UNIVERSITY OF OREGON
Econometrics: Economics 424/524, Winter 2009.
Tu, Th 12:00 – 13:20 and Fri 12 – 12:50 in 102 Deady.

Professor George W. Evans. Office: Room 441 PLC. Office hours: Th 10:30 – 11:45am and F 9:15 – 10:00am. Phone: 346-4662. email:gevans@uoregon.edu.

Graduate Teaching Fellow: The GTF is **Annie Voy.** Office: 518 PLC. Office hours are: W, F 10 – 11 am. email: avoy@uoregon.edu. Annie Voy will grade the problem sets and is the instructor for the Friday class. On one or two occasions Professor Evans may use the Friday class for lecture.

Textbook: The textbook for this course is William H. Greene, *Econometric Analysis*, sixth ed., Pearson/Prentice-Hall 2008. Lecture notes will be made available on Blackboard at the conclusion of each topic.

This course is a continuation of EC 423/523. The purpose of EC 424/524 is to present and illustrate the central techniques of statistical investigation of data that are used in economics. Knowledge of calculus, linear algebra, probability and statistics are assumed. Some knowledge of elementary econometrics will obviously be useful, although not absolutely essential. 424/524 provides a rigorous treatment of the classical regression model and the method of least-squares estimation using a matrix formulation. We carefully develop the statistical properties of least-squares estimation, techniques for inference, and the implications and treatment of deviations from the standard assumptions. We will also briefly discuss dynamic regression models and instrumental variable estimators. In addition to the lectures on Tuesdays and Thursdays, there is a class on Friday 12:00-12:50 that will mainly review lectures and discuss the problem sets.

Exams and Grades. The course grade will be based on problem sets, a midterm and a final exam, with weights of 20, 35, and 45 percent, respectively. The midterm will be in class on Tuesday, Feb. 10. The final will be comprehensive, though with greater weight on material from the second half of the course. The final exam is on Wednesday, March 18 from 8am – 10am. There will be about six problem sets. The problem sets will include both analytical and computer problems.

Computer software, SSIL Lab. The computer software program STATA will be used in this class. An introduction to STATA will be given by the GTF, Annie Voy, during the first Friday class, on January 9. This will take place in the large SSIL computer lab in 442 McKenzie Hall. Computer assignments may be completed in the SSIL lab, which provides computers, software, manuals, and computer assistance. The SSIL lab has a fee for the quarter (approximately $25). You are not required to use the SSIL lab if you have the means to complete the computer assignments elsewhere (e.g., the TERF room for economics graduate students), but using STATA is expected. It is also possible to buy a student version of STATA from SSIL using GradPlan.

Topics and Reading

1. Introduction. Simple regression. Estimation of bivariate relationships.
Ch. 1, Ch. 2, lecture notes.

2. The classical multiple regression model. Least Squares. Partitioned regression. Goodness of fit.
Ch. 2, Ch. 3.

3. Statistical properties of the LS estimator. Gauss-Markov Theorem. Multicollinearity. Inference: t-tests and confidence intervals. F-tests.
Ch. 4, pp. 43 – 63. Ch. 5, pp. 81 – 92.

4. Model specification. Functional form. Structural change. Omitted and irrelevant variables. Model selection.
Ch. 6 and 7.

5. Asymptotic theory and its application to the regression problem. Consistency. Asymptotic normality of LS. Asymptotic efficiency. Tests of nonlinear restrictions.
Ch. 4, pp. 63 – 75. Ch. 5, pp. 92 – 102. Appendix D.

6. Generalized regression model. Properties of LS estimates. Robust standard errors. Efficient estimation by generalized LS. Heteroscedasticity and autocorrelation.
Ch. 8 and Ch. 19, pp. 632 – 634, 644 – 651.

7. Additional topics.
(a) Models with lagged variables. Dynamic multipliers, autoregressive distributed lag models and dynamic stability. Error correction models.
Ch. 20, pp. 670 – 693.
(b) Instrumental variables. Measurement error.
Ch. 12, pp. 314 – 318, pp. 325 – 331.