Midland College Syllabus
2018 - 2019
MATH 1342
Statistics
3 Semester Credit Hours
(3 Lecture/0 Lab)
Core Curriculum Course

Instructor Information:
Instructor: 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 proctored 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 proctored exams, and a departmental final exam.

Text, References and Supplies:
  - ISBN: 978-0-13-413678-3 (Midland College custom print)
- MyStatLab code may be required by some instructors.
- Graphing calculator is required (TI-83, TI-84 or TI-Nspire are recommended)
- Access to a computer with Microsoft Excel is required.

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

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<thead>
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<th>Assessments</th>
<th>Percentage of Grade</th>
<th>Grade Range</th>
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<tr>
<td>Exams</td>
<td>65-80%</td>
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<td>Quizzes/Assignments</td>
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<td>89-80 B</td>
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<tr>
<td>Final Exam/Final Project</td>
<td>20-25%</td>
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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?
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

ADA Statement:
Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must place documentation on file with the Counselor/Disability Specialist. Students with disabilities should notify Midland College prior to the beginning of each semester. More information can be found at the Student Service – Disability Services or by contacting the Midland College Disability Specialist at 685-4505.

Student Services will provide each student with a letter outlining any reasonable accommodations. The student must present the letter to the instructor at the beginning of the semester.

Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following individuals have been designated to handle inquiries regarding the non-discrimination policies: Tana Baker, Title IX Coordinator/Compliance Officer, 3600 N. Garfield, SSC 242, Midland, TX 79705, (432) 685-4781, tbaker@midland.edu; Natasha Morgan, Director Human Resources/Payroll, 3600 N. Garfield, PAD 104, Midland, TX 79705, (432) 685-4534, nmorgan@midland.edu. For further information on notice of non-discrimination, visit http://wdcrobcollp01.ed.gov/CFAPPS/OCR/contactus.cfm or call 1 (800) 421-3481.

Spanish
Midland College no discrimina por motivos de raza, color, nacionalidad, sexo, discapacidad, o edad en sus programas o actividades. Las siguientes personas han sido designadas para responder a cualquier pregunta o duda sobre estas políticas no discriminatorias: Tana Baker, Title IX Coordinator/Compliance Officer, 3600 N. Garfield, SSC 242, Midland, TX 79705, (432) 685-4781, tbaker@midland.edu; Natasha Morgan, Director Human Resources/Payroll, 3600 N. Garfield, PAD 104, Midland, TX 79705, (432) 685-4534, nmorgan@midland.edu. Para más información sobre estas políticas no discriminatorias, visite http://wdcrobcollp01.ed.gov/CFAPPS/OCR/contactus.cfm o llame al 1 (800) 421-3481.
Math/Science Division Information:
Division Dean:   Dr. Margaret Wade  125 AHSF   (432) 685-4615
Department Chair: Dr. Sonia Ford   110 AHSF  (432) 685-4525
Division Secretary: Mrs. Carol Pritchard 124 AHSF  (432) 685-6404
Division Clerk:  Ms. Sarah Anderson 124 AHSF  (432) 685-6896
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