

PSYC 5302: Statistics

Fall 2026 Syllabus

COURSE

PSYC 5302 · 3 Credit Hours

INSTRUCTOR

Dr. Alan M. Daniel, PhD

EMAIL

Alan.Daniel@tamusa.edu

CLASS MEETS

Mondays, 3:30-4:45

OFFICE

Science and Technology 249D

OFFICE HOURS

T 3:30–5, W 1:30–2 or by appointment; virtual meetings available

COURSE DESCRIPTION

This course provides a theoretical background and practical experience in statistics for psychology and other behavioral sciences. Statistics are the tools we use to summarize and describe the world around us and to explore the causal processes at work. Understanding statistics — and how they are used and misused — is vital to assimilating information as an informed citizen, as well as to pursuing a career in the behavioral sciences or a related field.

This course is built around a single idea: nearly every statistical test you will ever run — t-tests, ANOVA and its variants, regression, chi-square — is the same underlying model (the General Linear Model) applied to different kinds of predictors. We start from scratch: no assumed background in statistics, probability, or advanced math. Each new “test” is introduced as a small extension of the model you already know, rather than as an unrelated recipe to memorize. Topics include principles of measurement, descriptive statistics, error and probability, correlation and regression, hypothesis testing, t-tests, analysis of variance, and chi-square tests. You will learn and use JASP (free statistical software) to conduct and interpret these analyses.

Starting in Week 3, you will also be introduced to R and RStudio for a handful of guided data-visualization exercises alongside JASP. R never runs a statistical test in this course — JASP does that all semester — so this is a low-stakes first exposure to code, not a second statistics curriculum to learn on top of the first.

REQUIRED TEXTS

Navarro, D., Foxcroft, D., & Faulkenberry, T. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners. Free online: <https://tomfaulkenberry.github.io/JASPbook/index.html>

Clyde, M., et al. (2022). An Introduction to Bayesian Thinking. Free online: <https://statswithr.github.io/book/>

Additional readings will be provided through Blackboard, and you will be expected to find peer-reviewed readings on your own as part of some assignments. If you cannot find a PDF of an article, interlibrary loan can usually locate it.

Software

JASP (free — jasp-stats.org) is the primary software for this course and the only tool used for statistical inference; install it before Week 3. Starting Week 3, you will also use R and RStudio, or Posit Cloud (posit.cloud, free, runs in a browser — no local installation needed) for a small number of guided plotting exercises. No prior programming experience is assumed or required; every R exercise is a short, fill-in-the-blank script, not a blank page.

COURSE GOALS AND OBJECTIVES

As a result of successfully completing this course, the student will be able to:

- Design experiments with statistics in mind
- Become proficient in using software for statistical analysis
- Identify best practices and common misuse of data
- Apply the appropriate statistical test to a novel data set — and explain why it's the right one in terms of the same underlying model

- Attain broad familiarity with statistical approaches to different kinds of data across many disciplines in psychology

GRADING

Types of Assignments

- Class analyses. For each statistical test we discuss, we will analyze data from a data set and you will produce an APA-style results section to demonstrate that you can successfully conduct that analysis. About half of these weeks also include a small, guided R/ggplot2 plotting step, folded into the same assignment and point value rather than graded separately.
- Experiment proposals. For each statistical test we discuss, you will develop an experiment proposal appropriate to that week's topic. We will choose one proposal to discuss in class.
- Exams. A midterm and a final exam, which may assess concepts for that unit but will primarily focus on your ability to identify the appropriate statistical test for a given data set and carry out that analysis.

Graded Items

- Class Analyses: 10, 2 points each (20 points)
- Experiment Proposals: 10, 3 points each (30 points)
- Midterm Exam: 25 points
- Final Exam: 25 points

All assignments are submitted through Blackboard; instructions and rubrics are posted there unless otherwise noted. Your final grade is a simple average — points earned divided by the maximum possible (100 total points): A = 90–100, B = 80–89, C = 70–79, D = 60–69, F = 59 or below.

[Note: this redistributes the previous 8-item / 26-point exam scheme to match the 10 new-technique weeks below. Point values and item counts are easy to adjust if you'd rather keep the old 8-and-8 structure — see the accompanying memo.]

LATE WORK

Due dates and times are listed on every assignment. In general, work for the week is due by class time on Monday of the following week. Work turned in after the due date and time is considered late and will not be accepted. If you have an emergency situation, notify me as soon as possible for consideration, and include any necessary documentation. This is a basic time-management skill you must learn to succeed in college and in life — make a schedule and work ahead.

WITHDRAWAL POLICY

Any withdrawal after the last day for an automatic “W” established by the university will receive a grade of “F.”

IMPORTANT DATES — FALL 2026

Event	Date
First day of classes	Monday, August 24, 2026
Labor Day – no classes	Monday, September 7, 2026
Census date	Wednesday, September 9, 2026
Last day to drop with automatic “W”	Friday, November 13, 2026
Study Day – no classes	Wednesday, November 25, 2026
Thanksgiving holiday – university closed	Thursday–Saturday, November 26–28, 2026
Last day to withdraw from the university	Monday, November 30, 2026
Last day of classes	Friday, December 4, 2026
Final exam period	Saturday–Friday, December 5–11, 2026

Commencement	Tuesday, December 15, 2026
--------------	----------------------------

The complete university academic calendar is available at tamusa.edu/calendar.

COURSE SCHEDULE

Class meets Mondays. Assignments for a given week's topic are due by class time on the following Monday, per the Late Work policy above.

Wk	Date	Topic	Assignments & Key Dates
1	Mon 8/24	Orientation: Why Statistics, Research Design & the Decision Tree, Ethics and Open Science	—
2	Mon 8/31	Describing a Single Variable: Mean, SD, Variance, Degrees of Freedom <i>The mean is our simplest possible model — error is just how wrong that model is for any one data point.</i>	—
3	Mon 9/7	R & JASP Practicum (asynchronous — Labor Day, no live class): Descriptives, Graphs, Error Bars & Confidence Intervals <i>Applies Week 2 by hand-computing, then reproducing it in JASP. First touch of R: install R/RStudio (or Posit Cloud — no install needed) alongside JASP; read_csv(), one mean()/sd() line, and a first ggplot2 histogram of the same variable from Week 2.</i>	Labor Day – no class. Census Date 9/9. Analysis & Proposal 1 due (Describing a Variable).
4	Mon 9/14	The Error Law & the Normal Distribution: z-scores, Standardizing Error	—
5	Mon 9/21	Sampling Distributions & the Logic of Inference: Standard Error, the Central Limit Theorem, “How surprised should we be?”	—
6	Mon 9/28	The Pivot — Correlation & Simple Regression as THE Model: $Y = b_0 + b_1X + e$ <i>Same idea as Week 2's mean-only model, now with a predictor added. In R: geom_point() + geom_smooth(method="lm") draws the fitted line you just met in JASP — same line, two tools.</i>	—
7	Mon 10/5	NHST Formalized + the Independent-Samples t-test (a Between-Subjects Design): p-values, Alpha, Effect Size (Cohen's d), Welch's t as Default <i>The t-test is Week 6's model with X coded as a 2-group predictor. Effect size is also what power analysis runs on — more in Week 15. In R: geom_boxplot() comparing the two groups JASP just tested.</i>	Analysis & Proposal 2 due (Correlation & Regression).
8	Mon 10/12	The Paired-Samples t-test (a Within-Subjects Design); When Model Assumptions Break Down <i>Same model, run on difference scores — contrast with Week 7's between-subjects design. Optional in R: a simple before/after paired plot.</i>	Analysis & Proposal 3 due (Independent-Samples t-test).
9	Mon 10/19	Nonparametric Alternatives & Chi-Square: When the Outcome Isn't Continuous/Normal <i>Optional in R: a bar chart of the categorical data.</i>	Analysis & Proposal 4 due (Paired-Samples t-test).
10	Mon 10/26	One-Way ANOVA as “Regression with a Multi-Level Categorical Predictor”; Post Hoc Corrections <i>Dummy-coding extends Week 7's 2-group predictor to k groups. In R: geom_boxplot() extended across 3+ groups.</i>	Analysis & Proposal 5 due (Nonparametric/Chi-Square). Midterm due.

Wk	Date	Topic	Assignments & Key Dates
11	Mon 11/2	Factorial ANOVA: Two Categorical Predictors + Their Interaction; Main Effects, Interactions, Marginal Means <i>Same model, a second predictor column plus a product term. In R: an interaction plot in ggplot2 — a place R genuinely reads more clearly than JASP's built-in plot.</i>	Analysis & Proposal 6 due (One-Way ANOVA).
12	Mon 11/9	Repeated-Measures Designs & ANCOVA: Adding a Subject Term or a Continuous Covariate <i>Connects back to Week 8's paired design. In R: a spaghetti plot of individual trajectories — another spot R outperforms JASP's defaults.</i>	Analysis & Proposal 7 due (Factorial ANOVA). Last day to drop with automatic "W" is 11/13.
13	Mon 11/16	Multiple Regression, Mediation & Moderation (with a MANOVA/MANCOVA overview): Closing the Loop <i>Every test since Week 6 has been a special case of this. Capstone in R: JASP's regression table next to R's <code>lm(y ~ x1 + x2) %>% summary()</code> for the same data — same equation, two tools, the whole semester in one comparison.</i>	Analysis & Proposal 8 due (Repeated Measures/ANCOVA).
14	Mon 11/23	Bayesian Estimation & Hypothesis Testing: Same Models, a Different Lens <i>No live-class conflict — Study Day/Thanksgiving closures fall 11/25–11/28, after this Monday session.</i>	Analysis & Proposal 9 due (Multiple Regression/Mediation).
15	Mon 11/30	Power Analysis, Missing Data & Being a Responsible Analyst (wrap-up; revisit Week 1 readings) <i>Builds on the effect-size concept from Week 7 — now applied hands-on with G*Power. Optional mention: R's <code>pwr</code> package as an alternative to G*Power.</i>	Analysis & Proposal 10 due (Bayesian Methods). Last day to withdraw from the university is 11/30.
F	12/5–12/11	Final Exam period <i>Take-home, JASP-based: apply the decision tree across the semester's models.</i>	Final Exam due Mon 12/7 (adjustable within the finals window).

Gray italic lines under a topic show how that week's model connects back to an earlier week — the throughline of the course. Brown lines mark that week's R/RStudio exercise — low-stakes, folded into the week's existing assignment, and never the tool used to run a statistical test; JASP does that all semester.

TIME COMMITMENT

Federal law mandates that each "hour" of course credit requires two hours of work outside of class. As such, expect to spend time outside of class studying, even when no homework is formally assigned — you will be tempted to make that time as close to zero as possible, and that is a trap to avoid. A full-time student (12+ credit hours) is effectively a full-time job; expect to spend at least 36+ hours a week on coursework.

QUALITY OF WRITTEN WORK

All written work should be of academic quality and submitted in APA format in order to receive full credit.

INTELLECTUAL PROPERTY

We are both going to make things this semester, and both of us have a stake in what happens to them. Most courses leave this unsaid. I would rather write it down, because the arrangement is genuinely mutual and it reads better in the open.

- **My materials.** Slides, lecture notes, assignments, exam questions, course pages, and anything else I make for this class are mine. Use them freely for your own learning — download them, mark them up, keep them after the course ends. What I ask is that they not be redistributed: not uploaded to Chegg, Course Hero, Quizlet, or a shared drive, and not handed along

to a future section. Exam questions that circulate stop measuring anything, which costs me the time I would rather spend making the course better. And some of what I make here is creative work (the occasional song about planarian cannibalism, for instance) which I would like to remain mine to share or not.

- **Your work.** Your papers, videos, policy briefs, analogies, and exam questions are yours, and you hold the copyright. I will not sell your work, publish it, or use it for any commercial purpose. I will not put it in a portfolio, a promotional piece, or a future course without asking you first and hearing yes.
- **The one exception, stated up front.** Teaching has its own scholarly literature, and I occasionally write for it. If I ever quote student work in a pedagogy or scholarship-of-teaching publication, the quotation will be brief, anonymous, and stripped of identifying detail. For anything more than that I will ask, and “no” is a complete answer that will not affect your grade or how I work with you.
- **What this does not do.** None of this restricts you. Your work is yours to post, publish, submit to a conference, build a thesis chapter on, or show a hiring committee. Several assignments here are built to outlive the semester: the policy brief and the teaching video in particular are meant to be things you can hand to someone.

This is my understanding of how it generally works, not a take-it-or-leave-it. If you have reason to want different terms, for instance if you need to maintain an agreement with a lab, a funder's requirements, work you would rather keep out of a classroom, or simply a different view of it, come talk to me and we will put something else in writing for your situation.

AI POLICY: USE OF GENERATIVE AI PERMITTED UNDER SOME CIRCUMSTANCES OR WITH EXPLICIT PERMISSION

There are situations and contexts within this course where you may be asked to use artificial intelligence (AI) tools to explore how they can be used. Outside of those circumstances, you should not use AI tools to generate content (text, video, audio, images) that will end up in any student work (assignments, activities, discussion responses, etc.) that is part of your evaluation in this course. Any student work submitted using AI tools should clearly indicate, with attribution, what work is the student's own and what part is AI-generated; no more than 25% of the student work should be AI-generated in such cases. If any part of this is confusing or uncertain, reach out to your instructor for clarification before submitting work for grading. Use of AI-generated content without the instructor's permission and/or proper attribution qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Guidance for citing AI generators such as ChatGPT: <https://apastyle.apa.org/blog/how-to-cite-chatgpt>



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 www.tamusa.edu/Disability-Support-Services/index.html, or email 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 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 mental health resources 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 system. In the event of an emergency, such as inclement weather, registered students, staff, and faculty will have the option to receive a text message and email with instructions and updates. To register or update your information, visit <https://tamusa.bbcportal.com>. More information about the Emergency Operations Plan and the Emergency Action Plan can be found at 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 federal regulation 34 CFR 668.21 (U.S. Department of Education 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 will have their aid terminated and returned to the DoE. 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 "Writing, Language, and Digital Composing Center." The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information: 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 (www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-a-report.html) for support. Please also notify the professor if you are comfortable doing so, so that they can help direct you to available resources.

Office Hours: All faculty with teaching assignments 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 hold; office hours listed above should be confirmed against that letter for Fall 2026.

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 contact the Office of Military Affairs 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. Students are provided an opportunity to make up any examination, study, or coursework requirements missed due to a religious observance, provided they notify their instructor 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, which limits students to a maximum of six (6) non-punitive course drops during their undergraduate careers. A non-punitive drop does not affect the student's GPA; however, drops exceeding the maximum allowed by SB 1231 will be treated as "F" grades and will impact 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 a temporary medical condition related to the health and safety of the student and the student's unborn child, which could include maintaining a safe distance from hazardous substances/areas/activities; excused absences for illness or medical appointments; modified due dates; rescheduled tests/exams; a leave of absence; and access to instructional materials and recorded 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 questions or concerns (titleix@tamusa.edu; 210-784-2061; CAB 439K). The Title IX Coordinator also serves as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18.

Young Jaguars: Young Jaguars can support parenting students with daycare for students who: are enrolled in classes at TAMUSA in the current semester; are Pell eligible or a single parent; and have children ages 3–12 enrolled in Pre-K-3 through 6th grade. Contact youngjaguars@tamusa.edu or (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, that 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 academic misconduct. For more information, review the Student Code of Conduct or visit the Office of Student Rights and Responsibilities website.