

Midland College Syllabus

2021 - 2022

MATH 1342

Statistics

3 Semester Credit Hours

(3 Lecture/0 Lab)

Core Curriculum Course

Instructor Information:

Instructor: [Click here to enter text.](#)

Phone: [Click here to enter text.](#)

Office Hours: [Click here to enter text.](#)

Office: [Click here to enter text.](#)

Email: [Click here to enter text.](#)

Notice: Students MUST actively participate by completing an academic assignment required by the instructor by the official census date. Students who do not actively participate in an academically-related activity may be reported as never attended and dropped from the course.

Course Description:

This course is designed to enable students to learn the introductory techniques of collection, analysis, presentation, and interpretation of data and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Prerequisite: TSI complete Math.

A final project applying the techniques and analysis described in the above course description is required.

Core Objectives:

This course fulfills the three-hour Mathematics requirement in the Midland College Core Curriculum. The Core Curriculum is a set of courses that provide students with a foundation of knowledge, skills and educational experiences that are essential for all learning. The Core Curriculum is available in the [Midland College Catalog](#). As part of the core, this course addresses the following three objectives:

Critical Thinking Skills – Students will demonstrate critical thinking skills by analyzing and interpreting numerical data including descriptive statistics, correlation and regression, confidence intervals and hypothesis testing in course assignments, instructor created exams, and a departmental final exam.

Communication Skills – Students will demonstrate communication skills in written, oral, and visual form within the classroom setting through instructor posed questions, collaborative peer assignments, and exams.

Empirical and Quantitative Skills – Students will demonstrate empirical and quantitative skills by analyzing real-world applications of introductory

techniques of collection, presentation, analysis, and interpretation of numerical data and probability through course assignments, instructor created exams, and a departmental final exam.

Text, References and Supplies:

- Sullivan, Statistics: Informed Decisions Using Data, 6th ed.
 - ISBN: 978-0-13-413678-3 (Midland College custom print)
- MyStatLab is required. 978-0-135-91055-9
- Graphing calculator is required by some instructors.
- Access to a computer with Microsoft Excel is required by some instructors.

Student Learning Outcomes

Upon successful completion of this course, students will:

1. Explain the use of data collection and statistics as tools to reach reasonable conclusions.
2. Recognize, examine and interpret the basic principles of describing and presenting data.
3. Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
4. Explain the role of probability in statistics.
5. Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
6. Describe and compute confidence intervals.
7. Solve linear regression and correlation problems.
8. Perform hypothesis testing using statistical methods.

Student Contributions, Responsibilities and Class Policies:

Students will be expected to comply with the policies outlined in the [Midland College Catalog](#). Instructor policies concerning attendance and academic behavior are consistent with the policies in the catalog. Regular attendance is required to do well in this class. Students will be evaluated based on the results of assessments outlined in the syllabus and Instructor Handout. At least 70% of the course grade will come from proctored assignments.

Attendance Policy:

It is the responsibility of the students to know the policies and procedures associated with absences. These policies are set by instructors. Excused absences may include, but are not limited to, illness, severe weather, and death in the family. Instructors will determine whether or not an absence is excused. Please visit the [Midland College Catalog](#)

Your lecture instructor will inform you on the first day of class as to the tentative dates and content for each exam. Students are expected to complete each exam. Your instructor will inform you on the first day of class as to make-up procedures for missed exams and any exemption procedures if they apply (See Instructor Handout).

Withdrawal Policy:

Students who have enrolled in a Texas public institution of higher education as a first-time freshman in fall 2007 or later are permitted to drop no more than six courses during the entire undergraduate career. This limit includes all transfer work taken at a Texas institution of higher education and to second baccalaureate degrees. This statute was enacted by the State of Texas in spring 2007 (Texas Education Code 51.907). Any course that a student drops after Census Day is counted toward the six-course limit if “(1) the student was able to drop the course without receiving a grade or incurring an academic penalty; (2) the student’s transcript indicates or will indicate that the student was enrolled in the course; and (3) the student is not dropping the course in order to withdraw from the institution.” Please visit the [Midland College Catalog](#)

Scholastic Dishonesty:

Midland College does not tolerate scholastic dishonesty or academic misconduct in any form. Please read the Student Rights & Responsibilities section in the [Midland College Catalog](#) for more information.

Evaluation of Students:

Students will be evaluated based on grades which may include the following but are not limited to:

Assessments	Percentage of Grade	Grade Range
Exams	60-80%	90-100 A
Quizzes/Assignments	0-10%	89-80 B
Final Exam	20-25%	79-70 C
Final Project	5-15%	69-60 D
		59-0 F

Course Schedule:

This class meets for 3 contact hours per week. For a tentative schedule of the class meetings and material to be covered during those meetings, please refer to the schedule distributed to each student on the first class meeting (See Instructor Handout).

Course Outline:

- Chapter 1: Data Collection
 - 1.1 Introduction to the Practice of Statistics
 - 1.2 Observational Studies versus Designed Experiments
 - 1.3 Simple Random Sampling
 - 1.4 Other Effective Sampling Methods
 - 1.5 Bias in Sampling
 - 1.6 The Design of Experiments

- Chapter 2: Organizing and Summarizing Data
 - 2.1 Organizing Qualitative Data
 - 2.2 Organizing Quantitative Data: The Popular Displays

2.3 Additional Displays of Quantitative Data
2.4 Graphical Misrepresentations of Data

Chapter 3: Numerically Summarizing Data
3.1 Measures of Central Tendency
3.2 Measures of Dispersion
3.3 Measures of Central Tendency and Dispersion from Grouped Data (optional)
3.4 Measures of Position and Outliers
3.5 The Five-Number Summary and Boxplots

Chapter 4: Describing the Relation Between Two Variables
4.1 Scatter Diagrams and Correlation
4.2 Least-Squares Regression
4.3 Diagnostics on the Least-Squares Regression Line
4.4 Contingency Tables and Association (optional)

Chapter 5: Probability
5.1 Probability Rules
5.2 The Addition Rule and Complements
5.3 Independence and the Multiplication Rule
5.4 Conditional Probability and the General Multiplication Rule
5.5 Counting Techniques
5.6 Putting It Together: Which Method Do I Use? (optional)

Chapter 6: Discrete Probability Distributions
6.1 Discrete Random Variables
6.2 The Binomial Probability Distribution

Chapter 7: The Normal Probability Distribution
7.1 Properties of the Normal Distribution
7.2 Applications of the Normal Distribution
7.3 Assessing Normality
7.4 The Normal Approximation to the Binomial Probability Distribution (optional)

Chapter 8: Sampling Distributions
8.1 Distribution of the Sample Mean
8.2 Distribution of the Sample Proportion

Chapter 9: Estimating the Value of a Parameter
9.1 Estimating a Population Proportion
9.2 Estimating a Population Mean
9.3 Estimating a Population Standard Deviation (optional)
9.4 Putting It Together: Which Procedure Do I Use? (optional)

Chapter 10: Hypothesis Tests Regarding a Parameter
10.1 The Language of Hypothesis Testing

- 10.2 Hypothesis Tests for a Population Proportion
- 10.3 Hypothesis Tests for a Population Mean
- 10.4 Hypothesis Tests for a Population Standard Deviation (optional)
- 10.5 Putting It Together: Which Method Do I Use? (optional)
- 10.6 The Probability of a Type II Error and the Power of the Test (optional)

Chapter 11: Inferences on Two Samples

- 11.1 Inference about Two Population Proportions
- 11.2 Inference about Two Population Means: Dependent Samples
- 11.3 Inference about Two Means: Independent Samples

Non-Discrimination Statement

Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following individual has been designated to handle inquiries regarding the non-discrimination policies:

Tana Baker

Title IX Coordinator/Compliance Officer
3600 N. Garfield, SSC 131
Midland, Texas 79705
(432) 685-4781
tbaker@midland.edu

For further information on notice of non-discrimination, visit the ED.gov Office of Civil Rights website, or call 1 (800) 421-3481.

Americans with Disabilities Act (ADA) Statement:

Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must visit www.midland.edu/accommodation and complete the Application for Accommodation Services located under the Apply for Accommodations tab. Services or accommodations are not automatic, each student must apply and be approved to receive them. All documentation submitted will be reviewed and a "Notice of Accommodations" letter will be sent to instructors outlining any reasonable accommodations.

Math & Science Division Information:

Division Office: AHSF 124 (432) 685-4561
Division E-Mail: mns@midland.edu

Department Chair: Dr. Krista Cohlmiia (432) 685-4541
Dean: Dr. Miranda Poage
Secretary: Sarah Anderson
Clerk: Liliana Orcutt

Contents

Midland College Syllabus..... 1

 Instructor Information: 1

 Instructor: 1

 Phone: 1

 Office Hours: 1

Notice 1

Course Description:..... 1

Core Objectives: 1

 Critical Thinking Skills..... 1

 Communication Skills..... 1

 Empirical and Quantitative Skills..... 1

Text, References and Supplies: 2

Student Learning Outcomes 2

Student Contributions, Responsibilities and Class Policies: 2

Attendance Policy: 2

Withdrawal Policy: 3

Scholastic Dishonesty: 3

Evaluation of Students: 3

Course Schedule:..... 3

Course Outline: 3

ADA Statement: **Error! Bookmark not defined.**

Math/Science Division Information: 5