

MARIAN UNIVERSITY

———— Indianapolis ————®

Marian's Adult Programs

BUS 205 Statistical Methods

Course Description

A study of the basic concepts and methods of statistics, including descriptive statistics, probability, sampling theory and practice, hypothesis testing, and correlation.

General Information

Credit Hours: 3

Prerequisites: An Intermediate Algebra course (MAT 095 or 105)

If you have not had any math in a number of years you might have difficulty with this class. It is expected that you have a good foundation of basic algebra and can use variables in equations, go through calculations, and understand the basic fundamentals of algebra. If you have not used these and did not or do not have a foundation in this, then it is suggested that you take MAT 105 (or another intermediate algebra course) before taking this course. This is especially true for an online course, as you do not have regular, in-person aid. If you took intermediate algebra and did not get a C or better, this class will also be challenging for you.

Required Textbook(s) and Additional Resources

Refer to the MAP website (www.marian.edu/MAP) for specific textbook requirements.

A **calculator** capable of addition, subtraction, multiplication, division, taking numbers to a power, square roots, and factorials. A good, inexpensive choice is TI-30X IIS. You do not need a graphing calculator but if you have one, feel free to use it – they are nice. I will be able to help you with your calculator. If you have a question about a calculator you already have, you can email me a picture of it and I will let you know if it will be acceptable or not. I know the iPhone/iPad calculators will do a lot, but you will find that when the problems get more complicated, they aren't good enough – just buy the TI-30 – it shouldn't be more than \$15, and you can sometimes find it on sale

Course Objectives

At the completion of the course, the student will be able to:

1. Understand the statistical terms, concepts and methods presented in the course. They should be able to:
 - 1.1 Define the terms and related concepts.
 - 1.2 State the relevance of the terms and concepts to modern statistical practices.
 - 1.3 Distinguish between proper and improper usage of the terms and concepts.
 - 1.4 Identify the assumptions underlying the statistical methods presented.
 - 1.5 Describe the statistical procedures employed.

2. Evaluate statistical methods by:
 - 2.1 Explaining the purpose of the statistical tests presented.
 - 2.2 Explaining the procedures to be followed in conducting statistical tests.
 - 2.3 Evaluating the effectiveness of the application of statistical methods to specific problems.
 - 2.4 Making inferences about population parameters from knowledge of sample statistics.
 - 2.5 Performing the calculations required for statistical tests and measures.

3. Demonstrate an appreciation of the relevance of statistical methods by:
 - 3.1 Actively participating in problem solving.
 - 3.2 Describing the impact of the application of statistical methods on decision making.
 - 3.3 Recognizing the value of problem definition to problem solving.
 - 3.4 Objectively assessing the contribution of statistical applications to decision making.
 - 3.5 Applying objectivity in the interpretation of problem solutions.

4. Apply statistical methods in problem solving situations by:
 - 4.1 Defining the nature of statistical problems presented.
 - 4.2 Choosing appropriate statistical tools for problems confronted.
 - 4.3 Demonstrating competence in performing mathematical computations in problem solving.
 - 4.4 Making appropriate statistical decisions based on analysis performed.
 - 4.5 Applying statistical decisions to real world problem solving in different situations.

Course Schedule and Assignments

Please be advised that all dates and times in Canvas are Eastern Time (ET) by default. Unless you as the student have changed your personal settings due dates and times will appear as ET. Please plan accordingly.

We will cover the following chapters and sections.

Note that not all sections of all chapters are covered.

A detailed list of assignments and due dates is available on Canvas.

Chapter 1: Statistics – What is it?

Chapter 2: Describing Data: Frequency Distributions and Graphic Presentations

Chapter 3: Describing Data: Numerical Measures

Chapter 4: Describing Data: Displaying and Exploring Data

Quiz I: Chapters 1- 4

Chapter 5: Probability

Chapter 6: Discrete Probability Distributions

Chapter 7: Continuous Probability Distributions

Quiz II: Chapters 5 – 7

Chapter 8: Sampling Methods and the Central Limit theorem

Chapter 9: Estimation and Confidence Intervals of concepts

Quiz III: Chapters 8 and 9

Chapter 10: One-Sample Tests of Hypothesis

Chapter 11: Two-Sample Tests of Hypothesis

Chapter 12: Analysis of Variance

Exam IV: Chapters 10-12

Chapter 13: Linear Regression and Correlation

Final Exam: Cumulative

Policy Statements

Policies and Procedures:

For additional policies and procedures or clarification, refer to MAP Student Handbook for all additional items.

Student Code of Rights and Responsibilities:

Students enrolled in this course agree to abide by the policies, philosophies of conduct, and expectations of MAP and Marian University as stated in the MAP Student Handbook and the Student Code of Rights and Responsibilities Handbook on the MAP website at www.marian.edu/MAP. The Student Code of Rights and Responsibilities is also available at the Office of Student Life.

Disability Statement:

Students with disabilities who have proper documentation must contact the Director of Academic Support Services in the Counseling and Consultation Services office to set up a documentation review. If after the review, accommodations are deemed appropriate, an accommodation plan will be developed. As per the ADA (Americans with Disabilities Act) no accommodations can be provided until this process is complete. Contact Marj Batic, Director of Academic Support Services (mbatic@marian.edu ; 317.955.6150; or stop by the office in Clare Hall). Note: Students who may require assistance in emergency evacuations should consult with the instructor as to the most appropriate procedure to follow. If there are questions regarding such a procedure, contact Ruth Rodgers, Vice President, Student Success and Engagement/Dean of Students @rrodgers@marian.edu or the Director of Academic Support Services for additional information.

Grading Scale

Grading will be determined as follows:

Homework	30%
4 Section Exams	45%
Final Examination (comprehensive)	25%

GRADE	PERCENTAGE
A	95-100%
A-	90-<95%

B+	87-<90%
B	83-<87%
B-	80-<83%
*C+	77-<80%
C	73-<77%
C-	70-<73%
D+	66-<70%
D	60-<66%
F	<60%

Soft Skills

Statistical Methods is a course that integrates the relevant terminology and tools expected from an introductory statistics course with applications to current problems and issues. Students are required to use the tools presented to analyze data based on real world questions. Given either a set of data or summary information from a current issue, students must analyze the information to determine what is relevant, what the question is asking, and what additional measurements need to be calculated. They then must use their problem solving skills to delineate which statistical tool or test is needed to answer the final question. A summary of their analysis and conclusion of their findings is then reported. Problems increase in difficulty beginning with calculation and interpretation of basic statistical measures, utilizing these measures within a larger problem, and finally incorporating the use of multiple measures in the solution. Each section, therefore, requires students to build their analysis and problem solving skills so that at the end of the course, they are able to analyze problems that require many levels of analysis and use of multiple measures and tests within one problem.