

## Eco 491G

### Applied Econometrics Department of Economics University of Kentucky

#### Course Information:

Semester/Term: Spring 2024  
Credit Hours: 3.0 Credits  
Lectures: MW 3:30–4:45 PM, B&E 171  
Course Web Site: <http://gattoweb.uky.edu/Faculty/lamarche/ec491/ec491.html>

#### Instructor Information:

Professor: Dr. Carlos Lamarche  
Email: [clamarche@uky.edu](mailto:clamarche@uky.edu)  
Office phone: (859) 257-3371  
Office hours: MW 4:45–5:45 PM (<https://uky.zoom.us/j/9844152807>) and upon request

#### Course Description:

To provide the student with a solid foundation in the formulation and estimation of economic models, empirical analysis of economic relationships, and forecasting. Emphasizes the utilization of economic models.

#### Prerequisites:

ECO 391, ECO 401, and ECO 402 or equivalent or consent of instructor.

#### Tentative Course Schedule:

Week	Date (week of)	Topic	Reference
1	January 8	Regression Analysis	W2, W3
2	January 15	Introduction to Stata and R	Class notes
3	January 22	Inference	W4
4	January 29	Heteroscedasticity	W 8
5	February 5	Omitted Variable Bias and Error in Variables	W 3, W 9
6	February 12	Instrumental Variables	W 15
7	February 19	Two-Stages Least Squares	W 15
8	February 26	Simultaneous Equation Models	W 16
9	March 4	Midterm Exam	
10	March 18	Introduction to Dynamic Models and Model Selection	S 12
11	March 25	Time Series and Serial Correlation	W 12, S 13
12	April 1	First Difference and Difference-in-Difference Models	W 13, S 6
13	April 8	Fixed and Random Effects Models	W 14
14	April 15	Limited Dependent Variable Models	Class notes
15	April 22	Big Data and Applications of Machine Learning in R	Class notes, G6
16	April 29	Final Exam	

#### Final Exam Information:

Monday 05/01/2024 at 3:30 PM

## Required Materials:

### Textbooks:

Wooldridge, J.M, Introductory Econometrics: A Modern Approach, 6<sup>th</sup> Ed., Cengage Learning, 2015. (W).

### Suggested Textbooks:

Stock, J. and Watson M, Introduction to Econometrics, Pearson, 3<sup>rd</sup> Ed., 2014. (S)

Gareth, J., D. Witten, T. Hastie, and R. Tibshirani, An Introduction to Statistical Learning: with Applications in R, 2013 (G)

### Statistical Software

The course will include discussions of STATA and R software. I will upload materials regularly but I suggest to check online resources too:

1. <http://www.stata.com/links/video-tutorials/>
2. <https://www.statmethods.net/r-tutorial/index.html>

## Student Learning Outcomes:

After completing this course, I expect students to be familiar with estimation and inference. Specifically, I expect the student is be able to: (i) work independently with Stata and/or R, (ii) be familiar with issues that plague introductory data analysis, (iii) independently estimate and test different models, and interpret empirical results.

## Technology Information and Requirements:

### *Technology Requirements*

Minimum technical requirements for UK courses and suggested hardware, software, and internet connections are available at [ITS Student Hardware & Software Guidelines](#).

Share any additional technology requirements, such as required software, and your preferred procedure for resolving technical complaints for each service or software used in the course.

### *Technical Support*

For account help, contact UK's [Information Technology Customer Services online](#), by [email](#), or by phone at 859-218-HELP (4357).

## Class Recording Notification:

The University of Kentucky Student Code of Conduct defines Invasion of Privacy as using electronic or other devices to make a photographic, audio, or video record of any person without their prior knowledge or consent when such a recording is likely to cause injury or distress.

Meetings of this course may be recorded. All video and audio recordings of lecturers and class meetings, provided by the instructors, are for educational use by students in this class only. They are available only through the Canvas shell for this course and are not to be copied, shared, or redistributed.

As addressed in the Student Code of Conduct, students are expected to follow appropriate university policies and maintain the security of linkblue accounts used to access recorded class materials. Recordings may not be reproduced, shared with those not enrolled in the class, or uploaded to other online environments.

If the instructor or a University of Kentucky office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use. In anticipation of such cases, students may be asked to complete an “authorization of use” form by a faculty member.

Video and audio recordings by students are not permitted during the class unless the student has received prior permission from the instructor. Any sharing, distribution, and or uploading of these recordings outside of the parameters of the class is prohibited. Students with specific recording accommodations approved by the Disability Resource Center should present their official documentation to the instructor.

All content for this course, including handouts, assignments, and lectures are the intellectual property of the instructors and cannot be reproduced or sold without prior permission from the instructors. A student may use the material for reasonable educational and professional purposes extending beyond this class, such as studying for a comprehensive or qualifying examination in a degree program, preparing for a professional or certification examination, or to assist in fulfilling responsibilities at a job or internship.

**Attendance Policies and Excused Absences:**

It is students’ responsibility to attend class. Students however need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

For the Fall 2020 semester, it is considered as acceptable excuse the situation where (f) the student has been directed to self-quarantine by the University (including its app), a medical professional, public health professional, or government official.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

**Verification of Absences:**

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

**Academic Integrity:**

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else’s work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student’s assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

**Diversity, Equity and Inclusion:**

The University of Kentucky is committed to our core values of diversity and inclusion, mutual respect and human dignity, and a sense of community (Governing Regulations XIV). We acknowledge and respect the seen and unseen diverse identities and experiences of all members of the university community (<https://www.uky.edu/regs/gr14>). These identities include but are not limited to those based on race, ethnicity, gender identity and expressions, ideas and perspectives, religious and cultural beliefs, sexual orientation, national origin, age, ability, and socioeconomic status. We are committed to equity and justice and providing a learning and engaging community in which every member is engaged, heard, and valued.

We strive to rectify and change behavior that is inconsistent with our principles and commitment to diversity, equity, and inclusion. If students encounter such behavior in a course, they are encouraged to speak with the instructor of record and/or the Office of Institutional Equity and Equal Opportunity. Students may also contact a faculty member within the department, program director, the director of undergraduate or graduate studies, the department chair, any college administrator, or the dean. All of these individuals are mandatory reporters under University policies.

**Accommodations due to disability:**

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. Visit the [DRC website](#), [email the DRC](#), contact them by phone at (859) 257-2754, or visit their office on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407.

**Activities and Assignments:****Course Assignments**

Please find below the list of required assignments for the grade:

- 3 or 4 problem sets (total: 20% of the grade),
- Empirical project (20%),
- Midterm exam (30%),
- Final exam (30%)

**Summary Description of Course Assignments**

Problem sets are short empirical projects to practice data analysis and regression analysis.

The empirical project (20% of the grade) can be completed in groups of no more than three students. Students will discuss their ongoing work in class with other students and in individual meetings with the instructor. Students are expected to present the paper during the last week of classes (April 22 and April 24).

## Submission of Assignments

Please submit the solution of problem sets using Canvas.

I expect you to write the answers to the questions in the Problem Sets in Word or another text editor. You will receive the assignment probably 3 weeks before the deadline, so I do not accept late problem set answers.

## Course Grade:

### Grading scale and standardized scores:

The grade distribution is below, however, I reserve the right to curve (standardize) the grades as I see fit.

Grading scale for undergraduates	90 – 100% = A
	80 – 89% = B
	70 – 79% = C
	60 – 69% = D
	Below 60% = E

Grading Scale for graduate students	90 - 100% = A
(no D for Grad Students)	80 – 89% = B
	70 – 79% = C
	Below 70%= E

### Mid-term Grade:

Mid-term grades will be posted in myUK by the deadline established in the [Academic Calendar](#).