Course Syllabus 631: Experiment Design and Analysis Fall 2021

Course Overview and Prerequisites

This course introduces experiment design for laboratory and field experiments. We will discuss the logic of experimentation, and the ways in which experimentation has been -- and could be -- used to investigate social and technological phenomena. Students will learn how to design experiments and analyze experimental data.

Students should have completed at least one undergraduate statistics class at the level of Stats 250.

Instructor and Course Assistants

- Instructor: Yan Chen - yanchen@umich.edu
- Course Assistant: Alex Mcleod - mcleodal@umich.edu
- Graduate Student Instructor: Zihan Wi - ziwu@umich.edu
- Instructional Aide: Madhavan Somanathan - madhavso@umich.edu

Communication Expectations

Contacting instructor and course assistants:
Course channel in Slack (preferred) - siads631_fa21_001 (12-24 hour response time)
Email - see above (24-48 hour response time)

Textbooks

1. **Required:** Running randomized evaluations : a practical guide / Rachel Glennerster and Kudzai Takavarasha. See the book's website for purchasing options. This book is also available through the University of Michigan Library (restricted to one concurrent user). This book is at the right technical level for our class.
2. **Optional:** Field Experiments: Design, Analysis, and Interpretation /Alan S. Gerber and Donald P. Green. See the book's website for additional resources. **Note:** This is a technically more difficult and more precise book. It is listed here for those who would like to learn the material in greater depth.

Technology Requirements (unique to this course)

None

Accessibility

Screen reader configuration for Jupyter Notebook Content

Learning Outcomes

1. Use experiment as a method for causal inference
2. When designing experiments, know when to use blocking versus clustering for random assignment and subsequent data analysis
3. When designing an experiment, know basis power calculation
4. When implementing an experiment, know how to handle spillovers and non-compliance; know how to correct for multiple testing
5. Develop awareness of the areas of applications for laboratory and field experiments -- experiments as measurement of individual preferences, as policy interventions, as evaluation method

Course Schedule

This course begins on **Monday October 25, 2021** and ends on **Sunday November 21, 2021**.

Weekly **MobLab Activities** will be due on **Sundays at 11:59 pm** (time zone = Ann Arbor, Michigan - Eastern Time).

Weekly **Quizzes** and **Programming Assignments** will be due on **Sundays at 11:59 pm** (time zone = Ann Arbor, Michigan - Eastern Time).

Schedule of Weekly Office Hours via Zoom (time zone = Ann Arbor, Michigan - Eastern Time):

- **Yan Chen:** Wednesday 3:30 pm - 4:30 pm
- **Alex McLeod:** Friday 9:00 am - 10:00 am
- **Zihan Wu:** Saturday evening 9:00 pm - 10:00 pm
- **Madhavan Somanathan:** Sunday 11:00 am - 12:00pm

Assignments and Percentage of Final Grade

Course Assignment	Percentage of Final Grade
Week 1 Activity - MobLab	2%
Week 1 Quiz	10%
Week 1 Assignment	13%
Week 2 Activity - MobLab	2%
Week 2 Quiz	10%
Week 2 Assignment	13%
Week 3 Activity - MobLab	2%
Week 3 Quiz	10%
Week 3 Assignment	13%
Week 4 Activity - MobLab	2%
Week 4 Quiz	10%
Week 4 Assignment	13%
	100%

Note: All assignments are required to earn credit for this course.

Letter Grades, Course Grades, and Late Submission Policy

Refer to the Grades and Grading Policies section of the UMSI Student Handbook (access to Student Orientation course required)

The course grade scale is as follows:

Letter Grade	Percentage
A	[95 - 100]
A-	[90-95)
B+	[85-90)
B	[80-85)
B-	[75-80)
C+	[70-75)
C	[65-70)
C-	[60-65)
D+	[55-60)
D	[50-55)
D-	[45-50)
E	Below 45

For this course, the late-submission penalty is a 15% daily-recurring reduction in grade for the first three days after the submission deadline. You will receive a zero (0) if your assignment is turned in four or more days late.

Academic Integrity / Code of Conduct

Refer to the Academic and Professional Integrity section of the UMSI Student Handbook (access to Student Orientation course required).

While we offer a number of discussion channels to support your work, if you are stuck **you may not share or receive complete solutions to the assignments**. We also encourage you to support your classmates, but again, without sharing completed code. (Pointing to resources, describing ideas in pseudo-code, etc. is fine.)

Accommodations

Refer to the Accommodations for Students with Disabilities section of the UMSI Student Handbook.

Use the Student Application Form in Accommodate to begin the process of working with the University's Office of Services for Students with Disabilities.

Help Desk(s): How to get help

- Degree program questions or general help - umsimadshelp@umich.edu

- Coursera's Technical Support (24/7) - https://learner.coursera.help/

Library Access

Refer to the U-M Library's information sheet on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's Resources for Stress and Mental Health website for a listing of resources for students.

Student Services

Refer to the Introduction to UMSI Student Life section of the UMSI Student Handbook (access to the Student Orientation course required).