

Attention!

This is a *representative* syllabus.

The syllabus for the course when you enroll may be *different*.

Use the syllabus provided by *your* instructor for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given semester.

Feel free to contact the Psychology Advising Office for any questions regarding psychology courses either by email (psychadvising@osu.edu) or phone (614.292.5750).

Thank you!

Psychology 3321

Quantitative & Statistical Methods

Course Description

Psychology 3321 is a course on the principles of quantitative and statistical methods as they apply to psychology and related sciences. The aim is to familiarize the students with the basic notions and methods to make statistical inferences for the purpose of scientific research and to interpret statistical information available in the public domain and the media. The course prepares the students to read and interpret statistical information and to apply statistical methods. The course will pay particular attention to the general linear model, including t-tests, ANOVA, and regression.

The course will be taught synchronously via zoom. I will do my best to maintain a weekly flow to the course that will include a lecture component, lab component, and assignments. I plan to stay 15 minutes after class ends to answer any questions. *I strongly encourage you to read the assigned chapters prior to lecture!*

Course Learning Objectives

By the end of this course, students should successfully be able to:

1. *Learn the fundamentals of statistics*: measurement, central tendency and dispersion, probability, distributions, statistical inference
2. *Understand hypothesis testing*: null hypothesis testing, interpretation of p-values, type I and II errors
3. *Learn the basics of the linear models*: t-tests, analysis of variance (ANOVA), correlation, regression
4. *Learn R software*: Basic coding and analyses, interpret output, basic data manipulation
5. *Learn to evaluate claims through a quantitative lens*: learn the limitations of each statistical approach discussed, what questions each approach can (and cannot) address, causal inference
6. *Learn to communicate the results of a statistical analyses clearly*: APA-style write ups of analyses, describe quantitative methods without jargon

VERY IMPORTANT

Students are expected to familiarize themselves with the software to be used (R, excel), but only as far as needed and with the help of indications from the instructor and teaching assistants.

Credit hours and work expectations: This is a **3-credit-hour course**. According to [Ohio State policy](#), students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading slides and notes, making exercises and assignment work, preparing for exams).

Course Materials and Technologies

Textbooks

Howell, David C. (2013). *Fundamental Statistics for the Behavioral Sciences* (8th Edition). Belmont, CA: Wadsworth Publishing.

Supplemental material is available online. Any editions from the 5th to the 9th are fine.

Software

R, general purpose software: to be downloaded from <https://cloud.r-project.org/>

Additional materials

Microsoft office, Google Docs

Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

Carmen access

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions (go.osu.edu/add-device).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new**

codes button that appears. This will text you ten passcodes good for 365 days that can each be used once.

- Download the Duo Mobile application (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

Grading

Assignments

| | |
|-------------------------|--------------------|
| Midterm and final exams | 40% of total grade |
| Weekly assignments | 60% of total grade |

Grading Scale

| Grade (Percent) | Grade (Percent) | Grade (Percent) | Grade (Percent) |
|-----------------|-----------------|-----------------|-----------------|
| A (93–100) | B+ (87–89.9) | C+ (77–79.9) | D+ (67–69.9) |
| A– (90–92.9) | B (83–86.9) | C (73–76.9) | D (60–66.9) |
| | B– (80–82.9) | C– (70–72.9) | E (< 60) |

Descriptions of Major Course Assignments

Weekly assignments

Homework will be due Wednesday at 5pm MOST weeks. There will be a maximum of 14 homework assignments, though they may end up being less. Regardless, homework assignments will be worth 60% of your final grade. Homework assignments will consist of both conceptual questions as well as computations that will require you to use R. The lowest homework grade will be dropped. There will also be a “make-up” homework that replaces the second lowest homework.

No late assignments will be accepted!

You are encouraged to work the exercises from your textbook (Howell, available in the library if you don't buy it), some of which are also very similar to the kinds of questions you will see on exams. The odd-numbered questions have solutions in the back of the book.

Exams

There will be two midterm exams and a final, all completed online. The exams will be weighted equally and worth 40% of your final grade. The lowest exam grade will be recomputed to be the average between the lowest exam grade and highest exam grade.

For example, if a student's exam scores are 12, 14, and 8, the third exam will be recomputed as $(14+8)/2$. Thus, the student's exam scores would then be 12, 14, and 11.

Extra Credit

For two percentage points of extra credit, you make a meme that illustrates a course topic. Feel free to be creative, clever, and funny! Please make sure that it is appropriate for class though. I am open to other ideas for extra credit.

The content of the meme must illustrate a statistical concept and cannot be text copied from the book, internet, lecture materials, etc. (i.e., must be original content). In addition to the meme, please describe the concept and the point the meme is trying to make in a paragraph.

Here's a website where you can make a meme: <https://imgflip.com>



Instructor Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** You can expect your grades with feedback within seven days for assignments and the midterm exam.
- **Email:** The instructor and teaching assistants will try to reply to emails within 24 hours on weekdays when class is in session at the university.

Zoom Etiquette

- Feel free to use emojis, especially the hand raise. I may not see it right away but I'll pause intermittently to see if anyone has a question.
- If you do want to ask your question via raise hand, you can also type it into the chat. Feel free to interact with each other in the chat as well and help each other out. However, if the chat becomes too distracting, then I will limit to just questions.
- I will encourage to have your camera on, but I will not require it.
- At least one week, I will use breakout rooms for group discussions. I do strongly encourage having your camera on for this part of class. In part, these breakout sessions are meant to foster interaction and get to know your classmates.

Discussion and Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class activities/discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm does not always come across online. Please do not engage other students with negative feedback about them as a person and remember to always rely on the data and to focus on the argument being made, not the person making it. Remember to adhere to the OSU Student Code of Conduct at all times - <https://studentconduct.osu.edu/>
- **Citing your sources:** For your contributions in this course, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into Carmen.
- **What is said in class stays in class:** Please do not share any course materials or student contributions outside of this class without clear written permission from the student involved AND Dr. Cravens-Brown

Academic Integrity Policy

See **Descriptions of major course assignments**, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's *Code of Student Conduct* (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)
- Eight Cardinal Rules of Academic Integrity (go.osu.edu/cardinal-rules)

Copyright for Instructional Materials

The materials used in connection with this course may be subject to copyright protection and are **only** for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Commitment to a Diverse and Inclusive Learning Environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily

activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at go.osu.edu/ccsondemand. You can reach an on-call counselor when CCS is closed at 614-292-5766, and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Health and Safety Requirements

All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>), which includes *following university mask policies* and maintaining a safe physical distance at all times. Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.

Accessibility Accommodations for Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Course Schedule

| Dates | Topic | Reading |
|---|-------------------------------------|---------------------------------|
| Week 1 Aug 24 Aug 27 | Course Introduction, Basic Concepts | Chapter 1 (review) Chapter 2 |
| Week 2 Aug 30 Sep 1 Sep 3 | Introduction to R, Central Tendency | Chapter 4 |

| Dates | Topic | Reading |
|---|--------------------------------------|------------------------|
| Week 3 Sep 8 Sep 10 | Central Tendency | Chapter 5 |
| Week 4 Sep 13 Sep 15 Sep 17 | Probability, The Normal Distribution | Chapter 6 Chapter 7 |
| Week 5 Sep 20 Sep 22 Sep 24 | Probability, Midterm Review | Midterm 9/24 |
| Week 6 Sep 27 Sep 29 Oct 1 | Sampling Distributions and Inference | Chapter 8 |

| Dates | Topic | Reading |
|--|---|--------------------------|
| Week 7 Oct 4 Oct 6 Oct 8 | One-Sample t-test, Confidence intervals | Chapter 12 |
| Week 8 Oct 11 Oct 13 | Within-Subjects t-Test, Experimental Design | Chapter 13 |
| Week 9 | Between-Subjects t-Test, ANOVA | Chapter 14 Chapter 16 |

| Dates | Topic | Reading |
|----------------------------|--|---------------|
| Oct 18 Oct 20 Oct 22 | | |
| Week 10 | | |
| Oct 25 Oct 27 Oct 29 | ANOVA, Midterm Review, Midterm | Midterm 10/29 |
| Week 11 | | |
| Nov 1 Nov 3 Nov 5 | Correlation | Chapter 9 |
| Week 12 | | |
| Nov 8 Nov 10 Nov 12 | Simple Regression | Chapter 10 |
| Week 13 | | |
| Nov 15 Nov 17 Nov 19 | Simple Regression, Multiple Regression | Chapter 11 |
| Week 14 | | |
| Nov 22 | Multiple Regression | |

| Dates | Topic | Reading |
|--------------------------|-----------------------------------|------------|
| Week 15 | | |
| Nov 29 Dec 1 Dec 3 | Factorial ANOVA | Chapter 17 |
| Week 16 | | |
| Dec 6 Dec 8 | Review and preparation Final exam | |

| Dates | Topic | Reading |
|--------------|------------|---------------------|
| Final | Final Exam | 12/13 10-11:45am |