Applied Economics Analysis Syllabus

2026-01-01

Course

Econ 2020: Applied Economics Analysis

Meeting Times & Location

Monday and Wednesday, 10:30 am - 11:50 am

see Canvas for location

Instructor

Matthew DeHaven

Teaching Assistant

Myles Ellis

TA Office Hours:

Thursdays, 3:00 - 4:00 pm

see Canvas for Zoom link

Course Site

https://matthewdehaven.com/course-applied-economics-analysis-2026-Spring/

Course Description

This course prepares students to conduct independent research by providing the necessary skills in programming and project organization. Topics covered will include version control, integrated development environments (IDEs), programming basics, package environments, functional programming, data visualization, data science, and more. Material will be presented using the programming language R, with some time spent on introductions to Python, Julia, and some basics of HTML. By the end of the course students should feel comfortable in the major programming languages used in economic research and in producing their own work as a replicable, sustainable project.

Learning Goals

- Able to replicate published papers in multiple programming languages
- Write clean, documented, reproducible code
- Apply software tools and best practices to economic research projects

Schedule

The schedule is subject to change as the course progresses.

Click on the icons for links to the lecture slides, class feedback surveys, and assignments.

Table 1: Class and Assignment Schedule

#	Date	Topic	Lecture Slides	Assignments Due	Class Feedback
1	1/21	Intro, Git, & GitHub			
2	1/26	Visual Studio Code		PS1	
3	1/28	GitHub Projects & Branches			
4	2/02	Base R		PS2	
5	2/04	GitHub Copilot			
6	2/09	R Data Wrangling: `tidyverse`		PS3	
7	2/11	R Data Wrangling: `data.table`			
–	2/16	*No Class*			
8	2/18	Replication 1 Presentations		Replication 1	
9	2/23	*Guest:* Data Librarian		PS4	
10	2/25	R Databases and APIs		Proposal	
11	3/02	R Query LLMs		PS5	
12	3/04	R Data Visualization			
13	3/09	R Functional Programming		PS6	
14	3/11	*Guest:* OSCAR High Performance Cluster			
15	3/16	Websites, HTML, CSS		PS7	
16	3/18	Dynamic Documents with `Quarto`			
–	3/23	*No Class*			
–	3/25	*No Class*			
17	3/30	Crash Course: Python		PS8	
18	4/01	NLP with Python			
19	4/06	Crash Course: Julia		PS9	
20	4/08	DSGEs with Julia			
21	4/13	TBD			
22	4/15	Final Presentations		Final Project	
23	4/20	Final Presentations			

#	Date	Topic	Lecture Slides	Assignments Due	Class Feedback
24	4/22	Final Presentations		Replication 2	

We will not use the final exam slot given by the registrar. Please use the time to study for your other finals!

Class Feedback

Each lecture will have an accompanying survey for students to fill out (see the schedule). The survey will ask about comprehension of topics covered in the lecture and will have open ended space for questions. These assignments are graded for completion only and are meant as a way to judge if any material needs to be covered again in more detail. Do not fill these out if you miss a class, as they are meant to reflect participation in the class.

Assignments

Problem Sets

Problem sets will be assigned roughly once per week of material. This will end up close to 10 problem sets for the semester, possibly adjusted if the schedule changes.

Problem sets will begin with examples similar to those seen in class, but will then ask students to extend to a new application, method, or package. This may require some trial-and-error or research online, which is the goal.

Class Projects

A few assignments will be worked on throughout the semester.

Replication 1

Students will be asked to replicate a published economics paper of their choice. The goal is to find a paper with some "replication files" which can be downloaded. Students will inspect the documentation, attempt to run the files, check the output, and see if they can find the data sources.

Final Project

The final project asks the student to take skills learned in the class and apply them to a research project. Some datasets will be provided to work with, or students can choose to use their own. Students are expected to perform some data cleaning, simple analysis, and charting. The last few classes will be set aside for students to present their final projects.

Replication 2

Students will be assigned another student's final project to replicate. This will mirror the first replication assignment, with the goal being to understand the documentation, execute the code, and validate the output.

AI Policy

The use of AI tools (e.g., ChatGPT, Claude, Google Gemini, GitHub Copilot) is permitted for this course. In fact, I will be encouraging you to use these tools to improve your programming and project organization skills.

There may be certain problem sets or in-class exercises where I ask you to avoid using AI, in order to ensure you understand a specific concept.

Grading

Each assignment will be graded out of 100 points.

Table 2: Assignment Weights

Assignment	Weight
Class Feedback	20%
Problem Sets	30%
Replication 1	10%
Final Project	30%
Replication 2	10%

Letter grades will be given according according to the following rubric:

Table 3: Letter Grade Calculation

Letter Grade	Numeric Grade
A	[90, 100]
B	[80, 89)
C	[70, 79)
NP	[0, 69)

Late problem sets will be penalized 10 points per day late. Late class projects will lose full points, given the need to present in class. If you contact me ahead of time explaining why you need an extension, I may be able to accomamodate.

Credit Hours

You are expected to spend 180 hours on this course. You will spend approximately 35 hours on the lectures, 3 hours on each class readings and review (75 hours), 5 hours on each of the 14 assignments (70 hours).

Accessibility and Accommodations Statement

Brown University is committed to full inclusion of all students. Please inform me early in the term if you may require accommodations or modification of any of course procedures. You may speak with me after class, during office hours, or by appointment. If you need accommodations around online learning or in classroom accommodations, please be sure to reach out to Student Accessibility Services (SAS) for their assistance (sas@brown.edu, 401-863-9588). Undergraduates in need of short-term academic advice or support can contact an academic dean in the College by emailing college@brown.edu. Graduate students may contact one of the deans in the Graduate School by emailing graduate_school@brown.edu.

Acknowledgements

Material in this course comes from many locations, but I am especially thankful to the lecturers for this course before me, Michael Neubauer and Shunsuke Tsuda for sharing their materials.

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