

**Econometrics I
Syracuse University**

**ECN621
Fall 2020
T, Th: 12:30-1:50
Eggers 032**

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

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:

"At Syracuse University, academic integrity is expected of every community member in all endeavors. Academic integrity includes a commitment to the values of honesty, trustworthiness, fairness, and respect. These values are essential to the overall success of an academic society. In addition, each member of the university community has a right to expect the highest standards of academic integrity from all other community members. An individual's academic dishonesty threatens and undermines the central mission of the University. It is unfair to other community members who do not cheat, because it devalues efforts to learn, to teach, and to conduct research. Academic dishonesty interferes with moral and intellectual development, and poisons the atmosphere of open and trusting intellectual discourse. Syracuse University's academic integrity policy and procedures are administered by the Academic Integrity Office in the Division of Academic Affairs, and all schools and colleges." (SU Academic Integrity Office) <http://academicintegrity.syr.edu/>

Academic Integrity

http://coursecatalog.syr.edu/2014/rules/3383_academic_integrity

"Students who may need academic accommodations due to a disability are encouraged to discuss their needs with the instructor at the beginning of the semester. In order to obtain authorized accommodations, students should be registered with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498 and have an updated accommodation letter for the instructor. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance."

For more information about services and policy: <http://disabilityservices.syr.edu>