# I 320M

# Fall 2024

## Course Information

Instructional Mode: Face-to-face
Meeting Times: Mon/Wed 11:00 AM - 12:30 PM
Meeting Location: JES A215A
Unique Number: 27500

## Instructor

Steven Hershman
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## Academic Assistants

Name: Yiwei Wu

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Gender Pronoun: she/her

Office Hour: By Appointment through canvas message or email

## Welcome Message

Get ready to go on a psychedelic journey toward becoming a health informatics scholar in this course, founded in 2024, The Year of AI. This course delves into both Artificial Intelligence and Ayahuasca Intelligence as we explore a curated selection of publications that encompass a wide array of informatics approaches involving psychedelics and their applications. Topics include the

integration of bioinformatics in precision medicine, the application of AI in drug discovery, and the rigorous statistical analysis of clinical trials.

## Catalog Description

Explore principles and methodologies in health informatics research, including various approaches to data analysis, research design, and the application of informatics to health. Through lectures and Journal Club activities, students will engage with various data types, learning how to locate, collect, and analyze them effectively. By the end of the course, students will have acquired the core skills needed to think and act like health informatics scholars—how to critically review and write publications, identify research questions, take the first steps toward answering them, and communicate their progress.

## Overview of the Class

All instructions, assignments, readings, rubrics and essential information will be on the Canvas website at utexas.instructure.com. Check Canvas regularly. **Changes** to the schedule may be made at my discretion if circumstances require. I will announce any such changes in class and will also communicate them via a Canvas announcement. It is your responsibility to note these changes when announced, and I will do my best to ensure that you are notified of changes with as much advance notice as possible.

Weekly Class Topics and Activities

| Week | Date | Class Topics | Required Readings | Assignments |
|---|---|---|---|---|
| 1. Introduction | 8/26 - 8/30 | 8/26: Intro to course(Activity); Getting to know each other; Major research paradigms<br><br>8/28: Journal Club: narrative review | 8/26: Major research paradigms (APCh1)<br><br>8/28: The mechanistic divide in psychedelic neuroscience: An unbridgeable gap? | 8/26<br><br>8/28: Introduction Survey;Journal Club Response |

| Week | Date | Class Topics | Required Readings | Assignments |
|---|---|---|---|---|
| 2. Systematic Review | 9/2 - 9/6 | 9/2: Labor Day Break - no class<br><br>9/4: Journal Club: Systematic Review | 9/2: N/A<br><br>9/4: How to search the literature (GHJCh7); Drug–drug interactions involving classic psychedelics: A systematic review | 9/2<br><br>9/4: Journal Club Response |
| 3. Finding a question | 9/9 - 9/13 | 9/9: Literature review skills; how to define research<br><br>9/11:Journal Club: a simple research question | 9/9: How to appraise literature(APCh2)+Defining the Research(APCh3)<br><br>9/11: Analysis of Google Trends to monitor new psychoactive substance. Is there an added value? | 9/9<br><br>9/11: Journal Club Response<br><br>9/13: Topic Proposal |
| 4. Qualitative Studies | 9/16 - 9/20 | 9/16:Qualitative Analysis + Descriptive statistics part 1<br><br>9/18: Journal Club: YouTube Pharmacology | 9/16: Qualitative analysis (APCh23), Descriptive statistics part 1: levels of measurement (GHJCh2)<br><br>9/18: Salvia divinorum: Effects and use among YouTube users | 9/16<br><br>9/18: Journal Club Response |
| 5. Human Subjects Research | 9/23 - 9/27 | 9/23: Human subjects research: Sampling + Surveys<br><br>9/25: Journal Club: Qualitative survey data | 9/23:Sampling (APCh5), Surveys (APCh9)<br><br>9/25: The diverse reasons for using Novel Psychoactive Substances - A qualitative study of the users' own perspectives | 9/23<br><br>9/25: Journal Club Response |

| Week | Date | Class Topics | Required Readings | Assignments |
|---|---|---|---|---|
| 6. Questionnaire Design and Implementation | 9/30 - 10/4 | 9/30: Data Collection Technique: Questionnaires + Quantitative Analysis<br><br>10/2: Journal Club: Survey | 9/30: Data Collection Technique: Questionnaires(APCh18), Quantitive Analysis (APCh24)<br><br>10/2: The users of Novel Psychoactive Substances: Online survey about their characteristics, attitudes and motivations | 9/30<br><br>10/2: Journal Club Response<br><br>10/4: Draft 1: Research Statement |
| 7. Expert Opinion | 10/7 - 10/11 | 10/7: Proposal Presentation<br><br>10/9: Journal Club: Expert opinions (Delphi, Focus groups, Multicriterial decision analysis) | 10/7: Delphi (APCh13), Focus groups (APCh21)<br><br>10/9: Drug harms in the UK: a multicriteria decision analysis | 10/7: Presentation Slides<br><br>10/9: Journal Club Response |
| 8. Observational Studies | 10/14-10/18 | 10/14: Cohort studies + Advanced Statistics<br><br>10/16: Journal Club: Observational studies | 10/14: Experimental research (APCh10), Cohort studies (GHJCh9)<br><br>10/16: Trends in hallucinogen-associated emergency department visits and hospitalizations in California, USA, from 2016 to 2022 | 10/14<br><br>10/16: Journal Club Response |
| 9. Case-Control Studies | 10/21-10/25 | 10/21: Case control studies<br><br>10/23: Journal Club: Case control studies | 10/21: Case-control studies (GHJCh10)<br><br>10/23: Psilocybin microdosers demonstrate greater observed improvements in mood and mental health at one month relative to non-microdosing controls | 10/21<br><br>10/23: Journal Club Response |

| Week | Date | Class Topics | Required Readings | Assignments |
|---|---|---|---|---|
| 10. Randomized Controlled Trials | 10/28-11/1 | 10/28: Randomized Controlled trials<br><br>10/30: Journal Club: Clinical Trial | 10/28:Randomized Controlled trials (GHJCh8)<br><br>10/30: MDMA-assisted therapy for moderate to severe PTSD: a randomized, placebo-controlled phase 3 trial | 10/28<br><br>10/30:Journal Club Response |
| 11. Clinical Trial Innovation | 11/4 - 11/8 | 11/4:Clinical trial innovation, digital twin<br><br>11/6: Journal Club: Clinical Trial Innovation | 11/4: TBD<br><br>11/6: Self-blinding citizen science to explore psychedelic microdosing | 11/4<br><br>11/6:Journal Club Response<br><br>11/8: Draft 2: Research Plan |
| 12. AI in Drug Discovery | 11/11 - 11/15 | 11/11: Bioinformatics - AI in drug discovery<br><br>11/13:Journal club: Bioinformatics | 11/11: QSARs in medicinal chemistry, Computer-aided Drug Design, The impact of Artificial Intelligence methods on drug design (KRCh1,2,4).<br><br>11/13: AlphaFold2 structures template ligand discovery | 11/11<br><br>11/13: Journal Club Response |
| 13. Neuroinformatics | 11/18-11/22 | 11/18: Neuroinformatics<br><br>11/20: Journal club: Brain imaging | 11/18: TBD<br><br>11/20: Psilocybin desynchronizes the human brain | 11/18<br><br>11/20: Journal Club Response |
| 14. Thanksgiving | 11/25-11/29 | No Class Thanksgiving Holidays | | |

| Week | Date | Class Topics | Required Readings | Assignments |
|---|---|---|---|---|
| 15. Research Proposal Presentation | 12/2 - 12/6 | 12/2:Final Presentation<br><br>12/4:Final Presentation | 12/2: Final Presentation<br><br>12/4: Final Presentation | 12/2: Upload Final Presentation Slides<br><br>12/4: Upload Final Presentation Slides |
| 16. Class re-cap and Send-off | 12/9 - 12/13 | 12/9:Final Class meeting: class Recap | 12/9: N/A | 12/9 |

*APCh: Research Methods in information

*GHJCh: Research Methods and Data Analysis in the Health Science

*KRCh: Cheminformatics, QSAR, and Machine Learning Algorithms for Novel Drug Development

*Reading materials on Canvas: Any readings such as academic paper will be uploaded to Canvas Modules

## Pre-Requisites for the Course

Prerequisite: Informatics 310M.

## Learning Outcomes

At the conclusion of this course, students will be able to:

- Identify, assess, and synthesize research opportunities where informatics can significantly enhance health outcomes
- Develop the skills to design robust research projects that integrate comprehensive data analysis, addressing real-world challenges in health informatics

- Conduct literature reviews by finding, appraising, and synthesizing research to discover meaningful research questions.

- Craft research proposals with clear objectives and methodologies, and communicate your research effectively to diverse audiences.

## Grading Policy

As I hope you can see, flexibility is built into the assignments to support your success in this course. If you miss a discussion question or don't do as well on a quiz as you'd like, your grade will not be impacted significantly. Consequently, the final grades are firm, and no additional curve is available.

Grade breakdown for class

| Grade | Cutoff |
|---|---|
| A | 94% |
| A- | 90% |
| B+ | 87% |
| B | 84% |
| B- | 80% |
| C+ | 77% |
| C | 74% |
| C- | 70% |
| D+ | 67% |
| D | 64% |
| D- | 60% |
| F | <60% |

**Academic Integrity Expectations**
Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can include a written warning, probation, deferred suspension or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: http://deanofstudents.utexas.edu/conduct.

**Plagiarism is taken very seriously at UT** and is subject to academic disciplinary action, including failure of the course**.** To learn more about what plagiarism is and how to avoid it, see

the **Avoiding Plagiarism tutorial** developed by the UT Libraries in partnership with the Writing Flag program and Student Judicial Services.

## Overview of all Major Course Requirements and Assignments

The following table represents how you will demonstrate your learning and how we will assess the degree to which you have done so.

Assessment Overview

| Assignments | Points Possible | Percent of Total Grade |
|---|---|---|
| 1. Attendance and Participation | | 20% |
| 2. Wednesday response(reading discussion & CASP Checklist) | | 30% |
| 3.1 Presentation: Research Proposal | | 10% |
| 3.2 Presentation: Research Statement | | 10% |
| 3.3 Presentation Peer Review | | 5% |
| 4.1 Research Proposal Topic | | 5% |
| 4.2 Research Statement | | 5% |
| 4.3 Research Plan | | 5% |
| 4.4 Final Presentation | | 10% |

## Required Course Materials

**Research methods in information**
**ISBN:** 9781783300235
**Authors:** Pickard, Alison Jane
**Publisher:** London : Facet, 2013
**Publication Date:** 2013
**Edition:** Second edition.
Available through UT Library:

https://search.lib.utexas.edu/permalink/01UTAU_INST/k6kdll/alma991058396393706011

**Introduction to research methods and data analysis in the health sciences / Gareth Hagger-Johnson.**

**ISBN:** 1-317-67441-3
**Authors:** Hagger-Johnson, Gareth
**Publisher:** Abingdon, Oxon ; New York : Routledge, 2014.
**Publication Date:** 2014
**Edition:** 1st ed
Available through UT Library:
https://search.lib.utexas.edu/permalink/01UTAU_INST/be14ds/alma991058256100306011

## Final Exam Date and Time

The Final Exam Schedule is available here. This course does not have a final exam and instead students should focus on on their research proposal project.

## Class Canvas Site

https://utexas.instructure.com/courses/1395133

## Notice of Academic Accommodations from Disability and Access (D&A)

**Accessible/Compliant Statement:**

If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability and Access (D&A). You may refer to D&A's website for contact and more information: http://community.utexas.edu/disability/. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations.

**Accessible, Inclusive, and Compliant Statement:**

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability and Access (D&A). Please refer to D&A's website for contact and more information: http://community.utexas.edu/disability/. If you are already registered with D&A , please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

# Counseling and Mental Health Center (CMHC)

Students who are struggling for any reason and who believe that it might impact their performance in the course are urged to reach out to Bryce Moffett if they feel comfortable. This will allow her to provide any resources or accommodations that she can. If immediate mental health assistance is needed, call the Counseling and Mental Health Center (CMHC) at 512-471-3515 or you may also contact Bryce Moffett, LCSW (iSchool CARE counselor) at 512-232-4449. Bryce's office is located in FAC18S and she holds drop in Office Hours on Wednesday from 2-3pm. For urgent mental health concerns, please contact the CMHC 24/7 Crisis Line at 512-471-2255.

# Important Safety Information

**Carrying of Handguns on Campus**
Students in this class should be aware of the following university policies related to Texas' Open Carry Law:

- Students in this class who hold a license to carry are asked to review the university policy regarding campus carry.
- Individuals who hold a license to carry are eligible to carry a concealed handgun on campus, including in most outdoor areas, buildings and spaces that are accessible to the public, and in classrooms.
- It is the responsibility of concealed-carry license holders to carry their handguns on or about their person at all times while on campus. Open carry is NOT permitted, meaning that a license holder may not carry a partially or wholly visible handgun on campus premises or on any university driveway, street, sidewalk or walkway, parking lot, parking garage, or other parking area.

# University Policies and Resources for Students Canvas Page

This Canvas page is a supplement to all UT syllabi and contains University policies and resources that you can refer to as you engage with and navigate your courses and the university.

# Additional University Resources

**Additional University Resources and Supports for Students**

*BeVocal*
BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus, go to: https://wellnessnetwork.utexas.edu/BeVocal.

*Wellbeing Resources*
Longhorn Wellness Center resources for self-care
Virtual Mindfulness and Stress Reduction Activities

*Undergraduate Writing Center*: http://uwc.utexas.edu/

*UT Libraries*: http://www.lib.utexas.edu/