QMBE 6281

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I. Introduction (Chapter 1, handout and appendices A, B, C)
   a. Random Variables and their distributions
      1. Univariate
      2. Bivariate
      3. Prediction
   b. Estimators and Sampling Distributions
   c. Confidence Intervals and Hypotheses Tests

CROSS SECTIONAL DATA

II. The Simple Regression Model (Chapter 2)
   a. An overview
   b. Algebra of fitting a line
   c. Assumptions of the simple linear regression (SLR) model.
   d. Least Squares estimator and its properties.

III. Multiple Regression (Chapters 3 and 4, appendix D)
   a. Assumptions of the multiple linear regression (MLR) model.
   b. Gauss Markov
   c. Hypotheses tests if single and multiple constraints
   d. Restatement of model using linear algebra

IV. Large Sample Properties of Least Squares Estimators (Chapter 5 and Appendix C)
   a. Assumptions
   b. Maximum Likelihood
   c. Hypothesis Tests
      1. Wald
      2. Likelihood Ratio
      3. Lagrange Multiplier

V. Multiple Regression (Chapters 6 and 7)
   a. Scaling, $R^2$, and prediction.
   b. Qualitative explanatory (dummy) variables.
   c. F test for differences across groups.
   d. Qualitative dependent variable.
VI. Violations of Assumptions (3.3, 3.4, 8.1, 9.2, 9.1, 9.3, 9.4)
a. Erroneous inclusion or exclusion of explanatory variables (3.3, 3.4)
b. Heteroskedasticity (Non-scalar covariance matrix)
c. Functional form
  d. Proxies, random slopes, and measurement error (9.2, 9.3, 9.4)
  e. Non-random samples (9.5)

VII. Nonscalar Covariance Matrix – Heteroscedasticity (Chapter 8)
a. Properties of least squares estimators (8.1)
b. Detecting heteroscedasticity (8.3)
c. Robust estimators (8.2)
d. GLS estimators (3.4)
e. Feasible GLS estimators (8.4)

TIME SERIES DATA

VIII. Regression with time series models (Chapters 10, 11)
a. Time series data
b. Properties of estimators under classical (TS) assumptions
c. Static and Dynamic Models
d. Trends and seasonalities

IX. Large Sample Properties and Feasible GLS Estimators (Chapters 11-12)
a. Properties of least squares estimators (TS')
b. Nonscalar covariance matrix- serial correlation
c. Robust estimators of covariance matrix
d. Feasible GLS estimators

X. Correlation Between Explanatory Variables and Error Term (Chapter 15)
a. Properties of least squares estimator
b. Sources
c. Instrumental variables estimator

Midterm: 11 - 12:15 Monday, October 12.
Final: 3 - 5 pm, Wednesday, December 9.
NO CLASS on Monday, September 7 (Labor Day)
**Objective:** The objective of the course is to give the student a variety of econometric tools for use in empirical research.

**Text:** Introductory Econometrics, 5th edition by Jeffrey Wooldridge. ISBN: 978-1-111-53104-1

**Office Hours:** 11 to 11:40 and 12:45 to 1:45 Mondays or by appointment.

**Grading:** Midterm Exam 35%, Final Exam 35%, Assignments 30%.

**Grading Policies**
Assignments turned in late will incur a letter grade penalty for every calendar-day past the stated deadline, unless arrangements have been made with me prior to the deadline. Makeup Exams: Notify me in advance if you are unable (due to emergency at home or work which must be documented on request) to take an exam at the scheduled time. Make-ups must be taken prior to the next regular class.

**Academic Integrity**
Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.

**Students with Disabilities**
It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.