ECON 042: Econometrics

Term: 2020 Winter Session Instructor: Staff Language of Instruction: English Classroom: TBA Office Hours: TBA
Class Sessions Per Week: 5 Total Weeks: 3 Total Class Sessions: 15 Class Session Length (minutes): 240 Credit Hours: 4

Course Description:

This course introduces the students to econometrics. It studies both the theoretical and the practical aspects of statistical analysis, with a focus on techniques for estimating econometric models of various types. Students are expected to develop a solid theoretical background in introductory level econometrics as well as practicing skills to solve real word problems.

Prerequisites: Intro to Microeconomics, Intro to Macroeconomics, Calculus II, Linear Algebra, Applied Statistics

Course Materials:

Introduction to Econometrics 3rd Edition, by James H. Stock and Mark W. Watson

Publisher: Addison-Wesley; 3rd edition (December 13, 2010)

ISBN-10: 0138009007

ISBN-13: 978-0138009007

Course Format and Requirements:

Attendance:

Attendance is MANDATORY!!! Due to the fact that this is a public speaking course students are required to attend ALL sessions. The only excused absences will be for illness documented by a doctor's note. If you know ahead of time that you will be absent, kindly e-mail the instructor immediately. Unexcused absences will result in an automatic drop in grade. With each unexcused absence your final letter grade will be dropped ½ a grade – NO EXCEPTIONS (e.g.: A to A-).

Grading Scale:

A+: 98%-100%
A: 93%-97%
A-: 90%-92%
B+: 88%-89%
B: 83%-87%
B-: 80%-82%
C+: 78%-79%
C: 73%-77%
C-: 70%-72%
D+: 68%-69%
D: 63%-67%
D-: 60%-62%
F: Below 60%

Course Assignments:

Quizzes

Five unannounced quizzes will be given throughout the semester. Therefore, students should be prepared in all classes to answer questions pertaining to lectures, class handouts, presentations, etc. The lowest quiz score will be dropped at the end of the semester. Under no circumstances, i.e., regardless of the reason for absence (excused or not excused), can students make up a quiz.

Computer Lab

Students will be announced if next class will be hold in computer lab. There will be lab assignment after each computer session.

Statistical Software

This course will use STATA as our main statistical software. The latest version is STATA 13, but any version later than STATA 6 suffices for the purpose of this course.

Exams

Exams will be testing your comprehension of concepts and arguments. The midterm will be taken in class and the final exam date will be announced later. The composition of exams will be discussed in class prior to the examination date. All exams will be based upon class contents.

Course Assessment:

Quizzes	15%
Computer Lab	25%
Midterm Exam	30%
Final Exam	30%
Total	**100%**

Course Schedule:

Week 1- Class 1	Week 1- Class 2
Brief introduction to course Why study econometrics? What is an econometric model? Review of Probability and Statistics	Data quality issues Non-parametric estimation of density function Random Variables Controlled vs. uncontrolled experimental data Discrete vs. continuous random variables ***Quiz 1***
Week 1- Class 3	Week 1- Class 4
Review of probability concepts Expected value Review of conditional predictions, neural nets, regression trees, random forest, linear model Estimation by least squares	The econometric model The least squares principle Deriving OLS estimator; - Properties of OLS Gauss-Markov Assumptions ***Quiz 2***
Week 1- Class 5	Week 2- Class 6

Statistical properties of OLS Hypothesis testing with OLS Interval estimation and hypothesis testing Evaluating the Simple Linear Regression Model Extremum estimation, maximum likelihood, likelihood	Ratio test, Wald test, Lagrange multiplier test More on method of moments Optimal weighting matrix ***Quiz 3***
Week 2- Class 7	Week 2- Class 8
More on linear model, Regression algebra, Estimation by method of moments Estimating the econometric model and interpreting the results	The properties of the least squares estimates of an econometric model Inference and prediction in the Simple Linear Regression Model ***Midterm***
Week 2- Class 9	Week 2- Class 10
Interpretations of OLS estimates Gauss-Markov Theorem Testing a single population parameter; Testing multiple linear restrictions; ***Quiz 4***	Goodness-of-fit and selection of regressions Sample and asymptotic properties of estimators, classical measurement error, mechanics of the bootstrap Binary variables
Week 3- Class 11	Week 3- Class 12
Interactions between binary variables Functional form Binary Dependent Variables Panel data Least squares dummy variables ***Quiz 5***	Interactions among dummy variables Linear probability Discrete dependent variables Sample selection models Inference and prediction in the GLRM
Week 3- Class 13	Week 3- Class 14
Single and joint hypothesis tests of the parameters of the econometric model Model specification issues	Newey-West estimator Consistency

Collinear variables Heteroscedasticity	OLS asymptotic Time Series Analysis Covariance stationary
Week 3- Class 15	
AR processes MA processes ARMA Stationary time series Spurious regression Tests for stationarity Co-integration	***Final Exam (Cumulative): TBA***

Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another, but all other work should be completed independently.

Students are expected to adhere to the standards of academic honesty and integrity that are described in the Shanghai Normal University's *Academic Conduct Code*. Any work suspected of violating the standards of the *Academic Conduct Code* will be reported to the Dean's Office. Penalties for violating the *Academic Conduct Code* may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the *Academic Conduct Code*.

Special Needs or Assistance:

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.