Economics 346WE - Econometrics, Fall 2018 (Writing Intensive & Engaged Learning)
Tues/Thurs, 2:30 – 3:45, Schreiber Center Room 406

Associate Professor Tim Classen
Email: tclass1@luc.edu
WTC Office: Schreiber Center, Room 420
Office Phone: (312) 915 – 6184

Office Hours: Tues/Thurs 1:30 – 2:30 pm
Tues/Thurs 4 – 5 pm
and by appointment

Catalog Description
This course teaches students how to use statistical tools to evaluate hypotheses derived from economic models.

Course Overview
The course provides an understanding of *empirical techniques* in economics. Building on your knowledge of probability theory and statistics, you will learn how to *estimate economic relationships* of interest and perform hypothesis testing on predictions from economic models. This course will enhance your understanding of statistical analysis and develop skills for the interpretation of *quantitative data* in economics. You will gain hands-on experience in working with data, performing statistical estimation and writing up the results of your findings in a research paper. The ultimate goal is to estimate the magnitude and statistical strength of causal relationships derived from economic models and perform empirical economic research.

Course Objectives and Learning Outcomes
- Students will be able to interpret and critically analyze quantitative information related to economics.
- Students will understand regression analysis and understand how to use it to test economic models and to measure important economic parameters.

Required Materials
**Textbook:** *Introduction to Econometrics*, by Stock and Watson, 2nd or 3rd edition

**Software:** STATA will be used for data analysis in this course. It is available on networked Loyola computers (Start/Loyola Software/Statistical Applications). You can purchase small STATA for a 6 month student license for $38 ($75 for Intercooled) if you wish (not required). If you already use a statistical software package (SPSS, SAS, R etc), you are free to use that.
Course Requirements and Grading Criteria

Since this is a **Writing Intensive** and **Engaged Learning** (WI/EL) course, a significant portion of your grade will be based on the preparation of a research paper which will be developed over the course of the semester. You will work in groups of two for this project and there will be several submissions of work over the course of the semester. There will also be two presentations of your research project (a short 5 minute discussion of your idea and a 15 minute presentation of results) and a reflection assignment at the end of the semester. In addition to the project, a midterm and final exam will serve as the primary basis for your grade in this course. There will be no make-up exams. If you are unable to take the exams on their scheduled dates, you will need to arrange to take the exam **prior** to its scheduled time. There will be three problem sets that will allow you to apply the techniques from class to actual data. The relative weights of these components are:

- Research Paper and Presentations: 40% (**Paper due Sunday, Dec. 9**)
- Midterm exam: 20% (**Tuesday, October 16**)
- Final Exam: 25% (**Saturday, Dec. 15, 4 – 6 pm**)
- Problem Sets: 10%
- Course attendance, participation, and reflection assignment: 5%

**NOTE**: All papers should contain full attribution for any quoted or paraphrased material. Failure to fully acknowledge any portion of another author's work is plagiarism and will be treated as serious academic misconduct. You will submit your final papers via the Turnitin software which scans text for instances of plagiarized passages.

Classroom Expectations

- Turn off cell phones. **No texting**, please. If you’re coming to class, I expect you to be engaged and ready to learn.
- Laptops may **NOT** be used during class. Use of electronic devices is distracting to your classmates (and me) so please do not use them during class. (See Sakai for evidence) **Goal in life**: Reduce negative externalities you cause.
- If eating something, please select quiet foods. Drink caffeine if tired before class.
- Ask questions when you’re confused about something. Some of your classmates almost certainly are confused as well if you’re lost during the class.
- Adherence to Loyola’s Statement on Academic Integrity is mandatory. Plagiarism or copying on exams will result in a failing grade for the class.
Course Schedule (Tentative – Subject to change)

Weeks 1 - 3 (August 28 – Sept. 13, 6 classes) – Chapters 1 – 3
- Introduction to Econometrics
- Review of Statistics and Probability

THURSDAY, SEPT. 6: PROJECT PARTNER IDENTIFIED

THURSDAY, SEPT. 13: SUBMIT 1 – 2 PAGE SUMMARY OF PAPER TOPIC, HYPOTHESIS AND POTENTIAL DATA SET IDENTIFIED

Weeks 4 – 6 (Sept. 18 – Oct. 4, 6 classes) – Chapters 4 & 5
- Univariate Regression Analysis
- Ordinary Least Squares Estimation
- Hypothesis Testing
- Confidence Intervals

TUESDAY, OCT. 9 – NO CLASS, FALL BREAK

DATA SET MUST BE IDENTIFIED BY THURSDAY, OCTOBER 11!

Midterm Exam, Tuesday, October 16

Weeks 8 & 9 (Oct. 18 – 25, 3 classes) – Chapter 6
- Multiple Regression Analysis
- Limitations to causal inference from regressions

TUESDAY, OCTOBER 23 – SUBMIT LITERATURE REVIEW FOR PAPER

Week 10 (Oct. 30, 1 class) – Chapter 7
- Hypothesis Testing in Multiple Regression Analysis
- Testing on Multiple Coefficients

THURSDAY, NOVEMBER 1 – BRIEF (5 MINUTE) PRESENTATIONS OF PROJECT IDEAS

Week 11 (Nov. 6 & 8, 2 classes) – Chapter 8
- Nonlinear regressors and dependent variables

NOV. 1 – 8: REQUIRED MEETING DURING (ADDED) OFFICE HOURS TO DISCUSS PROJECT

TUESDAY, NOV. 13 – DATA MUST BE CLEANED UP (Outliers, Missing codes, etc)
Week 12 (Nov. 13, 1 class) – Chapter 9

- Other issues in model specification and data problems
- Internal and External validity

THURSDAY, NOV. 15 - SUBMIT SUMMARY OF DATA AND EMPIRICAL MODEL

Weeks 12 & 13 (Nov. 15 & 20, 2 classes) - Chapter 11

- Limited (binary) dependent variable models
- Probit and Logit estimation

Thursday, Nov. 22, No classes, Thanksgiving

TUESDAY, NOV. 27 – SUBMIT PRELIMINARY REGRESSION ESTIMATES

Week 14 (Nov. 27) – Chapters 10 & 12

- Panel data and fixed effects methods
- Methods of Instrumental Variable estimation

Weeks 14 & 15 (Nov. 29 & Dec. 4) – Project Presentations

Week 15 (Dec. 6) Course wrap-up

Time Permitting – Chapter 14

- Time series estimation
- Forecasting

FINAL VERSION OF PAPERS DUE – Sunday, December 9 by Midnight

Reflection Assignment for Engaged Learning credit completed by Friday, December 14

FINAL EXAM – Saturday, December 15, 4 – 6 pm

Please note: This class may occasionally deviate from the course schedule above. I reserve the right to make changes as needed to the course syllabus.
Timeline for Econometrics Research Paper

**Thursday, September 6** – Partner for project identified. Unmatched students will be matched to a partner by me. Email me group member names and initial topic idea(s) or area of interest.

**Thursday, September 13 5** – 1-2 page motivation of paper topic, hypotheses of interest and idea for data set to be used is due. This submission will be graded out of 5 points possible for content, grammar, clarity of thesis and organization.

**Thursday, October 11** – Data set for analysis must be in hand (or more precisely, on your hard drive or in the cloud). **DATA AVAILABILITY IS ESSENTIAL FOR A SUCCESSFUL PROJECT!** An interesting idea with no data will not result in a passing grade for the project. It will likely take several weeks to clean up your data and allow you to estimate regressions. There is nothing to hand in on this date, but if you do not have a data set located by this time, there will likely be problems with meeting subsequent deadlines.

**Tuesday, October 23** – 3 – 5 page literature review and statement of contribution for paper is due. This must include summaries and discussion of at least four (4) academic journal articles (newspaper and magazine articles do not count) related to your topic of interest along with a bibliography of references used to motivate your hypotheses. This will be graded out of 5 points possible on the basis of the organization of ideas, relevance of articles to your topic, grammar and discussion of how these papers relate to your project.

**Thursday, November 1** – Brief (5 minute) presentation of project idea and progress followed by November 1 – 8: **REQUIRED MEETING DURING OFFICE HOURS TO DISCUSS PROJECT**

**Tuesday, November 13** – Data must be cleaned up (Outliers, Missing codes, etc)

**Thursday, November 15** – 3 – 4 page discussion of summary statistics of data set to be used for analysis and empirical model to estimate relationships of interest to test hypotheses is due. This will be graded out of 5 points possible based on clarity of discussion of model and relationships of interest, correct use of statistical language in discussing summary statistics, and grammar.

**Tuesday, November 27** – Provide your initial regression estimates of your model and discuss what you have found so far. This will allow me to provide feedback on your progress and results prior to the final submission. This will be graded out of 5 points possible.

**November 29 & December 4** – 15 minute presentation on topic background, summary of data set used, empirical model specified and findings from project based on your estimates. This may be a PowerPoint presentation and both group members should share presentation responsibilities equally and be prepared to answer questions from the class and Prof. Classen.

**Sunday, December 9** – **FINAL PAPER DUE. NO EXCEPTIONS.** In addition to the previous four submissions (which should be edited in response to any comments provided as part of their grading), this submission will include your final results and conclusions from your research project. The final paper may range from **25 - 40 pages** (not including tables and figures) as you see fit. I will grade this paper in its entirety (including the sections previously submitted and presumably edited) on the basis of clarity of exposition, organization of ideas, grammar, appropriateness of statistical methods employed and validity of conclusions reached. This will be graded out of **80 points** possible.
Content of Paper

Your paper should include at a minimum these five sections:

I. Introduction and Motivation – This section should clearly state your question of interest, why it is of interest to you (and why it should interest the reader) and specific hypotheses of what you expect to find on the basis of your economic knowledge and reading of the previous literature on the topic.

II. Literature Review and Contribution – This section will summarize some of the previous research that has been conducted on your topic of interest or is related to your interesting question. It should also identify how your work will differ from previous research (either in the data set used, empirical techniques employed, or variables included).

III. Empirical Model and Data Summary – This section will discuss your dependent and explanatory variables and justification for their inclusion. As well, it should address any potentially omitted variables that may bias your findings. This section should also include a description of the data source used, any limitations to its sampling criterion to allow for inference on a wider population of interest and summary statistics of the variables of interest. If needed, this section can be divided into separate sections for the empirical model and data summary. PLEASE PROVIDE SUMMARY STATISTICS FOR THE VARIABLES USED (ON THE OBSERVATIONS INCLUDED IN YOUR ESTIMATED MODELS) IN THIS SECTION.

IV. Results of Model Estimation – This section will discuss the results of your regression analysis to estimate the relationships of interest. Care should be taken to properly discuss the statistical significance and meaning of the estimated coefficients.

V. Conclusions and Discussion – This section should summarize your findings relative to previous research on the topic, identify the major weaknesses of your study (i.e. the caveats and limitations due to data or empirical techniques) and state the conclusions that can be drawn from your work. You should also include a discussion of future work on the topic that could improve upon what you have done.

NOTE: All papers should contain full attribution for any quoted or paraphrased material. Failure to fully acknowledge any portion of another author's work is plagiarism and will be treated as serious academic misconduct.
Engaged Learning Assessment – Undergraduate Research

Assessment of the Engaged Learning University Requirement involves:

a) Students will enter their Engaged Learning placement/experience data into LOCUS

b) Students will respond to a standardized reflection prompt at the end of the semester.

What is the Engaged Learning Assessment?

As a student of an EL course, you are being asked to upload an artifact or reflection from your Engaged Learning course to TaskStream. Your uploaded artifact will be evaluated by a staff/faculty review committee using a common rubric. This assessment project aims to ensure that the EL student learning outcomes are being met. Below is the prompt you are to answer for your reflection:

Loyola University Chicago’s Mission Statement: “We are Chicago's Jesuit Catholic university- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice, and faith.”

In an effort to assess the Engaged Learning University requirement, we ask all students enrolled in an Engaged Learning course to complete this reflection. Referencing Loyola’s mission statement above, compose a written reflection (at least 2 pages, double-spaced) that connects your in-class and out-of-class experience responding to the following:

a) How did your Engaged Learning experience help you to connect to the mission?

b) How did the Engaged Learning experience in this course impact your personal, intellectual, civic and/or professional development?

For a course to be designated as “Undergraduate Research”, satisfying the University Engaged Learning requirement, it must meet all the following criteria.

a) The field research course engages students on an original research project, either contributing to a faculty research project or engaging in an independent research project with a mentor

b) Students conduct research on an ongoing basis, working an average of 5 – 10 hours/week.

c) Students gain knowledge of or experience in discipline-specific language, research ethics, skills in research methodologies, and important scholarship.

d) The learning objectives related to the research experience are clearly articulated related to their field of study, educational goals and/or career and vocational aspirations.

e) There is supervision and feedback by a mentor who has expertise related to their field of study, educational goals and/or career and vocational aspirations.

f) The syllabus assignments include reflection assignments and a final synthesis project integrated into the course.

g) There is an outlet to disseminate the original research (e.g., symposium, conference, scholarly article) integrated into the course.
Quinlan School of Business Policies:

**Attendance**

Class attendance and participation are fundamental components of learning, so punctual attendance at all classes, for the full class meeting period, is expected of Quinlan students. The student is responsible for any assignments or requirements missed during an absence.

**Make-Up Examinations**

Loyola University academic policy provides that tests or examinations may be given during the semester or summer sessions as often as deemed advisable by the instructor. Because Quinlan faculty believe examinations represent a critical component of student learning, required examinations should be taken during the regularly scheduled class period. **Make-up examinations are discouraged.** Exceptions may be granted only by the faculty member or department chair, and only for unavoidable circumstances (illness verified by a signed physician’s note, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, or religious observance). A make-up final examination may be scheduled only with the permission of the appropriate Quinlan Assistant or Associate Dean.

If a make-up examination must be given, it is the responsibility of the faculty member to prepare, schedule, and proctor the exam. The only regular exception is for a student athlete, who may use the testing services of the Athletics Department to complete a make-up examination. For a student with a documented special testing need, please consult University policy concerning use of the testing center in Sullivan Center at Lake Shore Campus.

**Academic Integrity**

All members of the Quinlan School shall refrain from academic dishonesty and misconduct in all forms, including plagiarism, cheating, misrepresentation, fabrication, and falsehood…Plagiarism or cheating on the part of the student in individual or group academic work or in examination behavior will result minimally in the instructor assigning the grade of “F” for the assignment or examination. In addition, all instances of academic dishonesty must be reported to the chairperson of the department involved.

Loyola’s Statement on Academic Integrity

http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml

The basic commitment of a university is to search for and to communicate the truth as it is honestly perceived. The university could not accomplish its purpose in the absence of this demanding standard. To the extent that this standard is respected, a genuine learning community can exist. Students of this university are called upon to know, to respect, and to practice this standard of personal honesty.

Plagiarism is a serious form of violation of this standard. Plagiarism is the appropriation for gain of ideas, language, or work of another without sufficient public acknowledgement and appropriate citation that the material is not one's own. It is true that every thought probably has been influenced to some degree by the thoughts and actions of others. Such influences can be thought of as affecting the ways we see things and express all thoughts. Plagiarism, however, involves the deliberate taking and use of specific words and ideas of others without proper acknowledgement of the sources.

The faculty and administration of Loyola University Chicago wish to make it clear that the following acts are regarded as serious violations of personal honesty and the academic ideal that binds the university into a learning community:

Submitting as one's own:

1. Material copied from a published source: print, internet, CD-ROM, audio, video, etc.
2. Another person’s unpublished work or examination material.
3. Allowing another or paying another to write or research a paper for one's own benefit.
4. Purchasing, acquiring, and using for course credit a pre-written paper.

The critical issue is to give proper recognition to other sources. To do so is both an act of personal, professional courtesy and of intellectual honesty.

Plagiarism on the part of a student in academic work or dishonest examination behavior will result minimally in the instructor assigning the grade of "F" for the assignment or examination. In addition, all instances of academic dishonesty must be reported to the chairperson of the department involved. The chairperson may constitute a hearing board to consider the imposition of sanctions in addition to those imposed by the instructor, including a recommendation of expulsion, depending upon the seriousness of the misconduct.

Academic cheating is another serious act that violates academic integrity. Obtaining, distributing, or communicating examination materials prior to the scheduled examination without the consent of the teacher; providing information to or obtaining information from another student during the examination; attempting to change answers after the examination has been submitted; and falsifying medical or other documents to petition for excused absences all are violations of the integrity and honesty standards of the examination process.

In the case of multiple instances of academic dishonesty across departments, the academic dean of the student's college may convene a hearing board. Students retain the right to appeal the decision of the hearing board to the academic dean of the college in which they are registered. The decision of the dean is final in all cases except expulsion. The sanction of expulsion for academic dishonesty may be imposed only by the Provost upon recommendation of the dean.