

**Econometrics I
Syracuse University**

**ECN621
Fall 2021
T, Th: 12:30-1:50
Maxwell 110**

**Professor Badi H. Baltagi
426 Eggers Hall
Office Hours: 11:30-12:30 (T, Th)
And by appointment
email: baltagi@syr.edu**

REQUIRED TEXTS:

Baltagi, B., *Econometrics*, 5th edition, Springer, 2011.
Baltagi, B., *Solutions Manual for Econometrics*, 3rd edition, Springer, 2015.

RECOMMENDED TEXTS:

Cameron, A.C. and P.K. Trivedi, *Microeconometrics*, Cambridge University Press, 2005.
Davidson, R. and J. MacKinnon, *Econometric Theory and Methods*, Oxford University Press, 2004.
Greene, W., *Econometric Analysis*, Pearson Education, 8th edition, 2015.
Stock, J.H. and M.W. Watson, *Introduction to Econometrics*, Pearson Education, 3rd ed., 2015.
Wooldridge, J.M. *Introductory Econometrics*, Cengage Learning, 6th ed., 2015.

PREREQUISITES:

ECN 620. Knowledge of statistics, basic matrix algebra and the use of a regression package on the computer, like EViews, Stata, SAS, LIMDEP, RATS, R, or GAUSS.
The PhD program learning outcome for ECN 621 is Mastery of fundamental basic econometric methods.
[In this course the outcome is introduced and practiced.](#)

REQUIREMENTS: Mid Term Exam (50%), Final Exam (50%).

COURSE OUTLINE

I. Background Material

1. Statistics and Matrix Algebra (not to be covered in class)

Read Chapter 2 and the Appendix to Chapter 7 of Baltagi (2011) *Econometrics*.

2. The General Linear Model

Least Squares, Partitioned Regressions, Frisch-Waugh Lovell Theorem, MLE, Prediction, Confidence Intervals, Test of Hypotheses, Joint Test of Hypotheses, Restricted MLE and RLS, (LR, W, LM) tests, Empirical Example.

Required Readings:

Chapters 3, 4, and 7, of Baltagi (2011) *Econometrics*.
Practice Exercises: problems at the end of Chapters 3, 4, and 7.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

3. Generalized Least Squares and Seemingly Unrelated Regressions

Generalized Method of Moments, Autocorrelation, Heteroscedasticity, MLE, Test of Hypotheses, Prediction, Feasible GLS, (W, LR, LM) revisited, Spatial Error Correlation. Seemingly Unrelated Regressions, Feasible GLS, Testing Diagonality, SUR with unequal number of observations, Empirical Example.

Required Readings:

Chapters 5, 9 and 10 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of Chapters 5, 9 and 10.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

II. Misspecification Tests in Econometrics

Influential Observations, Recursive Residuals, Non-Linear Least Squares and the Gauss-Newton Regression, Non-nested Tests, multicollinearity, Empirical Example.

Required Readings:

Chapter 8 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of Chapter 8.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

III. The Simultaneous Equations Model

Simultaneous Equations Estimation: 2SLS, 3SLS. Spatial Lag dependence. Test for Over-identification restrictions, Hausman's Test, Empirical Example.

Required Readings:

Chapter 11 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of Chapter 11.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

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IV. Qualitative Limited Dependent Variables

Linear Probability Model, Logit, Probit, Grouped Data, Fractional Response. Binary Response, Multinomial Choice Models, Censored Regression Model, Truncated Regression Model, Sample Selectivity, Empirical Example.

Required Readings:

Chapter 13 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of Chapter 13.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

V. Panel Data

Fixed Effects, Random Effects, Maximum Likelihood, Prediction, Hausman Test. Dynamic Panel data, Empirical Example.

Required Readings:

Chapter 12 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of Chapter 12.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

VI. Time Series Analysis

ARMA models, Stationarity, Vector Auto-regression, Unit Roots, Trend Stationary versus Difference Stationary, Cointegration, ARCH models, Empirical Example.

Required Readings:

Chapter 14 of Baltagi (2011) *Econometrics*.

Practice Exercises: problems at the end of chapter 14.

Solutions are available for selected problems in Baltagi (2015) *Solutions Manual for Econometrics*.

Additional Class notes:

“Syracuse University’s Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the University’s academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.”
Academic Integrity: <https://class.syr.edu/academic-integrity/>

“Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to meet with me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit their website at <https://disabilityresources.syr.edu>. Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process.”