

**PSY 295: Data Analysis in Psychological Research – 3.0 Credit Hours**  
**Fall Semester, 2019**  
**Meets: Monday & Wednesday 3:00pm – 4:20pm**  
**118 Psychology Building**

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**Instructor:** Victor Keller – [felixdes@msu.edu](mailto:felixdes@msu.edu)

**Office hours:** M & W 10:30am – 11:30am (or by appointment) in Psychology 244C

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**Graduate TA:** Andrew Guhin – [guhinand@msu.edu](mailto:guhinand@msu.edu)

**Office hours:** Thursday 2:00 – 4:00pm (or by appointment) in Giltner 354

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**Graduate TA:** Eric Chantland - [chantlan@msu.edu](mailto:chantlan@msu.edu)

**Office hours:** Tuesday 12:30 – 2:30pm (or by appointment) in Psychology 208

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**Undergraduate TA:** Yue Yang – [yangyue5@msu.edu](mailto:yangyue5@msu.edu)

**Office hours:** By appointment

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**Undergraduate TA:** Becca Vroegop – [vroegopr@msu.edu](mailto:vroegopr@msu.edu)

**Office hours:** By appointment

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**Texts and Materials:** Please make sure that you have the correct edition, as homework problems are selected from this book.

Aron, A., Coupe, E. J., & Aron, E. N. (2006). *Statistics for psychology* (6th ed.). Upper Saddle River, NJ: Prentice Hall.



In addition, we will be using the I>CLICKER device (see [www.iclicker.com](http://www.iclicker.com) for general information) in the class. This is a device which will permit you to record your answers to mini-quiz questions in class. Each student must have his/her own I>CLICKER (or I>CLICKER2 or I>CLICKER+, but not the WEB>CLICKER). They are available (new or used) in local bookstores, and can also be purchased new (amazon) or used (eBay) on the Internet.

To register your I>CLICKER go to [www.iclicker.com](http://www.iclicker.com) and click on “Menu” at the top of the page and then “Register your Remote”. Complete the fields with your first name, last name, student ID, and remote ID. ***Your student ID should be your MSU email.*** In the section for student id, you should write your MSU netid including @msu.edu. For example, the instructor’s email address is felixdes@msu.edu so he would enter this entire address under student id. Again, ***your student ID should be your MSU email. DO NOT list your A-PID.*** The remote ID is the series of numbers and sometimes letters found on the bottom of the back of your I>CLICKER remote. If you cannot read the bar code on the back of your clicker, please see me. **Also, even if you registered your I>CLICKER last semester, you need to register again this semester.** If you’re using a used clicker, there is no need for the previous owner to unregister. If you make a mistake registering, register again – the correct information will take precedence.

**We will use them every day in class, and you are responsible for bringing your I>CLICKER daily.**

Finally, you need a calculator. Please bring your calculator to every class session. Simple calculators are sufficient, assuming they have a square and square root function. **Cell phones or PDAs with a calculator function are not sufficient.**

**Course Webpage:** On D2L (<https://d2l.msu.edu/>). This page will provide you with the notes for the lectures, homework assignments, grades, and other important class information.

**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. Descriptive statistics such as central tendency, measures of dispersion, and standardized scores will be covered. Inferential statistics such as z- and t-tests, ANOVA, correlation, regression, and chi-square will be discussed. Finally, problems with the interpretation and communication of statistical results will be discussed.

**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 the various inferential statistics and understand their applications to psychological research. 4) Compute the inferential statistics we cover. 5) Test hypotheses and interpret research findings. 6) Apply the correct statistical analysis when provided with a specific research question. 7) Summarize the most common issues with the interpretation of statistical results.

### **Evaluation Criteria:**

**Quizzes:** Eight quizzes will be given according to the dates listed in the schedule at the end of the syllabus to cover the corresponding materials. The quizzes will focus mainly on conceptual knowledge and theoretical understanding and will be closed book and closed notes. Each quiz will be worth 10 points, but your lowest quiz score will be dropped. Therefore, your Quiz score will be determined by your highest 7 Quiz scores for a total of 70 potential points towards the final grade (14% of your final grade).

**Mini-quizzes:** During every lecture, I will pose a number of multiple choice questions that you will answer using your I>CLICKER device. Each day you will get a certain % correct – your Quiz% for the day. Excluding the first two lectures (8/28 and 9/4) and exam days, there are 24 lectures. Therefore, you will have 24 Quiz% scores. On certain days you may unavoidably miss the lecture or find it hard to grasp the material. To make allowances for such occasions, I drop your lowest **four** Quiz% scores. Thus, the Mini-quiz points you receive are determined by your highest 20 Quiz% scores. Mini-quiz questions determine 6% (30 points) of your final course grade.

If you forget your I>CLICKER or if your batteries are dead, you cannot obtain credit for that day of class. **Excused or unexcused absences also will not receive credit for that day of class.** Please understand that in a class of over 240 students, there will be at least one person who forgets their clicker or batteries each day and I simply cannot give credit in these circumstances. **Please do not ask!** Also, please note that **recording answers using anybody's I>CLICKER but your own constitutes providing false information to the Instructor and is a violation of class and University rules.**

**Homework:** Statistics are not really understood until they have been applied. For this reason, there 11 short homework assignments to be turned in by the due dates noted in the course schedule at the end of the syllabus. Homework assignments must be turned in by the end of the lecture the day they are due. **Late homework assignments will not be accepted, and there will be absolutely no exceptions to this rule.** A late homework assignment is defined as any time after the lecture in which the assignment is due ends. Each homework assignment will be worth 10 points, but your lowest homework assignment will be dropped. Therefore, your homework assignment score will be determined by your highest 10 homework assignment scores for a total of 100 points, composing 20% of your final grade.

Your homework grade will consist of two parts. First, you will receive 5 points for demonstrating in your written work that you made a serious attempt at each problem (this will be a subjective assessment of the grader – so make sure to show all work and write legibly). Second, one problem or problem cluster will be randomly selected for grading; the graded problem will be worth 5 points. For the problem or problem cluster that is selected for grading, if an answer is given with no supporting documentation, credit will not be given.

**Questions/concerns about homework grades should be addressed within a week of the posted grade.** In addition, please ask yourself these questions before asking why you missed points on a particular assignment: Were my answers correct? Did I complete the whole assignment? Did I show my work on the assignment?

**Exams:** Three exams will be given in class – two during the regularly scheduled class period, and one during the final exam period. Each exam will consist of multiple-choice questions and problem questions. Make sure to bring your calculator for the exams. Cellphones or PDAs with a calculator function are not allowed during exams. Each exam will be worth 100 points (20% of your final grade), so together they will be 60% of your final grade.

**Makeup Exams:** No makeup exams will be given unless you have a valid, documented excuse (e.g., a note from the dean, a note from your doctor recommending that you not attend class). Any notes must explicitly state that “This student was unable to take the exam on (date) because \_\_\_\_\_.” Simply having a bad cold is not an acceptable excuse. The note cannot come from someone in your family. If you cannot get a note or if your excuse involves something that is personal and that you want to keep private, you must get a note from the Dean. **You must notify the professor that you have a valid excuse by the end of the day of the exam or you will not be allowed to take the makeup exam.** There are no exceptions to these rules.

If you cannot take the exam because of a religious holiday, required participation in a university-sanctioned event (e.g., a commitment for a sports team), or some other acceptable event that can be foreseen, you must notify the professor **at least two weeks in advance** of exam day. Absence from an exam **for any other reason** – family obligations, job interviews, and vacations – will result in a grade of 0 for that exam.

**Exams will begin at 3:00pm.** You may arrive late, but no more exams will be handed out after the first student completes the exam. Exams 1 and 2 must be turned in by 4:20pm. The Final Exam must be turned in by 5:00pm. During exams, you may only have pencils, erasers, and a calculator at your desk. Leave refreshments or other materials zipped up in your book bag or do not bring them at all. Turn off anything that makes noise and please do not wear hats. Once the exam has begun, there will be no talking or disruptions. Leaving the room is reserved for emergency bathroom breaks only.

**Extra Credit:** There are two sources of extra credit and you can **earn up to 15 extra credit points (3% extra credit).**

1) You may accumulate an additional 1% extra credit by participating in ongoing research. All such participation will be through the Department of Psychology’s HPR (Human Participation in Research) / SONA program. You will receive a credit for each half-hour that you spend participating in an experiment. Each credit you earn is worth 0.5 extra-credit points in this class, up to a maximum of 5 extra-credit points (10 HPR credits), or 1% extra credit. **More detailed information for setting up your HPR / SONA account and how to sign up for research hours will be provided at a later time on D2L.**

**Extra Credit (continued):**

2) You may accumulate an additional 2% extra credit by completing the extra question(s) attached to each homework assignment throughout the semester. Note that the extra credit question(s) for each assignment must be turned in at the same time as the homework assignment is due. In addition, **extra credit questions will not be accepted late**. You will only receive extra credit if you show your work and supply the correct answer for extra credit questions. A total of 25 points worth of extra credit questions will be offered, but **you can only earn a max of 10 total extra credit points (2% extra credit)**. Therefore, you will have plenty of opportunities to earn extra credit via this option.

**Grading:** Your final grade will be based on the following course percentage points:

<b>Requirement</b>	<b>Points</b>	<b>% of final grade</b>
Top 7 (out of 8) Quiz Scores	70	14%
Top 20 (out of 24) Mini-Quiz Scores	30	6%
Top 10 (out of 11) Homework Scores	100	20%
Exam 1	100	20%
Exam 2	100	20%
Final Exam	100	20%
<b>Total</b>	<b>500</b>	<b>100%</b>
<b>Extra Credit – HPR</b>	<b>5</b>	<b>+1% potentially</b>
<b>Extra Credit – Bonus Qs</b>	<b>10</b>	<b>+2% potentially</b>

The grading scale is as follows:

<b>Total Points</b>	<b>Grade</b>
450 – 500	4.0
425 – 449	3.5
400 – 424	3.0
375 – 399	2.5
350 – 374	2.0
325 – 349	1.5
300 – 324	1.0
0 – 299	0.0

**Policy on grade changes:** *I will adhere to these cut-offs.* Extra credit is the only way to increase your point total if you are concerned about falling on the wrong side on one of these cut-offs. At the end of the semester, if you believe that I made an error in calculating your grade, please let me know. I will check your grade, and I will change it if I have made an error. **This is the only circumstance under which I will change a grade.** Under no circumstance will I “bump up” your grade or give you a special extra credit opportunity.

**Cheating:** Any student caught cheating on a test will receive a zero for that test and be reported to the University.

**Academic Honesty:** 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." In addition, the Psychology Department 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.

You are expected to develop original work for this course; therefore, unless authorized, you are expected to complete all course assignments, including homework, quizzes, and exams, without assistance from any source (except as specified in the assignment). This also means that you may not submit course work you completed for another course to satisfy the requirements for this course. In addition, plagiarism of written work is forbidden. It includes taking the work of another individual or source and presenting it as your own. This is considered plagiarism even if the source has given you permission to use their work, or the work is in the public domain (e.g., on the web). Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact your instructor, or TA, if you are unsure about the appropriateness of your course work.

See also: <https://www.msu.edu/~ombud/academic-integrity/student-faq.html>

**Policy on Religious Observations:** If you anticipate being absent from class due to a major religious observance, please provide notice of the date(s) to me, in writing, by the second class meeting.

**Note taking and recording:** You are encouraged to take notes on the lecture and are permitted to tape-record class sessions for your own purposes. However, you are not permitted to take notes or tape-record for purposes of sale and distribution, no matter how financially lucrative my lectures might be.

**Accommodations for Students with Disabilities:** Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at [rcpd.msu.edu](http://rcpd.msu.edu). Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation ("VISA") form. Please present this form to me at the start of the term and/or ***two weeks prior to the accommodation date*** (test, project, etc.). Requests received without sufficient lead time will not be honored.

If you require testing accommodations (additional time, less disruptive room, etc.) you must contact me and ***present your VISA at least two weeks before the exam date*** to schedule an alternative exam. Typically, I will schedule for you to take the exam during a special exam session offered by the Psychology Department. Those exams occur in small group settings and are offered every Monday and Wednesday at 3:00pm in Giltner 346. If you are unable to make either of those times, or that option does not meet your VISA accommodations, you may be able to schedule to take your exam at the RCPD office. In either case, the exam must be scheduled well in advance, so you need to adhere to the two-week prior notification requirement.

**Academic Assistance:** This is a university and you are expected to produce college level work. If you have any trouble with assignments or the material covered in class, please make an appointment to speak with me. Additionally, the university has resources to assist students, such as the Campus Tutorial Center, the Campus Writing Center, Adult Student Services, and more. A lot is expected of you, but the university wants to help you to produce your best work.

**E-Mail Policy:** E-mail is the best way to get a hold of us (Victor or one of the TAs). Please use the following guidelines when e-mailing one of us:

- **First, ask yourself this question: “Can this question be answered by looking in the syllabus or looking on the D2L course site?” Please consult both before emailing us.**
- Please email questions to the TAs before emailing Victor.
- Use PSY 295 in the subject line. That makes it clear you are a student in this course asking a question. It also helps to prevent e-mails from going directly to the junk folder.
- Please address the e-mail properly (i.e., Hello Victor).
- Proofread your e-mail. Is your question conveyed clearly with correct grammar and spelling? Did autocorrect make it sound super weird?
- Please sign your e-mail with your full name, so we know who you are.
- Be polite.
- **Check your e-mail regularly! During the course, we will e-mail you from time to time with announcements and reminders. Please read these e-mails as soon as you receive them, and please check your e-mail regularly.**

The four rules for a happy, productive class:  
 1) *Turn off cell phones.* 2) *Show up to lectures on time.*  
 3) *Ask questions.* 4) *Be courteous of other people.*

**Disclaimer:** Below is a general indication of when we will cover the topics in the course. However, as the instructor, I reserve the right to adjust this schedule according to the pace of the course and the needs of the students. This also includes making any changes that I deem necessary to the details and/or policies listed in this syllabus. **Check D2L regularly to keep up with the topics. You will be given notice of any changes via email or in class.**

## PSY 295 Course Schedule for Fall 2019

Date	Lecture Topic	Readings	Homework Assignments Due
Wednesday: 8/28	Introduction / Displaying data	Syllabus / Chapter 1	
<b>Monday: 9/2</b>	<b>Holiday – NO CLASS</b>	<b>NO CLASS</b>	
Wednesday: 9/4	Displaying data / Central tendency and variability	Chapter 1 / Chapter 2	
Monday: 9/9	Central tendency and variability / Key ingredients for inferential statistics	Chapter 2 / Chapter 3	
Wednesday: 9/11	Key ingredients for inferential statistics <b>Quiz 1: Chapters 1 and 2</b>	Chapter 3	<b>HW 1 Due</b>
Monday: 9/16	Introduction to hypothesis testing	Chapter 4	
Wednesday: 9/18	Hypothesis tests with means <b>Quiz 2: Chapters 3 and 4</b>	Chapter 5	<b>HW 2 Due</b>
Monday: 9/23	Effect size and power	Chapter 6	
Wednesday: 9/25	Effect size and power	Chapter 6	
Monday: 9/30	Catchup / Review for Exam 1 <b>Quiz 3: Chapters 5 and 6</b>		<b>HW 3 Due</b>
<b>Wednesday: 10/2</b>	<b>Exam 1</b>	<b>Chapters 1 – 6; class notes</b>	

<b>Date</b>	<b>Lecture Topic</b>	<b>Readings</b>	<b>Homework Assignments Due</b>
Monday: 10/7	<i>t</i> -tests: Single sample and dependent means	Chapter 7	
Wednesday: 10/9	<i>t</i> -tests: Single sample and dependent means	Chapter 7	
Monday: 10/14	<i>t</i> -tests: Independent means	Chapter 8	<b>HW 4 Due</b>
Wednesday: 10/16	<i>t</i> -tests: Independent means	Chapter 8	
Monday: 10/21	Introduction to ANOVA <b>Quiz 4: Chapters 7 and 8</b>	Chapter 9	<b>HW 5 Due</b>
Wednesday: 10/23	Introduction to ANOVA	Chapter 9	
Monday: 10/28	Factorial ANOVA <b>Quiz 5: Chapter 9</b>	Chapter 10	<b>HW 6 Due</b>
Wednesday: 10/30	Factorial ANOVA	Chapter 10	
Monday: 11/4	Catchup / Review for Exam 2 <b>Quiz 6: Chapter 10</b>		<b>HW 7 Due</b>
<b>Wednesday: 11/6</b>	<b>Exam 2</b>	<b>Chapters 7 – 10; class notes</b>	
Monday: 11/11	Correlation	Chapter 11	
Wednesday: 11/13	Correlation	Chapter 11	
Monday: 11/18	Prediction	Chapter 12	<b>HW 8 Due</b>
Wednesday: 11/20	Prediction	Chapter 12	
Monday: 11/25	Chi-Square tests <b>Quiz 7: Chapters 11 and 12</b>	Chapter 13	<b>HW 9 Due</b>
Wednesday: 11/27	Chi-Square tests	Chapter 13	
Monday: 12/2	The Replication Crisis in Psychology	TBD	<b>HW 10 Due</b>
Wednesday: 12/4	Catch up / Review for final exam <b>Quiz 8: Chapters 13 and Monday's readings</b>		<b>HW 11 Due</b>
<b>Monday: 12/9</b>	<b>Final Exam – 118 Psychology Building</b>	<b>Chapters 11 – 13 &amp; rep. crisis readings; class notes</b>	<b>3:00pm – 5:00pm</b>