PSY 295: Data Analysis in

Psychological Research (3.0 Credit Hours)

Summer 2023: 05/15 - 08/18

Instructor: Rachael Pyram (she/her)

Email: pyramrac@msu.edu

Contacting Me

The best way to reach me is via email. I will respond to emails within one business day; emails sent after 5:00 PM ET on Friday will be answered on the next business day.

A few things to consider when emailing:

- Include "PSY 295" in the subject line.
- Include your full name, so I know who you are.
- Double-check whether your questions can be answered by the syllabus or by content on Desire2Learn (D2L).
- Consider the scope of your question before you email (e.g., is your question complicated enough that it would be better answered via Zoom?).
- Proofread your email and ensure you are clearly communicating your question or request.

Office Hours:

- Office hours are a time for you to have live access to me; most students use this as a resource to work through questions they have about assignments or the lecture material.
  - To book office hours with me, use this booking link https://calendly.com/rachaelpyram/45min
    - This booking link shows all of my availability in real-time. Pick whatever available slot works best for you and a Zoom link will be emailed to you.

Course Information

Course Overview: This course is designed to introduce basic concepts and procedures used in descriptive and inferential statistics, especially as it applies to the behavioral sciences. This is a course for researchers, not statisticians, therefore we will focus on statistics as a tool for understanding data. This course will cover descriptive statistics (such as central tendency, measures of dispersion, and standardized scores) and inferential statistics (such as z-tests, t-tests, ANOVA, correlation, regression, and chi-square). Finally, the course will link various statistical analyses with research questions pertaining to various branches of psychology.

Course Mode: This course is asynchronous and entirely online. All course material (e.g., lectures, homework, quizzes) will be accessible through D2L. To access the D2L course, go to https://d2l.msu.edu/

Learning Objectives

By the end of this course, you should be able to do the following:

- Explain basic concepts of statistics.
- Summarize numeric data by computing descriptive statistics and creating tables and graphs.
- Differentiate between different inferential statistics and understand their applications to psychological research.
- Compute various inferential statistics.
- Test hypotheses and interpret research findings.
- Apply the correct statistical analysis when provided with a specific research question.

Required Materials

The textbook for this course is:

Aron, A., Coups, E. J., & Aron, E. N. (2013). Statistics for psychology (6th edition). Upper Saddle River, NJ: Prentice Hall.

You will also need:

- A calculator. A basic calculator is fine, but it needs to have a square root function.
- High-speed internet; as this is an online class, having access to high-speed internet is important for you to be able to access course material and complete assignments on D2L. I cannot give extensions due to connectivity issues; it is your responsibility to have access to the internet in order to submit assignments and quizzes by their due date.

Expected Workload

Summer courses can be intense, and it takes time to understand statistics. You should plan to spend 10 hours per week working on this course. This time includes reading the textbook, viewing lectures, working on homework problems, taking quizzes, and studying the material.

The best way for you to be successful in this course is to stay on top of the lecture material and apply that material using the practice questions and assigned homework. This class is 14 weeks long, but it can be easy to fall behind in an asynchronous class if you are not self-disciplined. Additionally, statistics can be very complicated and overwhelming at times, so make sure you have a solid understanding of the foundations. Be proactive! Reach out to me if you are confused about a topic or concept. If you feel that an online, asynchronous statistics course does not fit well with your summer schedule or with your personality, then dropping the course is something you should consider.

Course Schedule

Please note this class takes place in **Eastern Time (ET)**. Homework and quizzes in this class are due in D2L **Fridays at 5:00 PM ET**, <u>except for the last homework (HW7) and last quiz,(Quiz 6) which are due on the last Thursday of the semester (see below).</u>

Week	Dates	Lecture Topic	Assignments Due
1	05/15 - 05/19	Descriptive statistics • Basic concepts • Data visualization **Assigned reading: Chapter 1**	No assignments due
2	05/22 - 05/26	Descriptive statistics • Central tendency • Variability **Assigned reading: Chapter 2**	**HW1 due 05/26 at 5:00 PM ET** • HW1 covers chapters 1 and 2
3	05/29 - 06/02	Inferential statistics • Distributions and the bell curve **Assigned reading: Chapter 3**	No assignments due
4	06/05 - 06/09	Inferential statistics • Hypothesis testing **Assigned reading: Chapter 4**	**HW2 due 06/09 at 5:00 PM ET** • HW2 covers chapters 3 and 4 **Quiz 1 open 06/08 - 06/09; due 06/09 at 5:00 PM ET** • Quiz 1 covers chapters 1-4
5	06/12 - 06/16	Hypothesis tests with means of samples **Assigned reading: Chapter 5**	No assignments due
6	06/19 - 06/23	Statistical significance, decision errors, effect size, and power **Assigned reading: Chapter 6**	**HW3 due 06/23 at 5:00 PM ET** • HW3 covers chapters 5 and 6 **Quiz 2 open 06/22 - 06/23; due 06/23 at 5:00 PM ET** • Quiz 2 covers chapters 5 and 6, but you'll need to apply concepts from earlier chapters
7	06/26 - 06/30	T-tests • Single sample • Dependent means **Assigned reading: Chapter 7**	No assignments due

8	07/03 - 07/07	T-tests • Independent samples **Assigned reading: Chapter 8**	**HW4 due 07/07 at 5:00 PM ET** • HW4 covers chapters 7 and 8 **Quiz 3 open 07/06 - 07/07; due 07/07 at 5:00 PM ET** • Quiz 3 covers chapters 7 and 8, but you'll need to apply concepts from earlier chapters
9	07/10 - 07/14	ANOVA • Basic logic and assumptions • Hypothesis testing with ANOVA **Assigned reading: Chapter 9**	No assignments due
10	07/17 - 07/21	ANOVA • Factorial ANOVA **Assigned reading: Chapter 10**	**HW5 due 07/21 at 5:00 PM ET** • HW5 covers chapters 9 and 10 **Quiz 4 open 07/20 - 07/21; due 07/21 at 5:00 PM ET** • Quiz 4 covers chapters 9 and 10, but you'll need to apply concepts from earlier chapters
11	07/24 - 07/28	Correlation **Assigned reading: Chapter 11**	No assignments due *Extra credit opportunity opens 07/25 at 12:01 AM ET*
12	07/31 - 08/04	Predicting with linear regression **Assigned reading: Chapter 12**	**HW6 due 08/04 at 5:00 PM ET** • HW6 covers chapters 11 and 12 **Quiz 5 open 08/03 - 08/04; due 08/04 at 5:00 PM ET** • Quiz 5 covers chapters 11 and 12, but you'll need to apply concepts from earlier chapters *Extra credit opportunity closes 08/05 at 5:00 PM ET*
13	08/07 - 08/11	Chi-square tests **Assigned reading: Chapter 13**	No assignments due

| 14 | 08/14 - 08/17 | Data transformations and rank-order tests

Assigned reading: Chapter 14 | **HW7 due 08/17 at 5:00 PM**

• HW7 covers chapters 13 and 14

Quiz 6 open 08/16 - 08/17; due 08/17 at 5:00 PM ET

• Quiz 6 covers chapters 13 and 14, but you'll need to apply concepts from earlier chapters

Note: *HW7 and Quiz 6 are due on* ***Thursday*** |

Grading Policy

There is a total of 500 points in this course. Here is the breakdown:

Assignment Type	Total Points
Homework (Best 5 out of 7 graded)	50
Quizzes (6 total)	450
Course Total	**500**
Extra Credit	*25*

Homework:

There are 7 homework assignments in this course. Statistics is a skill and a body of knowledge; like any skill, it requires practice. The homework assignments are designed to give you an opportunity to practice what you are learning from the textbook and the lecture material.

- Each homework is graded out of 10 possible points, and your lowest *two* homework grades will be dropped, for a total of your 5 best homework assignments counting towards your final grade.
- Please see the course schedule for homework due dates. Homework assignments are due every two weeks.
- **Note that all assignments are due at 5:00 PM ET.** Homework assignments close at 5:00 PM ET *sharp*, meaning if you start at 4:55 PM ET, you will only have 5 minutes to complete the homework.
- Homework assignments 1-6 are due on a Friday, but Homework 7 is due on a *Thursday.*
- You have a recommended time limit of 120 minutes per homework. You may backtrack for homework assignments, meaning that you will be able to return to previous questions. After submitting homework, you will be able to review any incorrect answers.
- There are *no make-ups* for homework assignments. Recall that 2 of the 7 homework assignments will be dropped.

Quizzes:
There are 6 quizzes in this course.

- Each quiz is graded out of 75 possible points.
- Starting in Week 4, **quizzes are due every two weeks. Quizzes open on D2L 24 hours before their due date (e.g., Quiz 1 opens 06/08 at 5:00 PM ET and is due 06/09 at 5:00 PM ET).**
- **Note that all quizzes are due at 5:00 PM ET.** Quizzes close at 5:00 PM ET *sharp*, meaning that if you start the quiz at 4:55 PM ET, you will only have 5 minutes to complete the quiz.
- Quizzes 1-5 are due on a Friday, but *Quiz 6 is due on a Thursday*.
- You will have 100 minutes to complete the quiz from the time that you begin the quiz. You may backtrack for the quizzes, meaning you can return to previous questions. You will be able to review incorrect answers on the Monday following the quiz's due date. For Quiz 6, you will be able to review your incorrect answers immediately.
- You must complete quizzes by their due date. If an event occurs that prevents you from completing the quiz by the due date noted in the course schedule, please email Rachael by the quiz due date; failure to contact Rachael before 5:00 PM ET the Sunday immediately following the quiz due date will result in you not being allowed to make up the quiz.
- For each quiz, there will be an equation sheet and review material provided to help you study.
- Quizzes are open note and open book, **but you must take quizzes by yourself.** It is advised that you take notes in an organized manner and include examples in your notes.
- You are allowed scratch paper and a calculator for all quizzes.

Extra Credit:
There is one extra credit opportunity for this course. You have the opportunity to earn an additional 25 points by completing the extra credit.

- In Week 11, the extra credit opportunity will be available starting Tuesday (07/25) at 12:01 AM ET. You will have until the next Saturday (08/05) at 5:00 PM ET to submit it.
- The extra credit is a 25-question review quiz made up of commonly missed questions from previous quizzes. You can earn one point per question, for a total of 25 possible points.
- The extra credit is *optional;* choosing to not complete it will not lower your grade.

Grading Scale:
Your final grade will be based on the total number of points you earned in this course. Numerical grades will be assigned using the following scheme:

Total Points	Grade
450 - 500	4.0
425 - 449.9	3.5
400 - 424.9	3.0
375 - 399.9	2.5
350 - 347.9	2.0
325 - 349.9	1.5
300 - 324.9	1.0
0 - 299.9	0.0

I will strictly adhere to the grading criteria listed above. At the end of this course, if you believe I made an error in calculating your grade, please let me know.

Desire2Learn (D2L)

The course is online and asynchronous, and thus, will be held entirely through the D2L course management system. All lectures, homework assignments, and quizzes will be administered online on D2L.

D2L can be difficult to work with sometimes, so here are some tips to prevent you from running into accessibility issues on D2L.

- Use a recommended browser like Chrome or Firefox.
- If you can't view course materials on D2L, clear cache and cookies, then restart your browser.
- Only have D2L open in one browser when doing homework assignments and quizzes. If you have the course open in multiple browsers, you can get logged out of your NETID in the quiz browser, which might cause blank sections or skipped questions in the assignment. Therefore, you should download, print, or manually transcribe any course materials you wish to use on the quiz or homework.

D2L has its own built-in message and email system. Do **not** email me in the D2L email system; I will *only* respond to emails sent to my MSU email address (pyramrac@msu.edu). I will communicate weekly using announcements in the D2L course.

If you run into technical difficulties with D2L and you need assistance, you should:

- Visit the D2L help site: https://help.d2l.msu.edu/
- Call the MSU IT help line: 517-432-6200 or 844-678-6200
- Visit the MSU tech support site: https://tech.msu.edu/support/help/

Course Policies

Academic honesty:
All forms of cheating are unacceptable. Students are expected to complete homework and quizzes individually and without outside help. **Any student caught cheating will receive a zero in the course and will be reported to the University.** Cheating includes sharing answers via group messaging applications. Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." The Department of Psychology adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. For extensive details see Spartan Life: Student Handbook and Resource Guide. Further information about cheating can be found on a website provided by the MSU Ombudsman (https://ombud.msu.edu/). Make sure you are familiar with MSU's definitions of academic dishonesty; ignorance is not an excuse.

Limits to confidentiality:
Please be aware that class materials are generally considered confidential pursuant to the University's student policies. However, all University employees, including instructors, cannot maintain confidentiality when it conflicts with their responsibility to report certain issues based on external legal obligations or health and safety considerations of MSU community members and others. The instructor for this course must report the following information (including your name and the details of the disclosure) to the Office of Inclusion if you share it with us:

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child
- Allegations of sexual assault or sexual harassment when they involve MSU students, faculty, or staff
- Credible threats of harm to oneself or others.

The Office of Inclusion will reach out to you via a confidential email, to see if you would like to pursue legal action and to provide you with additional university resources. You have the right to choose whether or not you would like to utilize any of these services or even respond to the university's email. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the MSU Counseling Center (https://caps.msu.edu/).

Course climate:
We are all working toward the same goals in this course! If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let Rachael know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing Rachael if/when difficulties arise during the semester.

Accommodations for students with disabilities:
If you need special assistance for this course because of a disability, please contact the Resource Center for Persons with Disabilities to establish reasonable accommodations. If you have an existing RCPD visa, please reach out to let me know so I can keep a record of your accommodations. More information can be found at http://www.rcpd.msu.edu or by calling 517-884-7273 (TTY: 517-353-1293).

Honors option:
There is no honors option for this course.