

Psy 295: Data Analysis in Psychological Research (3.0 Credit Hours)

Summer 2024: 5/13 – 8/15

Instructor: Nathan Baker (He/Him)

Email: bakerna7@msu.edu

Office Hours and Contact Information

The fastest way to contact me is using email. I will respond to emails within one business day. Emails sent after 5:00 PM ET on Friday may not be answered until the next business day.

Some tips to help me get back to you more quickly:

- Include 'PSY 295' in the subject line.
- Include your full name, so I know who you are.
- Double-check the syllabus and the content on Desire2Learn (D2L) first to see if your question is answered there.
- Read through your email before sending it and make sure you have included enough detail for me to answer your question or request.

Office Hours:

I will hold live office hours via Zoom during the week. This is a time for you to meet with me one-on-one and work through questions you might have regarding the material or other class issues.

To book office hours with me, use this link: <https://calendly.com/bakerna7/psy-295-office-hour>

Course Description

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 do not consistently work on the course material each week.

Statistical concepts may seem confusing or complicated at first. Topics within the course build upon one another, so it is important to make sure you have a solid understanding of the foundations as you move forward. 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 (HW) in this class is due in D2L on **Wednesdays at 5:00 PM ET** and quizzes in D2L on **Fridays at 5:00 PM ET**, except for the last quiz,(Quiz 6) which is due on the last Thursday of the semester (see below).

<i>Week</i>	<i>Dates</i>	<i>Lecture Topic</i>	<i>Assignments Due</i>
1	5/13-5/17	Descriptive statistics <ul style="list-style-type: none"> • Basic concepts • Data visualization Assigned Reading: Chapter 1	No assignments due
2	5/20-5/24	Descriptive statistics <ul style="list-style-type: none"> • Central Tendency • Variability Assigned Reading: Chapter 2	HW1 due 5/22 at 5:00PM ET <ul style="list-style-type: none"> • HW1 cover chapters 1 and 2
3	5/27-5/31	Inferential statistics <ul style="list-style-type: none"> • Distributions and the bell curve Assigned Reading: Chapter 3	No assignments due
4	6/03-6/07	Inferential statistics <ul style="list-style-type: none"> • Hypothesis testing 	HW2 due 6/05 at 5:00 PM ET <ul style="list-style-type: none"> • HW2 covers chapters 3 and 4

		Assigned Reading: Chapter 4	Quiz 1 open 6/06 - 6/07; due 6/07 at 5:00 PM ET <ul style="list-style-type: none"> • Quiz 1 covers chapters 1-4
5	6/10-6/14	Hypothesis tests with means of samples Assigned Reading: Chapter 5	No assignments due
6	6/17-6/21	Statistical significance, decision errors, effect size, and power Assigned Reading: Chapter 6	HW3 due 6/19 at 5:00 PM ET <ul style="list-style-type: none"> • HW3 covers chapters 5 and 6 Quiz 2 open 6/20-6/21; due 6/21 at 5:00 PM ET <ul style="list-style-type: none"> • Quiz 2 covers chapters 5 and 6; however, you will apply concepts from earlier weeks
7	6/24-6/28	T-tests <ul style="list-style-type: none"> • Single sample • Dependent means Assigned Reading: Chapter 7	No assignments due
8	7/01-7/05	T-tests <ul style="list-style-type: none"> • Independent samples Assigned Reading: Chapter 8	HW4 due 7/03 at 5:00 PM ET <ul style="list-style-type: none"> • HW4 covers chapters 7 and 8 Quiz 3 open 7/04-7/06; due at 7/06 at 5:00 PM ET* <ul style="list-style-type: none"> • Quiz 3 will be open an additional day to account for Jul 4th. • Quiz 3 covers chapters 7 and 8; however, you will apply concepts from earlier weeks
9	7/08-7/12	ANOVA <ul style="list-style-type: none"> • Basic logic and assumptions • Hypothesis testing with ANOVA Assigned Reading: Chapter 9	No assignments due
10	7/15-7/19	ANOVA <ul style="list-style-type: none"> • Factorial ANOVA 	HW5 due 7/17 at 5:00 PM ET <ul style="list-style-type: none"> • HW5 covers chapters 9 and 10

		Assigned Reading: Chapter 10	Quiz 4 open 7/18-7/19; due at 7/19 at 5:00 PM ET <ul style="list-style-type: none"> Quiz 4 covers chapters 9 and 10; however, you will apply concepts from earlier weeks
11	7/22-7/26	Correlation Assigned Reading: Chapter 11	No assignments due <i>Extra credit opportunity opens 7/22 at 12:01 AM ET</i>
12	7/28-8/02	Predicting with linear regression Assigned Reading: Chapter 12	HW6 due 7/31 at 5:00 PM ET <ul style="list-style-type: none"> HW6 covers chapters 11 and 12 Quiz 5 open 8/01-8/02; due at 8/02 at 5:00 PM ET <ul style="list-style-type: none"> Quiz 5 covers chapters 11 and 12; however, you will apply concepts from earlier weeks <i>Extra credit opportunity closes 8/03 at 5:00 PM ET</i>
13	8/05-8/09	Chi-square tests Assigned Reading: Chapter 13	No assignments due
14	8/12-8/15	Data transformations and rank-order tests Assigned Reading: Chapter 14	HW7 due 8/14 at 5:00 PM ET <ul style="list-style-type: none"> HW7 covers chapters 13 and 14 Quiz 6 open 8/14-8/15; due at 8/15 at 5:00 PM ET <ul style="list-style-type: none"> Quiz 6 covers chapters 13 and 14; however, you will apply concepts from earlier weeks <i>Note: Quiz 6 is due on Thursday rather than Friday.</i>

Grading Policy

There are a total of 500 points in this course. The points are broken down in the following way:

Assignment	Total Points
Homework (Best 5 out of 7 graded)	50
Quizzes (6 total)	450
Course Total	500
<i>Extra Credit</i>	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.
- Homework assignments will open at the beginning of the week before they are due and will be available until their due date (10 days).
- Note that all **homework assignments are due on Wednesdays 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.
- 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. **Studying previous answers will help you to prepare for future exams.**
- 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 06/06 at 5:00 PM ET and is due 06/07 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 until the end of the same week. After that point, you will not be able to review quiz answers. 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 me (Nathan) by the quiz due date; failure to contact me 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 Monday (07/22) at 12:01 AM ET. You will have until the next Saturday (08/03) 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
350-374.9	2.0
325-344.9	1.5
300-324.9	1.0
0-299.9	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.

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 (bakerna7@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/>)

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.