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# Statistical Methods in Behavioral Science

**Lecture:** Tuesdays & Thursdays 12:30-1:45pm, Room: 161 Behavioral Sciences Building

**Discussion:** Fridays 11:00-11:50 am, Room: 320 Lincoln Hall

**Zoom Link:** <https://uic.zoom.us/j/89254526066?pwd=QzlkVlg5UUERZHFMRUtkWSSt0Z0krQT09>

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How do statistics  
inform our  
everyday lives?

How can you  
apply statistical  
methods in your  
own life?

How can  
statistics make  
you an informed  
consumer of the  
news?

## COURSE OVERVIEW & GOALS

Welcome to Statistical Methods in Behavioral Science! Are you excited to learn some stats?! In this course, we'll work together in a collaborative and inclusive environment to learn about the fundamentals of statistical methods used in the behavioral sciences. For example, we'll learn about topics like statistical inference, probability, sampling, hypothesis testing, correlation, *t*-tests, and analysis of variance (if you don't know what these are, don't worry! You will soon ☺).

What you learn here will be valuable not only for your academic career, but for whatever you choose to do in the future, because statistics is relevant to everyday life! The things you learn in this course will help you develop the skills to be an informed consumer of what you see in the news, read online, and hear about from others. Understanding statistics can also help you be a competitive job candidate, research assistant, or graduate student, among many other things.

### Student learning goals include:

- Learning how to evaluate numerical data so that you can make informed decisions about what you see in the news, read online, or hear from others.
- Being comfortable working with numbers and carrying out statistical analyses. If you have math anxiety, there's no need to be anxious! But if you do, hopefully by the end of this course you'll be excited to work with numbers.
- Understanding the difference between descriptive and inferential statistics.
- Understanding the difference between correlation and causation, and why correlation does not equal causation.
- Understanding the difference between main effects and interactions and why it matters.

### Instructor goals include:

- Establishing a collaborative, close, inclusive classroom environment.
- Facilitating and encouraging your learning.
- Providing feedback on assignments so that you understand *why* you did or did not get an answer correct and *how* to do it correctly.

**Course Pre-requisites**

PSCH 242 (Intro to Research in Psychology) and ENGL 161 (Academic Writing II); MATH 105 (Mathematical Reasoning) or equivalent or MATH 090 (Intermediate Algebra).

**Course materials:**

- **Required Text:** *Statistics for the Behavioral Sciences* by Gravetter & Wallnau. The 10th edition is current, but it's expensive. I recommend looking for an inexpensive used copy of any edition between 7 and 10. (Amazon has cheaper copies of earlier, used editions of the book.) You don't need access to supplemental material.
- **Calculator:** You'll need a calculator for working through problems. It doesn't have to be fancy—you just need to be able to add, subtract, multiply, divide, and calculate squares and square roots. (No graphing calculators allowed.) Note, for exams, you will not be able to use your phone/computer, so you'll need a simple calculator (not an online calculator). You can find these pretty cheap online if you don't have one.
- **Jamovi data analysis software** (open-access online)
- **Scrap paper and pencil:** These will be very helpful while we work through problems.

**ABOUT YOUR INSTRUCTOR**

**Instructor:** Professor Kelly Burke (she/her)

**Email:** [burke36@uic.edu](mailto:burke36@uic.edu)

**Student Hours:** Wednesdays, 12:00-1:30pm (CST) via Zoom

(<https://uic.zoom.us/j/3766182055?pwd=S2ZEeEZWRHg3SjdhZDZDNBWUJDeEpmUT09>); or by appt.

I refer to these as “student” hours because they're meant for you! That means I *want* you to come to them anytime you have questions (e.g., about homework assignments, exams), concerns, or just want to chat about the course. If you're not free during this time, please email me and we can schedule an appointment to meet in-person or via Zoom at another time. It's important to me that you know I'm here to support you and your learning. So, if something isn't working or you have constructive feedback for how to improve class, please let me know! I'm happy to adapt things in response to feedback.

It'll be extremely beneficial to you to stay on top of the material we cover each week. Everything builds off of earlier material, so if you stay on top of it, you'll be better prepared to learn and practice the new material.

**If you fall behind, feel stuck, have questions, or have trouble remembering earlier content, please come talk to me right away! I'm here to facilitate your learning, not create undue stress and anxiety during an already stressful time. It's okay if you forgot how to do something, just let me know and we can work together to catch you up.**

**COURSE FORMAT**

The course will meet three times a week during two lectures (Tuesdays & Thursdays) and one discussion section (Fridays). If you're attending in-person, we'll meet in the classroom. All course materials (lectures, assignments, announcements, etc.) will be posted on Blackboard.

## Lectures

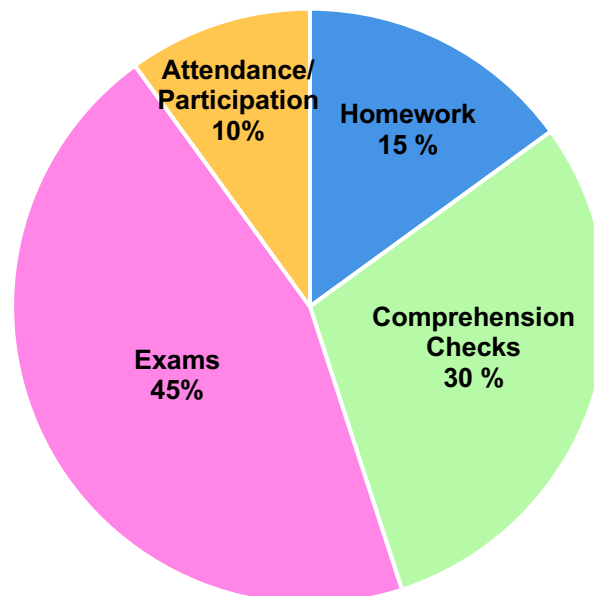
During lectures, we will learn new material each week. However, lectures will not only consist of me “lecturing,” they will also be a time for us to work together as a class on practice problems and to answer any questions you have about the current or prior weeks’ material, homework, etc.

## Discussion Sections

The goal of discussion sections is to reinforce the material you’ve been learning in lecture. To achieve this goal, we will have active practice sessions where you will have the chance to work with your classmates to “put into practice” what you learned during that week’s lecture.

## HOW YOUR LEARNING WILL BE ASSESSED:

We will have four different methods for assessing your learning: (a) homework assignments, (b) “comprehension checks,” (c) exams, and (d) participation/attendance.



### Homework Assignments (15%)

Homework assignments will consist of practice problems that provide you with an opportunity to (a) practice the material you learned in lecture (e.g., solve problems) or (b) apply what you’re learning in class to the real-world. These will be graded, but they will be graded for effort. So, as long as you give it your best and show effort, you’ll do great! If, however, you do not attempt each question fully, you will not receive credit. These will be due at the start of discussion on Fridays. (Note, if you have an accommodation to attend class remotely, you will submit these via Blackboard. If you have any trouble submitting them on Blackboard, email them to me.)

### “Comprehension Checks” (30%)

Comprehension checks will include multiple choice and (very) short answer questions. These are intended to reinforce (a) the current week’s material and (b) prior material that is relevant to the current material. These will be graded, and will be released on Blackboard on Mondays and due by the start of discussion on Fridays via Blackboard (if you have any trouble completing it on Blackboard, email me).

**Exams (45%)**

This course will include 3 exams, each worth 15% of your grade. Exams will consist of short-essay questions about conceptual and theoretical material (e.g., what is a standard deviation) and practice problems where you will carry out an analysis and interpret the result. For example, you'll receive a prompt describing a study along with data for that study. Then, you will be asked to carry out an analysis and interpret the result.

These exams will *not* be comprehensive; however, I will offer extra credit questions that are adapted from prior weeks' comprehension checks, discussion section activities, and/or homework assignments. The purpose of this is to reinforce what you learned previously and encourage you to keep up with each week's material because everything builds off of prior weeks.

To further reinforce learning, there will be mandatory revisions for Exam 1, for which you will have the opportunity to earn back up to half of the points you missed.

Exams 1 & 2 will be distributed during *Thursday* lectures, so everyone (online and in-person) will complete the exams at the same time. The final exam will be distributed during our assigned exam period (see schedule below). **Note, if you have an accommodation to attend class remotely, you *must* be in attendance via Zoom during the exams or else you cannot submit your exam.**

While completing the exams, you can use course materials (textbook, lectures, discussion section activities, etc.), but no non-course-related materials (i.e., no internet, no other human's help). You'll also receive a formula sheet that you can use while you complete the exam. Prior to each exam, we'll have a review session where you can ask questions, go over material, etc.

**Attendance & Active Participation (10%)**

Participation and attendance will be assessed for both lecture and discussion sections. To receive full credit, actively participate by being attentive and making thoughtful in-class comments (e.g., raise your hand, try to participate at least once/week).

I know it can be intimidating or difficult to actively participate (trust me, I really get it). But in the long run, active participation and engagement will help you understand the material better. So to encourage this, I'll be committed to providing the spaces and opportunities for you to actively participate by pausing during lectures to give you time to ask questions or make comments and providing small group sessions that make it a little easier to engage with your classmates.

**Grading**

Your overall grade in the course will be determined by the number of points you receive divided by the total number of points in the course, and will follow this breakdown:

A: 90-100%	C: 70-79.9%	F: 59.9% or lower
B: 80-89.9%	D: 60-69.9%	

For any grading disputes you would like to bring up, you have one (1) week from when you receive your grade to review it and contact me. After the week has passed, I will not review it again

**COURSE POLICIES:****Our Inclusive Learning Environment**

I'm dedicated to establishing and maintaining an inclusive, welcoming, and open learning environment that values diversity. Regardless of age, disability, ethnicity, race, gender, gender identity, sexual orientation, socioeconomic status, geographic background, religion, political ideology, language, or culture, I expect everyone to contribute to a respectful, welcoming, and inclusive environment for every other member of our class. If there is anything that results in barriers to your inclusion, engagement, accurate assessment or achievement, please notify me as soon as possible.

**COVID-19**

You are expected to attend class in-person if you (a) received a COVID-19 vaccine; (b) received a vaccination exemption, are saliva testing 2 times/week, and completing the daily HealthCheck; or (c) are partially vaccinated, saliva testing 2 times/week, and completing the daily HealthCheck.

We are required to wear a mask that is tight-fitting and covers the nose and mouth while inside. If anyone does not wear a mask, I will ask them to go get a mask. If anyone refuses, they will be asked to leave, reported to the Dean of Students, and subject to student discipline.

Because we will be wearing masks, food and drink are not allowed in our classroom. If you need a drink, please leave the classroom and go to a private area where it is safe to remove your mask.

**If you have any symptoms of COVID-19, please do not come to class. Instead, contact me and we can make other arrangements.**

**In-person Versus Online Attendance**

You are expected to attend class in-person unless you have an accommodation to attend remotely. (The exception to this, of course, is if the university decides to remain remote after the first two weeks of the semester.) If you are sick or have another situation/conflict that prevents you from attending class in-person, please ask a classmate for notes and contact me to make other arrangements so that we can go over what you missed.

**Online Learning**

For those who have accommodations to attend remotely, you will join class "live" via Zoom at the designated time.

To make this course as similar as possible to a fully in-person course, I strongly encourage you to keep your camera on during class and to use your microphone. This course is interactive and requires active participation, which will be much easier if we can see and hear one other. Also, full disclosure, it's *\*incredibly\** helpful to me if I can see your faces—it helps me know when I might need to slow down or increase the pace of lecture, if my explanations are unclear or confusing, and, frankly, it's so much more enjoyable if I get to interact with you "face-to-face"!

To encourage this, I will show you how to blur your background on Zoom or create a fun virtual background (who wouldn't want to be surrounded by palm trees right about now?!). You can also [click here](#) to go to a support page that shows you how to enable the blur feature.

**Late Policy**

You can have up to 3 unexcused absences throughout the semester (remember: lecture and discussion all count toward attendance). This is to account for life circumstances that are either out of our control, if you are in an overwhelming situation, or if you are sick (in which case, please do not come to class!).

In addition, your two lowest quizzes and two lowest homework assignments will be dropped. This is designed to replace a more complicated missed work system. Emergencies, illnesses, weather, and other priorities happen. This is why you can drop several of each assignment type.

Makeup exams will not be offered except on a case-by-case basis (e.g., if you have a family or personal emergency).

**I want to reiterate the importance of communicating with me. If you experience any issues (e.g., COVID, child-care, etc.), please come talk with me!**

**Feedback**

I am committed to helping you learn the material in this course, which means I will provide you with feedback on your assignments. Specifically, I will review the answers to the homework assignments, comprehension checks, and exams and will answer any questions you might have. I'm also more than happy to meet with you individually to give you additional feedback or answer any questions you might be more comfortable asking one-on-one. If you get this far in the syllabus, email me a picture of your favorite animal for 1 point extra credit!

**Laptops/Phones**

If you are going to use social media or visit any other non-course-related websites during class, please sit in the back of the classroom out of respect for everyone else.

**TENTATIVE COURSE SCHEDULE**

Note, the course schedule is tentative and subject to change.

\* HW = Homework; CC = Comprehension Check

Week	Date	Topic	Chapter	Homework
1	1/11 1/13 1/14	Introduction to Research & Statistics Intro (cont.), Frequency Distributions Discussion #1	Ch 1 Ch 2	
2	1/18 1/20 1/21	Central Tendency Variability Discussion #2	Ch 3 Ch 4	HW 1 & CC 1 due by 11:00am
3	1/25 1/27 1/28	z-Scores & Intro. to Probability Probability Discussion #3	Ch 5 Ch 6	HW 2 & CC 2 due by 11:00am
4	2/1 2/3 2/4	Probability & Samples Hypothesis Testing Discussion #4	Ch 7 Ch 8	HW 3 & CC 3 due by 11:00am
5	2/8 2/10 2/11	Samples & Hypothesis Testing Hypothesis Testing; Exam 1 Review Discussion #5	Ch 7, 8	HW 4 & CC 4 due by 11:00am
6	2/15 2/17 2/18	Exam 1 Review <b>EXAM 1</b> Discussion #6		HW 5 & CC 5 due by 11:00am
7	2/22 2/24 2/25	Introduction to <i>t</i> -Tests Independent Samples <i>t</i> -Tests Discussion #7	Ch 9 Ch 10	HW 6 & CC 6 due by 11:00am
8	3/1 3/3 3/4	Introduction to ANOVA Introduction to ANOVA (cont.) Discussion #8	Ch 12	HW 7 & CC 7 due by 11:00am
9	3/8 3/10 3/11	One-way ANOVA, Multiple Testing One-way ANOVA, Multiple Testing Discussion #9	Ch 12	Exam 1 Revisions due 12:30pm HW 8 & CC 8 due by 11:00am
10	3/15 3/17 3/18	Review for Exam 2 <b>EXAM 2</b> Discussion #10		HW 9 & CC 9 due by 11:00am
11	3/21-3/25	SPRING BREAK (no classes!)		
12	3/29 3/31 4/1	Two-way ANOVA Two-way ANOVA (cont.) Discussion #12	Ch 13	HW 10 & CC 10 due by 11:00am
13	4/5 4/7 4/8	Two-way ANOVA & Intro. to Matched Sample <i>t</i> Matched Sample <i>t</i> Discussion #13	Ch 11	HW 11 & CC 11 due by 11:00am
14	4/12 4/14 4/15	Repeated Measures ANOVA Repeated Measures ANOVA (cont.) Discussion #14	Ch 11	HW 12 & CC 12 due by 11:00am



15	4/19 4/21	Correlation & Regression Correlation & Regression (cont.)	Ch 14	
	4/22	Discussion #15		HW 13 & CC 13 due by 11:00am
16	4/26 4/28	Catch-up Review for Final Exam		
	4/29	Discussion #16		HW 14 & CC 14 due by 11:00am
<b>Finals</b>	<b>5/3</b>	<b>FINAL EXAM WEEK (TBD)</b>		

**Other Important Dates:**

- Friday, January 21: Last day to complete late registration; last day to add a course(s) or make section changes; last day to drop individual courses via XE Registration without receiving W (Withdrawn) grade on academic record. Last day to Web Drop courses via XE Registration and receive 100% cancellation of tuition and fees.
- Friday, March 18: Last day for undergraduate students to use optional late drop in college office and receive grade of W on academic record.

**ADDITIONAL INFORMATION****Academic Integrity**

As an academic community, UIC is committed to providing an environment in which research, learning, and scholarship can flourish and in which all endeavors are guided by academic and professional integrity. All members of the campus community—students, staff, faculty, and administrators—share the responsibility of insuring that these standards are upheld so that such an environment exists. Instances of academic misconduct by students will be handled pursuant to the Student Disciplinary Policy: <https://dos.uic.edu/wp-content/uploads/sites/262/2018/10/DOS-Student-Disciplinary-Policy-2018-2019-FINAL.pdf>

By enrolling in this course, you agree to uphold a class honor code in which we trust one another and engage only in behaviors that reflect our community standards of academic integrity.

**If any part of you feels even slightly tempted to engage in academic dishonesty for the sake of a better grade, come talk to me and I'll give you all sorts of tips and tricks to earn that grade you're hoping for.**

**Disability Accommodation**

The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for access to and/or participation in this course are welcome, but must be registered with the Disability Resource Center (DRC). You may contact DRC at 312-413-2183 (v) or 773-649-4535 (VP/Relay) and consult the following: <http://drc.uic.edu/guide-to-accommodations>.

**Religious Holidays**



Students who wish to observe their religious holidays shall notify the faculty member by the tenth day of the semester of the date when they will be absent unless the religious holiday is observed on or before the tenth day of the semester. In such cases, the student shall notify the faculty member at least five days in advance of the date when they will be absent. The faculty member shall make every reasonable effort to honor the request, not penalize the student for missing the class, and if an examination or project is due during the absence, give the student an exam or assignment equivalent to the one completed by those students in attendance. If the student feels aggrieved, they may request remedy through the campus grievance procedure. <https://oae.uic.edu/religious-calendar/>

## **UIC RESOURCES**

### **UIC Technology Solutions**

If you have any difficulty connecting to the internet or require a computer, you can request a cellular hotspot or loaner laptop from UIC Technology Solutions: <https://teaching.uic.edu/ed-tech/equipment-lending/extended-laptop-loan/>

### **Mental, Physical, and/or Academic Challenges**

As an undergraduate at UIC, you may experience challenges such as struggles with academics, finances, student life, or your personal well-being. Please know this is completely normal and you shouldn't hesitate to ask for help. Come to me, or if it is about an issue beyond the scope of this class, please contact your college advisors, or get help from any number of other support services and resources available to all UIC students. A comprehensive list is available on the [Current Student Resources](#) website.

If you find yourself having difficulty with the course material or any other difficulties in your student life, please ask for help! If you experience sexual violence, identity-based harm, or any other personal crisis at any point during the course, please don't hesitate to reach out so I can (a) help you get caught up in class, (b) put you in contact with the appropriate resources and services, and (c) answer questions to the extent that I am qualified to do so. Note that I am required by both university policy and federal law to report all disclosures of sexual violence to the appropriate campus authorities. But please know that I am more than willing to support survivors throughout the process. If you'd rather not talk to me about these issues, I completely understand. Please see the resources below.

Finally, I fully support the rights of undocumented students to an education. If you have any concerns in that regard, feel free to discuss them with me, and I will respect your wishes concerning confidentiality. Furthermore, I am committed to resisting any and all attacks on immigrants.

**Counseling Services** are available for all UIC students. You may seek free and confidential services from the Counseling Center [www.counseling.uic.edu](http://www.counseling.uic.edu). The Counseling Center is located in the Student Services Building; you may contact them at (312) 996-3490. The Counseling Center also

operates the InTouch Crisis Hotline from 6:00 p.m.-10:30 p.m. They offer support and referrals to callers, as well as telephone crisis interventions; please call (312) 996-5535.

**If you are in immediate distress**, please call the UIC Counseling Center at (312) 996-3490 to speak directly with a counselor or to schedule an appointment with a counselor. If calling after business hours (which at UIC are typically from 9 am - 5 pm CT, M-F), press 2 to be connected to a crisis counselor. You can find additional online mental health resources on the [Counseling Center Resources](#) page.

### **Campus Advocacy Network**

Under the Title IX law you have the right to an education that is free from any form of gender-based violence and discrimination. Crimes of sexual assault, domestic violence, sexual harassment, and stalking are against the law and can be prevented. For more information or for confidential victim-services and advocacy contact UIC's Campus Advocacy Network at 312-413-1025 or visit <http://can.uic.edu/>. To make a report to UIC's Title IX office, email [TitleIX@uic.edu](mailto:TitleIX@uic.edu) or (312) 996-5657.

### **Campus Security**

As a UIC student, you've chosen to live in one of the nation's largest cities. But, as at any university, crime is a reality. At UIC, we are strongly committed to our public safety programs, and we encourage students to be proactive in learning what programs and services are available in case of an emergency.

You are DISCOURAGED from staying in university buildings alone, including lab rooms, after hours and are ENCOURAGED to use the POLICE/STUDENT patrol escort if you are uncomfortable traveling anywhere on campus. You may request an escort to accompany you to your campus destination on foot by calling 312-996-2830, and between 11:00 pm and 7:00 am you can dial the Red Car service (312-996-6800) if you are alone and need to leave the building. Through Red Car, the university has established a safe evening transportation service for university employees, students, visitors, and other authorized individuals. The car travels between university facilities within the following general boundaries: Clinton Street on the east; Western Avenue on the west; Jackson Boulevard on the north; and, 16th on the south. This service is available only to individuals possessing a valid UIC i-card. The i-card is required to ensure the safety of the driver and other passengers. Consult the following for more information:  
<http://www.uic.edu/uic/studentlife/campus/safety.shtml>

Also, you can subscribe your cell phone to receive text message alerts. An immediate SMS text alert will be sent in case of a serious crime in progress, a weather emergency, or other urgent situation. ([https://accountportal.uic.edu/auth/manage?dispatch=set\\_sms\\_panel](https://accountportal.uic.edu/auth/manage?dispatch=set_sms_panel)).

Finally, by dialing 5-5555 from a campus phone, you can summon Police or Fire for any on-campus emergency. You may also set up the complete number, 1-312-355-5555, on speed-dial on your cell phone. For more information contact:

<http://www.uic.edu/uic/studentlife/campus/emergency-information.shtml>

**Syllabus Disclaimer:** This syllabus is intended to give you guidance on what will be covered during the semester, and will be followed as closely as possible. However, I may modify, supplement, and make changes throughout the semester.

\* *Portions of this syllabus were adapted from Professors Ryne Estabrook and Rebecca Littman.*