



Texas A&M University - San Antonio
Math 4303 Statistical Methods, Section 001
Fall 2025

Instructor:	Dr. Craig McCarron
Office:	Classroom Hall 314V
Office Hours:	MW 10:00-noon TR 9:00-10:45 or by appointment
Class Meetings:	TR 11:00 – 12:15 Classroom Hall 309
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Course Website:	Blackboard
IMPORTANT NOTE: TO CONTACT THE INSTRUCTOR, USE EMAIL TO EITHER Craig.McCarron@tamusa.edu or cmccarro@tamusa.edu. YOU SHOULD RECEIVE A RESPONSE TO EMAIL IN AT MOST ONE BUSINESS DAY. DO NOT USE BLACKBOARD MESSAGING TO CONTACT THE INSTRUCTOR, IT IS NOT RELIABLE.	

Course Description and Material

Catalog Description: Calculus-based probability, discrete and continuous random variables, joint distributions, sampling distributions, the central limit theorem, descriptive statistics, interval estimates, hypothesis tests, ANOVA, correlation and simple regression.

Prerequisite: MATH 2314 and MATH 2114 both with a grade of “C” or higher.

Required Textbook: Devore, Jay L., Probability and Statistics for Engineering and the Sciences, 9th edition, Cengage. You may rent or purchase an eBook version, hardcover, new or used. You do *not* need to purchase access to WebAssign.

Required Equipment: TI-84 graphing calculator

Student Learning Outcomes: By the end of this course, students will be able to:

1. Perform elementary probability calculations using important probability distributions, both discrete and continuous, and apply them to model real world problems.
2. Estimate sampling distributions of statistics using theoretical and computational methods, and choose appropriately between them for specific data.
3. Calculate point estimates and confidence intervals for unknown parameters.
4. Perform hypothesis tests for unknown parameters.
5. Choose among the various inferential statistical methods from this course to answer specific research questions.
6. Interpret and communicate statistical results through formal writing.
7. Critically evaluate statistical claims in academic and public literature.

MATH 4303 helps students develop Critical Thinking, Communication, and Empirical and Quantitative Skills by focusing on student understanding of key concepts and techniques in statistics by recognizing, identifying, solving, analyzing and explaining appropriately model applicable real-world situations.

Course Topics and Weekly Schedule

Week	Chapters	Topics	Major Writing Assignments
1	1	Introduction to the course; the nature of data; samples; descriptive statistics	Diagnostic writing sample
2	2	Probability, counting techniques	Response paper: Interpreting statistical claims
3	2, 3	Conditional probability, discrete random variables, probability mass functions	Problem set with reflection on assumptions
4	3	Expected value, binomial distribution, Poisson distribution	Mini-report: Expected value in real-world context
5	3, 4	Continuous random variables, PDFs, CDFs	Peer review #1
6	4	Normal distribution, exponential distribution, gamma distribution	Draft: Descriptive statistical report
7	1-4	Midterm Exam	Final descriptive statistical report due
8	5	Joint distributions, independence, covariance	Reading response: Journal article critique
9	5	Sampling distributions and the Central Limit Theorem	Proposal for final project
10	7	Confidence intervals	Peer review #2
11	8	Hypothesis testing: z-tests, t-tests	First draft: inferential analysis report
12	9	Power, Type I/II errors	Revision workshop
13	10	Multiple testing	Final inferential analysis report due
14	12	Linear regression, correlation, residual analysis	Final project presentations
15	1-5, 7-10, 12	Final Exam	Final paper due (cumulative project report)

The instructor reserves the right to modify/update the topics as appropriate.

Grading Policy

Category	Number	Points Each	Drops	Total Points	Semester Percent
Problem Sets	12	10	2	100	28.57%
Midterm Exam	1	50	0	50	14.29%
Final Exam	1	50	0	50	14.29%
Formal Writing Assignments	5	varies	0	60	17.14%
Peer Reviews & Revisions	4	10	0	40	11.43%
Final Project	1	50	0	50	14.29%
			Total	350	100%

(All numbers above are approximate and subject to adjustments.)

Grading Scale:

90.0%-100%	A
80.0%-89.9%	B
70.0%-79.9%	C
60.0%-69.9%	D
59.9% and below	F

NOTE: The class meets twice per week. Aside from the three hours that you spend in class each week, you should devote at least another 8 hours to studying on your own: reading the book and lecture notes, writing and revising writing assignments, working out your homework assignments, and possibly solving some extra related problems for practice. You are responsible for any and all materials/topics discussed in this class and in the assigned textbook sections.

Course Expectations and Requirements

Examinations: There will be two exams during the semester: the Midterm Examination (11:00 October 9th), and the Final Examination (Tuesday, December 9th, 10:00-11:50). Students are expected to take all exams at the scheduled time. Exceptions for a legitimate reason may be granted by and must be approved by the instructor beforehand. In the event that a student misses an exam for unforeseen and dire circumstances (hospitalization, death, nuclear war, ...), the final exam score *may* be used to replace the missing exam score at the instructor's discretion.

Problem Sets: There will be twelve Problem Sets for this course that should be submitted on their due dates (normally on a Tuesday at 11:00 AM). Problem Sets are collected at the beginning of that day's class. Late homework will **NOT** be accepted. Should the student have to miss that day's class due to dire circumstances (see above), it is the student's responsibility to submit the Problem Set via email to the instructor. (Students are not allowed to send their homework to class with another student since this could facilitate cheating.) If a student cannot finish all the questions, the student should try to finish as much as possible.

Work on Problem Sets should be legible and neat. No credit will be awarded for illegible work. Please staple the sheets of your assignment together in the upper left corner and please do not use papers torn out of spiral bound notebooks. In the upper right corner of your assignment you should write your name, the class section number, and the assignment number (PS1, PS2, ..., PS9). Answers along with work leading up to the solution must be shown clearly with final answers circled. **NO** credit will be awarded for merely having the right

answer. You can have group/team discussions about homework problems. However, you must write up solutions on your own and truly understand the mathematics/algorithms involved. Be mindful of your academic integrity.

Writing Assignments: Each writing assignment will be submitted in Blackboard through TurnItIn. Writing assignments are normally due Fridays at noon.

Examples of collaboration on Problem Sets and Writing Assignments:

1. A group of students studying together read a problem and then discuss verbally the techniques or strategies they will use to solve the problem. They compare final answers and if answers disagree, each student goes back over his/her own work to find errors. **This level of cooperation is allowed.**
2. One student writes a solution to a problem which other students then use (copy) on their own papers. **This level of cooperation is NOT allowed.**
3. A group of students are analyzing a common data set for a writing assignment. The students compare means, standard deviations, hypotheses, etc. If answers disagree, each student goes back over his/her own work to find errors. **This level of cooperation is allowed.**
4. Students copy each other's verbiage or use AI verbiage in a writing assignment. **This level of cooperation is NOT allowed.**

General fact 1: Problem set cheaters are caught due to duplicated arithmetic errors. (Chegg has errors, too, mostly well-known to professors.)

General fact 2: Plagiarists are caught with technology (comparing AI solutions to student solutions) and the instructor's radar for recognizing the student's voice. Students writing in their own voice will pass any test for plagiarism.

Classroom Etiquette: Students are expected to refrain from distracting classmates as a result of off-task conversation, electronic devices, or other class interruptions.

Electronic Communication Devices: Electronic communication devices (e.g., laptop computer, tablet computer, cellular phone, smart phone) can be useful learning tools, but can also be distractions. Mathematical concepts often require *intense concentration* to grasp, so missing even a few words of classroom discussion can leave a student confused and frustrated. During lecture, use good judgement when and how to use electronic devices. If a student has an urgent situation (e.g., family member in the hospital), inform the instructor at the beginning of class that you wish to leave your cell phone on in case you receive an emergency call.

Recording: If a student wishes to record any part of classroom activity, the student must obtain written permission from the instructor *in advance* of recording. Unauthorized recording can infringe on other class members' rights.



IMPORTANT POLICIES AND RESOURCES

Academic Accommodations for Individuals with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact us via phone at (210) 784-1335, visit us <https://www.tamusa.edu/Disability-Support-Services/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services as soon as possible.

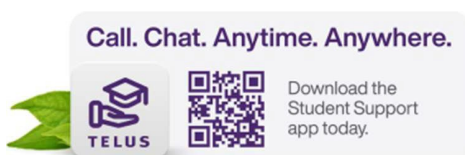
Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call 210-784-1331 or visit Madla 120.

All mental health services provided by the SCC are **free and confidential** (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services visit <http://tamusa.edu/studentcounseling>

Crisis support is available 24/7 by calling the SCC at 210-784-1331.

Additionally, the TELUS Student Support App provides a variety of mental health resources to including support for in the moment distress, an anonymous peer-to-peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.



Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com>

More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/emergency-management/>

Download the SafeZone App (<https://safezoneapp.com/>) for emergencies or call (210) 784-1911. Non- Emergency (210) 784-1900.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended by the published Census Date (the first week of class). Any student receiving federal financial aid who does not attend prior to the published Census Date (the first week of class) will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://www.tamusa.edu/academics>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to submit a CARE referral (<https://www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-a-report.html>) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources.

Office Hours: All faculty with teaching assignments should include regularly scheduled office hours on each syllabus in addition to "by appointment." Please review your appointment letter for the number of weekly office hours you are expected to set. Regularly scheduled office hours should also be posted outside your office door (where applicable).

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to visit the Office of Military Affairs for any question involving federal or state VA Education Benefits. Visit the Patriots' Casa building, room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided with an opportunity to make up any examination, study, or course work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual on our campus and within our state, nation, and world. All decisions and actions involving students and employees are to be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the University's Civil Rights Officer at 210-784-2061 or titleix@tamusa.edu.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking based on sex, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such

as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related sex-based misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable modifications to pregnant students as would be provided to a student with temporary medical condition that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K). Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Young Jaguars: can support parenting students with daycare who meet this criteria: Must be enrolled in classes at TAMUSA in the current semester. Must be Pell eligible or a single parent. They serve children ages 3 to 12-years-old. Children must be enrolled in Pre-K-3 through 6th grade. youngjaguars@tamusa.edu (210) 784-2636

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or

ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.

3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university students' rules shall be assured a fundamentally fair process.

Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated.

Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the Student Code of Conduct (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/documents/Student-Handbook-2022-23.pdf>) or visit the resources available in the OSRR website (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html>).

Option 1 - No Use of Generative AI Permitted

[Insert Course Number] assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

NOTE: Guidance for how to cite AI-generators, like ChatGPT, can be found here <https://apastyle.apa.org/blog/how-to-cite-chatgpt>

Important Dates: Fall 2025 Regular 16-Week Session

August 25	First day of class
September 1	Labor Day Holiday – No classes
September 10	Census Date
November 14	Last day to drop with an automatic “W”
November 25	Last day to withdraw from the University
November 26	Study Day – No classes
November 27-29	Thanksgiving Holiday – No classes
December 4	Last day of classes
December 5	Study Day – No classes
December 6-12	Final exams
December 16	Commencement

The complete academic calendar is available online: <https://www.tamusa.edu/academics/academic-calendar/index.html>