

Elementary

Statistical Methods



How are statistics used to lie to us?

Should you go on that fad diet, gift chocolate to infatuate your crush, or drink wine to live longer?

Why is statistics perfect for people who hate math?

Fall (2022) | PY 211: (41073-004) | Gordan Palmer 208
Day and time: M/W/F; 1 PM. – 1:50 P.M.
Instructor: Jacob Miranda | Class E-Mail: jfmiranda@crimson.ua.edu

T. A.: Emily Halvorson | E-Mail: Removed
Office Hours: By Appointment (Email to set up Zoom call)
[Zoom Office Hours Link](#)



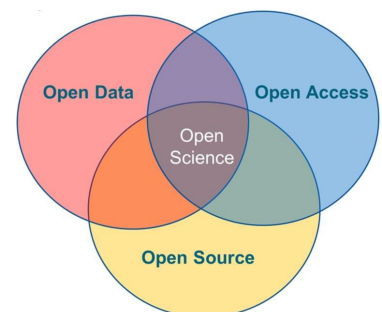
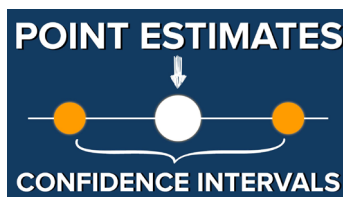
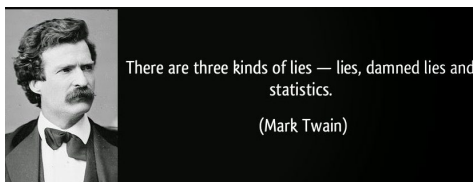
Have you ever asked your instructor to curve your grade?
Does that help you or hurt you?

Are men different than women? Do certain medications/interventions *actually* work? What do scientists and researchers mean by a *statistical difference*? Is that a *practical difference*?

What are the signs of a study we can trust or the red flags to avoid? Does any study tell us much, and how do we know if we are being lied to?

What is the point of this class? To build up your statistical literacy so that you can evaluate research that is important to you and make informed decisions.

THEMES COVERED



Evaluating Psychological Research

- Interpretation and misuse of results
- Analyzing limitations
- Synthesizing with your personal life

The 'New' Statistics

- Defined
- Contrast with the more 'traditional' method
- Effect Sizes, Confidence Intervals, & Meta-Analyses oh my!

Open Science

- Learning about the timeline of how we got to where we are today
- Best practices
- Red Flags
- Public Trust



Free Textbooks

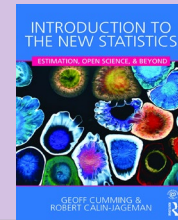
An Introduction to Psychological Statistics (2018)

By: Garrett C. Foster, Davide Lane, David Scott, Mikki Hebl, Rudy Guerra, Dan Osherson, and Heidi Zimmer

- The PDF for this *open/free* textbook will be downloadable on BB. You can download the PDF from [here](#).
- Alternative Introductory Statistics Free Textbook is from [OpenStax](#)

Other suggested reading material (not mandatory*)

- Introduction to the New Statistics (1st Edition)
- By: Geoff Cumming & Robert Calin-Jageman



How are you evaluated?

Why do we grade? What do letters mean and what purpose should they function? What is the purpose of you getting your degree?

The saddest and most ironic practice in schools is how hard we try to measure how students are doing and how rarely we ever ask them. -Dr. Amy Fast

Start by trusting students. -Dr. Jesse Stommel

At the end of the semester, all students will still receive a letter grade (A, B, C, D, F) in this course in accordance with university policy. However, in this course, we will emphasize a qualitative journey of learning rather than quantitative markers of earning. **You will determine your grade in this course through your engagement and own self-evaluation.**

I will not be hyper-focusing grading individual assignments, but rather asking questions and making comments that engage your work rather than simply evaluate it.

In your **final learning letters**, you will indicate what you believe your grade in the course should be **and submit it to Blackboard**. You will also be asked to submit a course reflection with your letters, to assist you in documenting your engagement throughout our course. I reserve the right to request an additional conference with you. If you do not meet you will receive an **“I – Incomplete” for your final grade**.

If this process causes more anxiety than it alleviates, see me at any point to confer about your progress in the course to date. If you are worried about your grade, your best strategy should be to join the discussions, engage the materials, and complete the assignments.

I reserve the right to veto your grade if I disagree, only in cases in which I believe you’ve provided yourself too low of a grade. If vetoed, I will provide rationale to justify such a veto, in addition to giving you the opportunity to reject the veto.

Class Details

Weekly 'Feedback' Survey

Providing feedback allows me to try and improve in real time to the class's needs. Statistics can sometimes be tricky, so this is especially important!



BB: Respond to Lecture Qs

Due 1 week from the day of the lecture that asks the question.

In most (if not all) of my lectures, I will ask a question. It may be about:

- Your personal thoughts/opinions on an ethical issue
- Relating some topic to your life
- Any # of other topics

These are not meant to be difficult questions, but a way for me to engage you throughout the course.

All you must do is:

- Answer the question completely
- Say which lecture + date you are answering for (e.g., the lecture on Motherhood you asked _____. I think ____.)

In Class Activities

My lectures are **NOT** meant to repeat verbatim exactly what is in your suggested Textbook; but **rather provide unique, complementary information to truly get statistics**

Thus, although my lectures will have some overlap on the topics discussed, the content will provide new/different information.

The point of the in-class work is to get you practicing being better consumers of scientific information.

Course Calendar

**** The order and topics below are tentative and subject to change ****

Topics Covered*		Important Dates
Week 1 (half-week): August 17th (W) / August 19th (F)		
	- <u>Class Overview</u> - <u>Asking and Answering Research Questions</u>	- Syllabus Day - STARS Survey
Week 2: August 22nd / 24th / 26th		
	- Complete: Last Week - Start: Research Fundamentals: Don't Fool Yourself!	
Week 3: August 29th /31st and September 2nd		
	- Complete: Last Week - Start: Picturing Data, Visualizations	
Week 4: September 5th / 7th /9th		
	- <u>Review, Catch-Up, and Practice</u>	Labor Day: UA Closed, September 5th
Week 5: September 12th /14th /16th		
	- Complete: Last Week - Start: The Bell Curve, Sampling, and the Normal Distribution	
Week 6: September 19th /21st /23rd		
	- Complete: Last Week - Start: Confidence Intervals and Effect Sizes	
Week 7: September 26th /28th /30th		
	- Complete: Last Week - Start: 'Old' Statistics, Null Hypothesis Significance Testing (NHST)	
Week 8: October 3rd /5th / 7th		
	- Complete: Last Week - <u>Comparing Two *Independent* Groups, t-test</u>	Spring 2023 Registration: Time Assignments Available, October 1 st
Week 9: October 10th /12th /14th		
	- Complete: Last Week - <u>The Paired Design: Repeated Measures</u>	
Week 10: October 17th /19th /21st		
	- <u>Review, Catch-Up, and Practice</u>	
Week 11: October 24th /26th /28th		
	- Special Topic Week: Open Science and Planning Research (Problems/History/Solutions)	Registration for Spring 2023 Opens, Oct. 23rd
Week 12: October 31st and November 2nd /4th		
	- Complete: Last Week - <u>Analyzing Variables Simply by Observing: Correlations</u> - <u>Analyzing Frequency and Proportions: Chi-Square</u>	Holiday: Halloween
Week 13: November 7th /9th /11th		
	- Complete: Last Week - Special Topics Based on Interest, Student's Choice* o ANOVA, Regression, Bayesian,	
Week 14: November 14th / 16th /18th		
	- Special Topics Based on Interest, Student's Choice* o ANOVA, Regression, Bayesian, Coding Practice	
Week 15: November 21st /23rd /25th		
	- November 21 st – November 27 th Class Dismissed	- Thanksgiving Week
Week 16: November 28th /30th and December 2nd		
	- Continue Special Topics Based on Interest, Student's Choice* o ANOVA, Regression, Bayesian, Coding Practice - Start Writing Reflections and Submitting them to BB	- Final Lecture, December 2 nd - Possibly Consider Dead Week*
Submit Reflection to Portfolio NO LATER than December 4th. I must upload grades by a set deadline.		

Course Policies

My Open-Door Policy

You are welcome to meet with me, outside of that time, by making an appointment. If you have issues or questions about the course, I strongly encourage you to reach out to me.

Additionally, I encourage you to come talk to me if you ever have an issue affecting your ability or desire to continue at UA. Attending college is often a transformative experience for many people, but it is not without its own unique hardships. I want to see you succeed, so if you are having issues, please let me know. Even if I don't know how to help, I can probably direct you to someone on campus who can.

Respect

Meaningful and constructive dialogue is encouraged in this class and **requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view.** Respect for individual differences and alternative viewpoints **will always be maintained** in this class. One's words and use of language should be temperate and within acceptable bounds of civility and decency. *Basically, just be a good person.*

Responsibility

Learning can only truly occur when we take responsibility of it into our own hands. At the end of the day, I cannot force you to read, force you to write; I cannot force you to learn. It is up to you, as adults, to take ownership of your

To facilitate an atmosphere of safety and respect:

1. Please let me know (inside or outside of class) if you have specific pronouns you would like me to use or if you go by a different name than is listed in your registration materials.
2. Please let me know if you have life circumstances that make it difficult to complete course work at the assigned times. The syllabus also has a list of campus resources that students may find helpful during difficult life circumstances.
3. Please know we are all still learning about diverse perspectives. If anyone says anything that makes you uncomfortable, please talk with me

ON BASIC NEEDS

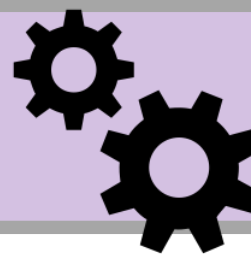
If you ever find yourself struggling to afford food and/or secure a safe and stable place to live and feel like such circumstances are impacting your performance in this class, please speak to me (if you feel comfortable) so I can provide whatever resources and support I can. For additional information and support, you can contact the **Student Well-Being and Care Office** (bamacares@ua.edu; 205-348-2461), which offers a variety of services from meals and shelter to financial assistance.

PARENTAL/CAREGIVER ACCOMMODATIONS

If we want all genders to be represented in the academic community, we should also expect children to be present in some form. The university does not have a formal policy on children in the classroom. The policy below is strictly a reflection of my own beliefs and commitment to student, faculty, and staff parents and caregivers. Nursing babies are welcome in class anytime. For older children, I understand that illness and unforeseen disruptions in childcare often put parents in difficult positions. While this is not meant as a long-term childcare solution, occasionally bringing a child to class to cover gaps in care is perfectly acceptable. If you need to miss class to provide caregiving, please let me know. While I maintain the same high expectations for all students in my classes regardless of parenting status, I am happy to problem solve with you in an effort to help you find your school-caregiver balance. Finally, I ask that all students work together

to create a welcoming environment that is respectful of all forms of diversity, including diversity in parenting status.

The Technical Stuff...



Course Outcomes

- Utilize critical thinking, writing, and speaking skills, as well as information literacy
- Define and utilize key concepts, terminology, and theoretical frameworks central to the field of statistics
- Understand and interpret the estimation approach to statistics and contrast it to Null Hypothesis Significance Testing.
- Be able to identify markers of open science, replicable work, and red flags to be skeptical of.
- Apply central concepts from statistics into their own life experiences and the world around them

Academic Integrity Policy

All acts of dishonesty in any work constitute academic misconduct and will not be tolerated. This includes, but is not limited to, cheating, plagiarism, fabrication of information, misrepresentations, and abetting any of the above. If you ever worry you might be plagiarizing, please visit this Southern Miss tutorial that teaches what plagiarism is and is not through examples:

<http://www.lib.usm.edu/legacy/plag/plagiarismtutorial.php>. Students are expected to uphold the University's Code of Academic Conduct Statement, which reads:

"All students in attendance at the University of Alabama are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student. The Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct."

Please refer to the Student Affairs Handbook, which can be obtained in the Office of Student Life and Services in the Ferguson Center, for more information

Covid Policy

All University faculty, staff, and students are expected to maintain a commitment to the health and safety of our campus community. Due to the current COVID-19 pandemic, specific health and safety standards are in place to minimize exposure and community spread on campus. In the interest of your health and safety and that of all UA students, faculty and staff, the University reserves the right to change the mode of instruction or schedule of instruction at any time, based upon prevailing public health and other guidance. While the method of delivery may change, educational instruction and opportunities will continue. As such, the University will not provide a refund of tuition, in whole or in-part, based on any such changes. Detailed information on changes in format or schedule can be found at studentaccounts.ua.edu and financialaid.ua.edu.

All students must be familiar with and abide by the requirements outlined in the UA Return Plan | UA System Comprehensive Health and Safety Plan. Students must (1) wear a mask or face covering at all times while participating in face-to-face class; (2) adhere to social distancing standards; and (3) comply with all other health and safety restrictions. If a student refuses to comply with the requirements, the student will be asked to leave the class and reported for a conduct violation. Unless a student has an exemption from the requirement to wear a face covering, (more information can be found at ods.ua.edu/covid-19-disability/), the student will be reported to Student Life for further disciplinary action. More information on these requirements and UA Healthcheck system and screening can be found at healthinfo.ua.edu/returnplan. You are expected to visit the site and comply with all noted requirements related to in-person class attendance.



Special Needs

If you require assistance in the classroom due to a disability of any type, please contact Disability Services at (205) 348-4285 during the first week of the semester so that appropriate accommodations can be made. After initial arrangements have been made with Disability Services, **contact me immediately.**

Emergency Services

The primary University communication tool for sending out information is the web site www.ua.edu. Students should consult this site as soon as they can in an emergency. During the emergency, the instructors will give information on the course through email. ⁽¹⁾₍₂₎

Statement on Diversity and Nondiscrimination

As an academic community, our educational mission is enhanced by the robust exchange of ideas that occurs between a diverse student body, faculty, and staff within a respectful and inclusive learning environment. As a campus community, we are dedicated to the pursuit of personal and academic excellence, to advancing the ideals of individual worth and human dignity, and to maintaining a nurturing and respectful learning environment. All members of the UA community are expected to contribute positively to the environment and to refrain from behaviors that threaten the freedom or respect that every member of our community deserves. The University of Alabama is committed to providing an inclusive environment that is free from harassment or discrimination based on race, genetic information, color, religion, ethnicity, national origin, socioeconomic status, political beliefs, sex, sexual orientation, gender expression, gender identity, age, ability, size, or veteran status. The University of Alabama prohibits any verbal or physical conduct that threatens or endangers the health or safety of any individual or group, including physical abuse, verbal abuse, threats, stalking, intimidation, harassment, sexual misconduct, coercion, and/or other communication or conduct that creates a hostile living or learning environment. Harassment or other illegal discrimination against individuals or groups not only is a violation of University Policy and subject to disciplinary action, but also is inconsistent with the values and ideals of the University. (<http://eop.ua.edu/law.html>)

Other Useful Campus Resources

Even the best of students can feel overwhelmed by a heavy course load or stressed out from the demands of college life. There are numerous resources available to *all students* on campus that can help you progress through your coursework in a successful and timely manner. Such resources include, but are not limited to:

- **The Center for Teaching and Learning (CTL):** Obtain academic tutoring services in a variety of subject areas, as well as assistance developing more effective study habits. Go to <http://wwwctl.ua.edu/default.asp> or call (205) 348-8854 to make an appointment.
- **The University of Alabama Writing Center:** Obtain assistance with writing assignments. To find more information about their available services, go to www.as.ua.edu/writingcenter or call (205) 348-5049.
 - Hours: 9:00 a.m.-6:00 p.m., Monday through Thursday; and 9:00 a.m.-3:00 p.m., Friday. Appointments are recommended.
 - Walk-in consultations are available from 7:00 p.m.-9:00 p.m., Monday, Tuesday, and Wednesday, in Java City/Gorgas Library.
- **The University of Alabama Psychology Clinic:** Obtain a variety of mental health services. The Clinic provides confidential private counseling sessions, as well as psychological evaluations (ADHD, Learning Disorder etc.). For more information, visit <http://psychologyclinic.ua.edu> or call them at 205-348-5000.
- **The University of Alabama Counseling Center:** Obtain a variety of emotional health services. The Center provides confidential private counseling sessions, as well as substance abuse counseling, crisis counseling, and psychiatric consultation. You can learn more by visiting <http://www.sa.ua.edu/counseling/> or calling (205) 348-3863.