

Capstone: Advanced Research Projects in Quantitative Analysis

**2022-2023**

**CAP-GP 3148**

**Syllabus**

# Instructors Information

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# Course Information

* Course Dates (Fall): 9/12/2020 - 12/12/2020
* Class Meeting Times:
	+ Every Monday, 6:45 pm – 8:25 pm
	+ October 11, Tuesday, 6:45 pm – 8:25 pm (No class on October 10)
* Class Location (Fall): In-person at Kimmel Room 803 for the first three weeks (September 12, September 19 and September 26), and Zoom in subsequent weeks through the end of the semester. (zoom link available on Brightspace site) In order to facilitate discussions, please have your camera on.

# Course Description

In architecture, the capstone is the crowning piece of an arch, the center stone that holds the arch together, giving it shape and strength. NYU Wagner's Capstone program plays a similar role, by integrating and enhancing your learning in several different arenas. You’ll quickly become familiar with an issue or content area. You’ll hone process skills, like teamwork and project management. And you’ll effectively gather, analyze, and present data. Capstone requires you to interweave your learning in all these areas—and to do so in real time, in an unpredictable, complex, real-world environment.

# Learning Objectives

* *Content.* Students should be able to:
	+ Understand the policy context surrounding their research question;
	+ Utilize relevant (specialized) vocabulary;
	+ Draw on previous research related to their project;
	+ Connect their project with previous coursework in the broader program as well as their specialization.
* *Process.* Working as a team, you must be flexible and resilient. You must be able to adapt to unexpected developments, work on a team with competing demands and opinions, and accept uncertainty and ambiguity. You are expected to work through difficulties as a team, but you must also know when to consult with your capstone instructor.
	+ Project Management – Students should be able to:
		- Frame and refine the research question;
		- Develop a schedule with the instructor, including timeline and deliverables;
		- Develop an internal project work plan;
		- Meet deadlines and monitor their progress against the work plan;
		- Revise the work plan as necessary.
	+ Team Management – Students should demonstrate the ability to:
		- Diagnose and attend to interpersonal dynamics;
		- Define roles and useful division of labor;
		- Manage assignments and accountability;
		- Advocate points of view and negotiate differences of opinion;
		- Solicit and offer feedback;
		- Appreciate and learn from cultural and other differences.
* *Research.* Students should demonstrate the ability to:
	+ Identify and synthesize existing research relevant to the project;
	+ Identify and implement appropriate data collection methods;
	+ Identify and implement appropriate data analysis procedures;
	+ Determine findings;
	+ Develop useful and practical recommendations and/or tools and resources based on findings.
* *Communication* – Students should be able to:
	+ Synthesize and summarize large amounts of data and information;
	+ Prepare clear and well-argued written deliverables, as well as verbal presentations, tailored to a policy audience and non-technical audience.

# Course Requirements

You will be working as part of a team. Based on your subject-matter preferences and skill sets, the instructors will assign teams. Each team will likely consist of three to five people, depending on the enrollment.

Class time will include a variety of activities. Given your busy schedules, the instructors will give teams – once formed – plenty of time to speak with each other on a weekly basis. Other activities will involve instructor presentations, team presentations, and discussion of required readings.

Other course requirements include:

* Enrollment during both semesters;
* Attendance and participation in class activities and team meetings (in and out of class);
* Completion of assignments (see below);
* Participation in project work and presentations.

We will not necessarily meet every week, especially in spring semester, when you may instead be meeting with your teams. Nonetheless, please do not schedule anything on Mondays from 6:45-8:25 pm for the duration of the academic year.

# Course Deliverables

The course deliverables are designed to keep the teams on track for successful completion of the entire project by the end of the academic year. Written deliverables will generally be due at the start of class, unless specified otherwise. They are expected to be coherent and free of grammatical errors. In terms of formatting, please use a 12-point font in Times New Roman, with 1-inch margins on all sides.

Presentations are expected to be professional and make use of a presentation program. Note that the time expectation of each presentation could change based on the number of teams.

## Fall Semester

* *Team Charter.* A brief presentation (5 minutes) accompanied by a one- or two-page document, which:
	+ Outlines specific tools/guidelines for team communication;
		- What tool(s) will be used for team communication
		- What is the expected timeline for responses
		- Who will be the primary contact between team and faculty
	+ Outlines strategies for conflict resolution.
* *Initial Project Status Report.* A one-page document that:
	+ Describes the status of your project
	+ Discuss the progress you’ve made toward defining a research question
	+ Any results from searching for relevant data and literature
	+ What you remain uncertain about.
* *Project Idea Presentation.* A short presentation (15 minutes) on your team’s policy research question. A memo (three pages) will accompany the presentation. The presentation will:
	+ Give the policy context;
	+ Clearly state the research;
	+ Discuss possible data sources and measurement strategies;
		- Discuss how the team will access the data (if not publicly available)
	+ Discuss potential contribution or significance of the project.
* *Work Plan.* A one-page document that:
	+ Identifies team members who will take primary responsibility for tasks, such as the literature review, data cleaning and preliminary analyses, drafting of sections, etc. (Consider and discuss your existing skills and individual learning objectives.)
	+ Provides a timeline for the project and deliverables, including internal deadlines.
* *Research Prospectus.* A presentation of 15 minutes on a detailed research plan for your team. A written memo (five pages) should be submitted by midnight after class to allow the teams to incorporate feedback from instructors and peers. Please try not to include multi-media unless imperatively necessary.
	+ Reference components of the presentation:
		- Research question and policy context:

Why is the question important? Do you have a theory? What is your hypothesis?

* + - Literature review:

How will your research contribute to or challenge what we already know?

* + - Research design:

What are the empirical challenges that your project faces, and how will you address them?

* + - Data and measurement:

Describe the proposed data (including access and availability) and how you plan to measure quantities of interest;

* + - Analysis:

What empirical methods are appropriate?

* + - Timeline:

What is your work plan for implementing the research?

* *Fall Semester Progress Report.* A short presentation (15 minutes) on your team’s research progress. A report of four pages should accompany the presentation. The presentation and memo should:
	+ Summarize progress in each task area;
	+ Describe findings from initial analyses;
	+ Discuss challenges faced so far.

## Spring Semester

* *Interim Report.* A presentation (15 minutes) describing your team’s progress along with a written report of 8-10 pages:
	+ Presentation should loosely follow the outline of: research question/policy context, theory/literature review, research design/data/methods, and findings. This will serve as practice for the final presentation.
	+ Presentation of findings so far, with tables and graphs;
	+ Future steps.
* *Draft paper.* A draft of your final paper for detailed feedback.
* *Final Report.* A full-length presentation (20 minutes) and a final report (usually around 20 pages).

Learning Assessment Table

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| **Course Learning Objective** | **Corresponding Assignment** |
| Understand the policy and/or management context for their project | Interim and final products |
| Be familiar with relevant specialized vocabularies | Interim and final products |
| Draw on critical research related to their content area | Interim and final products |
| Develop an internal project workplan | Team workplan |
| Meet deadlines and monitor their progress against the team workplan | Team workplan |
| Advocate points of view and negotiate differences of opinion | Self and team peer evaluations |
| Appreciate and learn from cultural and other differences | Self and team peer evaluations |
| Identify and synthesize existing research relevant to the project | Interim and final products |
| Identify and implement appropriate quantitative and/or qualitative data gathering methods | Interim and final products |

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| --- | --- |
| **Course Learning Objective** | **Corresponding Assignment** |
| Identify and implement appropriate data analysis procedures | Interim and final products |
| Determine findings | Interim and final products |
| Develop useful recommendations and/or tools and resources based on findings | Interim and final products |
| Synthesize and summarize large amounts of data and information | Interim and final products |
| Prepare clear and well-argued written deliverables tailored to the research question | Interim and final products |
| Prepare clear and well-argued verbal presentations tailored to the research question | Interim and final presentations |

# Evaluation and Grading

Students will receive 1.5 credits for the fall semester and 1.5 for the spring semester. At the end of the first semester, students will receive a grade of “IP” (Incomplete Pass) to reflect the “work in progress” nature of the yearlong project. The instructors will assign final grades at the end of the second semester.

Grades will be allotted to individuals, not to the team as a whole. That is, team members may receive different grades if the instructors believe that is warranted. We will make this judgment based both on our assessment of students’ contributions and learning, and on assessments you give each other as part of the evaluation process after each semester.

Students will be graded on both the products they deliver and evidence of progressive learning throughout the course, as described by the learning objectives:

* Deliverables and assignments (60%): work products identified in the milestones as well as any interim deliverables assigned by the instructors.
	+ Team charter, presentation and memo (3%)
	+ Initial Project Status Report (3%)
	+ Project idea, presentation and memo (5%)
	+ Work plan, memo (3%)
	+ Research Prospectus, presentation and memo (7%)
	+ Fall Semester Progress report, presentation and memo (12%)
	+ Interim report, presentation and written report (12%)
	+ Draft paper and final report, presentation and written report (15%)
* Individual learning and contribution (40%): evidence of the individual student’s learning during the course through participation in the team’s work and class activities, their ability to act on peer and faculty feedback; individual and team preparation for and performance at presentations; and end-of-semester faculty, peer and self-evaluations.
	+ Classroom attendance and participation (10%)
	+ Year-end peer evaluation (15%)
	+ Faculty evaluation (15%)
* Late assignment policy: written assignments and due at the start of the class. For each additional day that the assignment is submitted, the instructor will deduct 10% of the grade. After five days, the assignment is considered incomplete and will not receive a grade.
	+ If a team is struggling to meet deadlines and/or there are extenuating circumstances, the team should reach out to the instructor(s) as soon as possible.
* Readings:
	+ Reading is one of the most important channels of learning both in and outside the classroom. Required and optional (additional) readings are listed by each week in the course schedule below.
	+ Textbooks: There is no “official” textbook for this course. However, the classic *Mostly Harmless Econometrics* by Angrist and Pischke (2009) should cover most of the design, technical, and even the writing up aspects of a quantitative project.

# Class Schedule

Classes will generally meet on Mondays from 6:45-8:25 pm throughout the academic year, but note that there is no class on October 10 as it is Fall Break. October 11 will observe the Monday schedule, so class will take place on October 11, at the same time.

The weekly schedule below is tentative and subject to change. Specific requirements for each class will be posted on NYU Classes and emailed to you with enough lead time to prepare. NYU Brightspace site takes precedence over what is written here.

**Fall Semester**

## **September 12th**

* Course introduction
* Self introduction and initial discussion
* After class:
	+ Announce team assignments
	+ Establish communication channel(s) among team members
* Optional reading: Dhawan, E., & Chamorro-Premuzic, T. (2018). How to collaborate effectively if your team is remote. Harvard business review.

### September 19th

* Developing research question(s)
* In-class assignment: Identify two or three candidate questions of interest. Describe them in a few written sentences and prepare to share them with the class.
* Required Reading:
	+ Angrist and Pischke (2009): *Mostly Harmless Econometrics*, Chapter 1
	+ Cunningham, S. (2021). Causal inference: the Mixtape, Chapter 1
* Additional Reading:
	+ Morgan and Winship (2007): *Counterfactuals and Causal Inference*, Chapter 1
	+ Brady (2013): “Causation and Explanation in Social Science”
	+ Rubin (2008): “For Objective Causal Inference, Design Trumps Analysis”
* After class: Team building

### September 26th

* Discussion of what makes a good research project
* Finalizing research topics
* Required Readings:
	+ Anzia, S. F., & Berry, C. R. (2011). The Jackie (and Jill) Robinson effect: why do congresswomen outperform congressmen?
	+ Greenstone, M., & Gallagher, J. (2008). Does hazardous waste matter? Evidence from the housing market and the superfund program.
* Optional readings:
	+ Chattopadhyay and Duflo (2004): “Women as Policy Makers: Evidence from a Randomized Policy Experiment in India”

### Assignment due: Team Charter

**October 3rd**

* Quasi-experimental Methods I (differences-in-differences)
* Required Readings:
	+ Cunningham, S. (2021). Causal inference: the Mixtape, Chapter 9
	+ Angrist and Pischke (2009): *Mostly Harmless Econometrics,* Chapter 5
	+ Simon, K., Soni, A., & Cawley, J. (2017). The impact of health insurance on preventive care and health behaviors: evidence from the first two years of the ACA Medicaid expansions.

### Assignment due: Initial Project Status Report

**October 11th (meeting on Tuesday due to the legislative day)**

* Quasi-experimental Methods II (regression discontinuity and instrumental variables)
* Required Readings:
	+ Angrist and Pischke (2009): *Mostly Harmless Econometrics,* Chapter 6
	+ Cunningham, S. (2021). Causal inference: the Mixtape, Chapter 7
	+ Chen, Y., Ebenstein, A., Greenstone, M., & Li, H. (2013). Evidence on the impact of sustained exposure to air pollution on life expectancy from China’s Huai River policy.
	+ Kearney and Levine (2015): “Media Influences on Social Outcomes: The Impact of MTV's 16 and Pregnant on Teen Childbearing”
* Optional Readings:
	+ Chapter 4, *Mostly Harmless Econometrics*
	+ Ananat (2011): “The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality”
	+ Cattaneo et al. (2019): “A Practical Introduction to Regression Discontinuity Designs: Foundations”

### October 17th

* Literature review
* Required readings:
	+ Paré & Kitsiou, Handbook of eHealth Evaluation: An Evidence-based Approach, Chapter 9 (https://[www.ncbi.nlm.nih.gov/books/NBK481583/)](http://www.ncbi.nlm.nih.gov/books/NBK481583/%29)
* Optional readings:
	+ Booth, A., Papaioannou, D. & Sutton, A., (2016). Systematic Approaches to a Successful Literature Review.

**October 24th**

* **Assignment due: Project idea presentations and memo**

**October 31st**

* **Assignment due: Work Plan**

**November 7th**

* Team meetings
* Technical skills session (if necessary)

### November 14th

* Team meetings

### November 21th

* Team meetings

### November 28th

* **Research Prospectus presentation**
* Optional reading:
	+ Anderson, C., & Duarte, N. (2013). How to give a killer presentation. Harvard business review, 91(6), 121-125.

### Assignment due midnight after class: Research Prospectus memo December 5th

* Team meetings

### December 12th

* **Presentation: Fall Semester Progress Report** (the last class of Fall)

### December 19th

* No class

### Assignment due 11:59pm: Fall Semester Progress Report

**Spring Semester** *(subject to change)*

In the Spring semester, teams are free to use the scheduled class time to have internal discussions. You are not required to meet with the instructor every week, but in general, the instructor expects to hear from each team in terms of research progress at least once every two weeks. That is, each team should schedule a meeting with the instructor during class time at least once every two weeks.

January 23rd

* Team updates January 30th
* Team meetings February 6th
* Team meetings February 13th
* Team Meetings February 20th
* No class due to the President’s day

February 27th

* Team meetings March 6th

### Assignment due: Interim Report Presentations

March 13th

* Spring Break (no class) March 20th
* Team meetings March 27th
* Team meetings April 3rd
* Team meetings April 10th

### Assignment due: Draft paper

April 17th

* Team meetings April 24th
* Final Report Presentations

May 1st

* Final Report Presentations May 8th
* Presentations to faculty

May 11th (Tuesday)

* Capstone Expo

# Resources

Throughout the year, you may find yourself in need of help with data management, data analysis (Stata, R, SPSS, etc.), or GIS. As a student, you have access to the NYU Data Service Studio, located on the 6th floor of the Bobst Library.1 Consultation is available remotely via e-mail (data.service@nyu.edu), or by phone (212-998-3434).

Also, the [NYU Wagner Library page](http://guides.nyu.edu/wagner) ([http://guides.nyu.edu/wagner)](http://guides.nyu.edu/wagner%29) has a list of resources that Kathryn Wissel, the Wagner liaison to NYU libraries, has put together that is also particularly helpful for literature reviews.

# Academic Integrity

Academic integrity is a vital component of Wagner and NYU. All students enrolled in this class are required to read and abide by [Wagner’s Academic Code](https://wagner.nyu.edu/portal/students/policies/code). All Wagner students have already read and signed the [Wagner Academic Oath](https://wagner.nyu.edu/portal/students/policies/academic-oath). Plagiarism of any form will not be tolerated and students in this class are expected to report violations to the instructors. If any student in this class is unsure about what is expected of you and how to abide by the academic code, you should consult with the instructors.

# Henry and Lucy Moses Center for Students with Disabilities at NYU

Academic accommodations are available for students with disabilities. Please visit the [Moses](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) [Center for Students with Disabilities (CSD) website](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) and click on the Reasonable Accommodations and How to Register tab or call or email CSD at (212-998-4980 or mosescsd@nyu.edu) for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance.

# NYU’s Calendar Policy on Religious Holidays

[NYU’s Calendar Policy on Religious Holidays](https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. Please notify the instructors in advance of religious holidays that might coincide with exams to schedule mutually acceptable alternatives.

**1** Note that during the Fall term, access to the library will be restricted due to COVID-19.