Econometrics (22:839:654:30)  Fall 2018

**Meets** Thursdays 1-3:50 P.M., 1 Washington Park 205, Newark Campus

**Professor Robert H. Patrick**  
Finance and Economics Department  
Rutgers Business School - Newark and New Brunswick

**My offices and hours of availability:**  
- Livingston Campus: BBR 5167, Wednesdays 5:30-6:30PM.  
- Newark Campus: 1 Washington Park 1148, Thursdays 11:50A.M-12:50 P.M.  
- and by appointment.

**Phone:** Newark (973) 353-5247. *Communication by e-mail is preferred outside of office hours.*

**e-mail:** [rpatrick@rutgers.edu](mailto:rpatrick@rutgers.edu)  (put E1 at the beginning of the subject line for priority reply)

**web:** [http://www.rci.rutgers.edu/~rpatrick/hp.html](http://www.rci.rutgers.edu/~rpatrick/hp.html)

**Prerequisites:** statistics and probability courses.

The purpose of this course is to develop basic econometric estimation and hypothesis testing tools necessary to analyze and interpret the empirical relevance of financial and other economic data. This requires developing statistical methods for estimation of population parameters and testing hypotheses about them using a sample of data drawn from the population distribution, under various assumptions regarding the true population relationship between the observable economic variables. Topics covered include estimation and hypothesis testing using the classical general linear regression model, combining sample and nonsample information, dummy and interaction variables, multicollinearity, and introductions to large sample theory, nonspherical disturbances, panel data, instrumental variables, systems of equations, and their application. The focus is on the theoretical foundations of econometric analysis and strategies for applying these basic econometric methods.

**Course References**


Handbook of Econometrics Volumes I-VI, North-Holland, various years.

*These books should also be available in the library (some electronically, including the Handbook chapters). Also, previous editions of the references, when available, are posted on Blackboard for this course.

I will provide extensive lecture and background documents through Blackboard. Additionally, the references listed above will serve as your background material for the topics covered. Students are also encouraged to seek out whatever reference material facilitates their learning of each topic (this should be a given for you in all of your courses). For example, the econometric topics in Brooks, Wooldridge, and Griffiths, Hill, and Judge are also covered in Greene, but Greene presents a more concise, mathematical treatment, and additionally offers some relatively advanced econometric methods.

The Handbooks (chapters can be downloaded from the library) provide more detail and references for further research. Students will find Griffiths, Hill, and Judge very useful in furthering their intuitive understanding of building and interpreting econometric models, and especially helpful for those in need of developing their understanding and use of matrix algebra.

Related empirical articles from the economics and finance literature will also be assigned, as well as selected material from the books listed as references above.

Software/Programming Requirement
There are a number of very good econometric software packages available. SAS and STATA (Rutgers has site licenses) and NLOGIT/LIMDEP are three such packages that are widely used. The examples I provide in the course will primarily use these packages. R, which is freeware, is also increasingly popular. There are other possibilities as well, e.g., GAUSS and MATLAB. While no specific software package is required, the use of some computational software (or programming if you prefer) will be required to complete the requirements in this course and it is your responsibility to understand the details of the particular software you use.

Resources
https://www.aeaweb.org/RFE/toc.php?show=complete
http://libguides.rutgers.edu/business
http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
http://www.newstatesman.com/technology/2013/02/excel-most-dangerous-piece-software-world
http://www.economist.com
http://www.FT.com
http://online.wsj.com/public/us
http://equity-research.com
http://lib.stat.cmu.edu
http://www.federalreserve.gov/
http://fisher.osu.edu/fin/fdf/osudata.htm
http://www.rba.co.uk/sources/stats.htm
http://www.bea.gov/
**Anticipated Schedule:**

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<tr>
<th>Date</th>
<th>Topics</th>
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<tr>
<td>Sept.  6</td>
<td>Introduction to Econometrics</td>
</tr>
<tr>
<td>Sept. 13</td>
<td>Classical General Linear Regression Model</td>
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<tr>
<td>Sept. 20</td>
<td>Inference &amp; Testing Hypotheses</td>
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<td>Sept. 27</td>
<td>Combining Sample and Nonsample Information</td>
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<td>Oct.  4</td>
<td>Dummy Variables and Varying Coefficients</td>
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<td>Oct. 11</td>
<td>Specification and Testing, Multicollinearity</td>
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<td>Oct. 18</td>
<td>Exam 1</td>
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<td>Oct. 25</td>
<td>Large Sample Theory</td>
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<td>Nov.  1</td>
<td>Nonspherical Disturbances</td>
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<td>Nov.  8</td>
<td>Instrumental Variables and Systems of Equations</td>
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<td>Nov. 15</td>
<td>Panel Data Models</td>
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<td>Nov. 29</td>
<td>Time-series Econometrics</td>
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<td>Dec.  6</td>
<td>Applications and Course Review</td>
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<tr>
<td>Dec. 13</td>
<td>Final Exam</td>
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Other topics may be added as time permits.

**Evaluation of performance**

Students are responsible for all problems and problem sets assigned, which you may be asked to demonstrate your answer in class. Problem sets will be submitted through Blackboard and select (random) problems graded (the same problems will be graded for everyone in each case). The graded problems, quizzes (no set number or dates, you need to keep up with the material and be prepared every class), and class participation will be 50% of your course grade and the final exam is the other 50%.
Academic Integrity

I do NOT tolerate cheating. Students are responsible for understanding the RU Academic Integrity Policy (http://academicintegrity.rutgers.edu). I will strongly enforce this Policy and pursue all violations. I will screen all written assignments through SafeAssign or Turnitin, plagiarism detection services that compare the work against a large database of past work. Don’t let cheating destroy your hard-earned opportunity to learn.

Support Services


If you are a military veteran or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. http://veterans.rutgers.edu/

If you are in need of mental health services, please use our readily available services.
[Rutgers Counseling and Psychological Services – New Brunswick: http://rhscaps.rutgers.edu/]

If you are in need of physical health services, please use our readily available services.
[Rutgers Health Services – New Brunswick: http://health.rutgers.edu/]

If you are in need of legal services, please use our readily available services: http://rusls.rutgers.edu/

If you are in need of additional academic assistance, please use our readily available services.
[Rutgers University-New Brunswick Learning Center: https://rlc.rutgers.edu/]