ECON 7025, Spring 2016
Empirical Research Methods

Theme: Micro-econometrics with applications in applied fields
Instructor: Pat McCarthy

Course Syllabus, Outline and Guidelines[1]

Class time: Tue & Thurs [3:05 – 4:25] Location: Room 310

Information about the class including the detailed course syllabus, summary notes and assignments are on T-square. Class attendance and participation is important and will account for a significant part of the grade.

Required Reference Textbooks
All required textbooks should be on hold in the library
- *Research Methodology in Applied Economics* (RMAE), Don Ethridge
- *Designing Social Inquiry* (DSI), King, G., Keohane, R., and Verba, S. 1994; e-Book Edition. 2001 (Adobe Reader format)
- *Economical Writing* (EW)*.* Deirdre McCloskey (Second Edition). Waveland Press, Inc., 2000.

Other Reference Materials
Note: Some of the other reference textbooks should be on hold in the library.
- *Microeconometrics: Methods and Applications*, A. Colin Cameron and Pravin K. Trivedi. (on reserve)
- *Microeconometrics Using Stata*, A. Colin Cameron and Pravin K. Trivedi. (on reserve)
- *The Little SAS Book: A Primer* (3rd Edition)*.* Delwiche, L. and Slaughter, S. SAS Institute Inc., 2003. (on reserve)
- *Discrete Choice Methods with Simulation* (2nd Edition). Kenneth Train (1st edition on reserve, 2nd edition requested)

Course description
The objectives of this course are to:
- Provide guidance on how to organize and conduct research in economics. Your courses in econometrics have exposed you to core technical methods and procedures. This course focuses on using this knowledge in finding a good research topic and navigating the process of research from the questions you are interested in, to the literature review, conceptual framework, data, empirical strategy, results, conclusions and targeting a paper for publication;

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[1] Subject to change as the semester progresses if I believe that this will enhance the overall quality of the course and learning.

- Demonstrate how to critique an economic paper and provide guidance that should help you to write a referee report for applied papers. As an economist one of your obligations will be to review papers and write referee reports;
- Cover modern econometric techniques that you may have seen before or may be new to you. These techniques are commonly used in many areas of applied economics. The purpose of going over these techniques is to guide you as you learn how to apply modern econometric techniques to answer real world policy related and subject matter research questions.

The course will focus on issues and techniques. Expected outcomes for this class are: 1) that every student leave this class with a good understanding of the research process from beginning to end; 2) that every student know how to apply some modern econometric techniques to real world problems in applied microeconomics; 3) that every student be able to write a good referee report; and 4) that every student be able to prepare a working paper that, with some improvements, can be suitable as part of a thesis or be considered for possible submission journal in the future; and 5) that every student know how to tailor presentations for job market talks, seminars, and conferences.

Topics to be covered
- Week 1   [*Jan 11-Jan 15*]   Introduction, Planning the Research
- Week 2   [*Jan 18-Jan 22*]   The Research Problem and Objectives
- Week 3   [*Jan 25-Jan 29*]   The Literature Review – Good writing sells!
- Week 4   [*Feb 1-Feb 5*]   The Conceptual Framework
- Week 5   [*Feb 8-Feb 12*]   Methods and Procedures (M&P): Introduction, Data and its link to Methods
- Week 6   [*Feb 15-Feb 19*]   Referee's reports – Assessor (writing) and Assessed (responding)
- Week 7   [*Feb 22-Feb 26*]   M&P: Linear Probability and Binary Outcome Models
- Week 8   [*Feb 29-Mar 4*]   M&P: Multinomial Models, RUM, Discrete Choice
- Week 9   [*Mar 7-Mar 11*]   M&P: IIA, GEV Models
- Week 10   [*Mar 14-Mar 18*]   M&P: Mixed Logit Models
- Week 11   [*Mar 21-Mar 25*]   Spring Break
- Week 12   [*Mar 28-Apr 1*]   Referee's reports
- Week 13   [*Apr 4-Apr 8*]   M&P: Selection Models
- Week 14   [*Apr 11-Apr 15*]   M&P: Structural Models, Flexible form models
- Week 15   [*Apr 18-Apr 22*]   Reporting your research, Presentations
- Week 16   [*Apr 25-Apr 26*]   Presentations

Class Website
Course materials and announcements will be posted on the course website on t-square

Grade Breakdown and Course Requirements

Class Participation　　　　　　10%
Econometrics Assignments　　　15%
Econometric Paper Summaries　15%
Referee Reports　　　　　　　10%
Literature Review　　　　　　10%
Research Presentations　　　　15%
Research Paper　　　　　　　25%

Details

1. <u>Class Participation</u>: This class requires students being active in class discussions. Contributing to the discussion of papers in class is compulsory. Students need to be willing to share their knowledge and experience with the instructor and other students in class. Also, seminar attendance is helpful. Students are encouraged to attend seminars.

2. <u>Two Computer Assignments</u>: There will be two assignments, each is worth 10 points. Late assignments are unacceptable.
　　　　Homework 1, assigned March 3, due at 12:00pm, March 17
　　　　Homework 2, assigned April 7, due at 12:00pm, April 21

3. <u>Econometric Technical Summaries</u>: On most Thursdays during the first 10-12 weeks, students will summarize one of the papers from the general readings for the week. These technical reports are one-two page summaries of the main econometric method(s) used in the paper and the limitations of the method in the paper's context. Everyone has to write this technical report and be prepared to contribute to class discussions. However, the choice of who formally presents the summarized paper in class <u>will be determined a week prior</u> to the class.

In the remaining weeks, two papers will typically be discussed in class and the same format as indicated above still applies but only one technical summary needs to be submitted. The choice of the paper for the technical summary will be announced a week or the Friday before the summary is due. The papers for the technical summaries are indicated on the course syllabus.

4. <u>Literature Review</u>: All students are required to prepare a 3 – 4 page literature review. The topics to write a literature review on will be assigned in class. Students are supposed to prepare a literature review that could easily become a part of a paper aimed for a journal or part of a thesis. The literature review is due at the end of week 5 (**11th of February**).

5. <u>Two Referee Reports</u>: A referee report is a critical evaluation of an article. The referee report will be a randomly assigned working paper from a list number of websites that have papers on applied economics. The referee report should be 3-6 pages. Instructions on how to prepare a referee report will be posted on the course website once the referee report is announced. The referee reports are due February 25th and March 31st.

6. <u>Research Presentations</u>: All students are required to present the results from their term papers. These presentations would take place during the last two weeks of class. Each student will be judged by their colleagues and the instructor. The allocation of point for the presentation will be based on presentation style, delivery of presentation, content of presentation and ability to answer questions based on presentation. Presentations must be good visually, contain at least a motivation, related literature, data description, methodology, results and conclusions. Students will be assigned to presentation times randomly during **weeks 15 and 16**. All students **must be present** at all presentations.

7. <u>Research Paper</u>: The research paper should be 14-20 pages, 12 point Times New Roman font, 1.5 line-spacing, 1" margins on all sides, and justified. The research proposal should have seven sections.

- Introduction.
- Literature Review.
- Conceptual Framework.
- Data and Descriptive Statistics
- Empirical Strategy or Methodology.
- Results and Robustness checks
- Conclusions and Limitations

All students must meet with me to discuss the choice of questions for their research paper, at the latest by the 8th week of the semester. As mentioned above, research papers will be presented during the last two weeks of class and are due **April 26th**.

8. <u>Class Participation</u>, Activities and Attendance: It is important to participate in class activities and attend class regularly. Students who attend class regularly but do not participate in class activities and discussions will not get any of the 10% for participation.

Statistical Software
There is no required statistical software for this class. From prior courses, students may have knowledge of STATA, the software package that many research economists use. You can purchase your own copy of STATA for use on your personal computer or buy a one year license for the software from stata.com. Also, STATA is installed on the computers in the Old CE building computer room on the first floor.

Other software packages that economists use are SAS (often) and SPSS (less so). GT has site licenses each and both are installed on the computers in the Old CE building computer room on the first floor. LIMDEP and EVIEWS are also popular packages among economists, particularly for discrete response modeling (LIMDEP) and time series analysis (EVIEWS).

Honor Code
Students are expected to adhere strictly to GT's Honor Code. Copying, cheating and plagiarism among others are totally unacceptable. Discussion of homework is acceptable and even encouraged, but answers to problems should be filled out by each person. Each student must sign all assignments, referee reports and research paper. Your signature indicates that you conform to the Georgia Institute of Technology Honor Code. See http://www.honor.gatech.edu/plugins/content/index.php?id=9 for details.

Office hours
Particularly for small classes, I have found that making individual appointments works best for office hours. Unless I have conflicting appointments, I can generally accommodate students' schedules.

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E-mail: mccarthy@gatech.edu.

Detailed Syllabus (Recommended and Extra Weekly Readings)

- Week 1: Introduction and Planning the Research (Jan 12, 14)
  - Hausman, Daniel, "Economic Methodology in a Nutshell", *Journal of Economic Perspectives* 3, 115-27 (required)
  - DSI, Chapter 1 (required)
  - RMAE, Chapter 5 (required)
  - Read chapters 1-4 of RMAE on your own as it provides a good overview of the conceptual and philosophical basis of research methodology.
  - Introduction to Stata by Jeroen Weesie, on T-square
  - UCLA Stat lab is also a very helpful resource for guiding you as you work with Stata, SAS, SPSS, and R (http://www.ats.ucla.edu/stat/sas/
  - An Introduction to the SAS System, Phil Specter, on T-square and at http://www.stat.berkeley.edu/classes/s100/sas.pdf
  - SAS Tutorial, M. Marashinge
  - A SAS User's Guide to Stata, on T-square and at http://www.cpc.unc.edu/research/tools/data_analysis/sas_to_stata
  - A Quickstart Introduction to NLOGIT and LIMDEP by W. Greene

- Week 2: The Research Problem and Objectives (Jan 19, 21)
  - RMAE, Chapter 6 (required)
  - Technical Summary: Baum-Snow, N. "Did Highways Cause Suburbanization", *Quarterly Journal of Economics*, May 2007, pp. 775-805. (required)

- Week 3: The Literature Review (Jan 26, 28)
  - Literature Review, RMAE, Chapter 7 (required)
  - EW, Chapters 1 – 9 (required)
  - Technical Summary: Marin, P. and Sicotti, R. "Exclusive Contracts and Market Power: Evidence from Ocean Shipping", Journal of Industrial Economics LI, 2003, pp. 193-213. (required)
  - Sowell, T. , Some Thoughts about Writing (recommended)

- Week 4: The Conceptual Framework (Feb 2, 4)
  - The Conceptual Framework, RMAE, Chapter 8 (required)
  - EW, Chapters 10 – 19
  - Technical Summary: D. Harless and G. Hoffer, "Do Women Pay More for New Vehicles? Evidence from Transaction Price Data", *American Economic Review* 92, 270-79, 2002. (required)

- Week 5: Methods and Procedures [Data and its link to Research Methods] (Feb 9, 11)
  - o Methods and Procedures, RMAE, Chapter 9 (required)
  - o DSI, Chapter 2 (required reading)
  - o Technical Summary: Duranton, G. and Turner, M. "The Fundamental Law of Road Congestion", *American Economic Review* 101, 2011, pp. 2616-52. (required).

  February 11: Literature Review Due

- Week 6: Observation-Based Research, Referee's reports – Assessor (writing) and Assessed (responding) (Feb 16, 18)
  - o Cockburn, I. and A. Jaffe, "A Project of the NBER Productivity Program" (required)
  - o Feldstein, M. "The NBER-Sloan Project on Productivity Change" (with comments), 2000 (required)
  - o Gordon, R. "Reflections on Pin Factory Visits" (required)
  - o Helper, S. "Economists and Field Research: "You Can Observe a Lot Just by Watching" (required)
  - o EW, Chapters 20-31 (required)
  - o DSI, Chapter 3 (required)
  - o Cochrane, J. Writing Tips for PhD Students (required)
  - o Paul, R. and L. Elder, Critical Thinking (recommended)
  - o Choi, K. "Being a Good Referee" (required)
  - o JME, "Guide for Referees" (recommended)
  - o Cowen, T. "How to be a good referee" (recommended)
  - o Writing Tutorial Services, Indiana University, "Examples of Plagiarism, and of Appropriate Use of Others' Words and Ideas" " (required)

- Week 7: Methods and Procedures–[LPM and Binary Outcomes Models] (Feb 23, 25)
  - o DSI, Chapter 4, pp. 115-24 (required)
  - o A. Colin Cameron and Pravin K. Trivedi, MICROECONOMETRICS: Methods and Applications Chapter 14, pp. 461-474 (required)
  - o McCarthy, Notes
  - o Technical Summary: Horowitz, J. and Savin, N. "Binary Response Models: Logits, Probits, Semiparametrics", *Journal of Economic Perspectives* 15, 2001, pp. 43-56. (required)
  - o Technical Summary: Qu, W. et al., "Which Factors Are Effective For Farmers' Biogas Use? Evidence from a Large-Scale Survey in China", *Energy Policy*, DOI: http://dx.doi.org/10.1016/j.enpol.2013.07.019, 2013. (required)

  February 25: First Referee Report Due

- Week 8: Methods and Procedures [MNL and Discrete Choice Models, RUM] (Mar 1, 3)
  - Kenneth Train, *Discrete Choice Methods with Simulation* (2nd Edition), Chapter 3 (required)
  - A. Colin Cameron and Pravin K. Trivedi, *MICROECONOMETRICS: Methods and Applications* Chapter 14, pp. 475-478, Chapter 15, pp. 490-507 (required)
  - Train (1st edition), Chapter 3, pp. 15-23, 38-46
  - McCarthy, notes
  - Technical Summary: Nguyen, A. N. and Taylor, Jim, "Post-high school choices: New evidence from a multinomial logit model", *Journal of Population Economics* 16, 2003, pp. 287-306. (required)
  - Technical Summary: Martin, J.C. and Nombela, G. "Microeconomic impacts of investments in high speed trains in Spain", *Annals of Regional Science* 41, 2007, pp. 715-733. (required)

  March 3: Assignment 1 Assigned – LPM, BRM, MNL/DCM, RUM

- Week 9: Methods and Procedures [IIA, GEV Models] (Mar 8, 10)
  - Kenneth Train, *Discrete Choice Methods with Simulation* (2nd Edition), Chapter 3 (1st edition), 46-56, Chapter 4, pp. 80-92 (required)
  - Colin Cameron and Pravin K. Trivedi, *MICROECONOMETRICS: Methods and Applications,* Chapters 15, pp. 507-512 (required)
  - McCarthy, notes
  - McCarthy, P. and Tay, R., "New Vehicle Consumption and Fuel Efficiency: A Nested Logit Approach", *Transportation Research E* 34, 1998, pp. 39-51. (recommended)

- Week 10: Methods and Procedures [Mixed Logit Models] (Mar15, 17)
  - Kenneth Train, *Discrete Choice Methods with Simulation* (1st Edition), Chapter 6 (required)
  - A. Colin Cameron and Pravin K. Trivedi, *MICROECONOMETRICS: Methods and Applications,* Chapter 15, pp. 512-515 (required)
  - McCarthy, notes
  - Train, K., "Recreation Demand Models with Taste Differences Over People", *Land Economics* 74, 1998, pp. 230-39.
  - Technical Summary: Kukuk, M. and M. Ronnberg, "Corporate Credit Default Models: A Mixed Logit Approach", *Review of Quantitative Finance and Accounting* 40, 467-83, 2013. (required)
  - Technical Summary: Grzybowski, L. and Pereira, P., "Subscription Choices and Switching Costs in Mobile Telephony", *Review of Industrial Organization* 38, 2011, pp. 230-42. (required)

  March 17: Assignment 1 Due

- Week 11: **Spring Break** (Mar 22, 24)

- Week 12: Methods and Procedures [Bivariate Probit, Fractional Models](Mar 29, 31)
  - Referee's reports – Assessor (writing) and Assessed (responding)
  - A. Colin Cameron and Pravin K. Trivedi, *MICROECONOMETRICS: Methods and Applications,* Chapter 15, pp. 522-523 (required)
  - McCarthy, notes
  - Technical Summary: Rupp, N. and Taylor, C. "Who Initiates Recalls and Who Cares: Evidence from the Automobile Industry", *Journal of Industrial Economics* L, 2002, 123-49.
  - Technical Summary: Adams, S. et al., "Minimum Wages and Alcohol-Related Traffic Fatalities Among Teens", *Review of Economics and Statistics* 94, 2012, 828-40.

  March 31: Second Referee Report Due

- Week 13: Methods and Procedures [Selection Models](Apr 5, 7)
  - DSI, Chapter 4, 124-49 (required)
  - Kenneth Train, *Qualitative Choice Analysis*, MIT Press, Cambridge, MA., 1986, Chapter 5 (required)
  - A. Colin Cameron and Pravin K. Trivedi, *MICROECONOMETRICS: Methods and Applications,* Chapter 16, pp. 546-57 (required)
  - McCarthy, notes
  - Technical Summary: Levitt, S. and Porter, J., "Sample Selection in the Estimation of Air Bag and Seat Belt Effectiveness", *Review of Economics and Statistics* 83, 2001, pp. 603-15. (required)
  - Technical Summary: Falaris, E., "Migration and Wages of Young Men", *The Journal of Human Resources* XXIII, 1988, pp. 513-544. (required)

  April 7: Assignment 2 Assigned – IIA, GEV, Mixed Logit/Selection Models

- Week 14: Methods and Procedures [Structural Models] (Apr 12, 14)
  - DSI, Chapter 5 (required)
  - Kenneth Train, Discrete Choice Methods with Simulation (2nd Edition), Chapter 13 (required)
  - McCarthy, notes.
  - Technical Summary: Berry, S., "Estimating discrete-choice models of product differentiation", RAND 25, 1994, pp. 242-62. (required).
  - Technical Summary: Deng, H. and A.C. Ma, "Market Structure and Pricing Strategy of China's Automobile Industry", *Journal of Industrial Economics* LVIII, 2010, 818-45. (required).

- Week 15 Method and Procedures: Flexible Form Models] (Apr 19, 21)
  - McCarthy, notes
  - Douglas W. Caves; Laurits R. Christensen; Joseph A Swanson, "Productivity Growth, Scale Economies, and Capacity Utilization in U.S. Railroads, 1955—74", *The American Economic Review,* 71, 1981, pp. 994-1002.
  - Technical Summary: Caves, D. et al., "Productivity in U.S. railroads, 1951-1974", *Bell Journal of Economics* 11, 1980, 166-181. (required)
  - Technical Summary: Martin, J. C. and Voltes-Dorta, A., "The Econometric Estimation of Airports' Cost Function", *Transportation Research Part B* 45, 2011, pp. 112-27. (required)
  - Reporting your research and presentations
    - *How to sell your paper and journal choices*
      - Engemann, K. and H. Wall, "A Journal Ranking for the Ambitious Economist", Federal Reserve Bank of St. Louis Review 91, 127-39, 2009. (recommended)
      - Choi, K. "How to Publish in Top Journals" (recommended)
    - *Presentations*
      - Shewchuk, J. "Giving an Academic Talk" (required)

  April 21: Assignment 2 Due

- Week 16: Presentations (Apr 26, last day of instructional class)

  April 26: Research Paper Due