PSCH 343: Statistical Methods in Behavioral Science
Syllabus - Fall 2021

Overview

Lecture: Presented in-person (BSB 140) and Zoom

Zoom link: https://uic.zoom.us/j/89754748295?pwd=WGlqVW4rUWZiWHNwSW4zYVAwOHduUT09

Discussion: Fridays at assigned times.

Instructor: Ryne Estabrook, PhD (cestabr2@uic.edu)

Student Drop-In Hours: In-person T/Th 12:15-1pm; Remote (via Blackboard) Mondays or Wednedays TBD (by you!)

Course Objectives and Goals

The goal of this course is to provide an overview of the basic statistical methods used in psychology and serve as an introduction to psychological research methods and data science. Topics will include statistical inference, probability distributions, sampling, hypothesis testing, t-tests, correlation, and analysis of variance.

At the end of this course, you should not only be able to carry out the various statistical operations covered during the semester, but gain a familiarity of how to work with data. *The most important goal from this course is for all of you to become comfortable making decisions based on numerical information.*

Course Structure

All course materials will be accessed via Blackboard. This course consists of weekly lectures, a weekly discussion section, and assigned homework, quizzes, and exams.

Lectures

Lectures will be presented both in person and online. All students are welcome to attend in person at BSB 1040, participate in lectures live on Blackboard Collaborate Ultra, or watch recordings of these lectures at your convenience. Lecture attendance is not graded. However, I strongly recommend that you not assume that you can use the recordings to put off learning material: each week's readings and lectures will have to be understood to complete weekly homework and quizzes.

Lectures will change in response to student input. Both in-person and remote students should be prepared to ask questions and clarify material that isn't clear. I hope to get as much feedback as possible to make sure that I'm delivering the material in ways that maximize your learning and success.

Here is our zoom link. It is also available on blackboard.

https://uic.zoom.us/j/89754748295?pwd=WGlqVW4rUWZiWHNwSW4zYVAwOHduUT09

Discussion Section

Weekly discussion sections will meet on Fridays, simultaneously in person and via Blackboard Collaborate Ultra. These sessions will reinforce lecture material, provide practice on topics and techniques taught in lectures and homework, and provide smaller groups for discussion. You should have completed this week's lectures and any outstanding assignments prior to your Friday discussion section.

Discussion attendance and participation is a graded part of this course, as will be discussed later in this syllabus.

Drop-in Hours and Student Engagement

Drop-in hours will be completed in person right after class or online either Mondays or Wednesdays. I will also make myself available for individual meetings as requested over e-mail. These hours are for you and you should take advantage of them to make sure you're keeping up with the material.

Whatever combination of in-person and remote access you choose to use, your TAs and I are here to teach and support your learning, and I strongly encourage you to reach out to us as resources early and often. I will adapt the class, its structure, and materials to your feedback, so please let me know what you would like to do differently.

Course Materials

Textbook

One textbook is required for this course: *Statistics for The Behavioral Sciences* by Gravetter & Wallnau. The 10th edition is current, but any edition between 7 and 10 is sufficient. Relatively inexpensive used copies of editions 7-9 are readily available from where ever you rent or purchase textbooks. When searching the web for used copies, note that most searches will yield the 10th edition unless you specifically ask for an earlier one.

Software, Smartphones, & Calculators

You will need some method for doing basic calculations for coursework and during exams. Smartphone or laptop calculators or any internet-capable devices are allowed during class, but not during exams and quizzes. You are free to bring a simple or scientific calculator to exams.

We will be doing a fair bit of hand calculation in this course. You should bring scrap paper or an equivalent tool that you feel comfortable using for arithmetic. You do not need to turn this in, so use whatever you are comfortable with.

I will be using scientific software called R in class. R is a free open source statistical computing environment. It can be downloaded for free at https://cran.r-project.org/. It is not in any way required for this class, and will not be used for your assignments, quizzes, or exams. However, it does perform required calculations, and you are free to follow along with any provided code.

Grading

Grading for this class will be divided into four categories: exams, quizzes, homework, and discussion participation.

Homework (10%)

Homework will be given weekly to provide practice for skills and methods learned in class. Homework is required and will be graded: however, it will be graded as simple pass-fail based on effort. All homework will be assigned on Thursdays, due at the start of class Tuesday, and reviewed in class.

Quizzes (20%)

Quizzes will be given weekly to reinforce lecture and readings, but there will be no quizzes the first week or during exam weeks. They will be released on blackboard to be completed on your own time like homework. They will largely consist of multiple choice and short answer questions. Like homework, they will be assigned on Thursdays, and due the following Tuesday.

Schedule Note

Essentially, quizzes are the part of homework that is graded for credit. Excepting exam weeks, you'll have a quiz and homework each week. I grade quizzes for accuracy to evaluate how your progress, and grade homework for effort because that's where the arithmetic mistakes happen and I don't want that to affect your grade. Quizzes are released early so students using hybrid options don't have an advantage. The start of every Tuesday will review last week's quiz and homework.

Exams (60%)

There will be three exams in this class, each worth 20% of your grade. The majority of the items on these exams will consist of free-format responses in which you carry out an analysis and interpret the result. For these questions, you'll be provided with a brief description of a research project or experiment, as well as all data required to complete the analysis. You will then be required to carry out the requested analysis and interpret the result.

You may use any physical course materials you wish to complete the exam, including the textbook and your own notes. You may not use lecture videos or any other materials that require a computer.

At this moment, I am planning for in-person exams, and am open to accommodations for students who are not able to attend in person. If the demand for remote exams is sufficiently high (or university policy demands a change), I will reformat exams for online administration. Please note that this may affect exam difficulty and require other protections.

Exams are not cumulative: the course is divided into three five-week sections, and each exam covers the material specific to each section of the course. However, course content is somewhat cumulative: the basic methods taught early in the course will be a part of more advanced methods taught later.

Your last homework assignment before each exam will be a practice exam, that will have a comparable format, difficulty, and length as your exam. This will serve as your study guide. I will also provide formula sheets that give a single location for common formula you will use.

Exam Schedule

Exams 1 and 2 will follow the schedule below. Exam 1 will take place on 9/23 (Week 5), and Exam 2 will take place on 10/28 (Week 10). Practice tests will be released just like any other homework: they are available on the Thursday of Week 4 (9/16) and Week 9 (10/21), and due the subsequent Tuesday. Your discussion sessions on the Fridays of these weeks will go through the practice exams. Tuesday lectures during exam weeks will be a review session. Exams 1 and 2 will be in person on Thursdays during weeks 5 and 10.

Exam 3 is scheduled for Monday, 12/6, from 10:30am-12:30pm. We will hold a review session during the last class on Thursday, 12/2. Because of the timing of the Thanksgiving holiday, I'll release the practice exam after the Tuesday, 11/23 class.

All exams are currently scheduled to be in person. However, if that changes for any reason, I will inform you with as much notice as possible. If exams are online, I will give you a longer window, assume that you have access to additional material (i.e., lecture videos and all other course materials), and adjust the exam difficulty and format as necessary.

Item	Exam 1	Exam 2	Exam 3
Practice Test Available	Thurs, 9/16	Thurs, 10/21	Thanksgiving
Practice Test Due	Tues, 9/21	Tues, 10/26	Thurs, 12/2
Lecture Review Session	Tues, 9/21	Tues, 10/26	Thurs, 12/2
Exam	Thurs, 9/23	Thurs, 10/28	Monday, 12/6

Participation (10%)

Participation and attendance in discussion will be recorded and evaluated each week. There is no discussion meeting during the first week (8/27), or after the exams (9/24 and 10/29).

Grade Status

The TAs and I will work to keep grades up to date. Blackboard's grade center does an excellent job of showing your grades for individual assignments: if you notice a discrepency between the grade center and what you think you earned, notify the TAs and/or me immediately. However, the grade center is unable to implement our "drop two lowest quizzes/homeworks/discussions" rule, so please ignore any "total score" column you find.

Close to the end of the semester, I'll release a calculator that reflects these rules and gives you an accurate measure of your current grade. Prior to that, you can manually assess your standing in this class using the mathematical tools we learn together this semester.

Academic Integrity & Class Conduct

There will be no tolerance for plagiarism or cheating. Plagiarism/cheating will result in loss of credit for the exam or assignment and further, more serious, consequences, including suspension from the university (see Student Disciplinary Policy for what qualities are academic integrity: https://dos.uic.edu/community-standards/academic-integrity/).

Beyond that, please do your part in creating a positive learning environment for other students. Those attending in-person must adhere to all university policies regarding mask usage and physical distancing. Beyond that, please be respectful of your fellow student's choices regarding their own precautions. As some of you may be at higher risk for COVID or live with a high-risk family member, feel free to expand physical distance between you and your students as you see fit.

Student Accommodations

Students in need of accommodations should reach out to the disability resource center (DRC). The DRC provides resources and support to allow equal access for all students, and can provide a letter of accommodation (LOA). LOAs describe the accommodations required going forward, do not expire, and to not disclose private information. If you think you might benefit from support related to a disability, you can contact the DRC by phone at (312) 413-2183, visit drc.uic.edu, e-mail drc@uic.edu, or stop by the office in SSB 1070.

You will never be required to disclose private information related to your LOA to instructors or teaching assistants. However, LOAs are strictly proactive, and only cover course materials and assignments going forward from the receipt of an LOA. Please reach out to the DRC as soon as possible.

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

Attendance and Makeups

Attendance in discussion sections will be recorded as part of your participation grade. There will be no make-up exams or quizzes. Your lowest two quizzes, homeworks, and discussion grades will be dropped. This is designed to replace a more complicated excused absence and missed work system. Emergencies, illnesses, weather, and other priorities happen. This is why you can drop several of each assignment type.

Absent a valid justification (family emergency or medical issue with documentation; see "Student Accomodations"), missed quizzes and exams will count as a zero (0). With a documented justification, the exam in question will be dropped and the remaining grades averaged to generate the scores for that section.

COVID

As you are certainly aware, UIC has implemented a variety of polices to mitigate the spread of COVID-19. At the moment, this includes vaccinations for all students on campus as well as masks in all indoor spaces. I will comply with all policies, and expect you all to do so as well. I will further make any reasonable

accommodations to course schedule and the delivery of course materials to make all of you feel safe. Please reach out at any time if there's more I can do.

More information about UIC COVID policies can be found here: https://today.uic.edu/coronavirus.

Other

You will get out of this class what you put into it. You must be proactive in asking for the help you need. It is much easier to make a small correction early than it is to re-teach weeks of the course long after you had a question. Because of this semester's format, it is more important than previous semesters to reach out when you need help, clarification, or other support.

I further recommend study groups as a way to reinforce material and get you comfortable talking about statistics. Any attempt by me to instruct any of you on how to connect with your fellow students is likely to feature horribly dated advice, so I will simply encourage you to use Blackboard and your discussion groups to find ways finding students to study with. Additionally, Psi Chi has a tutoring program to help interested students: more information about this program will become available later in the semester.

Tentative Weekly Schedule

This schedule is tentative and can change in response to student needs.

Week	Date	Topic	Reading
1	8/24	Introduction to Research & Statistics, Frequency Distributions	Ch 1-2
2	8/31	Central Tendency & Variation	Ch 3-4
3	9/7	Probability & Samples	Ch 5-6
4	9/14	Hypothesis Testing	Ch 7-8
5	9/21	Review & Exam 1	Ch 9
Exam 1			
6	9/28	Introduction to T-Tests	Ch 9
7	10/5	Independent Samples T-Tests	Ch 10
8	10/12	Intro to ANOVA	Ch 14
9	10/19	One-Way ANOVA, Multiple Testing	Ch 14
10	10/26	Review & Exam 2	Ch 15
Exam 2			
11	11/2	Two-Way ANOVA	Ch 14
12	11/9	Two-Way ANOVA & Matched Sample *t*	Ch 14, 11
13	11/16	Repeated Measures ANOVA	Ch 13
14	11/23	Correlation	Ch 15
15	11/30	Chi-Square & Review	Ch 17
Final Exam			