Rutgers University
The State University of New Jersey
Department of Economics - CCAS
Spring 2025

Class Information

Course Title: Econometrics
Economics 50:220:322/Sec 92

Instructor: Dr. I-Ming Chiu

Office: ARMITAGE 435
Phone (856) 225 6012

E-mail address: ichiu@camden.rutgers.edu

Zoom Meeting: 6:00-8:50 pm, Wednesday

Class Meeting: ATG 225, **TBA**

Office Hours: 1:30-3:30 pm, Thursday or by appointment

Course Description: Econometrics is a branch of economics. It applies mathematical and statistical methods to explore and quantify the relationships observed in an economy. The econometric methods learned in this class can also be applied in other areas such as finance and various disciplines in social sciences. After a brief review on both mathematical and statistical fundamentals, linear regression model and its various alternatives will be introduced and explained. Students will be able to conduct their own data analysis using econometric techniques after completing this course. The ultimate learning goal is to equip students with analytical ability and pave them the way for exploring modern data science tools, which are covered in Applied Data Mining course (220:422). Please click the link below and read the article titled "The Sexiest Job of 21st Century".
http://www.businessinsider.com/how-much-money-you-earn-in-the-sexiest-job-of-the-21st-century-2016-2

Readings: R. L. Thomas, Modern Econometrics: An Introduction, Longman U.K., 1997. Here is the amazon link:
https://www.amazon.com/Modern-Econometrics-Introduction-Leighton-Thomas/dp/0201876949/ref=sr_1_8?keywords=modern+econometrics+an+introduction&qid=1579190199&s=books&sr=1-8

Rob J Hyndman & George Athanasopoulos, Forecasting: Principles and Practice 3rd edition, Otexts, 2021.

https://otexts.com/fpp3

Rutgers University
The State University of New Jersey
Department of Economics - CCAS
Spring 2025

Other References: Christoph Hanck, et al., Introduction to Econometrics with R, University of Duisburg-Essen, 2020. https://www.econometrics-with-r.org/index.html

Jay L Devore and Kenneth N. Berk, Modern Mathematical Statistics with Applications, 3rd Edition, Springer, 2021.

Alain Zuur, et al., A Beginner's Guide to R, Springer, 2009.

Computing: All the computations will be done using both statistical software **R**. The R software is free for download at http://www.r-project.org. There is an integrated development environment (IDE) for R called RStudio and is also free for download at https://www.rstudio.com/products/rstudio/download/

Notice: you have to install R first before installing RStudio

R Installation: https://www.youtube.com/watch?v=Icawuhf0Yqo (for Mac)
https://www.youtube.com/watch?v=hxj0UG4boGU (for PC)

Class Material: Handouts, readings, data, and homework assignments will be posted on **Canvas** website.

Online Learning: https://www.datacamp.com/ (Learn Data Science online)

Useful Websites: http://www.statmethods.net/ (Computing using R web site)

Data Sources: http://www.federalreserve.gov/econresdata/statisticsdata.htm (the Federal Reserve System)

http://finance.yahoo.com (Yahoo Finance Section)

Spring '25 Calendar: https://camden.rutgers.edu/registrar/catalogs-calendars/2024-2025#spring

Grading: **Contribution to Final Grade**

- Attendance	5%
- DataCamp Courses	10%
- Take-home Problems	25%
- Midterm Exams (2)	40%
- Final Exam	20%
- Participation (extra credit)	5%

Grading Policy: Term grades will be based on the final distribution of the above grading weights.

Exam Preparation: The exam questions will be drawn from three sources: (i) homework assignments, (ii) course lectures, and (iii) reading material.

Class Participation: Class attendance is essential for learning achievement. When missing a class, it would cost you more time to learn on your own. I strongly recommend the following steps for your successful learning: (1) attend every class and take notes; (2) review everything you learn from the class immediately, never put it off; (3) ask questions and participate in class discussions.

Academic conduct: Make up exams will be given **only upon prior notice**. I request prior knowledge of any expected absence from an exam. If this is not feasible, you can document a valid reason for missing the exam. Unexcused absence on any exam will result in a grade of zero. Dishonesty in seeking an excused absence or in the examination process will result in a grade of zero on the exam involved and in university discipline. More detailed information can be found at the following site: https://academicintegrity.rutgers.edu.

Disability Services: Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

https://ods.rutgers.edu/students/documentation-guidelines. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form at https://webapps.rutgers.edu/student-ods/forms/registration.

Here is the link to the Office of Disability Service: https://success.camden.rutgers.edu/disability-services

Rutgers University
The State University of New Jersey
Department of Economics - CCAS
Spring 2025

Course Outline:

Topic 1	Introduction to R (the main software) & SAS (supplemental software)
Laboratory	There are R lab sessions for each learning topic
Topic 2	Review on Probability Theory & Statistical Inference
Topic 3	Simple Linear Regression Model
Midterm Exam 1	Date: TBA in class (parts of Topic 4 will be included)
Topic 4	Linear Algebra, Matrix Operations, and some Calculus
Topic 5	Multiple Linear Regression Model
Topic 6	Diagnostic Checks
Topic 7	Shrinkage Methods: Ridge Regression and Lasso
Midterm Exam 2	Date: TBA in class
Topic 8	Conut Models: Probit, Logit & Poisson Regression
Topic 9	Time Series Analysis I: Decomposition & Smoothing
Topic 10	Time Series Analysis II: Stationarity & ARIMA Model
Additional Topic	Panel Data Models (Fixed vs. Random Effects)
Final Exam (school schedule)	6:00-9:00 pm, Wednesday, May 14/2025