

# ***Applied Econometrics***

*ECG 563 001*

*North Carolina State University*

*Fall 2019*

**Instructors: Harrison Fell and Roger H. von Haefen**

**Contact information (Office/Phone/Email):**

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**Office hours:**

**Fell – M/W 3:00-4:30 & by appointment**

**von Haefen – M/W 3:00-4:30 & by appointment**

**Class meeting days/times: M/W 1:30 – 2:45 in NH 1140**

**Website: Moodle**

**Textbook and/or other required materials:**

**Suggested texts:**

Wooldridge, J.M. 2016. "Introductory Econometrics: A Modern Approach, 7<sup>th</sup> Edition", South-Western Cengage Learning. (Note: older editions will be fine)

Angrist, J.D. and J-S Pischke. 2009. "Mostly Harmless Econometrics: An Empiricist's Companion", Princeton University Press.

Train, Kenneth, 2009. "Discrete Choice Methods with Simulation, 2<sup>nd</sup> Edition", Cambridge University Press. (Note: all chapters are downloadable at <https://eml.berkeley.edu/books/choice2.html>)

**Student learning outcomes:**

Students will learn/ gain experience with:

1. STATA programming language.
2. maximum likelihood estimation techniques.
3. censored and truncated linear regression models.
4. discrete choice and count data techniques.
5. panel data analysis techniques.
6. modern approaches to project analysis.

**Academic Integrity:** Cheating will be prosecuted to the maximum extent possible within the University's Code of Student Conduct: <http://policies.ncsu.edu/policy/pol-11-35-01>

**Brief list of topics covered:**

1. Theory of maximum likelihood.
2. Censored / truncated regression models.
3. Logit / probits.
4. Conditional logit.
5. Count data models.
6. Introduction to panel data analysis.
7. Introduction to the hypothetical outcome framework.
8. IV and Matching estimators.
9. Difference-in-Differences estimators.
10. Regression discontinuity estimators.

**Grading Procedures:** The weighting of the final grade will be determined as follows:

Exam 1 –	35%
Exam 2 –	35%
Homework –	25%
Participation –	5%

Exam 1 will cover the material covered by Dr. von Haefen. Exam 2 will cover topics covered by Dr. Fell. There will be homeworks given throughout the semester as well. These are intended to be done as individual assignments and will typically involve some applied data analysis. The homeworks will be due at the beginning of class on the assigned due dates. Homework turned in late will not be accepted without prior approval. Participation grades will be assigned based on student attendance and student participation in the general discussions.

**Absence Policy** (e.g., Sports/Activities Policy): Attendance and participation are mandatory. Please notify the instructor of any planned absences.

**Detailed Course Schedule:**

Below is a tentative outline for the class with an expected reading list. We stress that this is a tentative list. Topics, readings, and listed order are all subject to change based on class progress and professor preferences. Please consult the webpage for this class frequently for updates on topics covered and required readings.

<b>Week 1 - Introduction</b>	
<b>Week 2 - OLS Review</b>	Wooldridge: ch 2 - 6
<b>Week 3 - Theory of Maximum Likelihood</b>	Chapter 1 from <i>Maximum Likelihood Estimation with Stata</i> (posted on Moodle)
<b>Week 4 - Censored &amp; Truncated Regression Models</b>	Wooldridge: ch 17 (Sections 2, 4 & 5)
<b>Week 5 - Logits and Probits</b>	Wooldridge: ch 17 (Section 1)
<b>Week 6 - Conditional Logit</b>	Train: ch 1-4, 6
<b>Week 7 - Conditional Logit (cont.)</b>	
<b>Week 8 - Count Data Models</b>	Wooldridge: ch 17 (Section 3) Cameron & Trivedi (posted on Moodle)
<b>Week 9 - Count Data Models</b>	Cameron & Trivedi (posted on Moodle)
<b>Week 10 - Panel Data 1</b>	Wooldridge: ch 13-14 Angrist & Pischke: ch 5
<b>Week 11 - Panel Data 2</b>	Wooldridge: ch 13-14 Angrist & Pischke: ch 5
<b>Week 12 - Hypothetical Outcome Framework</b>	Angrist & Pischke: ch 3
<b>Week 13 - IV and Matching Estimators</b>	Angrist & Pischke: ch 4
<b>Week 14 - Diff-in-Diff Estimators</b>	Wooldridge: ch 13 Angrist & Pischke: ch 5
<b>Week 15 - Regression Discontinuity</b>	Angrist & Pischke: ch 6