



## Econometrics (Session 2)

### Syllabus

- Office:** North Hall 2021.
- Office Hours:** Monday and Wednesday from 11:00 to noon, or by appointment. Students should feel free to set up an appointment by email.
- Email:** [brian.duncan@ucdenver.edu](mailto:brian.duncan@ucdenver.edu)
- Class Web Page:** [www.econ.ucdenver.edu/duncan](http://www.econ.ucdenver.edu/duncan)
- Teaching Assistant:** TBA
- Textbook:** Introductory Econometrics: A Modern Approach, 4<sup>th</sup> edition, by Jeffrey M. Wooldridge, ISBN: 978-0324581621, *required*.

Other useful textbooks include Introduction to Econometrics, by Maddala (MacMillan), and Introductory Econometrics with Applications, by Ramanathan (Harcourt Brace Jovanovich). Students interested in more advanced topics should consider Econometric Methods by Johnston (Mc Graw-Hill) and A Guide to Econometrics, by Peter Kennedy (MIT Press).

- Prerequisites:** This course assumes that students are familiar with the material covered in the first session of ECON 194SE.

**Course Description:** Econometrics is the application of statistical techniques to analyze economic problems. This course is an introduction to the fundamental tools of econometrics. Students in this course will learn to formulate models, manage data, estimate models, interpret results, and forecast. Topics covered will include probability and sampling distributions, hypotheses testing, linear regression models, and maximum likelihood estimation. A complete list of topics can be found on the course outline.

- Grades:** Grades will be based on two problem sets due on **July 19** and **July 26** and on the final exam scheduled for **July 30**. No early or make-up exams will be given. The grading weights are:

Problem Set #1:	30%
Problem Set #2:	30%
Final Exam:	40%

**Course Outline:**

<b>Week</b>	<b>Day</b>	<b>Topic</b>	<b>Reading</b>
4	M	Review of Gauss-Markov assumptions Including irrelevant variables Omitted variable bias	Sec. 3.3 Sec. 3.5
	W	Hypothesis testing Type I and Type II error Confidence and significance level t-tests, p-value and confidence interval	Sec. 4.1 Sec. 4.2 Sec. 4.3 Sec. 4.4
	F	Goodness of fit R-squared and adjusted R-Squared F-test for overall significance F-test for joint significance	Sec. 4.5 Sec. 6.3
5	M	Interpretation of functional form Marginal effect and elasticity Effect of data scaling on OLS estimates	Sec. 6.1 Sec. 6.2 Sec. 7.2
	W	Dummy variables Mutually exclusive and exhaustive dummies Interaction terms	Sec. 7.3 Sec. 7.4
	F	Maximum-likelihood estimation Linear probability model Probit and logit models	Sec. 7.5 Sec 17.1
6	M	The problem of determining causal relationships Self-selection and endogeneity Instrumental variables Natural experiments External and internal validity	Sec. 15.1 Sec. 15.2
	W	Panel Data Wide versus long data Within versus between variation Pooled regression Fixed effects and differenced regressions Random effects regression	Ch. 13
	F	Final Exam	