Instructor: Tom Badgett  Office: Rassman 204
Office Phone: 325-486-6096  E-mail: tom.badgett@angelo.edu
Mobile: 325 656-0309

Office Hours:
If you need to see me, please send me an email and we can set a meeting time.

The easiest way to reach me during the term is through email. I will work hard to return all emails received during business hours within 24 hours of receiving them (in most cases I will be quicker than that). Emails received on weekends will be replied to by the following Monday.

Course Prerequisites: MATH 1324 or equivalent

Course Description

From the ASU Catalog
Introduction to statistical analysis including such topics as: descriptive statistics, probability distributions, sampling, statistical inference, analysis of variance, and correlation and regression analysis.

Course Objectives:
Understanding statistics and statistical analysis is imperative for managers from all business fields. Statistics can help managers evaluate goals and make better decisions. This course is intended to serve as an introductory course in business statistics. This course covers data description, probability concepts, sampling methods, parameter estimation, and hypothesis testing. These are some of the basic statistical tools that managers see in reports and use when making decisions.

Student Learning Outcomes

By the end of this course students should be able to:
* Define common statistical terms.
* Identify different types of data and the applicable statistical techniques to summarize and use such data depending upon the situation.
* Use computer software to generate statistical output.
* Explain basic probability concepts and be able to use such concepts in management situations.
* Create confidence intervals and test statistical hypotheses.
* Understand various types of statistical reports and be able to correctly judge if the statistics in the report are good or bad.

Methods of Assessing Learning Outcomes
Learning outcomes will be assessed through your use of the Connect Master learning modules, homework assignments, and four exams.

**Required Materials:**


This course does not have a traditional textbook, instead it uses an online teaching system.

To purchase and access the electronic resources, there are two ways to do this. You can go to:


and follow the instructions on how to access these resources. Another way to gain access is to go to the Blackboard platform for this course. Click on the Assignments button. Then click on any of the published assignments. The first time you do this, you will be directed to the server where you can purchase access. Let me know if you have any issues or questions in this regard.

*Please note that you will need to purchase your access to the above materials right away for this course.* Getting started and staying ahead in this course is crucial to your success.

*The system we will be using is different than the Connect system that is paired with a textbook that you may have used in other courses.* It is an adaptive learning system and when you start a module, it will first ask you to answer a question. If you don’t know the answer, then you are given access to materials to help you learn what the answer is. It may take you a few days to get used to the new system, but once you do I hope that you will find it easy to use and that it helps you learn the materials in an interactive and interesting way.

**Required Readings:**

As listed in the course schedule, specific modules are assigned in the Connect Master system; completing these modules takes the place of a regular textbook in this class, your work on these modules is part of your grade in this course.

**Required Technology:**

Students will need a web browser and internet connection for the course. Some exercises in this course use Microsoft Excel.

All of the needed software for this course is available in the ASU computer labs. Blackboard and university computer lab technical support is provided by the university’s Technology Service Center by calling 325-942-2911 or 1-866-942-2911 or by email at helpdesk@angelo.edu.

If you have a technical issue with the Connect Master system you will need to contact McGraw-Hill directly either through their phone help line at 800-331-5094 or through their on-line help system.

**Class Format**

Students will gain their knowledge of business statistics in this course through the interactive Connect Master system. As noted above, this system may be different from other online learning technology systems you may have used in other courses. It is structured in such a way that it starts by asking you a question and then, if you don’t know the answer, offering you materials in the form of readings, slides and videos to learn about the topic at hand. If you try the system...
and don’t like how it works, you can also access the Library area first and review the material before trying to answer any questions.

You will also be given opportunities to practice and review what you have learned. When you first get into the system, I highly recommend you visit the How-To area which should come up on your screen once you access a Connect Master (non-homework) assignment.

For each module in the course you will have Connect Master (interactive learning) assignments and homework assignments. I have made the due date for all material within a module the same and give suggestions as to what sections of the module to work on each day in the course schedule below. I highly recommend that you work through the material in short periods, breaking it up into pieces that you are comfortable with. DO NOT attempt to complete all your work a few hours before it is due.

I want to also warn you now that Module 7 has a very short fuse. You have very limited time to complete this module. You will likely need 10 or more hours per day to do this unit of material. So plan ahead!

You may find this video useful to watch before you jump into Connect Master:
https://youtu.be/LNlpZc9wn8k

Graded Activities

Exams
Four exams will be given during the term. Students should expect exams consisting of multiple choice questions and problems. Questions on the exams will test knowledge and application of the student’s knowledge. The exams are not cumulative.

The final exam is on the last day of class.

Make up exams will be given only for reasons deemed legitimate and should be avoided if at all possible. If you have to miss an exam for any reason, you must notify me in advance, if you are ill or otherwise incapacitated, a phone message or email will suffice.

Connect Master
As described above, the Connect Master is what you will use to gain knowledge of statistics in this course. You will be given credit for the work you complete in Connect Master, based on the percentage of a module that you complete.

Homework Assignments/Exercises
There will be homework assignments and exercises related to each module of material we cover. You can complete these homework assignments as many times as you like. Your score on these assignments will be recorded as of the due date for each assignment.

Course Grades
Please keep in mind that in MGMT 2331 you are graded on your performance on the graded elements of the course. Your final class grade will depend solely on how you perform on all aspects of the course and no other factors.

The following cutoffs will be used to determine final grades in MGMT 2331:
Your course grade will consist of the following components.

- Exams 4 @ 10% each = 40%
- Connect Master Reading Assignments = 30%
- Homework = 30%

**Note:** You must have a passing grade on your exam average to pass the class.

**Other Course Policies**

**Extra Credit Work**
No extra credit work will be available for students in this class. Students should prepare for exams and assignments to the best of their ability.

**Late Assignments**

Late submissions of assignments will not be accepted.

**Academic Honesty**
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook. In essence, the willingness to cheat undermines our purpose at the university.

In general, all students are expected to conduct themselves in this course in a manner consistent with the University Honor Code policy which is at: [http://www.angelo.edu/forms/pdf/Honor_Code.pdf](http://www.angelo.edu/forms/pdf/Honor_Code.pdf)

**Policy on Disabilities**
Angelo State University is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments Act of 2008 (ADAAA), and subsequent legislation.

The Student Life Office is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting the Student Life Office, Room 112 University Center, at (325) 942-2191 or (325) 942-2126 (TDD/FAX) or by e-mail at Student.Life@angelo.edu to begin the process.

**Policy on Religious Observances**
A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
**Course Drop**
To view information about how to drop this course or to calculate important dates relevant to dropping this course, you can visit: [http://www.angelo.edu/services/registrars_office/course_drop_provisions.php](http://www.angelo.edu/services/registrars_office/course_drop_provisions.php).

**Incomplete as a Course Grade**
The incomplete grade, a grade of I is only given when the student is unable to complete the course because of illness or personal misfortune. An I that is not removed before the end of the next long semester automatically becomes an F. To graduate from ASU, a student must complete all I's.

**Grade Appeal Process**
A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see Operating Procedure 10.03 at: [http://www.angelo.edu/content/files/14196-op-1003-grade-grievance](http://www.angelo.edu/content/files/14196-op-1003-grade-grievance).
Course Schedule

<table>
<thead>
<tr>
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<th>Topic</th>
<th>Assignment</th>
<th>Available</th>
<th>Due By</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-10</td>
<td></td>
<td>Read Syllabus Acquire Online Learning Materials</td>
<td>7-10</td>
<td>7-10</td>
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</tbody>
</table>

**Module 1—Data and the Science of Statistics**

**Learning Objectives**
- LO1-1 Define the Discipline of Statistics
- LO1-2 Differentiate between Descriptive and Inferential Statistics
- LO1-3 Differentiate between Sample Data and Population Data
- LO1-4 Classify Measures as Parameters or Statistics
- LO1-5 Compare and Contrast Different Types of Data
- LO1-6 Classify Observations According to Their Level of Measurement

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<th>Assignment</th>
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<td>7-11</td>
<td>Data and the Science of Statistics</td>
<td>All sections of the Connect Master module for Module 1. Note that this is not due until Friday, but if you can finish this on Wednesday, that would be best, as it will give you more time to work on Module 2.</td>
<td>7-10</td>
<td>7-13, 11:59 pm</td>
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<tr>
<td>7-11</td>
<td></td>
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<td>7-10</td>
<td>7-13, 11:59 pm</td>
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</table>
Module 2—Describing Attributes of a Data Set

Learning Objectives
LO2-1 Organize Qualitative Data into a Relative Frequency Table
LO2-2 Organize Quantitative Data into a Relative Frequency Distribution
LO2-3 Create a Histogram for a Set of Quantitative Data
LO2-4 Use Summation Notation to Simplify an Expression
LO2-5 Calculate and Interpret the Mean, Median, and Mode
LO2-6 Calculate and Interpret Various Measures of Dispersion
LO2-7 Apply and Contrast Chebyshev's Theorem and the Empirical Rule
LO2-8 Determine Relative Position for a Given Measurement
LO2-9 Categorize a Distribution as Left Skewed, Right Skewed, or Symmetric
LO2-10 Create, Display, and Interpret the Five Number Summary

<table>
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<th>Recommended Day</th>
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<td>Connect Master as Assigned; LO 2-1, 2-2, 2-3</td>
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<td>7-13</td>
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<td>Connect Master as Assigned; LO 2-4, 2-5, 2-6</td>
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<td>Module 2.3 Homework</td>
<td>7-12, 8 am</td>
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</table>
## Module 3–A Survey of Probability

### Learning Objectives
- **LO3-1** Define the Terms Experiment, Outcome, Event, and Sample Space
- **LO3-2** Calculate Probability Using the Classical Approach or the Empirical Approach
- **LO3-3** Discuss the Terms Collectively Exhaustive and Mutually Exclusive
- **LO3-4** Compute the Number of Outcomes Using the Appropriate Counting Technique
- **LO3-5** Calculate Probability Using the Addition Rule of Probability
- **LO3-6** Calculate Probability Using the Conditional Rule of Probability
- **LO3-7** Calculate Probability Using the Multiplication Rule of Probability
- **LO3-8** Calculate Probability Using the Rule of Complements

<table>
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<td>A Survey of Probability</td>
<td>Connect Master as Assigned; LO 3-1, 3-2, 3-3, 3-4</td>
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<td>Connect Master as Assigned; LO 3-5, 3-6, 3-7, 3-8</td>
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<td>7-19</td>
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<td>Exam 1: Modules 1-3</td>
<td><strong>7-19, 8 am</strong></td>
<td><strong>7-19, 11:59 pm</strong></td>
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Module 4–Discrete Random Variables

Learning Objectives
LO 4-1 Describe the Characteristics of a Probability Distribution
LO 4-2 Calculate the Expected Value of a Probability Distribution
LO 4-3 Calculate the Variance and Standard Deviation of a Probability Distribution
LO 4-4 Calculate the Probability of X Successes in a Binomial Experiment
LO 4-5 Calculate the Probability of a Cumulative Set of Events for a Binomial Experiment
LO 4-6 Calculate the Mean, Variance, and Standard Deviation of a Binomial Distribution
LO 4-7 Describe the Characteristics of the Poisson Distribution and Use It to Calculate Probability

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<td>7-23, 11:59 pm</td>
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## Module 5–Continuous Random Variables

**Learning Objectives**
- LO5-1 Discuss the Properties of Continuous Random Variables
- LO5-2 Describe the Characteristics of the Uniform Distribution and Use It to Calculate Probability
- LO5-3 Discuss the Properties of the Normal Distribution
- LO5-4 Describe the Characteristics of the Standard Normal Distribution and Use It to Calculate Probability
- LO5-5 Use the Nonstandard Normal Distributions to Calculate Probability
- LO5-6 Calculate Percentiles of the Normal Distribution
- LO5-7 Use the Normal Distribution to Approximate Probabilities for a Binomial Random Variable

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<td>Exams 2: Modules 4-5</td>
<td>7-27, 8 am</td>
<td>7-27, 11:59 pm</td>
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Module 6—Point Estimators and the Sampling Distribution of the Sample Mean

Learning Objectives
LO6-1 Define Sampling Distributions
LO6-2 Describe the Standard Error of a Point Estimator
LO6-3 Discuss the Desired Traits of a Point Estimator
LO6-4 Discuss the Central Limit Theorem
LO6-5 Know the Mean and Standard Deviation of the Distribution of the Sample Mean
LO6-6 Compare the Variation of the Sample Means to the Variation of the Random Variable
LO6-7 Apply the Central Limit Theorem to Calculate Probabilities

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<td>7-29</td>
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<td>7-31, 11:59 pm</td>
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Module 7–Interval Estimators

Learning Objectives
LO7-1 Define Interval Estimators
LO7-2 Construct and Interpret a Confidence Interval for the Mean when Sigma is Known
LO7-3 Determine the Sample Size Needed to Estimate the Population Mean
LO7-4 Construct a Confidence Interval when Sigma is Unknown
LO7-5 Discuss the Sampling Distribution of the Sample Proportion
LO7-6 Construct and Interpret a Confidence Interval for the Population Proportion
LO7-7 Calculate the Sample Size Needed to Estimate the Population Proportion

<table>
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<td>8-2</td>
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<td>Exam 3: Modules 6-7</td>
<td>8-2, 8 am</td>
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## Module 8–Hypothesis Testing

### Learning Objectives
- LO8-1 Know the Steps to Conduct a Hypothesis Test
- LO8-2 List the Characteristics of the Null and Alternative Hypotheses
- LO8-3 Form the Test Statistic from Sample Data
- LO8-4 Describe Type I and Type II Errors and Know the Probability of a Type I Error
- LO8-5 Determine the Critical Value(s), Rejection Region, and Decision Rule for a Hypothesis Test
- LO8-6 Use the Classical Approach to Conduct a Hypothesis Test of the Population Mean when
- LO8-7 Test a Hypothesis when Sigma is Known Using the P-value Approach
- LO8-8 List the Ways to Reduce the Likelihood of an Error
- LO8-9 Conduct a Test of a Hypothesis about the Population Mean when Sigma is Unknown
- LO8-10 Conduct a Test of a Hypothesis about the Population Proportion

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**Must be done on this date.**