

**Syllabus**  
**ECON 5495-004: Panel Data Econometrics**  
FALL 2018

**Instructor:** Jungbin Hwang, Email and office : jungbin.hwang@uconn.edu and OAK 333  
**Time and Location:** MoWe 4:40PM - 5:55PM and OAK 308  
**Office Hours:** TBA

## Description of the Course

The course “Panel data econometrics” covers standard panel data models which apply to datasets that follow cross sections of individuals through time. An emphasis will be placed on determining when causal relationships can be inferred from panel data. The material is divided into the following three sections: (1) Static Panel Data Models (2) Dynamic Panel Data Models (3) Non-linear Panel Data Models. We will use computer programming packages in STATA (or R) to implement the econometric methods covered. The course also briefly covers recently developed issues in panel data econometrics such as re-sampling and machine learning methods, if time allows.

## Textbook/References

Since I will provide slides of lecture notes that summarize overall materials, there are no required textbooks for the course, although the following will be useful references. If you are planning to specialize in econometric theory you should probably consider adding Wooldridge (2010) to your library.

- Microeconometrics using stata (2010): AC Cameron, PK Trivedi
- An Introduction to Mata: <https://www.ssc.wisc.edu/sscc/pubs/4-26.htm>
- Panel Data Econometrics with R (2016): Yves Croissant, Givanni Millo
- Econometric Analysis of Cross Section and Panel Data (2010): J. M. Wooldridge

## Outline

1. An introduction to panel data and its features
  - Getting started with panel data/ Summary statistics and dynamics
  - Overview of basic concepts/ Data generation
  - The regression model/ Variance-covariance estimators
  - Margins and marginal effects
  - Basic panel-data estimation concepts/ Panel data, regression, and efficiency
2. Static panel models and applications
  - Random-effects model/ Fixed-effects model, Within estimator
  - Comparing within and random-effects estimates
  - First-differenced estimator
  - Deciding between random and fixed effects: Hausman test/ Mundlak test
  - Population-averaged models
3. Dynamic Panel models and applications
  - Theory behind dynamic models/ Time series operators
  - IV estimations/ GMM methods/ Anderson Hsiao, Arellano Bond methods

- Model Specification/ Building your own dynamic model
4. Nonlinear panel model and its application
    - Probit models for panel data: Random effects/ Population averaged
    - Logit models for panel data: Random effects/ Fixed effects/ Population averaged
    - Poisson models for panel data
  5. Resampling methods in panel data and applications (If time allows)
    - Resampling methods in econometrics: Bootstrap/Subsampling methods in econometrics
    - Bias correction in panel model with analytical/resampled methods

## Course Web Page

A course webpage is available at **HuskyCT- <https://lms.uconn.edu/>**. It will include information relevant to the course, such as announcements, homework assignments, information on Stata tutorials, practice problem sets, solutions, updated syllabus, schedule and more. **You should check this page regularly.**

## Required Software

**STATA** ([www.stata.com](http://www.stata.com)) is a general-purpose statistical software package. Students are not required to buy the software as you can access to these tools in the computer lab as well as our classroom in Oak Hall 308, and in other computer labs on. Check <http://software.uconn.edu/stata/> for on-campus access information. The main reason for adopting STATA in my course is that it offers a good combination of ease of use and power and is easy to learn. It also has compelling tools for data management, many cutting-edge statistical procedures, the ability to quickly download programs developed by other users and the ability to create your Stata programs that seamlessly become part of STATA.

## Homework

There will be **three homework assignments** in this course. Homework assignments are STATA exercises and will serve as a way to learn and practice that software. Complete all your homework assignments on your own. Remember, homework is assigned to assist you in learning the software and at the same time it is a good check of your understanding of the econometrics concepts taught in class.

## Grading

**15% Homework Assignments / 35% Midterm Exam (Online)/ 50% Final Exam (In Class).**

The overall course grade, computed using the weights specified above, will be curved. In general, the class average corresponds to the lowest B.

## Academic Integrity

Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

## **ADA Statement**

If you have special needs as addressed by the Americans with Disabilities Act (ADA) and need assistance, please notify the Department of Human Resources Americans with Disabilities Act (ADA) Accommodations Case Manager is charged with processing and facilitating requests for employee ADA accommodations. If you believe you may need an accommodation, or if you are a supervisor or manager who has been presented with a request for an accommodation, please contact the ADA Case Manager, Ryan Bangham, and/or visit our page on Employee Accommodations. See the guide to HR's Reasonable Accommodations Process. Students who require an accommodation in the academic setting should contact the Center for Students with Disabilities. Please feel free to contact the ADA Case Manager at (860) 486-2036 or via e-mail at ryan.bangham@uconn.edu for further assistance.

**For other policy Against Discrimination, Harassment and Related Interpersonal Violence and the Statement on Absences from Class Due to Religious Observances and Extra-Curricular Activities: <http://provost.uconn.edu/syllabi-references/>**