Rutgers University
The State University of New Jersey
Department of Economics - CCAS
Spring 2018

Class Information

Course Title: Econometrics (index#13904)
Economics 50:220:322

Instructor: Dr. I-Ming Chiu

Office: ARMITAGE 328
Phone (856) 225 6012

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

Class Meeting: BSB 336. 9:35-10:55 PM (Tuesday & Thursday)

Office Hours: 2:30-3:30 pm, Tuesday & Thursday or by appointment

Course Description: Econometrics is a branch of economics. It applies mathematical and statistical methods to explore and quantify the relationships between economic, financial and social variables where these relationships are either hypothesized by models or based on observed phenomena. 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 asked to conduct their own data analysis using econometric techniques learned from this course. The ultimate goal of this course is to equip students with analytical ability and pave them the way for exploring modern data mining tools. 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

Textbook (required) Michael Bailey, Real Econometrics, Oxford, 2014.
The above textbook is available for purchase at the University District Bookstore (601 Cooper St., Camden, NJ 08102)

Neeraj R. Hatekar, Principles of Econometrics/An Introduction [Using R], Sage 2010.

R. L. Thomas, Modern Econometrics: An Introduction, Longman U.K., 1997. This second reading is not required but highly recommended. Part of the course material will be drawn from this book. It can be purchased at Amazon.com.

Other References: Jay L Devore and Kenneth N. Berk, Modern Mathematical Statistics with Applications, 2nd Edition, Springer, 2012.

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Takeshi Amemiya, Introduction to Statistics and Econometrics, Harvard University Press, 1994.

Kyle C. Longest, Using Stata for Quantitative Analysis, 2nd Edition, Sage, 2015.

Jared P. Lander, R for Everyone/Advanced Analytics and Graphics, 2nd Edition, Pearson Education Inc., 2017.

Computing: All the computations will be done using both statistical software **Stata** & **R**. Stata is installed on the desktop in our classroom. The virtual implementation of Stata can be found at the following site: https://apps.camden.rutgers.edu/novnc/, where NetID login is required. 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 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 **Sakai** 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)

http://www.bea.gov (Bureau of Economic Analysis)

Spring '18 Calendar: http://registrar.camden.rutgers.edu/academic-calendar-2017-2018

Grading: **Contribution to Final Grade**

- Attendance	5%
- Take-home problems	30%
- Midterm Exam (2)	40%
- Final Exam	25%
- 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: Students with disabilities should contact the Rutgers-Camden Office of Disability Services (ODS). For more information, visit http://learn.camden.rutgers.edu/disability-services. Accommodation will be made in accordance with Rutgers University Policy.

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Course Outline:

Topic 1	Introduction to R and Stata
Laboratory	There are R and Stata lab session that accompanies each learning topic
Topic 2	Probability Theory & Statistical Inference (Review)
Topic 3	Linear Algebra, Matrix Operations and some Calculus
Topic 4	Bivariate Distribution and Conditional Mean Function
1st Midterm Exam	Date: TBA in class
Topic 5	Simple Linear Regression Model
Topic 6	Multiple Linear Regression Model with Complex Regressors
Topic 7	Shrinkage Methods: Ridge Regression and Lasso
Topic 8	Box-Cox Transformations
2nd Midterm Exam	Date: TBA in class
Topic 9	Regression Diagnostics
Topic 10	Binomial (Logit & Probit) and Poisson Regression Model
Topic 11	Time Series Model
Topic 12	Panel Data and Difference-in-Difference Models
Final Exam (school schedule)	8:00~11:00 AM, Thursday, May 03.