MGT 7609 Syllabus

Observational Studies in IS, Section A, 1.5 Credits

Fall 2026

Instructor Information

Instructor: Dr. Ye Liu

Email: yeliu@gatech.edu

General Course Information

Description

This PhD seminar focuses on empirical methods applied to observational data. The course covers two primary streams of methods. The first stream focuses on causal inference approaches that leverage exogenous variation in observational (as opposed to experimental) settings, including matching, instrumental variables, difference-in-differences, regression discontinuity, synthetic control, etc. The second stream examines structural models, with an emphasis on the full pipeline from model formulation to simulation, estimation, and identification, including static discrete choice models, latent class models, and dynamic discrete choice models, etc. Across both streams, the course will also introduce recent developments in the field, particularly the integration of machine learning techniques into econometric frameworks.

For each topic, we will study both methodological papers and application papers, with a focus on work published in top IS journals. Each class will center on a single topic and will combine lecture with discussion.

Course Learning Outcomes

Upon successful completion of this course, you should be able to

- Understand the underlying assumptions, strengths, and limitations of each method
- Be able to read and evaluate academic papers independently
- Identify research opportunities applying these methods in observational data

Required Course Materials

There is no required textbook for this course. All required readings and supplementary materials will be made available on Canvas.

Grading Policy

Grades will be assigned on the following basis

- In-class presentations, discussions, and participation 20%
- Individual Assignments (6; worth 5% each) 30%
- Reproducing results of a published economics study 25%
- Research Proposal and Presentation 25%

The conversion of Percentage Scores to Letter Grades is expected to be as follows:
Rounding: Final percentage points will be rounded to the nearest integer.
For example, 89.6% = 90% while 89.4% = 89%.
A = 89.5% – 100.0% (above 90% with rounding)
B = 79.5% – 89.4% (80-89% with rounding)
C = 69.5% – 79.4% (70-79% with rounding)
D = 59.5% – 69.4% (60-69% with rounding)
F = 0% – 59.4% (0-59% with rounding)

Description of Graded Components

In-class presentations, discussions, and participation (20%)

Each student will be assigned one to two papers for presentation during the semester (typically one per assigned session). Regardless of presentation assignments, all students are expected to read all assigned papers prior to class. Students responsible for presenting should provide a clear and structured summary of the paper, including the research question, data, methods, and key findings, using either slides or a written document. Active participation in class discussions is expected from all students.

Individual assignments (30%)

Although many statistical and machine learning packages are readily available, a deeper understanding of a method's strengths and limitations is best achieved by implementing it from scratch and evaluating its performance using simulated data with known parameter values. In this course, students will complete six individual assignments designed to reinforce these skills. Through these assignments, students will practice simulating data, implementing methods independently, and evaluating different methods.

Reproducing results of a published economics study (25%)

This is an exercise to help you get as close as possible to details about a paper, from the data and the models that are used to generate the results that are published. Some papers are based on public data, and many economics journals require authors to post data and estimation commands associated with their papers (such as AER). For this exercise, you can choose any empirical paper that were published in ISR, MISQ, AER or another journal—as long as it relates to IT, broadly defined—and use the data and estimation commands provided by the authors to (1) generate the tables or results reported in the paper; and (2) slightly revise the model (e.g., more controls; different model specification) or sample (e.g., if a paper uses data from a public survey in 2010, what happens if you replicate that using the same survey results from 2015) to check its results. Alternatively, you can also conduct a "replication" exercise for papers that are published in journals that do not require authors to share data. For example, you can gather data from crowdfunding platforms (Kickstarter, kiva, etc.) and estimate the models reported in a given paper and compare the results.

Research proposal and presentation (25%)

Each student must produce one proposal for a conference-quality (or higher) paper by the end of the semester. Each student will formulate 3-4 research questions that are suitable for an IS-Econ type of analysis, and then, they will focus on one of them and develop that into a more complete research proposal.1 Students will also be required to present their research paper to the class in the last session. Instructor's evaluation of these papers will focus on the significance, clarity and potential impact of the research topic, justifications for the research design, coherence and logic of the preliminary hypotheses (for empirical papers). If you already have access to research data, preliminary analyses will be helpful as well, though not required.

Required sections of the proposal:

- Research question
- A "pitch" as to why readers should care
- A succinct but useful (i.e., relatively comprehensive) review of related literature
- Logic / hypotheses development
- Expected data & access to data: what your data will look like (rows / columns)
- Models that you plan to estimate on those data
- Expected challenges & mitigation plans
- Expected limitations (i.e. challenges that you cannot overcome within the scope of this paper)

Course Policies

Attendance and/or Participation

Students are expected to fully participate in the class. If you must be absent for valid reasons, such as an emergency, you must notify the instructor as early as possible. Examples of these valid reasons include participation in official Institute activities such as an athletic event as a member of the team or staff or representing the Institute as part at a competition or conference, or a mandatory military deployment. Absences for any sincerely held religious belief, observance, or practice will be accommodated where reasonable. If you miss points for some activity on a given day, it is up to you to not to miss other opportunities to earn points.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Collaboration, Group Work, and Use of Generative AI

You are encouraged to discuss assignments, presentations, and course materials with your peers. However, all work that you submit must be written independently and reflect your own understanding. The use of generative AI tools (e.g., ChatGPT) is permitted (and encouraged) to support your work on assignments. However, you are expected to critically evaluate and verify any AI-generated content, and you must be able to clearly understand, explain, and defend all material included in your submissions.

Campus Resources for Students

Undergraduate Student Academic Success Resources:

A list of resources for undergraduate students' academic success and information about advising can be found at Success at Tech

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.

Graduate Student Academic and Professional Success Resources:

A list of resources for graduate students is given on the Office of Graduate and Postdoctoral Education website. Specific information for current graduate students includes

- Academic Resources such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- Student Resources such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- Professional Development *such as the programming from the Career Center and other professional development resources and events"*

Student Well-Being:

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being (student-resource-guide (gatech.edu).