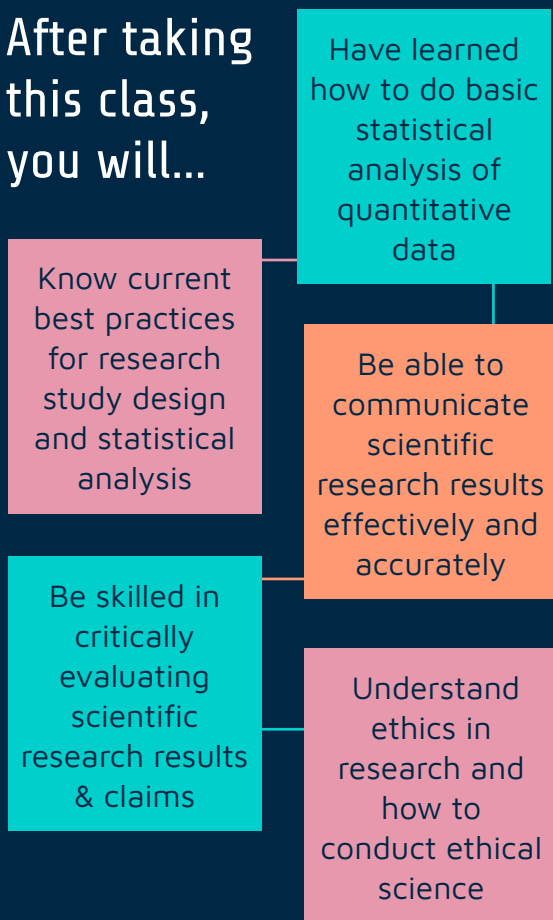


PSY 204L QUANTITATIVE RESEARCH METHODS & STATISTICS FOR PSYCHOLOGICAL SCIENCE 1

Summary In this two-semester course series (204L/205L) we will learn how to turn curiosity into knowledge. We will focus on the design of research studies and the use of statistical methods to become better consumers, creators, and communicators of psychology and human neuroscience research. By the end of this semester, students will have the initial foundational methodological and statistical knowledge and skills to conduct their own research in PSY205L.

After taking this class, you will...



LECTURE TTh 1:45–3pm SECTION T3:30, T7pm
HYBRID: some recorded lectures, some live
NO BOOK: all materials free on Sakai
PROJECT: choose your own team
OPTIONAL FINAL: 11/22 2–5PM
WEEKLY ASSIGNMENT: Sunday 10pm
FREE SOFTWARE: <https://jasp-stats.org/>

GR Samanez-Larkin, Ph.D.
g.samanezlarkin@duke.edu
 Office hours: T10am, Th9pm



Angie Vieth, Ph.D.
angela.vieth@duke.edu
 Office hours: W2pm, Th5pm



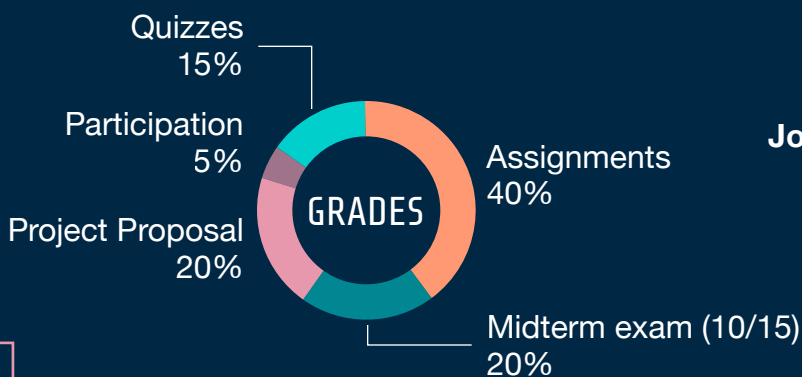
Mikella Green (PhD student)
mikella.green@duke.edu
 Section: T3:30pm



Joshua Stivers (PhD student)
joshua.stivers@duke.edu
 Section: T7pm



Teaching team



This semester (**PSY204L**) is focused on basic research design and measurement, ethical issues, statistical tests for observational studies (e.g., regression, correlation, non-parametric tests), and how to use statistical software.

Overview of Course Components and Grading

This is a hybrid course that combines **mini-lectures** with credit/no-credit **quizzes** (15% of grade), **interactive activities** (in-person and virtual) during normal class periods, **sections/labs** with a teaching assistant, weekly **assignments** (40% of grade) often with both group-based and individual components, an in-class **midterm exam** (20% of grade) on Thursday October 15th, an **optional cumulative final exam** (will replace midterm if higher grade), and a group-based **research study proposal** (20%). **Participation credit** (5% of grade) will be given for attending sections/labs and providing responses to in-class surveys. Details below on each course component.

TEXTBOOK & SOFTWARE

TEXTBOOK: There is no required textbook for this course. You paid for this class to learn from local Duke experts so all materials will be provided either via Sakai or via lectures and sections/labs. Some students learn better from reading a text and we completely understand that. If you feel like it would be helpful to have additional reading material, we will provide suggested materials (chapters from relevant textbooks) for each week on Sakai under Resources. Reading these materials is optional.

SOFTWARE: There are many different software options for basic data analysis. We will use the free and open source software, JASP, for demonstrations and activities during lecture and lab sections. This is not a programming course and we assume no prior background in programming or statistics. JASP does not require any programming. We will teach you the basics in JASP in a non-scary and supportive way. Our focus will be on teaching critical statistical thinking more than developing a foundation for programming.



LECTURES AND QUIZZES

There are two lecture periods each week where live lectures may be given that blend the presentation of information with student-instructor and student-student interaction. Purely informational content will be provided in recorded mini-lectures (5-15 minutes each). Each mini-lecture will have a credit/no-credit quiz (15% of course grade) of 1-3 multiple choice questions.

LABS/SECTIONS



In addition to the lecture components, students will attend a weekly lab session. During these sessions, students will review lecture material with a teaching assistant and have more TA-supported hands-on practice with that week's material in preparation for the weekly assignment. Labs will begin the first week of class.

PARTICIPATION

Participation credit is given for attending sections/labs as well as contributing to data collection throughout the semester. Each week there will be short Qualtrics surveys to collect data from students. These data will be collected, anonymized, and compiled by the teaching team and analyzed by the students for assignments, lab activities, and/or exams. During the first week of class, students will have the opportunity to make suggestions for data collection throughout the semester.

WEEKLY ASSIGNMENTS

There will be approximately 11 weekly assignments posted on Sakai (under Assignments). Assignments are mini-projects aimed at reinforcing concepts discussed in class and developing your independent methodological and statistical thinking and skills. Some components of the assignments are done in small groups (mostly to help build your research project proposal described below) and other parts should be done on your own. For the parts to be completed on your own, you may feel free to discuss those sections with other students, but the work that you turn in must be your own.



Assignments are due by Sunday at 10pm Eastern time. Late assignments will lose 20% for every day they are late. The maximum grade for turning in the late assignment before 10pm on Monday is 80, before 10pm on Tuesday is 60, before 10pm on Wednesday is 40, and before 10pm on Thursday is 20. No assignments will be accepted after Thursday. All assignments count (we don't drop the lowest).

RESEARCH STUDY PROPOSAL

You will complete a research study proposal in small groups of 1-3 (self-selected from classmates in your assigned sections/labs) over the course of the semester. This proposal will be in the form of a Registered Report which is a document providing a brief background and rationale for a proposed study with hypotheses (similar to a brief Introduction of a research paper) and the detailed methods of the proposed study (similar to a Method section of a research paper).

You will not have the opportunity to procrastinate on this proposal. Many of your weekly assignments will involve drafting sections of this document. You will be rewarded throughout the semester for making consistent progress on this project. At the end, you'll compile everything and feel great! Our goal is to build to a very satisfying and non-stressful end-of-semester where you get to just bask in the glory of your new knowledge and skill.

MIDTERM EXAM

There will be a midterm examination (multiple choice & short answer) based on two-thirds of the course material administered during the ninth week of class. The exam will cover the topics discussed in lecture and sections/labs up until that date. The completed exam is submitted on Gradescope at the end of class. Make-up exams will be given only under exceptional circumstances. You must contact the instructors before the exam if an emergency arises. If you are entitled to exam accommodations via the Student Disability Access Office (SDAO), please let us know as soon as possible after the end of Drop/Add if you will be getting accommodations so we can be sure you are fully supported.

OPTIONAL FINAL EXAM

There will be an optional cumulative final examination during the final exam period that involves evaluating research methods and analyzing and reporting data. The exam will cover the topics from the entire semester. This is a non-traditional exam where you will get the full exam (but not the data) on Sakai 24 hours in advance to allow time to jot down ideas, think, and plan without time pressure. The data are released via a Box folder at the beginning of the exam. Data analysis and write-up must be completed during the exam period, and the completed exam is submitted on Gradescope. Make-up exams will not be given since this exam will be optional.

Our course policy is as follows: We don't care when you learn it; all that matters is that you learn it!

In this spirit, there are **no risks to taking the optional final** - only potential benefits. If you don't take it, your grade will not be affected. If you take it and the grade is higher than your midterm exam grade, your midterm exam grade will be replaced by your final exam grade. You do not need to request this; it will happen automatically. If your grade on the final exam is lower than your midterm, your midterm exam grade will not be replaced by your final exam grade. If the final exam grade is lower, we will not include that score anywhere in your final course grade.

GRADE SCALE

The letter-grade scale for this course is:

A+ = 99-100%	A = 95-98%	A- = 90-94%
B+ = 87-89%	B = 83-86%	B- = 80-82%
C+ = 77-79%	C = 73-76%	C- = 70-72%
D+ = 67-69%	D = 63-66%	D- = 60-62%
F = <60%		

Grades will be rounded up, for example, from 94.5% to 95%.



PSYCH/NEUROSCI MAJOR AND PRE-MED REQUIREMENTS

Completion of both semesters of the course are required to meet the statistics and methods requirements for Psychology. For the academic year 2020/2021 completing of both courses will also meet both the methods and stats requirements for Neuroscience majors. Both semesters are also required to meet the pre-med statistics requirement.

BEHAVIOR AND COMMUNITY STANDARDS

The Duke Compact

The Duke Compact recognizes our shared responsibility for our collective health and well-being. Please be reminded that by signing your name to this pledge, you have acknowledged that you understand the conditions for being on campus. These include complying with university, state, and local requirements and acting to protect yourself and those around you. For complete language and updated policies, please visit <https://returnto.duke.edu/compact/>

Duke Community Standard

All students, whether residing on campus or learning remotely, must adhere to the Duke Community Standard (DCS): Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, and accountability. Citizens of this community commit to reflect upon these principles in all academic and non-academic endeavors, and to protect and promote a culture of integrity.

To uphold the Duke Community Standard:

Students affirm their commitment to uphold the values of the Duke University community by signing a pledge that states:

- I will not lie, cheat, or steal in my academic endeavors;
- I will conduct myself honorably in all my endeavors;




- I will act if the Standard is compromised

Regardless of course delivery format, it is the responsibility of all students to understand and follow Duke policies regarding academic integrity, including doing one's own work, following proper citation of sources, and adhering to guidance around group work projects. Ignoring these requirements is a violation of the Duke Community Standard. If you have any questions about how to follow these requirements, please contact Jeanna McCullers, Director of the Office of Student Conduct.

MENTAL HEALTH AND WELLNESS RESOURCES

If your mental health concerns and/or stressful events negatively affect your daily emotional state, academic performance, or ability to participate in your daily activities, many resources are available to you, including ones listed below. Duke encourages all students to access these resources, particularly as we navigate the transition and emotions associated with this time. Duke Student Government has worked with DukeReach and student advocates to create the Fall 2020 “[Two-Click Support](#)” Form, and [Duke Reach](#) has expanded its drop in hours as well.

- **DukeReach.** DukeReach offers comprehensive outreach services to help students who are experiencing significant difficulties related to mental health, physical health, and/or psychosocial adjustment. DukeReach provides case management for students in distress, securing and coordinating services from across the Duke community that will support each student’s particular needs. Individuals may self-refer to DukeReach, or others (friends, classmates, professors) may contact DukeReach on a student’s behalf. More information is available at <https://studentaffairs.duke.edu/dukereach1>. Contact DukeReach at 919-681-2455 or dukereach@duke.edu
- **Counseling and Psychological Services (CAPS).** CAPS services include individual, group, and couples counseling services, health coaching, psychiatric services, and workshops and discussions. (919) 660-1000
- **Blue Devils Care.** A convenient and cost-effective way for Duke students to receive 24/7 mental health support through TalkNow. bluedeviscare.duke.edu



Managing daily stress and self-care are also important to well-being. Duke offers several resources for students to both seek assistance on coursework and improve overall wellness, some of which are listed below. Please visit <https://studentaffairs.duke.edu/duwell/holistic-wellness> to learn more about:

- **The Academic Resource Center:** The Academic Resource Center (ARC) offers free services to all students during their undergraduate careers at Duke. Services include Learning Consultations, Peer Tutoring, Learning Communities, ADHD/LD Coaching, Outreach Workshops, GRE/MCAT Prep, Study Connect, and more. Because learning is a process unique to every individual, they work with each student to discover and develop their own academic strategy for success at Duke. Learn more at arc.duke.edu or by contacting the ARC at 919-684-5917 or theARC@duke.edu
- **DuWell:** (919) 681-8421, duwell@studentaffairs.duke.edu, or <https://studentaffairs.duke.edu/duwell>)
- **WellTrack:** <https://app.welltrack.com/>

ACCESSIBILITY

In addition to accessibility issues experienced during the typical academic year, I recognize that remote learning may present additional challenges. Students may be experiencing unreliable wi-fi, lack of access to quiet study spaces, varied time-zones, or additional responsibilities while studying at home. If you are experiencing these or other difficulties, please contact us to discuss possible accommodations.

Technology Accommodations

Students who may have limited access to computers and stable internet may request assistance in the form of loaner laptops and WIFI hotspots. For new Fall 2020 technology assistance requests, please go [here](#). For returning students who wish to request an extension of a laptop or hotspot loan for Fall 2020 semester, please go [here](#). For updates, please visit <https://keeplearning.duke.edu/undergraduate-students/>.



Academic Accommodations

The Student Disability Access Office (SDAO) will continue to be available to ensure that students are able to engage with their courses and related assignments.

Students with documented or suspected disabilities may contact the Student Disability Access Office (SDAO) to engage in a confidential conversation about the process for requesting reasonable accommodations both in the classroom and in clinical settings. Qualified students are encouraged to register with the SDAO as soon as feasible, as accommodations are not provided retroactively. More information may be found online at access.duke.edu or by contacting SDAO at 919-668-1267 or SDAO@duke.edu. Zoom has the ability to provide live closed captioning. If you are not seeing this, and but would like to see this feature, please reach out to us for assistance.

Accommodations for Remote Students

If students cannot participate in synchronous or in-person course components (due to permanent time zone differences or temporary quarantine, for example), students should contact the instructor and academic dean to request an accommodation that will allow them to participate remotely. Please note that the experience may not be identical to that of local students.

OTHER USEFUL RESOURCES

Duke University Libraries: Due to the research focus of this class, students will be asked to find and explore scholarly literature on topics relevant to psychology and neuroscience. Although some lab time will be devoted to ways to conduct effective literature searches, students also should examine the resources available via the Duke University Libraries website. Through this website, students are able to access various research databases; make library purchase requests; chat with librarians about general questions; and schedule consultation appointments with Ciara Healy, the subject specialist for both Psychology and Neuroscience. Please click <https://library.duke.edu/services/undergraduate> to read about these and additional services.



COURSE POLICIES/EXPECTATIONS

Attending class: In recognition of possible extra personal and academic stress this semester, lecture and section attendance is not required but this is where the core content of the course comes from. More details on Trinity attendance policies are available [here](#). More details on Pratt attendance policies are available [here](#). If you miss a lecture or section, you will likely need to get notes from someone else (or watch the recording since we will be offering recorded lectures to students who cannot attend synchronously). There will also be many interactive activities during lecture and especially during section periods. If you miss a lecture, there is nothing specific you need to do to make up these activities. Try them out on your own. They are purely for your own benefit to support your learning. If you need to miss a section, you will need to notify the TA in advance and ask for details on how to make up that section which will likely involve some coordination with your group members.

Personal Mental Health Day: Due to the absence of official breaks in the academic calendar this semester, we offer the option for students to take a “mental health day” this term. You may schedule this day in advance or elect to take it at a time when it will afford the most relief. Please note that you will be responsible for making up missed course material and assignments.

Assignment/exam/report regrades: The assignments and exams are written by the professors who also write grading guides but the actual grading is primarily done by the TAs. If you have questions about a grade, please first contact your TA to discuss the assignment. If there is a grading error they can fix it. If it was grading correctly but you are contesting the grading, you will need to request a regrade by the professors. One of us will re-grade the entire assignment. Your grade may go up, down, or not change. This is not meant to be threatening. If you ask for our extra time through a re-grade, we will do the best job we can re-grading it to be as fair as possible. We reserve the right to deny regrade requests if they become too frequent. We are committed to providing you the best learning experience possible and that takes time. We understand how critical your grades are. Know that everything we do leading up to that grade is intended to prepare you for success.



Civic Engagement Policy: To support your participation in civic duties this election year, we will elect one-to-two days this fall during which I will institute a flexible attendance policy. In exchange, we expect you to use these days for volunteering for civic activities that support the democratic process and/or casting your ballot. Duke will host an on-campus early voting site in the Karsh Alumni and Visitors Center from October 15-31, and all students voting in NC are encouraged to take advantage of this site. Information for voting at Duke is available [here](#), and early voting policies by state are available [here](#).

Inclement Weather/Connectivity Policy: In the event of inclement weather or other connectivity-related events that prohibit class attendance, either in the location of the instructor or in the location of the student, we will notify you how we will make up missed course content and work. Asynchronous catch-up methods will likely apply.

This is a collaboration: We all have the same goal. We are deeply invested in this course and your success in it. Every member of this teaching team loves teaching this content. We will do our best to get to know each and every one of you. Please bring your whole self to this class. Creating a welcoming and inclusive classroom experience together as instructors and students is an important priority for all of us.

If you are ever confused or struggling, please come to office hours or reach out to us. It is our job to support your learning experience here at Duke. Please do not keep your struggle to yourself.

We are not therapists but we can direct you to one if you need it (see above). **We are here to help you not only learn the content of this course but become confident!** There is no shame in having a hard time. All of us on the teaching team have struggled with different parts of the content of this course at various career stages.



We've been there; we're here now to help you have a better experience. We do not want anyone to feel like they are bad at research methods and statistics because they are confused or have difficulty with the software or because it isn't coming easily.



We are here to empower every single one of you!

DETAILED SCHEDULE

The course schedule is subject to change; topic dates are approximate.

Section 1: The Scientific Method and Ethics

Week 1	Aug 18 Aug 20	What is science? The scientific method	Lab 1	Assignment 1 (8/23)
Week 2	Aug 25 Aug 27	The scientific method continued Study design and validity	Lab 2	Assignment 2 (8/30)
Week 3	Sep 1 Sep 3	Ethics Ethics continued	Lab 3	Assignment 3 (9/6)

Section 2: Designing Research Studies

Week 4	Sep 8 Sep 10	Reliability Validity	Lab 4	Assignment 4 (9/13)
Week 5	Sep 15 Sep 17	Threats to validity Sampling and scales of measurement	Lab 5	Assignment 5 (9/20)

Section 3: Analyzing Data

Week 6	Sep 22 Sep 24	Intro to data modeling Distributions and variance	Lab 6	Assignment 6 (9/27)
Week 7	Sep 29 Oct 1	Quantifying uncertainty Qualifying estimates	Lab 7	Assignment 7 (10/4)
Week 8	Oct 6 Oct 8	Explaining variance Visualizing data	Lab 8	Assignment 8 (10/11)
Week 9	Oct 13 Oct 15	Midterm prep Midterm	No labs	No assignment

Week 10	Oct 20 Oct 22	Linear regression Correlation	Lab 9	Assignment 9 (10/26)
Week 11	Oct 27 Oct 29	Group comparisons Non-parametric tests	Lab 10	Assignment 10 (11/1)

Section 4: Course Wrap-Up and Transition to 205L

Week 12	Nov 3 Nov 5	What's wrong with science How to make science better	Lab 11	Assignment 11 (11/8)
Week 13	Nov 10 Nov 12	Course review Final exam prep and closing thoughts	No labs	Project report (11/13)

Nov 22 FINAL EXAM (2-5pm Eastern)