

PSY 295: Data Analysis in Psychological Research – 3.0 Credit Hours

Summer Session One, May 16 to June 30, 2022

Instructor: Beau Zhang (zhangb42@msu.edu)

How to reach me

Email is typically the best way to reach me. Please feel free to email me with any questions about course materials, assignments or schedule. I check my emails frequently so you can expect a reply from me within one business day. Emails sent after 5pm EST on Fridays will be answered the following Monday.

A few things to note when emailing me:

1. Double check if your questions can be answered by content on D2L
2. Note PSY 295 in the subject line so I know you are a student in this house.
3. Please sign your e-mail with your full name so I know who you are.

Office hours:

Tuesdays 1-2 PM and Thursdays 4-5 PM

If none of the above options works for you, feel free to schedule an appointment with me via <https://beauzhang.youcanbook.me>. I will receive an email when you schedule a time and be ready at the time.

I hold my office hours at <https://msu.zoom.us/j/4616215169>. Just join the meeting with your questions ready.

Course overview

This course is designed as an introduction to basic concepts and procedures used in descriptive and inferential statistics, especially as applied to the behavioral sciences. This course will cover descriptive statistics (such as central tendency, measures of dispersion, and standardized scores) and inferential statistics (such as z- and t-tests, ANOVA, correlation, regression, and chi-square). Finally, the course will link various statistical analyses with particular research questions pertaining to various branches of psychology.

Course goals:

By the end of this course, you should be able to do the following: 1) Explain basic concepts of statistics. 2) Summarize numeric data by computing descriptive statistics and by creating tables and graphs. 3) Differentiate between different inferential statistics and understand their applications to psychological research. 4) Compute various inferential statistics. 5) Test hypotheses and interpret research findings. 6) Apply the correct statistical analysis when provided with a specific research question.

Required materials:

- Aron, A., Coups, E. J., & Aron, E. N. (2013). Statistics for psychology (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- Calculator (a phone calculator is just fine!)

Workload:

Summer courses are intense, and statistics takes time to fully understand. Plan to spend around 20 hours per week working on PSY 295. This includes the time you spend reading the text, viewing lectures, working on homework problems, taking quizzes, and studying the material. The best way to be successful in PSY 295 is to stay on top of the material. We will follow a compressed schedule during our 7 weeks together so it can be easy to fall behind if you are not self-disciplined. Remember, we will cover the same material that is normally covered in an entire semester! Homework is due each week. Likewise, you will have to complete six quizzes that will occur at the end of each week starting in Week 2. You should commit yourself to seven weeks of working very hard. Do not plan a summer vacation in the middle of this class! If these considerations do not fit with your plans or your personality, then drop this class as soon as possible. Note that you must have access to the required textbook to succeed in this course.

Statistics can be very complicated and overwhelming at times, so make sure you have a solid understanding of the foundations. Be proactive with your questions; reach out if you are confused about something and you feel it's not addressed clearly by the course materials.

Weekly content breakdown:

Week	Date	Lecture Topics	Reading	Assignments
1	5/16 - 5/20	Descriptive statistics <ul style="list-style-type: none">• Basic concepts• Data visualizations• Central tendency/variability	Chapter 1-2	HW1 due @ 5 pm 5/19 No quiz
2	5/23 - 5/27	Inferential statistics <ul style="list-style-type: none">• Distributions and the bell curve• Hypothesis testing	Chapter 3-4	HW2 due @ 5 pm 5/26 Quiz 1 open 5/26 - 5/27
3	5/30 - 6/3	<ul style="list-style-type: none">• Comparison of means• Decision errors, effect size and power	Chapter 5-6	HW3 due @ 5 pm 6/2 Quiz 2 open 6/2 - 6/3
4	6/6 - 6/10	T-tests <ul style="list-style-type: none">• Single sample• Dependent means• Independent samples	Chapter 7-8	HW4 due @ 5 pm 6/9 Quiz 3 open 6/9 - 6/10

Week	Date	Lecture Topics	Reading	Assignments
5	6/13 - 6/17	Analysis of Variance (ANOVA) <ul style="list-style-type: none"> • Basic logic and assumptions • Hypothesis testing with ANOVA • Factorial ANOVA 	Chapter 9-10	HW5 due @ 5 pm 6/16 Quiz 4 open 6/16 - 6/17
6	6/20 - 6/24	Correlation <ul style="list-style-type: none"> • The correlation coefficient • Predicting with linear regression 	Chapter 11-12	HW6 due @ 5 pm 6/23 Quiz 5 open 6/23 - 6/24
7	6/27 - 6/30	Chi-square tests <ul style="list-style-type: none"> • Basic logic and assumptions Data transformations and rank-order tests	Chapter 13-14	HW7 due @ 5 pm 6/30 Quiz 6 open 6/29 - 6/30

Evaluation

Homework:

There are 7 homework assignments to practice what you have learned, and they account for 10% of your grade. Homework will be available on D2L from Monday of the week that the assignment is due. **All homework is due by 5 pm EST of the Thursday of that week. You will have a recommended time limit of 120 minutes. There is no back-tracking for homework assignments, meaning after you answer a question, you will not be able to return and change your answers later.** There are no make-ups for homework assignments; instead, your two lowest homework assignment grades will be dropped. Therefore, only your top 5 homework grades will be counted towards your final grade. You will be able to review incorrect homework responses after you submit.

Quizzes:

There are six quizzes in PSY 295. Each quiz will be worth 15% of your final grade. These will occur at the end of Weeks 2 to 7 in the course. You will have 80 minutes to complete the quiz starting from the time that you begin to take the quiz. **The quizzes will be available on D2L from 5 pm on Thursday until 5 pm on Friday (except for Quiz #6, the last quiz, which will open from 5pm on Wednesday (6/29) to 5 pm on Thursday (6/30)).** You can take that quiz anytime during that 24-hour window.

It is important that you plan ahead and leave yourself enough time to work on the quiz. **Do not start the quiz right before it is due, because it will close at precisely 5 pm and you may not get to finish it. There is no back-tracking for the quiz, meaning after you answer a question, you will not be able to return and change your answers later.** There are no make-ups for quizzes without a certified medical excuse provided by a doctor's note. You will

be able to review incorrect responses on the Saturday after the quiz closes (except incorrect responses for the last quiz will be available to view immediately after the quiz closes).

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

Requirement	Points	Grade Percentage
Your best 5 out of 7 homework assignments	50	10%
All 6 quizzes	450	90%
Total	500	100%

Your final grade is based on the total number of points earned in this course. Numerical grades will be assigned according to 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
325-349.9	1.5
300-324.9	1.0
0-299.9	0.0

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

Desire 2 Learn (D2L)

This course will be held entirely online through the D2L course management system. All lectures, quizzes, and homework assignments will be administered online on D2L. Due to the online nature of this class, you will need to have a high-quality computer with consistent access to a high-speed internet connection. You need to have access to high-speed internet when all of the course assignments are due. If your internet connection is down when you need to turn in a homework assignment or take a quiz, it is your responsibility to get access to the internet ASAP! In the case of missing deadlines because of internet connectivity problems,

I cannot give extensions on quizzes and homework assignments. Access to a printer is also recommended.

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

1. Use a recommended browser such as Chrome or Firefox. You are more likely to run into issues while on Edge or Safari.
2. If you can't view course materials on D2L (slides, assignments, etc), clear cache and cookies, then restart the browser.
3. Remember to clear your cache and cookies before starting a quiz
4. Have D2L open only to the quiz browser. If you have the course open in a second browser then you may have guest status in the exam browser and be logged in with your NETID in the other. Your quiz could end up with blank sections even after you enter data or it can skip questions.

D2L has its own built-in message and email system. I will maintain at least weekly communication by sending you an email on D2L. To be sure you don't miss an email from me, you can set up course communication to have emails on D2L to be forwarded to an email address of your choice. To do this, go to the D2L page of our course section (Summer2022-PSY295 - Data Analysis in Psychological Research), click on Communication -> Email -> Settings -> scroll to the bottom and find Forwarding Options.

If you run into technical difficulties with D2L and you need assistance during the course, you can:

- Visit the D2L Help Site – <https://help.d2l.msu.edu/>
- Call the D2L Help Line – (517) 432-6200 or (844) 678-6200
- Visit the MSU Tech Support Site – <https://tech.msu.edu/support/help/>
- Call the Tech Support Line – (517) 432-6200 or toll free (844) 678-6200

Academic honesty

Any and all forms of cheating are unacceptable.

Students are expected to complete homework and quizzes individually and without outside help. Any student caught cheating on exams or homework will receive a ZERO in this course and be reported to the University. You can only use a basic calculator for your quizzes.

Legalistic Details: 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://www.msu.edu/~ombud/academic-integrity/student-faq.html>).

Make sure you are familiar with MSU definitions regarding academic dishonesty. Ignorance is not an excuse. The bottom line in PSY295 is simple – work hard, don't cheat, and be happy!

Spartan's code of honor: <https://asmsu.msu.edu/home/initiatives/spartan-code-of-honor/>

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).