University of International Business and Economics

University of International Business and Economics
International Summer School

ECON 303 Econometrics

Term: June 15– July 16, 2020
Instructor: Guofeng Zhang
Home Institution: University of International Business and Economics
Email: zhangguofeng@uibe.edu.cn
Class Hours: Monday through Thursday, 120 minutes each day (2,400 minutes in total)
Office Hours: Thursday 15:00-17:00
Discussion session: 2 hours each week

Total Contact Hours: 64 contact hours (45 minutes each, 48 hours in total)
Location：WEB
Credit: 4 units

Course Description:

Econometrics provides a link between theoretical economic models and "real world" data. Econometrics is a required part of the "toolbox" of an undergraduate economics education and for understanding applied economics courses and research. To learn econometrics, you must actually do econometrics. So, the focus on this course will provide a theoretical foundation that allows you to do econometric analysis and to understand econometric analysis published in a variety of journals.

Course Goals:

There are several goals in this course. The first is to gain an understanding of the statistical theory that underlies econometrics. The second is to be able to learn to use data analytical tools that allow you to formulate and then estimate an econometric model. The third is to gain the ability to interpret econometric results and draw statistical inference from these results.

Course Prerequisites:

Microeconomics at the Intermediate level (typically a 200 or 300 course designation). Macroeconomics at the principles level (100 level).
Differential Calculus and a Probability and Statistics course.

Required Textbook:

Jeffrey M. Wooldridge, *Introductory Econometrics, A Modern Approach, 7th Edition*; copyright 2020, Cengage, ISBN: 978-1-33-755886-0. Note: The 6th Edition is acceptable but if you use the older version, you are responsible for ensuring that you have access to any material or problems that have changed across editions.

Required Software Package:

We will use Stata software for econometric analysis in this course. You should be familiar Stata through this course if you want to continue your studies in econometrics when you get back to your "home" university. You can also use other tools, like R, SPSS, Matlab, to conduct the econometric analysis, but, in class, the materials will be presented in Stata format.

Grading Policy:

Grades will be based on the following (1000 points—i.e. 25% is 250 points):

- Exams: Two Exams, each worth **25% of final grade**; Exam 1 on Monday, 29 June; Exam 2 on Tuesday, 17 July; **(total 50% of course; 500 points)**
- Homework, **10% of the grade**.
    - Homework grading: If you try to answer—hopefully successfully—the assigned problem or problems—you will receive credit for that assignment. Trying and turning in all the homework assignments (on time) will earn you the full 10%.
        - Late homework and missing assignments will decrease your homework grade.
    - Homework is to be turned in individually. You are encouraged to work problems with classmates, but you must turn in your own assignment.
- Project/Paper: **40% of the grade. Project/Paper due at the start of class on Monday 13 July. No late papers accepted unless there are extenuating circumstances.**
    - For this project, you are to formulate an econometric model, find the data, estimate the model, and interpret the results. The paper should be no more than 3 pages including your results, but not including your cover page. (You should be prepared to provide your actual computer results should I ask for them as backup to your paper.)
        - Paper format is
            - Cover page with name, title and certification of individual work
            - One paragraph introduction
            - One or two paragraphs about your model and why it is important
            - One paragraph about the source of your data
            - One paragraph detailing your testable hypotheses
            - Two or three paragraphs interpreting your results
                - Your results need to be presented in a table or tables at the end of the paper
            - One or two paragraphs as a conclusion
        - Paper is due at the start of the 13 July class.
        - The model must be more complex than simple linear regression and must include testable hypothesis or hypotheses.
        - Please tell me your proposed topic in a one paragraph submission at the start of the 17 June class. The paragraph should clearly state the subject of the project and your reason for choosing this topic.
        - The project is individual work. You can consult with the TA or with me.

- Preliminary presentation of paper—in-progress review using slides (e.g. PowerPoint; 5-10 minutes); Wednesday, 1 July.
- Final presentation of paper results—using slides (e.g. PowerPoint; 10-15 minutes); Wednesday, 15 July.

Grading Scale:

Assignments and examinations will be graded according to the following grade scale:

A	90-100	**C+**	72-74
A-	85-89	**C**	68-71
B+	82-84	**C-**	64-67
B	78-81	**D**	60-63
B-	75-77	**F**	below 60

Class Expectations:

Students are expected to:

- ✧ Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade.
- ✧ Adhere to standards of academic integrity appropriate for UIBE and your home university.
- ✧ Not text, phone, play games nor engage in computer activities unrelated to class during class time.
- ✧ Complete the day's required reading before class and turn in assignments on time.
- ✧ Review the previous day's notes before class; make notes about questions you have about the previous class or the day's reading.
- ✧ Participate in class discussions.

Econometrics is a difficult and important aspect of the undergraduate economics curriculum and requires your dedication to learning the material.

Course Schedule:

The planned schedule below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

Day and Date	Topic(s)	Wooldridge Text Readings	Problems (note: additions and/or changes may be made in class; denoted by "P") **Problems are due at the start of the next class period.**
Day 1, Monday, 15 June	Introduction to Econometrics and Economic Data and Introduction to Stata (data analysis)	Chapter 1	Text Problem 1; Computer Exercises (to be assigned)

Day 2, Tuesday, 16 June	Stata Hands-On: data processing		
Day 3, Wednesday, 17 June	Stata Hands-On: statistics analysis and graphs		Stata Quiz to be worked in class.
Day 4, Thursday, 18 June	The Simple Regression Model and Introduction to Empirical Projects **Paragraph on paper topic due**	Chapter 2 and Chapter 19	Chapter 2; P: 1, 4, 8, 10
Day 5, Monday, 22 June	Multiple Regression Analysis: Estimation	Chapter 3	P: 1, 2, 3, 10, 15
Day 6, Tuesday, 23 June	Multiple Regression Analysis: Inference	Chapter 4	
Day 7, Wednesday, 24 June	Inference and Hypothesis Testing and "catch up" day	Chapter 4	P: 1, 2,3, 5, 11
Day 8, Thursday, 25 June	Functional forms and Qualitative Information (dummy variables and interaction terms)	Chapter 5 (skim); Chapter 6; Chapter 7	Chapter 6; P: 1, 2, 3, 7 Chapter 7;P: 1, 2, 5, 11
Day 9, Monday, 29 June	**Exam 1**		
Day 10, Tuesday, 30 June	Heteroskedasticity	Chapter 8	P: 1, 2, 5, 6
Day 11, Wednesday, 1 July	Exam Review; **Preliminary Presentation of Paper** Specification and Data Problems; Autocorrelation	Chapter 9	P: 1, 3, 8, 9
Day 12, Thursday, 2 July	Simple Panel Data Methods Advanced Panel Data Methods	Chapter 13 Chapter 14	Chapter 13 P: 2, 6 Chapter 14 P: 1, 4
Day 13, Monday, 6 July	Basic Time Series, Serial Correlation Issues	Chapter 10 Chapter 12 (12.1, 12.4)	Chapter 10 P: 1, 2, 3 Chapter 12 P: 1
Day 14, Tuesday, 7 July	Limited Dependent Variables	Chapter 17	P: 1, 2
Day 15,	Instrumental Variables and	Chapter 15	

Wednesday, 8 July	Two-Stage Least Squares		
Day 16, Thursday, 9 July	Instrumental Variables and Two-Stage Least Squares (continued)	Chapter 15	P: 1, 2, 3, 5
Day 17, Monday, 13 July	Stata Hands-On: regressions; Catch Up		**Paper Due**
Day 18, Tuesday, 14 July	**Exam 2**		
Day 19, Wednesday, 15 July	**Paper Presentations**		
Day 20, Thursday, 16 July	Course Review and Summary		