Wolfson Campus

STA 2023 –Statistical Methods

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Office: Wolfson Campus, Room 3704-06
Course Id: STA 2023
Term: 2009-1
Reference Number: 528850
Credits: 3
Days: Thursdays
Location: Room 1566
Time: 5:40 p.m. to 8:10 p.m.
Prerequisite: MAC 1105 (Grade "C" or better)

Office Hours: Tuesdays from 3:00 p.m. to 5:00 p.m. and Thursdays from 11:30 a.m. to 1:00 p.m. at Room 2301-01; also by appointment.

COURSE DESCRIPTION

STA 2023, Statistical Methods, is a first course in statistics designed to introduce some of the most important techniques used in Business and Social Sciences. Among the topics that will be discussed in class are: Description of Sample Data, Organizing Data, Numerical Descriptive Measures, Probability, Normal Distribution; Sampling Distribution, Estimation of Mean and Proportion, Hypothesis Tests, Chi-Square Distributions and Linear Regression.

TEXTBOOK

Essentials of Statistics 3rd Edition by Mario F. Triola; Publisher Addison-Wesley.

MyMathLab

With the textbook, Students should receive an access code for the MyMathLab/Coursecompass course that the instructor has created online to supplement this course. The website for the online course is www.coursecompass.com. The course ID for the MyMathLab course is **madiedo23164.** Here students can find helpful materials such as videos, tutorials, and portions of the textbook. Students also have homework to do online.

COURSE GOALS and OBJECTIVES

See attached goals and objectives. This course is applications driven.

COURSE ACTIVITIES TO MEET GOALS AND OBJECTIVES

Course activities include lectures, class discussions, exercises, exams, project, and homework assignments.

WOLFSON CAMPUS MATH LAB

Students may also go to the Math Lab on the second floor of building 2, room 2223, for help. An appointment is not needed. Tutors are available who can help you to successfully complete this course. The Mat Lab is open Monday through Saturday. For additional information, contact the Math Lab at (305) 237-3834.

ATTENDANCE

It is your responsibility to attend all class meetings. Attendance is taking at the beginning of class. If you miss a class, it remains your responsibility to obtain information concerning the material covered and assignments. Please check with me for any additional information about the class that you missed.

Students who absent themselves from the course and do not comply with the withdrawal procedures may be recorded as having failed the course and they will be awarded an **F** grade. **To withdraw from this class, you must do so officially.** A "'Drop Card" must be obtained from the Registrar, completed, and returned to the Registrar on or before the last day to drop. **The last day to drop a class with a grade of W is Tuesday, November 3, 2009.**

MDC EMAIL ACCOUNT:

Students are required to activate and use their MDC email account. The best way to contact me is ia my Miami Dade College email. I require that you check your email at least twice a week because I may periodically email you regarding class activities.

PUNCTUALITY, CONDUCT AND MOBILE PHONES:

1- Class will begin promptly at the time convened. I expect you to come on time, as a courtesy to your fellow classmates and me.
2- Respect to the professor and classmates is expected at all times and any form of disrespect or misconduct will not be tolerated. Improper behavior may result in your being asked to leave the class.
3- Turn off mobile phones before class. Breaching this may result in your being asked to leave the class. Once again, this is as a courtesy to your fellow classmates and professor.

ACADEMIC DISHONESTY

Academic dishonesty is not tolerated. Academic dishonesty includes cheating on an examination and plagiarism. Using another student's work with or without that student's consent for your assignment is an example of plagiarism. For a more detailed explanation and definition of academic dishonesty and its consequence, refer to Miami Dade College Students' Rights and Responsibilities handbook.

GRADE CRITERIA

Grading is done on the total points received in the course. The approximate weighing for the course will be:

Grading Scale

90-100	**A**
80-89	**B**
70-79	**C**
60-69	**D**
<60	**F**

Grading System

Percentage	Description
60%	There will be five exams worth 100 points each. The four best scores will be counted. If you miss one exam for any reason, that is the exam which will be deleted. **NO MAKE-UP EXAMS and NO EXTRA CREDITS ARE GIVEN.**
30%	There will be a final exam worth 100 points and will cover the entire course. Attendance for the final is mandatory
10%	**There are five sections of a project, each section is due on a test date. Grade is apart from test graded.**

INCOMPLETE GRADES:

Incomplete grades are to be given only to students who have been regularly attending class and have completed most of the work for the class but who have a serious emergency at the end of the term. See the Student Bulletin for Incomplete Grade Policy.

Calendar of Activities Fall 2009-1 Term

Please note: Activities and Assignments are subject to change

Meeting on	Discussions and Activities on Chapter's Sections	Problems
Aug 27	Welcome Remarks: Distribution and Discussion of Syllabus Calendar and Project. **Emphasis on grading and attendance.** 1.1 Overview 1.2 Types of Data 2.1 Overview 2.2 Frequency Distribution 2.3 Histograms 3.1 Overview 3.2 Measures of Center 3.3 Measures of Variation.	 1, 5 to 8 1, 3, 5 to 8, 14, 16, 20 1, 2, 5 to 8, 14, 16, 20 8, 12, 16 1, 2, 5 to 15, 16, 27 1 to 15
Sep 3	Review for Test 1 **Test 1**	Handout **Due Date for Project's Parts 1 to 3**
Sep 10	4.1 Overview 4.2 Fundamentals 4.3 Addition Rule 4.4 Multiplication Rule: Basics	 5 to 16, 20, 26, 28 1 to 20 1 to 20
Sep 17	4.5 Multiplication Rule: Complements and Conditional Probability 5.1 Overview 5.2 Random Variables. Pages 195-198 5.3 Binomial Probability Distribution 5.4 Mean, Variance and St. Deviation for the Binomial Dist.	1 to 24 1 to 12 1 to 14; 29 to 35 1 to 18
Sep 24	Review for Test 2 **Test 2**	Handout **Due Date for Project's Parts 4 to 6**
Oct 1	6.1 Overview 6.2 The Standard Normal Distribution 6.3 Applications of Normal Distributions 6.6 Normal as Approximation to Binomial	 1 to 39 1 to 23 1 to 32
Oct 8	Review for Test 3 **Test 3**	Handout **Due date for Project's Parts 7 to 9**
Oct 15	6.4 Sampling Distributions and Estimators 6.5 The Central Limit Theorem 7.1 Overview 7.2 Estimating a Population Proportion	1 to 6 1 to 4 25 to 40
Oct 22	7.3 Estimating a Population Mean: σ Known 7.4 Estimating a Population Mean: σ Not Known 7.5 Estimating a Population Variance	21 to 31 13 to 21 13 to 20
Oct 29	Review for Test 4 **Test 4**	Handout **Due date for Project's Parts 10 to 12**

Meeting on	Discussions and Activities on Chapter's Sections	Problems
Nov 3	**Last Day to Withdraw with a Grade of W**	
Nov 5	8.1 Overview 8.2 Basics of Hypothesis Testing 8.3 Testing a Claim About a Proportion	 1 to 40 1 to 24
Nov 12	8.4 Testing a Claim About a Mean: σ Known 8.5 Testing a Claim About a Mean: σ Not Known 8.6 Testing a Claim About a Standard Deviation or Variance 10.1 Overview 10.2 Correlation 10.3 Regression 10.4 Variation and Prediction Intervals	1 to 15 1 to 27 1 to 20 1 to 21 1 to 21 1 to 13
Nov 19	Review for test 5 **Test 5**	Handout **Due date for Project's Parts 13 and 14**
Nov 26	**Thanksgiving Holiday**	
Dec 3 and 10	**Review for Final**	
Dec 17	**Final Exam**	

Learning Outcomes: The competencies and objectives included in this course will address some of the recently adopted Miami Dade College General Education outcomes, a set of 10 learning outcomes we expect graduating students to master in the years to come.
Miami Dade College General Education Outcomes

As graduates of Miami Dade College, students will be able to: Communicate effectively using listening, speaking, reading, and writing skills.

1. Use quantitative analytical skills to evaluate and process numerical data.
2. Solve problems using critical and creative thinking and scientific reasoning.
3. Formulate strategies to locate, evaluate, and apply information.
4. Demonstrate knowledge of diverse cultures, including global and historical perspectives.
5. Create strategies that can be used to fulfill personal, civic, and social responsibilities.
6. Demonstrate knowledge of ethical thinking and its application to issues in society.
7. Use computer and emerging technologies effectively.
8. Demonstrate an appreciation for aesthetics and creative activities.
9. Describe how natural systems function and recognize the impact of humans on the environment.

The learning activities designed in this course will address outcomes 1, 2, 3, 4, 8 and 10. The selected problems may also introduce concepts in outcomes 5, 6, 7, and 9.

MDC Mission Statement:

"The mission of Miami Dade College is to provide accessible, affordable high quality education by keeping the learner's needs at the center of decision-making and working in partnership with its dynamic, multicultural community."

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)

Co-requisite: MAC 1105 or higher.

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:
Distinguishing between discrete and continuous random variables.

a. Constructing a probability distribution for a discrete random variable and computing its mean and standard deviation.
b. Computing probabilities for random variables having a binomial distribution.
c. Computing probabilities for random variables having a normal distribution.
d. Applying the Central Limit Theorem.
e. 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.
d. 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.