

**PSCH 343: Statistical Methods in Behavioral Sciences**

**Fall 2021 · CRN 12243 · Syllabus**

**Synchronous Class Sessions:** TR 9:30am – 10:45am, BSB 140

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**Instructor: JP Prims · Email:** jprims2@uic.edu

**Office Hours:** T 2pm – 3pm, W 1pm – 2pm and by appointment, BSB 1054A

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**TA: Lindsay Keeran · Email:** lkeera2@uic.edu

**Office Hours:** W 11-12pm, BSB 3058 and by appointment · **Sections:** F 8am & 2pm

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**TA: Andrea Daviera · Email:** adavie6@uic.edu

**Office Hours:** T 2-3pm, BSB1080 and by appointment · **Sections:** F 4pm & 5pm

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Welcome to Statistical Methods in Behavioral Science! I am excited to teach you one of the most important skills you need for research and for consuming information on a daily basis. Whether you continue on in psychology, or find a career in a different field entirely, statistics is an invaluable tool for evaluating and interpreting information. Statistics are a part of everyday life, from weather forecasts, to opinion polls, to science news, to sports brackets.

### **Course Goals and Objectives**

This course is designed to prepare you to perform statistical analyses and interpret not only your own results, but others' results as well. Although this course is intended for psychology students, the things you will learn apply to any field of science that uses statistics to answer questions (psychology, economics, biology, astronomy, medicine, etc.). By the end of this course you will be able to:

1. Perform and interpret basic statistical analyses
2. Use statistical analyses to answer research questions
3. Communicate statistical results to both experts and laypeople
4. Understand statistics' strengths and weaknesses (what they can and cannot do)

With the skills you gain in this course, you will be better equipped to conduct your own research and critically evaluate information like the poll numbers and research findings you see online and in the news.

The contents of this course will be a blend of online lectures and hands-on activities. My goal is to make sure that you are familiar with both the principals behind the statistics you learn, and

that you are capable of and confident in performing these statistics. The lectures will facilitate the former, while the activities will facilitate the latter. I will provide activities and practice problems both during lecture and as homework. I will not ask you to memorize any formulas for this class, but I will expect you to have a solid understanding of how the statistical tests are run, and why we run them the way we do.

## Course Requirements

**Prerequisites.** To enroll in this course, you must:

1. Have completed PSCH 242 with at least a C
2. Be a psychology or neuroscience major
3. Register for both the lecture and a discussion section

If you do not meet these prerequisites, you will be automatically dropped from the course.

## Texts and Materials

**Texts.** The textbook is **optional** supplementary reading. The course material will be based on the information in the textbook, and the textbook will provide additional information, so it may be useful. This is the textbook:

- Gravetter, F. J., & Wallnau, L. B. (2013). *Statistics for the behavioral sciences* (9th ed.). Belmont, CA: Wadsworth Cengage Learning.

If you choose to use R, I recommend this online text and Datacamp course:

- <https://ademos.people.uic.edu/>
- [Introduction to R](#)

All other supplemental material will be available on Blackboard.

If you would like the textbook but are having trouble affording it, please contact me.

**Materials.** You will need a **calculator** for this class. The calculator can be very basic: You will only need to add, subtract, multiply, divide, and calculate squares and square roots.

## Grading

Your grade in this course will reflect exams (60%), homework assignments (30%), and attendance (10%).

**Exams (60%).** There will be four exams including the final. Your lowest exam score will be dropped from your grade. Each of the three exams will be worth 20% of your final grade. The first three exams are not cumulative, though all of the material in this course builds on the previous material. The final exam will be cumulative. You are only required to take three exams as your lowest score will be dropped. However, this means that there will be no makeup exams for any reason.

Exams will be a combination of problem-solving and short answer questions where you will explain your results. I will provide a formula sheet for each exam containing all of the formulas that you will need for the problems. All exams will be open note (the notes you took in class). You may use a calculator on your exam, however, you must still show your work (every step of your calculation) on your exam.

I recommend that you study early and often. Everything in this semester builds upon itself. The earlier that you ask for help, the more I will be able to help you. Your textbook, your TAs, and I are great resources. Remember: We are here to help you learn. Do not hesitate to ask for help.

Currently, we plan to hold exams in person.

**Homework Assignments (30%).** There will be eight homework assignments. These homework assignments are designed to help you prepare for the exams and identify areas where you may need additional practice. As such, they will be formatted similar to the exams, with problem-solving and short answer questions. Your two lowest homework grades will be dropped from your final grade.

*Earning Back Points.* If you lose points on a homework, you have an opportunity to earn a point back. You can earn up to 2 points (20% of the total grade) back on a graded homework by completing the math portion of that homework in R and turning your R code in to your TA. Your TA will check to make sure that your R code runs and produces the correct answer and, if it does, they will add up to two points back on your homework assignment. (This is not extra credit. You cannot receive more than 10 points on a homework assignment even if you complete some of it in R.) You have one week from the day you receive a homework grade to earn back points with R code.

**Attendance (10%).** As students have the option to attend live sessions or watch recordings, attendance will be a little different. Attendance to the main lecture during class time is optional, though I do expect you to watch the recordings of the lectures. If you are watching the videos, please fill out [this form](#) for each class. If you have filled out the form by the end of the first Sunday after the lecture, you will receive full attendance points for that lecture. You have two excused absences, no questions asked.

*Discussion Attendance.* Attending discussion section is the only way to earn extra credit in this course. Attending all discussion sections can earn you up to 4 extra credit points. (Equivalent to approximately 4 days of lecture attendance.) Attending discussion is a great way to earn extra points and boost your grade and your understanding of the material.

### **Grade Breakdown.**

Exams	60%
Homework	30%
Attendance	10%
<b>Total</b>	<b>100%</b>

Final grades will follow the standard 100-percentage scale: 90-100% = A; 80 – 89% = B; 70 – 79% = C; 60 – 69% = D; below 60% = F.

*NOTE:* I round up any decimal: e.g., 79.1 = 80 (B); 89.5 = 90 (A); 69.2 = 70 (C).

## How to Calculate Your Grade.

1. Sum your percentage scores on every assignment in each category, excluding the dropped assignments/exam/classes. Divide your sums by the total number of assignments/exams/classes, excluding the dropped assignments/exam/classes.

	Scores	Sum
<b>Exams</b>	<del>75</del> , 84, 98, 100	282
<b>Homework</b>	100, <del>70, 80</del> , 100, 80, 80, 80, 100	560
<b>Attendance</b>	100 * 25 days	2500

Exams	Assignments	Attendance
$282/300 = 94.00$	$560/600 = 93.33$	$2500/2700 = 92.59$

2. Weight the score in each category. Multiply the exam score by 0.60, the assignments score by 0.30, and the attendance score by 0.10. Then sum. Round decimal up to nearest whole number.

$$\begin{aligned}\text{Final grade} &= 94.00(.60) + 93.33(0.30) + 92.59(.10) \\ &= 56.4 + 28 + 9.59 \\ &= 93.66 \\ &= 94 \\ &= A\end{aligned}$$

## Course Policies

**Late Assignments.** If you anticipate that you will not be able to turn in a homework on time, please contact me ahead of time to make alternative arrangements. If you are unable to notify us ahead of time, you will lose 5% of your grade for every day late. Your two lowest-scoring homework assignments will be dropped from your grade, including any homework assignments that lose points for being late. I will not accept any late assignments after the final.

**Corrupted Files.** If your exam or homework is a corrupted file or otherwise cannot be opened, your TA or I will contact you. You will have 5 days from the date of the email to turn in an alternate and openable copy of the assignment. If you do not turn in the uncorrupted file during this window of time you will receive a zero on the assignment.

**Email.** If you have questions about the material, I encourage you to make an appointment for a one-on-one meeting. The concepts in this class are sometimes difficult to convey via email. However, you may ask questions via **your UIC email**. I cannot respond to

questions sent from an outside email account. Please keep in mind that I receive many emails every day. Please put the course number (PSCH 343) in the subject line. Please allow **48 hours** for response. I will try to respond earlier, but it is not always possible. I recommend that you start assignments several days before the deadline if you suspect that you will want to ask questions via email.

The Family Educational Rights and Privacy Act (FERPA) forbids me from discussing your grades over email. **I will not respond to any emails about grades** with one exception: You may email me if your grade is missing or has been entered incorrectly on Blackboard.

**Office Hours.** I encourage you to attend office hours. This can be an intimidating subject, but we are here to help you and want to see you succeed. If you cannot attend my scheduled office hours, please speak to me (or your TA) or send me an email to set up an appointment.

**Getting Extra Help.** As the semester progresses you may need help. Do not delay in seeking help. The longer you wait to get help the harder it will be to catch up. I am here to help you as much as I can, and when there is a problem, it is always easier to address it sooner than later. Please come see me during office hours or schedule an appointment outside of office hours.

Besides meeting with me, the UIC chapter of Psi Chi (the international honor society in psychology) offers statistics tutoring (<https://psch.uic.edu/psychology/undergraduate-studies/current-students/psi-chi>). You can also take advantage of the services offered by the Academic Center for Excellence (<https://ace.uic.edu/>). The staff there can help you with reading, writing, study skills, and time management. Please contact them at 312-413-0031.

Finally, juggling all the responsibilities of being a college student can be difficult for anyone, particularly during this difficult time. I encourage you to pursue Counseling Services at UIC if you are having difficulty managing these responsibilities. You can receive free confidential services from the UIC Counseling Center ([www.counseling.uic.edu](http://www.counseling.uic.edu)). Please contact: 312-996-3490 or visit them in the Student Services Building at the corner of Harrison & Racine. Alternatively, the Counseling Center offers the InTouch Crisis Hotline for support, referrals, and telephone crisis interventions. Please contact: 312-996-5535 (6:00 p.m.-10:30 p.m.).

**Academic Integrity.** No form of cheating will be tolerated. Cheating includes copying a classmate's work, working with your other people (classmates or otherwise) on your exams, using your phone or computer to search for the answers to exams, and so on. If you cheat on any exam or homework in this class, you will be given a zero on the assignment and possibly a failing grade in the class. You will also be subject to official judicial charges by the Dean of Students. There will be no exceptions. For more information about violating academic integrity and its consequences, consult the website

of the UIC Office of the Dean of Students at  
<http://www.uic.edu/depts/dos/studentconduct.html>.

**Students with Disabilities.** UIC strives to ensure the accessibility of programs, classes, and services to students with disabilities. I care about helping you, too. Reasonable accommodations can be arranged for students with various types of documented disabilities. If you have questions or need help in obtaining access and accommodations, the Office of Disability Services (ODS) is available to assist students and work with me as instructor. Please contact ODS at 312-413-2103 (voice) or 312-413-0123 (TTY).

**Religious Holidays.** Please contact me by the 10<sup>th</sup> day of the semester if you need to miss class or need an extension on an assignment or exam due to a religious holiday. I will make every reasonable effort to honor your request, and you will not be penalized for missing the class. Please let me know as soon as you are aware if there is a conflict. For more information on UIC's religious holiday policy, consult the website at <https://oae.uic.edu/religious-calendar/>

**Personal Emergencies.** There will be no exceptions to the above policies unless you experience a personal emergency (e.g., personal illness or accident, death in the family). **If you have a problem, contact me as soon as you are aware of it.** I will work with you to help you complete the coursework to the best of my ability. Please do not hesitate to talk to me. The sooner I am aware of your situation, the more I will be able to help! I, and your other professors, want to see you succeed. Unfortunately, this can be difficult if you wait until the last minute (e.g., the day before an assignment is due). I cannot help you if you contact me after the due date.

## PSCH 343 Course Schedule

*Note:* The specifics of this schedule may change over the course of the semester. I will never move assignments earlier, but I may push assignments back later if I believe that it will be beneficial to your understanding of the material. I will notify you of any changes to the schedule in lecture.

Readings are chapters from the textbook. I have listed chapter titles instead of numbers in case you have a different edition of the book. The contents of the chapters are very similar across versions.

Week	Date	Topic	Optional Reading	Homework	Discussion
<b>1</b>	8/24	Intro to research & statistics	Intro to Statistics		
	8/26	Frequencies & central tendency	Frequency Distributions, Central Tendency		
				HW 1 due	Worksheet
<b>2</b>	8/31	Variability	Variability		
	9/2	z-Scores	z-Scores		
				HW 2 due	Worksheet
<b>3</b>	9/7	Probability	Probability		
	9/9	Probability & samples	Probability & Samples		
					Worksheet
<b>4</b>	9/14	Review & catch-up			
	9/16	<b>Exam 1</b>			
					Exam review
<b>5</b>	9/21	Hypothesis testing	Intro to Hypothesis Testing		
	9/23	Hypothesis testing, cont.			
					Worksheet
<b>6</b>	9/28	Intro to $t$ -statistic	Intro to the $t$ Statistic		
	9/30	Intro to $t$ -statistic, cont.			
				HW 3 due	Worksheet
<b>7</b>	10/5	$t$ -test for independent samples	The $t$ Test for Two Independent Samples		
	10/7	$t$ -test for independent samples, cont.			
				HW 4 due	Worksheet
<b>8</b>	10/12	$t$ -test for paired samples	The $t$ Test for Two Related Samples		
	10/14	$t$ -test for paired samples, cont.			
				HW 5 due	Worksheet

<b>9</b>	10/19	Review & catch-up			
	10/21	<b>Exam 2</b>			
					Exam review
<b>10</b>	10/26	Intro to ANOVA	Intro to Analysis of Variance		
	10/28	Intro to ANOVA, cont.			
				HW 6 due	Worksheet
<b>11</b>	11/2	ANOVA Review			
	11/4	RM ANOVA	Repeated-Measures Analysis of Variance		
<b>12</b>	11/9	Two-Way ANOVA	Two-Factor Analysis of Variance		
	11/11	Two-Way ANOVA, cont.			
				HW 7 due	Worksheet
<b>13</b>	11/16	Correlation	Correlation		
	11/18	Correlation, cont. & other tests			
				HW 8 due	Worksheet
<b>14</b>	11/23	TBD			
	11/25	<b>Thanksgiving Break</b>			
<b>15</b>	11/30	Review			
	12/2	<b>Exam 3</b>			
	12/3				Exam Review
<b>Final</b>	12/9	Starts at 8:00am			