Syllabus
Introduction to Statistics
Math 3321 - 010
Fall, 2021

Instructor Information
Dr. Andrew J. Siefker
Office: MCS 219B
Phone: 486 - 5440 (office)
Email: andrew.siefker@angelo.edu
Office Hours: M: 10:00 – 11:00 a.m. 1:30 – 4:30 p.m.
T: 9:30 – 11:30 a.m. 1:30 – 2:30 p.m.
W: 9:30 – 11:30 a.m. 1:30 – 2:30 p.m.
Th: 9:30 – 11:30 a.m.
F: 1:30 – 2:30 p.m.
or by appointment.

Major Course Requirements
Prereqs: Mathematics 1314, 1316, 1324, 1342, 2312, or 2413.
Grading: • Exams .............................. 3 Exams: 30% each
• Homework and Quizzes .... 10%.
• Final .............................. 0%; 12-7-2021 (Tue); 1 – 3 pm.
  Final ≥ 90% - up 1 letter grade; Final < 60% - down 1 letter grade.

Note: I reserve the right to adjust the grading scheme and grading scale for an individual or the class as warranted. Please note that ASU’s interpretation of federal law (Buckley amendment) prohibits me from relaying your grades via phone or email.

Fall Math Lab Hours

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<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
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<th>Friday</th>
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<td>4 p.m. - 8 p.m.</td>
<td>11 a.m. - 8 p.m.</td>
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<td>11 a.m. - 3 p.m.</td>
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Need a Math Tutor?
Students can login to Upswing to receive online help.

Attendance:
Attendance will be taken but does not count towards your final grade except in borderline cases.

November 22, 2021: LAST DAY TO DROP A CLASS OR WITHDRAW FROM ASU
Disclaimer:

This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date course information, contact the instructor. Also, the subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.

Course Policies:

Homework and Quizzes:

Homework is regularly collected and quizzes may be administered. When collected, homework is due when the instructor requests it. Late homework is not accepted for points and receives a grade of ZERO. When given, quizzes count as a homework score and NO MAKE-UP QUIZZES will be given. You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any problem.

Homework turned in for a grade must follow a specific template. (1) Write the problems in numerical order, in a single column, using only one side of a sheet of paper. (2) Staple multiple sheets of paper together in the upper, left-hand corner. Be certain the problems are in numerical order. (3) Fold your homework longwise so that it opens like a book. Write your name, the course (e.g. Math 2414) and course time (e.g. 8 am), and the homework section number.

Examinations:

You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any “essay” problem. Scrap paper will be provided upon request; you may not use your own. If you miss or will miss an exam, contact the instructor ASAP. NO MAKE-UP EXAMS will be administered, and the use of calculators is at the discretion of the professor.

Grades:

All grades become final one week after the grade is recorded. Therefore, any questions you may have regarding a grade must be resolved before this one week deadline.

Class Etiquette:

Please be courteous of others in the class including: not utilizing cell phones, silencing cell phones, not habitually arriving late, not leaving during lectures (unless you notify me beforehand), not engaging in non-math related conversations or activities, etc.

Information About COVID-19

Please refer to ASU’s COVID-19 (Coronavirus) Updates web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.
**Student Disability Services**

ASU 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 of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student’s responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
dallas.swafford@angelo.edu  
Houston Harte University Center, Room 112

**Title IX**

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: Incident Reporting Form  
Face to Face: Mayer Administration Building, Room 210  
Phone: 325-942-2022  
Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State’s policy please visit the Title IX website.
Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university’s Statement of Academic Integrity.

Plagiarism

Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

General Policies Related to this Course:

All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook
- Angelo State University Catalog
Student Responsibilities:

1. Students are responsible for the policies and procedures delineated in this syllabus. Failure to abide by these policies and procedures may result in failing the course.
2. If you miss class for any reason, even for University-sponsored activities, it is your responsibility to have your assignments submitted on time or ahead of time if necessary. You are also responsible for preparing for the next class. This includes obtaining assignments, announcements, and notes FROM A CLASSMATE.
3. The main keys to success in this course are as follows:
   a. Attending class regularly.
   b. Reading the book and working through the examples.
   c. Taking good notes.
   d. Completing all assignments in a timely manner.
   e. Not falling behind.
   f. Reviewing the material on a regular basis. Studying for this course at least 6 hours per week (more if needed) is what is recommended by learning researchers and is what I expect of you. AT LEAST SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.
Some Things to Consider About College Mathematics Courses:

1. **Responsibility** – Though guided by your instructors and advisors, **YOU** are responsible from now on for your own education. **SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.**

2. **Peer Group** – Most of you are no longer well above the majority of your classmates. You are in a new environment with people whose abilities are much like your own.

3. **Level of Learning** – The primary goals of a university education are three-fold:
   1) to learn essential **thinking skills** so that when you encounter a new or unfamiliar situation you can analyze the problem and carry out the necessary steps to solve it. This is especially important in mathematics since many courses require a mathematical background and expect you to use the material you have studied.
   2) to **learn how to learn** on your own, i.e. how to teach yourself through reading, study, discussion, and contemplation.
   3) to **develop an appreciation** for topics not directly related to employment. Students who do poorly in college mathematics courses are typically those who fall behind in their work, overestimate their effort, or insist on high-schoolish modes of learning.

4. **Roles of Students and Instructors** – The instructor's role is to guide the students' learning process. It is not to cover all aspects of every topic for every student. Students are expected to read the textbook, to learn some material on their own, and to fill in any gaps in their mathematical background. It is not uncommon in college mathematics courses that **MUCH OF YOUR LEARNING WILL TAKE PLACE OUTSIDE THE CLASSROOM.** You should plan to devote at least two hours outside the classroom for every hour of classroom instruction. Teaching and learning in college is a cooperative effort shared by the instructor and the student.

5. **Exams** – Class work and homework are intended to guide you in your task of gaining command of the material covered in this course. This **DOES NOT MEAN** that the examples you see will be exactly (or essentially) the same as the questions asked on exams. You are expected to prepare yourself for tests and the final exam. If you **UNDERSTAND THE MATERIAL** to the point where you can apply it to pertinent situations, you will do well on exams. If you concentrate on memorization and ad-hoc methods for particular problems, you will probably struggle on exams. There will be no review sessions or elaborate practice sheets to prep you for a test or final exam.
Student Learning Outcomes

1. Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in statistics including definitions of measures of central tendency; standard deviation; standardized variable; regression line; coefficient of determination; normally distributed variable; sampling distribution of the mean; sampling distribution of the proportion; point estimate; confidence interval estimate; null hypothesis; alternative hypothesis; critical value; and test statistic.

2. Students will describe the fundamental principles including the laws and theorems arising from concepts covered in this course. Students will identify and apply the laws and formulas that result directly from the definitions; for example, calculation of measures of central tendency; standard deviations; coefficients of determination; critical values and test statistics. Additionally, students will apply theorems such as the Central Limit Theorem.

3. Students will apply course material along with procedures and techniques covered in this course to solve problems. Students will use the facts, formulas, and techniques learned in this course to find regression equations for data collected; use regression equations to make predictions; calculate probabilities; find confidence intervals for means and proportions; and perform a variety of hypothesis tests.

4. Students will use available statistical software packages to solve problems. Students will use appropriate packages to solve problems in both descriptive and inferential statistics. Additionally, the students will use software to represent data visually.

5. Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields. Students will acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring statistics as a prerequisite, or for work in occupational fields requiring a background in statistics.
Course Content

Textbook: Introductory Statistics, Tenth Edition, by Neil A. Weiss. The following chapters including the particular sections listed are covered. (See textbook “Contents”)

1. **The Nature of Statistics.** Classifying statistical studies; sampling procedures.
2. **Organizing Data.** Grouping data; graphs and charts; distribution shapes; misleading graphs.
3. **Descriptive Measures.** Mean; median; mode; standard deviation; quartiles; percentiles; deciles; boxplots.
4. **Probability Concepts.** Events; conditional probability; Bayes’ formula; counting.
5. **Discrete Random Variables.** Mean and Standard Deviation; binomial and Poisson distributions.
6. **The Normal Distribution.** Areas under the standard normal curve; normally distributed variables; normal probability plots.
7. **The Sampling Distribution of the Mean.** Sampling error; mean and standard deviation of the sampling distribution of the mean.
8. **Confidence Intervals for One Population Mean.** Calculate confidence intervals for the mean; margin of error; sample size.
9. **Hypothesis Tests for One Population Mean.** Set up hypothesis tests; errors; perform hypothesis tests; P-values; type II errors; probability; the Wilcoxon signed-rank test.
10. **Inferences for Two Population Means.** Hypothesis tests; the Mann-Whitney test.
11. **Inferences for Population Standard Deviation.**
12. **Inferences for Population Proportions.** Calculating confidence intervals for one population proportion; performing hypothesis tests for one population proportion.
13. **Chi-Square Procedures.** Chi-Square Goodness-of-Fit Test; Chi-Square Independence Test.
14. **Descriptive Methods in Regression and Correlation.** Regression equation; coefficient of determination; linear correlation.
15. **Inferential Methods in Regression and Correlation.** Inferences in correlation; testing for normality.
16. **Analysis of Variance.** The F-Distribution, One-Way ANOVA

Additional Topics. Multiple regression analysis; Design of experiments and analysis of variance.
**Required Texts or Readings:**

There is no required textbook for this course; however, homework problems from the book will be assigned.

**Subject Matter Schedule**

The subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.

<table>
<thead>
<tr>
<th>Day #</th>
<th>Section to Cover</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Syllabus, Calculators, Handouts; Chapter 1</td>
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<tr>
<td>2.</td>
<td>Chapter 2: Organizing Data</td>
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<tr>
<td>3.</td>
<td>3.1, 3.2</td>
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<td>4.</td>
<td>3.2, 3.3</td>
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<td>5.</td>
<td>3.4, 3.5</td>
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<td>6.</td>
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<td>7.</td>
<td>4.5, 4.6, 4.7</td>
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<td>8.</td>
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<td>10.</td>
<td><strong>Exam #1</strong></td>
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<td>15.</td>
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<td>16.</td>
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<td>17.</td>
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<td>18.</td>
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<td>19.</td>
<td><strong>Exam #2</strong></td>
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<td>20.</td>
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<td>28.</td>
<td><strong>Exam #3</strong></td>
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<tr>
<td>29.</td>
<td>ANOVA</td>
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</tbody>
</table>
1 https://blackboard.angelo.edu/
2 https://www.angelo.edu/current-students/student-handbook/
3 https://www.angelo.edu/academics/catalog/
5 https://www.angelo.edu/current-students/disability-services/
6 https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
7 https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96
8 https://www.angelo.edu/current-students/writing-center/academic_honesty.php
9 https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
10 https://www.angelo.edu/incident-form
11 https://www.angelo.edu/title-ix
12 https://www.angelo.edu/covid-19/