

George Mason University

Statistics in Psychology

FALL 2021 | PSYC 300-007

COURSE DESCRIPTION

We will cover many of the basic descriptive and inferential statistics that are used in the field of psychology and social sciences. You will also get hands-on experience using R and other tools to analyze data. This is a 4-credit course, which includes both a lecture section and a lab section; however, all work will be submitted online via the PSYC 300-007 Blackboard section.

Course Meeting Times

Lecture (all students): Mondays & Wednesdays, 9:00 AM – 10:15 AM

Lab Section 213: Thursdays, 8:30 AM – 10:20 AM

Lab Section 214: Thursdays, 10:30 AM – 12:20 PM

Professor:

Steven Zhou



szhou9@gmu.edu



Office Hours: Thursdays, 1:30 – 2:30 PM
or by appointment

Lab Teaching Assistant:

Lida Ponce



lponce@gmu.edu

LEARNING OBJECTIVES

By the end of the course, you can expect to

- ✓ Identify and apply descriptive statistics to data.
- ✓ Understand the basic null hypothesis significance test and its uses in psychological research.
- ✓ Understand and apply appropriate statistical tests given a research question and dataset.
- ✓ Be able to use statistical software (e.g., R, JASP) to analyze data and conduct statistical tests.
- ✓ Articulate the use of statistics outside of psychology in real-world settings such as business and policy.

OVERVIEW

These are the major components of this course:

1. Lectures (2x per week)
2. Lab Meeting Time (1x per week)
3. Practice Sets (12 total)
4. Projects (5 total)
5. Quizzes (10 total, drop 1)
6. Research Participation (3 hours)

NO TESTS! FREE TEXTBOOK!

Statistics is learned through practice, not exams.

Unlike most of your other courses, this class will not have exams. Instead, you will complete five projects (can be either individual or in teams). These projects will allow you to directly apply the statistical methods learned in class to a real-life dataset.

In addition, the textbook is completely free and open access. The textbook will be used primarily as a reference and supplement to the lectures.

COURSE REQUIREMENTS

The following are the course activities and assignments.



Lectures & Lab Meetings

We will meet at our regularly scheduled lecture and lab meeting times (see schedule). Although I will not take attendance for lectures, you are expected to attend all lecture and lab meetings. If you are unable to attend, please email me in advance. Our lab TA *will* take attendance at your weekly lab meetings, and it will be part of your final grade.



Quizzes

There will be 10 short quizzes throughout the semester given during the first 15 minutes of lecture time. If you arrive to lecture on time, you will have the full 15 minutes. If you are late, you will have less time to complete the quizzes. You are allowed to drop one of your 10 quiz grades. There will be no makeup quizzes.



Practice Sets

There are no exams for this class. Instead, you will have weekly open-book open-note practice sets (for a total of 12 practice sets). To encourage mastery of the material, you can redo practice sets until you earn full credit. If you turn in practice sets early, I will give you feedback and allow you to resubmit with corrections. See "Deadlines" and "Grading Philosophy" on the next page for details.



Readings

Our textbook is *Introductory Statistics* (Illowsky & Dean, 2021). It is available for free at [this website](#), where you can also download a PDF for free. If you want, you can also purchase a print copy on [Amazon](#), but this is *not required*. Additional readings, if applicable, will be made available for free via Blackboard. There are no points assigned for readings, but you will find that the readings will be extremely helpful for quizzes, practice sets, and projects.



Projects

There are five projects to complete. The projects will have you take the lessons and techniques learned in lecture and apply them to a real-life dataset and research question. You can choose to do projects individually or in teams. I will send out a message at the beginning of the semester to assign teams if people would like to be on a team.



SONA Research Participation

This semester, you will serve for three hours as participants in psychological research. For students who choose not to participate in research, there is an alternative writing assignment on the SONA site. Students who are not eligible for studies should discuss alternatives with me *before Thanksgiving Break*. Be sure to assign your research hours to the correct course and section (PSYC 300-007) in order to receive credit. Unassigned or incorrectly assigned hours will not be credited towards your grade. Available research studies can be found at <http://gmu.sona-systems.com>.

SUMMARY

Activity	Description	Total Points
Lab Attendance	1 meeting per week for 14 weeks	50 points
Quizzes	9 quizzes (10, drop 1) x 10 points each	90 points
Practice Sets	12 practice sets x 15 points each	180 points
Projects	5 projects x 30 points each	150 points
Research Participation (3 hours)	3 hours x 10 points each	30 points

Total: 500 points

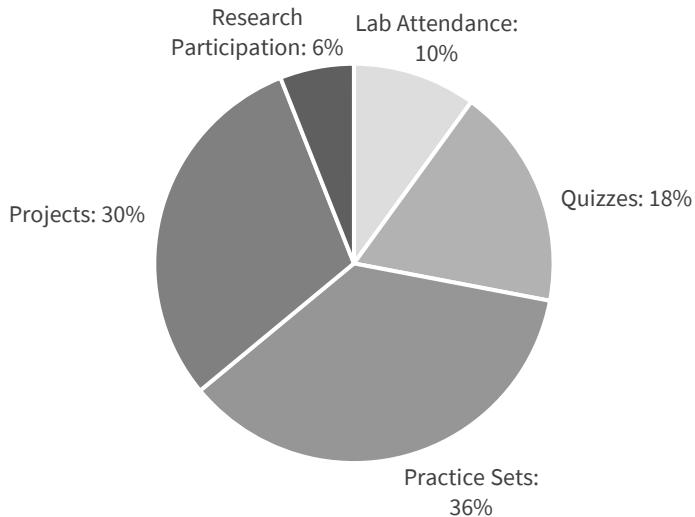
GRADING

The grading scale and points allocated per assignment are shown below.

Grading Scale

Grade	%	Points
A+	97% +	485 +
A	93%	465-484
A-	90%	450-464
B+	87%	435-449
B	83%	415-434
B-	80%	400-414
C+	77%	385-399
C	73%	365-384
C-	70%	350-364
D	60%	300-349
F	< 60%	< 300

Breakdown of Assignments



Extra Credit

Your grade will be out of 500 total points as described above. I may periodically announce extra credit opportunities, but please do not rely on these – just do the work expected for the course!

Deadlines, Late Work, and Corrections

- Lab attendance will be graded by your lab TA. Please consult your lab TA for lab attendance policies.
- Although I am not taking attendance for lectures, you will be receiving the quizzes during lecture time (as described on the previous page). If you miss lecture and miss a quiz, there are no make-ups. However, you can drop two of the 11 quizzes with no penalty.
- Practice sets are due each **Sunday night by 11:59 PM ET**. If you turn them in early (by Friday afternoon at 5:00 PM ET), I will grade them within 24 hours and give you feedback. You can then resubmit the practice set with corrections to improve your grade. All submissions and corrections are due by Sunday night at 11:59 PM ET.
- Projects will be due as specified in the weekly schedule. Late projects will receive a 2-point grade deduction on the project for every 24 hours it is late.

Grading Philosophy

I believe that education is about obtaining and applying knowledge. The knowledge presented throughout this course is crucial to your future success in the field that you have chosen, otherwise we would not have added it as a requirement! I also believe that mistakes are part of learning, and education should not be about losing points – rather, you should be gaining them just as you are gaining knowledge. Thus, throughout the course, I will be grading from an “upward” perspective – my goal is not to take points away from you, but to *give you points* when you demonstrate (on practice sets or projects) that you have grasped the material. This may seem like a small and insignificant distinction, but it is an important one. Statistics is all about practicing and gaining skills, not about memorizing or regurgitating knowledge. Throughout the course, the focus will be on *skill development*. I hope that you will see this throughout the lectures and the grading!

POLICIES & EXPECTATIONS

The following describe various policies that will be in place this semester.

Blackboard

All course materials and assignments will be distributed and collected via Blackboard. If you have any questions or concerns, feel free to reach out.

Withdrawal and Refund Dates

It is the student's responsibility to drop a course. Non-participation or failure to pay does not constitute official withdrawal. To view specific drop deadlines, log into your MyMason account: 1) Click on "My Class Schedule" under Student Quick Links 2) Select the current term 3) Click on "View Drop Deadline Dates" at the bottom of the page.

Student Privacy Statement

At times, students may disclose personal information in class. It is expected that the class will respect the privacy of classmates. The personal information disclosed in this class should not be repeated outside of the course.

Accommodations

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students. If you are seeking accommodations for this class, please visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then discuss your approved accommodations with me. Disability Services is located in The Student Union Building I (SUB I). Email: ods@gmu.edu | Phone: (703) 993-2474.

Academic Misconduct

George Mason University has an honor code, which requires all members of this community to maintain the highest standards of academic honesty and integrity. Cheating, plagiarism, lying, and stealing are all prohibited. It is every student's responsibility to familiarize himself or herself with the honor code. The honor code is available HERE. In the event that a student cheats by plagiarizing, the instructor may assign an F grade for the assignment, and/or for the course.

Civility (Non-Academic Misconduct)

Please remember that as members of this class and university, we are members of a larger learning community where excellence is achieved through civility. Our actions affect everyone in our community. You are to be respectful of others regardless of gender, age, race, culture, religion, or sexual orientation. In all online communication, it is expected that all students will follow rules of online "netiquette," which is a set of rules for online behavior that all members of this class are expected to follow. Review some of the general rules at <http://www.albion.com/netiquette/corerules.html>.

Individuals who violate this policy in class or engage in disruptive online behaviors such as flaming (posting disrespectful or hostile comments), posting inappropriate comments, or shouting (posting messages using all capitals) may have their online access privileges revoked and/or may receive an F for the class.

Title IX: George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students who believe that they have been sexually harassed, assaulted or subjected to sexual misconduct to seek assistance and support.

[University Policy 1202: Sexual Harassment and Misconduct](#) speaks to the specifics of Mason's process, the resources, and the options available to students. Any faculty or staff member at Mason is required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator, but please know that such reports will result only in someone reaching out to you directly to let you know about available services and to determine if you wish to take any action. That said, you can also contact the Student Support and Advocacy Center (703-380-1434) or Counseling and Psychological Services (703-993-2380) to speak to someone confidentially, as individuals who work in those offices are not required to report disclosures. You may also seek assistance directly from Mason's Title IX Coordinator (703-993-8730; titleix@gmu.edu).

TIPS FOR SUCCESS

You can expect to earn A in this class. Do the following, and you will succeed!

Attend Lectures and Read!

I know lectures can be a bore. I've done my best to make the material engaging and interesting. But, I've found that statistics is best learned when explained and through practice, not by reading a textbook and taking a test. Thus, to succeed, be sure to attend lectures and take notes, and complete the optional readings on Blackboard. If you are struggling to keep up with the content, reach out to me ASAP!

Manage Your Time

Do not wait until Sunday night to complete the practice set! The sooner you start working on the practice sets, the sooner you'll know if you have any questions. That way, you'll have time to reach out if you have questions and get them answered *before* the deadline. I will not be able to respond to last minute questions sent on Sunday night an hour before the practice set is due!

Email

Emails will be sent through Blackboard to your GMU email. Check your email regularly. I recommend having your school email linked to your cell phone and turn on notifications. I will make every effort to respond to emails within 24 business hours. I expect you will extend the same courtesy and respond to emails in a timely manner to me and your classmates.

Collaborate!

Statistics is best learned by collaborating with others. Projects can be completed on your own, or in teams (I highly suggest you do it in teams!). Use the time built into the course to work together on projects, share ideas, and learn from each other.

SONA Research

The Psychology department requires students to complete 3 hours of SONA research for this class. Professors and graduate students are running the studies, and they need your help. You need to register at SONA website, then you receive login information. After you login, you can find studies and sign up. You are responsible for keeping track of the appointment time, location, and experimenter information. If you must cancel an appointment, please do so at least 24 hours ahead of time. If there is an emergency within 24 hours and you must cancel, contact the researcher with the contact information on SONA. Those who are unable to fulfill the research requirement must discuss an alternative assignment with me at least two weeks prior to the SONA deadline. I highly recommend that you do some of your hours in the beginning of the semester. Also, though the experimenter will be granting your credits, it would be a good idea to check yourself to see if you received your credits by the next day (and kindly remind the experimenter if the credits have not been granted). Do not wait until the last minute to try to complete your SONA credits!



Personal Success!!!

Please utilize me as a resource to help you succeed, both in class and outside class. I want you to earn the grade that you want and enjoy this class, do well in college, and still have a life with your friends, family, job, and hobbies. If one or more of those things are not happening, please talk to me so we can work together to figure out a plan to improve your situation.

COURSE SCHEDULE

Below is our tentative course schedule. Please note that any modifications to the schedule will be announced in advance via Blackboard.

Week	Lecture Topics	Textbook Chapter	Assignments*
1 (Aug 23 & Aug 25)	Introduction: Sampling and Data Frequencies, Percentiles, & Plots	Chapter 1	Practice Set 1
2 (Aug 30 & Sep 1)	Central Tendency Variability	Chapter 2	Practice Set 2
3 (Sep 8) <i>no class on Mon Sep 6</i>	Z-Scores		Practice Set 3
4 (Sep 13 & Sep 15)	The Normal Distribution Introduction to R	Chapter 6	Practice Set 4 Project 1
5 (Sep 20 & Sep 22)	Introduction to Inferential Statistics	Chapter 7	Practice Set 5
6 (Sep 27 & Sep 29)	Null Hypothesis Significance Testing	Chapter 8	Practice Set 6
7 (Oct 4 & Oct 6)	The “T” Distribution	Chapter 9	Practice Set 7 Project 2
8 (Oct 13) <i>no class on Mon Oct 11</i>	Two-Sample T-Tests		<i>no assignments</i>
9 (Oct 18 & Oct 20)	Two-Sample T-Tests ANOVAs	Chapter 10	Practice Set 8
10 (Oct 27) <i>no class on Mon Oct 25</i>	ANOVAs	Chapter 13	Practice Set 9
11 (Nov 1 & Nov 3)	Effect Sizes Correlation		Practice Set 10 Project 3
12 (Nov 8 & Nov 10)	Linear Regression	Chapter 12	Practice Set 11
13 (Nov 15 & Nov 17)	Nonparametric Tests	Chapter 11	Practice Set 12 Project 4
14 (Nov 22) <i>no class on Wed Nov 24</i>	Other Topics / Catch-Up / Review	TBD	<i>no assignments</i>
15 (Nov 29 & Dec 1)	Other Topics / Catch-Up / Review	TBD	<i>no assignments</i>
Finals (Dec 8 – Dec 14) <i>no class meetings</i>			Project 5**

* All practice sets and projects are due at 11:59 PM ET on Sunday the week that they are listed. For example, Project 1 will be due Sunday September 19 at 11:59 PM ET. All submissions will be through Blackboard.

** Project 5 is due at the end of finals week, at 11:59 PM ET on Tuesday December 14. Submissions will be through Blackboard. We will *not* be having an in-person meeting during finals week.