Midland College Syllabus
2022 - 2023
MATH 1342
Statistics
3 Semester Credit Hours
(3 Lecture/0 Lab)
Core Curriculum Course

Instructor Information:

Instructor: Click here to enter text.
Office: Click here to enter text.
Phone: Click here to enter text.
Email: Click here to enter text.
Office Hours: 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, Fundamentals of Statistics: Informed Decisions Using Data, 6th ed.
  - ISBN: 978-0-136-80734-6 (Optional)
- MyStatLab is required. ISBN:9780136969778
- 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.

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:

At least 70% of the course grade will come from proctored assignments. 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
Departmental 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

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
- 2.3 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 The Coefficient of Determination
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
5.7 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 Putting It Together: Which Procedure Do I Use? (optional)
9.4 Estimating a Population Standard Deviation (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 Putting It Together: Which Method Do I Use? (optional)
10.5 Hypothesis Tests for a Population Standard Deviation (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.

Continuity of Instruction Statement
In the event that on campus activities are suspended due to extenuating circumstances, such as weather or quarantine, the instructor will continue instruction in a manner that best supports the course content and student engagement. In this event, your instructor will notify students of the change via Click here to enter text. At that time, they will provide details about how instruction and communication will continue, how academic integrity will be ensured, and what students may expect during the time that on campus activities are suspended. If a student becomes unable to continue class participation due to extenuating circumstances, (e.g., health and safety, loss of power, etc.) the student should contact their instructor and advisor for guidance. Resources are available to students via the SOS program. Information can be found at https://www.midland.edu/services-resources/student-services/sos.php.

Grievances or complaints
Concerns should be expressed as soon as possible to allow for early resolution. Midland College encourages students to discuss their concerns with their instructor first. If you feel uncomfortable discussing your situation with your instructor, students should discuss their concerns with the Chair of the appropriate department (Biology Chair – Mr. Tomas Hernandez (432-685-6751), Chemistry Chair – Mr. John Anderson (432-685-6737), Engineering and Physics Chair – Dr. Brian Flowers (432-685-4586), Geology Chair – Mr. Antony Giles (432-685-5580), Kinesiology Chair – Ms. Sheena Thompson (432-685-4579), Math Chair – Dr. Krista Cohlmia (432-685-4541) then the Dean of Math and Science – Dr. Miranda Poage (432-685-4561). If a resolution is still not possible, students may proceed with the formal complaint process.
http://catalog.midland.edu/content.php?catoid=14&navoid=2579#grievances-and-complaints

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

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

Contents