Statistics and Research Methods in Psychology
Psychology/Neuroscience 201 (Spring 2023)

MWF, 9:00 - 9:50am in Science Center room 3024

Professor Siobhan Robinson (she/her/hers)

Welcome to Psych Stats! One of the main goals of this course is for you to understand and use statistical methods so that you can critically and appropriately evaluate not only academic reports, but also 'facts' presented in non-academic settings (i.e., the web, newspapers, social media, etc.). In addition, I encourage you to 'dig in' deeply, engage and work consistently because this course provides a background for all upper-level courses in Psychology and Neuroscience, including the Senior Project experience.

We are here to help you!

Prof. Robinson's office hours (SCCT 3065)

Mon., 2 – 3pm
Thurs., 10 – 11am
or by appointment

Please come to office hours!

Student TA hours

Sun., 1-3pm (Rachel Zho '26)
Sun., 3-5pm (Shraddha Datta '25)
Sun., 7-9pm (Georgia Brown '25)

Teaching assistants can answer questions, explain concepts, and provide help on homework assignments.

Keypad code to enter the Stats lab: 70243

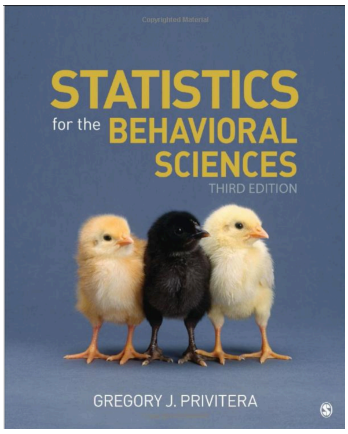
QSR Center Drop-in Hours
with Lara Speer (CJ 303)

Wednesdays, 2-4pm
Thursdays, 5-8pm

Student homework graders

Amy Shanahan '25
Yeyang Zhang '25

Required textbooks



Privitera, G. J. (2018) 3rd ed. *Statistics for the behavioral sciences.* Sage

Morling, B. (2018). 4th ed. *Research methods in psychology: Evaluating a world of information.* Norton

Both books are available in either e-book or hard copy formats for rental or purchase. The Hamilton College bookstore price matches. If you find either book at a lower price elsewhere but want to purchase from the bookstore, let them know.

A few things to consider if you are feeling a little nervous about this course:

*** You do not need a math background to do well in this course.**

*** Ever wish you had a second opportunity to get something right? You have that option on each homework!**

*** There are many opportunities to practice the material before the exams**

Course Description and Goals

Statistics are powerful. It is my hope that the knowledge and skills that you will gain in this course will help you become a critical consumer and producer of information. We use statistics to help us make informed decisions about many important aspects of our lives. These include choices you make in college, medical decisions, voting behavior, risk-taking, and many others. This class will take consistent, steady, work and discipline, but it will be worth it! In advanced Psychology and Neuroscience courses, students are frequently overheard pulling out "The Yellow Book" and their other notes from Psych Stats – so be sure to hang onto your materials from this course. Along the way, we will engage with some of the broad educational goals set forth by Hamilton College, such as:

1) **Analytic Discernment:** In this course, you will learn the statistical techniques necessary to analyze data collected using a variety of methods. You will learn to analyze data both by hand and using the Statistical Package for the Social Sciences (SPSS) computer program.

2) **Disciplinary Practice:** You will also learn the research methods employed by psychologists and neuroscientists to answer a variety of research questions.

3) **Communication and Expression:** In this class you will also learn how to clearly communicate research results in American Psychological Association (APA) style and will practice those skills on homework assignments and exam questions throughout the semester.

By the end of the course, you should have a strong understanding of not only the methods and statistics themselves, but also how to use them appropriately in conducting research and how to evaluate the appropriateness of methods and statistical results reported not only in academic journals but also in a vast number of other sources.

How Will We Achieve These Goals?

Active engagement, extensive practice, and spaced learning are the best ways to build a deep and lasting understanding of the material. There is no easy way to learn statistics; as with most things in life, you will get out of this course only as much as you are willing to put into it. By engaging fully with the course activities (attending class, taking notes, reading the text and completing assignments) you will gain the ability to understand methodological and statistical concepts that you can apply to real-life problems. You've got this!

Reading and Preparation for Success

Reading assignments for each class are listed in the syllabus. I recommend allocating 2-3 hours to read each chapter. You are expected to complete the reading **prior** to coming to class. You will likely have trouble understanding the class material if you have not yet completed the assigned reading. It really is true that what you learn on one day, you'll likely need down the line. Knowing this, I strongly advise you not to fall behind. If you don't understand something, see me or the TAs ASAP. Please do not let embarrassment or uncertainty prevent you from coming to office hours, even if it is something we covered a while back. I anticipate that with practice, some concepts that at first felt confusing or 'unreachable' will lead to ah-ha moments as you continue to practice the material. Try to recognize when something doesn't make sense to you so that the TAs and I can help you!

The textbooks in this course are user friendly – settle in with your reading, keep your pencil (and, if you are like me, an eraser!) handy and challenge yourself to work actively on problems as you read. The Privitera textbook offers Learning Checks, end-of-chapter summaries, SPSS exercises, and answers to the even-numbered homework problems that are often parallels to the odd-numbered ones that are assigned. Morling includes "Check Your Understanding" opportunities and chapter reviews.

Course Requirements and Learning Opportunities

Homework

The purpose of the weekly homework exercises is to help solidify your understanding and to give you extensive practice with the material. Homework assignments are due via Gradescope* before the beginning of class on the date listed in the syllabus. Homework assignments involve hand computations of statistics, creation of tables and figures to graphically represent data, SPSS analyses, and written summaries of statistical findings. **Expect to spend several hours on these assignments; I advise starting early in the week and not leaving everything until Sunday.** Note that even if we don't get to the SPSS component of a statistical test until Friday's class, you can rely on your SPSS guide and/or your textbook.

Please be sure to write legibly and list the problems in order. Showing your step-by-step solution is extremely important; you need to show enough work on the page that you could receive partial credit even if the final solution is incorrect. Due to the amount of material we need to cover in the course, you will not always have the most recent homework graded before an exam, but feel free to consult with the TAs or me if you want to verify an answer.

The first homework has an SPSS component, so it is imperative that you install the Citrix Workspace App on your laptop during the first week of class so you can access SPSS.

Use THIS LINK to Citrix Client – it will guide you through the steps needed to install Citrix on your computer. Do not wait until just before you start the homework, in case you run into trouble. If you do not have a laptop, you can access Citrix/SPSS on public lab computers on campus. Please get in touch with me as soon as possible if you foresee any difficulties.

You will submit each homework assignment as a pdf file on Gradescope*. See p. 15 of the SPSS packet for instructions on how to submit. Here is a link to an instructional video for how to submit pdf homework assignments:https://www.gradescope.com/get_started#student-submission. Lastly, to learn how to view your homework (and exam) feedback use this link: https://www.gradescope.com/get_started#student-submission-view

All homework must be submitted in order to pass the course. Late or incomplete homework will receive a grade of zero – but you still need to complete every homework assignment to pass this course. Because life gets a little choppy at times, each student will receive *one* no-questions-asked "freebie" late homework (with the late homework to be submitted within 48 hours of its original due date (e.g., freebies are due *before Wednesday's class*). To take advantage of your late freebie, you must indicate for which homework you are using it via the "freebie request" Google form on Bb.

Homework Corrections

Ever wish you could have a second opportunity to get something right? In Psych Stats, you have that opportunity with every homework assignment! Here is the process: Submit a **completed version** of your homework to Gradescope*. This attempt must be a good-faith effort, without skipped problems. Next, you will receive feedback and, if you choose, you can re-submit each homework one time for a higher grade. You need re-do only problems that were answered incorrectly. Homework corrections are due via Gradescope no later than 11:59pm four weekdays after you receive your graded homework back (e.g., if homework is returned on Saturday, corrections are due by 11:59pm Thursday). You will receive an email from the grader with the due date for corrections. Corrections for late homework assignments that received a zero may still be submitted for feedback, but the grade will remain a zero.

Exams

There will be four exams in this course, plus a cumulative final (see section below about the final). Exams are designed to assess your deep understanding of the material, and generally include short answer questions, short essays, and calculations/interpretations. Previous students have appreciated having more than the 50-minute class period to complete exams, so exams are held in the evening on the dates listed in the syllabus in **SCCT G027 (Science Aud in the basement), G041 (tiered room to the left of the aud), and G042 (flat classroom to the left of G041)**. We have three rooms so that you can spread out; students from both sections of Psych Stats will take their exams at the same time. TAs will be available to distribute and collect exams and answer questions. You may come anytime between 4:30 and 10pm; the exams should generally take you 1.5 – 2 hours. Leave yourself plenty of time; TAs will not stay past 10pm. You will be permitted to bring a calculator to exams, and I will provide you with a formula sheet and any necessary statistical tables. The formula sheets for each exam are provided on Blackboard under "Exam stuff" so you can see ahead of time what formulas will be provided. Please inform me at the beginning of the semester if you have a conflict with any of the evening exams.

Final Exam

The final exam will be an open-book practical exam using SPSS. You will be given data sets for two different hypothetical studies and will analyze and interpret the data to test a variety of hypotheses.

Evaluation

Assignment	% of grade
Weekly homework assignments	24
Exams 1 -4 (15% each)	60
Final Exam	16
Total	100

I reserve the right to modify the grading system either for the class as a whole or for individual students, depending on circumstances that arise

Grade	% of points		Grade	% of points
A+*	97.5-100		C	73.5-77.4
A	93.5-97.4		C-	70.5-73.4
A-	90.5-93.4		D+	67.5-70.4
B+	87.5-90.4		D	63.5-67.4
B	83.5-87.4		D-	60.5-63.4
B-	80.5-83.4		F	60.4 or less
C+	77.5-80.4			

*A+ cannot be earned by extra credit

Quick Reference Exam Dates

(any time between 4:30 and 10pm in G027, G041, or G042)

Exam 1: Monday, February 6
Exam 2: Monday, February 27
Exam 3: Monday, April 3
Exam 4: Monday, April 24

Final Exam: Saturday, May 13 (2-5pm)

In May, this will be you after the final exam!

Course Policies

Attendance and Classroom Expectations

Attendance in class is critical for success in this course. That said, I understand that you/we may face challenging circumstances at some point during the semester. If need to miss a class, please let me know ahead of time. Please be sure your laptops and cell phones are switched off (i.e., not just in vibrate mode) and put away during class. If you have an accommodation that requires you to use a laptop, just let me know.

Illness/Missing Class

Although I sincerely hope that the worst of the pandemic is behind us, COVID still rears its ugly head from time to time and official course and/or college policies may change. For now, masks are optional in class, but you are always welcome to wear one. If you feel sick, please don't come to class and be sure to take a rapid test! We want to have a worry-free learning environment. I do not plan to use Zoom or record class; I encourage you to promptly get notes from a peer, visit office/TA hours and/or review resources on Bb to catch up on the missed material and/or activities. Please do not request Zoom access for flu, cold, stomach bug, etc.

Blackboard, Email

I will post course materials (Powerpoint slides, etc.) as well as your grades on Blackboard (available via the Tools menu on My Hamilton or at https://blackboard.hamilton.edu). The TAs will also you Blackboard. We will make many course-related announcements via email and Blackboard.
Please check your email daily!

Exam Extensions

If you experience a circumstance that interferes with an exam (e.g., family or medical emergency, another exam at the same time) and you would like to request an extension, you must email or talk with me **prior** to the exam (no later than 9am the day of the exam). You will not be penalized for asking for an extension and I will do my best to try to accommodate your needs. If a pre-approved College-sanctioned activity (athletic contest, religious observance) conflicts with the exam schedule, please notify me within the first two weeks of the semester. Make-up exams can be taken early or up to one week following the regular exam date.

Honor Code

The Honor Code helps us maintain a community based on trust and integrity. I take it very seriously and expect you to do so as well. Please re-read the college's Honor Code to be clear about what is expected of you: http://www.hamilton.edu/student-handbook/studentconduct/honor-code. Although you are encouraged to study in groups and to see the TAs if you have questions about your homework, any homework assignment or exam you submit must be your own work. For example, on homework assignments in which you are asked to make up a study and generate your own data, you are free to talk through your ideas with others, but you may *not* submit the same idea or data. Similarly, you may not share your homework (or images of it) with other students. If a peer is confused or has a question, you are welcome to help explain a concept to them using a hypothetical problem, but *not* using your own homework answers. If you or a peer are struggling to understand a concept or problem, please ask me or the TAs for help. Any instance of academic dishonesty will be referred to the Honor Court.

Incompletes

If you are prevented from completing the course due to a special circumstance beyond your control (e.g., documented death in the family, illness, accident), you are eligible for an incomplete. Approval for incompletes must be granted by the chair of the Committee on Academic Standing. Work must be completed within 4 weeks of the end of the course, or the grade will automatically be converted to an F.

Extra Credit Opportunities

You may earn up to 3 extra credit points using any combination of the following methods; each submission is worth up to 0.2 points added to your final grade for the course. Extra credit may not be used to increase a final grade from an A to an A+ or from a failing to a passing grade.

Participating in Research Studies
You may earn extra credit by participating in research studies conducted by faculty and students in the Psychology Department. For every 30 min. of participation, you will be awarded 0.2 extra-credit points toward your final grade. You may sign up for studies on SONA (http://hamilton.sona-systems.com). If you miss two sessions without 24-hour prior cancellation (there is no penalty to cancel), your SONA access will be revoked and you will be ineligible for extra credit via research participation for the rest of the semester. Sona closes at 4pm on the last day of classes; you are responsible for making sure your participation tally is accurate. If your tally is inaccurate or you are having difficulty accessing the web-based interface, please contact Participant Pool Coordinator, Professor Keelah Williams (kewillia@hamilton.edu).

Attending Departmental Lectures/Colloquia
You may earn extra credit by attending talks sponsored by the Psychology Department or Neuroscience Program. To earn the equivalent of a Sona point (e.g., 0.2 points extra credit), email a paragraph to me summarizing the talk and describing what you found most interesting about it. Paragraphs should be submitted no more than a week following the talk.

Resources and Support

Course Support
If you need academic help during the semester, use any or all of the helpful resources available to you: visit my or the TAs' open hours, contact me via email to make a one-on-one appointment, visit the QSR Center (see below), and/or form a peer study group. The TAs for the course are knowledgeable, friendly, and communicate well, so I encourage you to make full use of their office hours.

Quantitative and Symbolic Reasoning (QSR) Center
The QSR Center (CJ 303) offers drop-in and individual tutoring as well as weekly facilitated group study sessions for specific courses. This spring, **Lara Speer** will offer drop-in tutoring on Wednesdays from 2-4pm and Thursdays from 5-8pm. You are welcome to come to the QSR as often and for as long as you would like. Sophie Maniscalco will offer weekly facilitated group study sessions; those who sign up commit to attending weekly for the semester. Stay tuned for an interest survey for those sessions.

Accessibility and Accommodations
I encourage anyone with a documented disability to speak with me regarding any necessary arrangements. I'm happy to accommodate you, but it may take a little planning, so be sure to talk with me during the first two weeks of the semester. You should also contact Dean Allen Harrison in the Dean of Students Office (Elihu Root House; 315-859-4021); he coordinates services for students with disabilities. All discussions will remain confidential.
For more information, please visit: http://www.hamilton.edu/dos/accessibility.

Multilingual Student Resources
Multilingual speakers whose first language is not English are encouraged to contact me if they have concerns about exams or assignments. We can discuss possible accommodations. You can also contact Alex Hanson, Coordinator of Multilingual Student Support, ahanson@hamilton.edu, for further assistance.
For more information, please visit: https://www.hamilton.edu/academics/centers/esol.

Mental Health Support
Life can be stressful and we all need help sometimes; don't be afraid to reach out for support if you need it. The Counseling Center, located in the Johnson Center for Health and Wellness (www.hamilton.edu/offices/counselingcenter, 315-859-4340), offers individual and group therapy, peer counseling (peercoun@hamilton.edu), psychiatric treatment, and a 24/7 hotline (call for immediate help, option 2). If you want off-campus help, call 1-800-273-TALK or text "START" to 741-741. You may also reach out to the Dean of Students office (dosdept@hamilton.edu; 315-859-4600), your academic advisor, your RA, or your residence hall area director. **If at any time you feel suicidal or in danger of harming yourself or others, please reach out for support! The Hamilton community cares and is available to help. Campus Safety is available 24/7 for urgent concerns at 315-859-4000.**

Class Schedule

P = Privitera statistics text [P: 1 = read Privitera, chapter 1]; M = Morling research methods book
Readings should be done prior to the day's class. HW is due before class on day listed unless otherwise specified.

Date	Topic	Readings	Assignments Due
1/18 W	Course introduction	Syllabus	
1/20 F	Levels of measurement	P: 1 M: 1, 3 (pp. 56-59) M: 5 (pp.117-124)	
1/23 M	Levels of measurement & SPSS	The Yellow Book: SPSS instructions	
1/25 W	Frequency distributions/graphs	P: 2 M: 6 (pp. 153-165)	
1/27 F	Summarizing data: Central tendency	P: 3 M: 2 (pp. 23-36)	
1/30 M	Summarizing data: Variability	P: 4 M: 2 (pp. 36-53)	**HW 1** Levels of measurement Intro to SPSS, freq. dist. & graphs, central tendency
2/1 W	Z scores & normal distributions	P: 6 (skip 6.9 & 6.10)	
2/3 F	Z scores & normal distributions, cont'd	**Bring *Z* table to class**	
2/6 M	Exam 1 Review (post questions on Bboard) **EXAM 1**		**HW 2** Variability, Z scores
2/8 W	Probability & sampling distributions	P: 7 (skip sections 7.2 & 7.4)	
2/10 F	Hypothesis testing (one sample z test)	P: 8 (pp. 240-257, skip 8.4)	
2/13 M	Hypothesis testing, cont'd (errors, effect size, power)	P: 8 (8.4, pp. 258-270) https://rpsychologist.com/d3/cohend/	**HW 3** sampling distributions, hypothesis testing
2/15 W	Hypothesis testing, cont'd (one sample *t* test)	P: 9 (pp. 274-288) **Bring *t* table to class**	
2/17 F	Hypothesis testing, cont'd (confidence intervals, SPSS)	P: 11 (334-348)	
2/20 M	Research design	M: 3 (pp. 60-65; 70-77) 8 (pp. 219-227), 9	**HW 4** hypothesis testing
2/22 W	Research design, cont'd	M: 10 (pp. 277-291)	
2/24 F	Research design, cont'd	M: 11 (334-337; 342-357)	
2/27 M	Exam Review (post questions on Bboard) **EXAM 2**		**HW 5** research design
3/1 W	Between-subjects designs I: Independent groups t test	P: 9 (pp. 288-301) **Bring *t* table to class**	
3/3 F	Independent groups t test, cont'd	P: 11 (pp. 349-351) **Bring *t* table to class**	

Date		Topic	Readings	Assignments Due
3/6	M	Between-subjects designs II: Oneway ANOVA	P: 12 (pp. 364-375)	**HW 6** indep samples t test
3/8	W	Oneway ANOVA, cont'd	P: 12 (pp. 376-398) **Bring *F* and *q* tables to class**	
3/10	F	Oneway ANOVA, cont'd	**Bring *F* and *q* tables to class**	
3/27	M	Ethics in research	M: 4; Rosenthal (1994 on Bboard)	**HW 7** oneway ANOVA
3/29	W	Methodological aspects of within-subjects designs	M: 10 (pp. 292-302)	
3/31	F	Methodological aspects, cont'd	M: 11 (pp. 324-334)	
4/3	M	Exam Review (post questions on Bboard) **EXAM 3**		
4/5	W	Within-subj. designs I: Paired samples t test	P: 10 **Bring *t* table to class**	
4/7	F	Paired samples t test, cont'd	P: 11 (pp. 351-356) **Bring *t* table to class**	
4/10	M	Within-subjects designs II: Repeated-measures ANOVA	P: 13 (pp. 404-419) **Bring *F* and *q* tables to class**	**HW 8** paired samples t test
4/12	W	Repeated-measures ANOVA, cont'd	P: 13 (pp. 419-435) **Bring *F* and *q* tables to class**	
4/14	F	Repeated-measures ANOVA, cont'd	**Bring *F* and *q* tables to class**	
4/14	M	Correlation	P: 15 (pp. 488-508) M: 8 (pp. 203-219)	**HW 9** Rep. measures ANOVA
4/14	W	Correlation, cont'd	**Bring *r* table to class**	
4/19	F	Linear regression & multiple regression	P: 16 (skip 16.10 – 16.12)	
4/24	M	Exam Review (post questions on Bboard) **EXAM 4**		**HW 10** Correlation & regression
4/26	W	Chi-square	P: 17 (no hand calcs; skip 17.3, 17.4 & 17.7)	
4/28	F	Factorial designs (2-way, b/w-sub. ANOVA)	M: 12	
4/28	M	Factorial designs, cont'd	P: 14 (pg. 474-477)	**HW 11** chi square
5/1	W	Factorial designs, cont'd		
5/5	F	Final exam review	Read through the final exam practice questions (on Bboard) before class	
5/8	M	Final exam review		**HW 12** factorial ANOVA

THE FINAL EXAM WILL BE HELD ON SATURDAY, May 13 from 2 – 5