative analytical skills to evaluate and process numerical data.
 3. Solve problems using critical and creative thinking and scientific reasoning.
 4. Formulate strategies to locate, evaluate, and apply information.
 5. Demonstrate knowledge of diverse cultures, including global and historical perspectives.
 6. Create strategies that can be used to fulfill personal, civic, and social responsibilities.
 7. Demonstrate knowledge of ethical thinking and its application to issues in society.
 8. Use computer and emerging technologies effectively.
 9. Demonstrate an appreciation for aesthetics and creative activities.
 10. Describe how natural systems function and recognize the impact of humans on the environment.

3. **GRADING POLICY:** There will be four tests throughout the semester. The lowest test grade will be dropped. There will also be a final examination covering all material in the course. The final cannot be dropped. For each test and for the final examination, students are allowed to use an information sheet with whatever information is desired. **HOWEVER, THIS SHEET MUST BE TURNED IN WITH EACH EXAMINATION.** In addition, there will be frequent quizzes (approximately 8 to 10 throughout the semester). The two lowest quiz grades will be dropped. Attendance in class and a calculator are **MANDATORY**.

Quizzes	15 points
Tests	45 points
Final Examination	35 points
Attendance	5 points

The final grade will be assigned on the following scale:

A	90- 100 points
B	80- 89 points
C	70- 79 points
D	60- 69 points
F	0- 59 points

4. **MAKE-UP POLICY:** There will be no make-up examinations. However, for students who know that they will be unable to attend the day of a test, **PRIOR** arrangements can be made. **There will be no make-up for missed quizzes under any circumstances.**
5. **MATHEMATICS LABORATORY:** Assistance is available for mathematics classes in the Mathematics Laboratory, Room 2223, Building II, Second Floor. You do not need an appointment to use the lab. The lab has course-related videotapes and computer software, and tutors that can help you to successfully complete this course. One-to-one tutoring is available by appointment. Please visit or call the lab to schedule an appointment. The telephone number for the lab is 305-237-3834.
6. **WITHDRAWAL POLICY:** If you feel that you will be unable to complete the requirements for passing this class, it is your responsibility to officially withdraw from the course by the specified date. Failure to officially withdraw from the course will result in a grade of F.
7. **ELECTRONIC DEVICES:** Please make sure that electronic devices such as cell phones or pagers don't go off in class.
8. **REPEATING COURSES:** A state law in effect with the 1997 fall term requires that students enrolling for a third time in the same course **MUST PAY THE FULL COST OF INSTRUCTION**, approximately four times the usual tuition.
9. **CLAST ALTERNATIVE:** Students earning a GPA of 2.5 or higher in selected mathematics courses are exempt from taking the mathematics section of the CLAST. STA 2023 is one of these courses. Please note that education majors cannot be exempt from the CLAST.

10. **MDC Email Account:** Students are required to activate and use their MDC email account. The MDC account allows students to receive email from their instructors and get notification/announcements or other pertinent information from the College.

Anticipated Semester Schedule

1	01/05	Chapters 1 and 2: Introduction, Organizing Data
2	01/12	Chapters 2 and 3: Descriptive Statistics
3	01/19	Chapter 3: Descriptive Statistics (conclusion), Test 1
4	01/26	Chapters 4 & 5: General Probability & Discrete Probability Distributions
5	02/02	Chapter 5: Discrete Probability Distributions (conclusion)
6	02/09	Chapter 6: Normal Probability Distributions
7	02/16	Chapter 6: Normal Probability Distributions (conclusion)
8	02/23	Chapter 7: Estimates, Sample Sizes, Test 2
9	03/02	Chapters 7 & 8: Estimates, Sample Sizes & Hypotheses Testing
10	03/09	Chapters 8 & 9: Inferences from Two Samples
11	03/16	Chapter 9: Inferences from Two Samples (conclusion)
12	03/23	Chapter 10: Correlation & Regression, Test 3
13	03/30	Chapter 10: Correlation & Regression (conclusion)
14	04/06	Chapter 11: Chi Squares & Analysis of Variance
15	04/13	Chapter 11: Chi Squares & Analysis of Variance (conclusion) Test 4
16	04/20	Special Topics
17	04/27	Final Examination

Miami-Dade College
STA 2023 - Course Objectives

The student in this course will acquire knowledge in the following topics: collecting, grouping, and presenting data; measures of central tendency and dispersion; probability; testing hypotheses; confidence intervals, and correlation. (3 hr. lecture)

Pre-requisite: MAT1033 (with a grade C or better), or appropriate placement score

Competency 1: The student will be able to analyze data by:

- a. Constructing and interpreting frequency tables and graphs such as bar graphs, pie charts and stem-and-leaf plots.
- b. Computing and interpreting the measures of centrality: the mean, median, mode and midrange.
- c. Computing and interpreting the measures of dispersion: the range, variance and standard deviation.

Competency 2: The student will be able to apply the measures of position by:

- a. Computing z-scores.
- b. Applying the Empirical Rule to the Normal Distribution.
- c. Applying the Chebyshev's Rule to the Non-Normal (or unknown) Distributions.

Competency 3: The student will be able to apply the counting principles by:

- a. Defining the Fundamental Counting Principle.
- b. Computing the possible outcomes of compound events.
- c. Computing Combinations and Permutations.

Competency 4: The student will be able to apply basic probability theory by:

- a. Describing a sample space and an event.
- b. Calculating probabilities of simple, compound and conditional events.

Competency 5: The student will be able to analyze random variables by:

- a. Distinguishing between discrete and continuous random variables.
- b. Constructing a probability distribution for a discrete random variable and computing its mean and standard deviation.
- c. Computing probabilities for random variables having a binomial distribution.
- d. Computing probabilities for random variables having a normal distribution.
- e. Applying the Central Limit Theorem.
- f. Approximating the Binomial Probability using the Normal Distribution.

Competency 6: The student will be able to analyze confidence intervals by:

- a. Constructing confidence intervals of a single mean with a known population standard deviation.
- b. Constructing confidence intervals of a single mean with an unknown population standard deviation.
- c. Constructing confidence intervals of a single proportion.
- c. Constructing confidence intervals of the difference between two means.

Competency 7: The student will be able to apply hypothesis test procedures by:

- a. Identifying Type I and Type II errors.
- b. Identifying and interpreting p-values.
- c. Testing a single mean for large or small samples
- d. Testing the difference between two means.
- e. Testing a single proportion.

Competency 8: The student will be able to analyze bivariate data by:

- a. Constructing and interpreting a scatter-plot.
- b. Computing and interpreting the linear correlation coefficient.
- c. Determining the simple linear regression equation and using it to make predictions.