B.E. International Program

Faculty of Economics, Thammasat University

Course Syllabus

EE 425 Econometrics 1

Semester 1/2019 (August 13 – December 16, 2019)

Number of credits: 3 credits (3-0-6)

Lecture Time: Tuesday and Thursday, 12.30-14.00 hrs.

Lecture Venue: Room 203, Faculty of Economics

Instructor: Assoc. Prof. Dr. Tatre Jantarakolica

Office: Room 9, Faculty of Economics

E-mail: tatre@econ.tu.ac.th

Office hours: Tuesday and Thursday 9:30-11:00 hrs.

Enrollment key for BE moodle: 2369

MindTap website: https://login.cengagebrain.com/course/MTPPQD9PVKDB

Prerequisites: MA216 (or MA211) and ST217 (or ST212)

Course Objective:

The objective of this course aims to provide students with statistical tools and econometric analysis so that students can understand the foundations of econometric theory and its applications. Economic theory makes statements and hypotheses that are mostly qualitative in nature and econometric analysis uses mathematics and statistical tools to give quantitative or empirical content to economic theory. With understanding in econometric methods, students can properly use them in their research work.

Course Description:

In this course, we will study applications of statistical and economic theories in analyzing economic data. This includes parameter estimation using the ordinary least squares (OLS) technique and hypothesis testing. The course covers single and multiple regressions. It also discusses problems encountered by OLS, including autocorrelation, heteroskedasticity, multicollinearity and specification error. Other estimation techniques such as generalized least squares (GLS), maximum likelihood estimation (MLE) and the use of computer application in practice will also be covered.

Note: Since the analysis of the multiple linear regression model (or general linear model) will involve matrix algebra, students should have taken MA217 or have some basic knowledge about matrix manipulation.

Main Textbooks:

Wooldridge, J. M. Introductory Econometrics: A Modern Approach. 6th ed. Cengage Learning, 2016.

Gujarati, D.N., and D.C. Porter, Basic Econometrics, 5th ed., N.Y., McGraw- Hill, 2009.

Other references for further reading:

Dougherty, C. ***Introduction to Econometrics***. 3rd ed. Oxford University Press: Oxford, 2007.

Stewart, K. G. ***Introduction to Applied Econometrics.*** Thompson: Brooks/Cole, 2005.

Heij, C., de Boer, P., Franses, H.P., Kloek, T., & van Dijk, K.H. (2004). Econometric Methods with Applications in Business and Economics. New York, NY: Oxford University Press.

Johnston, J., & DiNardo, J. (1997). Econometric Methods. 4th ed. Singapore: McGraw-Hill.

Ruud, P.A. (2000). An Introduction to Classical Econometric Theory. New York: Oxford University Press.

Remark: Teaching notes will be uploaded on Moodle at least 1 days prior to class.

Lecture Plan:

Class Schedule

Week	Date	Content	Reading
1	13/8/2019	**Introduction & Review of Statistical Concepts** What is econometrics Methodology of econometrics	G. 1, W. 1
	15/8/2019	**Introduction & Review of Statistical Concepts (Cont.)** Types of economic data Random variables and distributions Sampling and estimators Estimators and desirable properties of estimators	G. 1, W. 1
2	20/8/2019	**Econometric Process** Simple Regression (Two Variables) Model	G.1-3, W.2
	22/8/2019	**Econometric Process (Cont.)** Multiple Regression Model	G.1-3, W.3
3	27/8/2019	**Classical Normal Linear Regression Model** Ordinary Least Square Estimation Methods (OLS) - Assumptions	G. 4, W.4
	29/8/2019	**Classical Normal Linear Regression Model (Cont.)** Ordinary Least Square Estimation Methods (OLS) - Properties	G. 5-6, W.5
4	3/9/2019	**Econometric Methodology** Evaluating Estimated Results	G. 7, W.6
	5/9/2019	**Econometric Methodology (Cont.)** Evaluating Estimated Results	G. 7, W.6
5	10/9/2019	**Econometric Methodology (Cont.)** Hypothesis Testing and Statistical Indices Specific Test	G. 8, W.4-6
	12/9/2019	**Econometric Methodology (Cont.)** Hypothesis Testing and Statistical Indices Specific Test	G. 8, W.4-6
6	17/9/2019	**Econometric Methodology (Cont.)** Hypothesis Testing and Statistical Indices Specific Test	G. 8, W.4-6
	19/9/2019	**Econometric Methodology (Cont.)** Hypothesis Testing and Statistical Indices Specific Test	G. 8, W.4-6
7	24/9/2019	**Dummy Variable Regression Model** ANOVA Model	G. 9, W.7
	26/9/2019	**Dummy Variable Regression Model (Cont.)** ANCOVA Model	G. 9, W.7
8	**Th. 3/10/2019 12:00-14:00**	**Midterm Exam**	

Week	Date	Content	Reading
9	8/10/2019	**Violations of OLS Assumptions** Multicollinearity Problem Nature of Multicollinearity Detection of Multicollinearity Remedial Measures	G. 10, W.4
	10/10/2019	**Violations of OLS Assumptions (Cont.)** Multicollinearity Problem (Cont.) Nature of Multicollinearity Detection of Multicollinearity Remedial Measures	G. 10, W.4
10	15/10/2019	**Violations of OLS Assumptions (Cont.)** Model Specification Specification Errors Errors of Measurement Nested versus Non-nested Models Model Selection Criteria	G. 13, W.9
	17/10/2019	**Violations of OLS Assumptions (Cont.)** Model Specification (Cont.) Specification Errors Errors of Measurement Nested versus Non-nested Models Model Selection Criteria	G. 13, W.9
11	22/10/2019	**Violations of OLS Assumptions (Cont.)** Autocorrelation Problem Nature of Autocorrelation Detection of Autocorrelation Remedial Measures	G. 12, W.12
	24/10/2019	**Violations of OLS Assumptions (Cont.)** Autocorrelation Problem (Cont.) Nature of Autocorrelation Detection of Autocorrelation Remedial Measures	G. 12, W.12
12	29/10/2019	**Violations of OLS Assumptions (Cont.)** Heteroscedasticity Problem Nature of Heteroscedasticity Detection of Heteroscedasticity Remedial Measures	G. 11, W.8
	31/10/2019	**Violations of OLS Assumptions (Cont.)** Heteroscedasticity Problem (Cont.) Nature of Heteroscedasticity Detection of Heteroscedasticity Remedial Measures	G. 11, W.8
13	5/11/2019	**Estimation Methods** Least Squares Estimation Method Least Squares Estimation – Matrix Approach	Handout

Week	Date	Content	Reading
	7/11/2019	**Estimation Methods (Cont.)** Least Squares Estimation Method Least Squares Estimation – Matrix Approach	Handout
14	12/11/2019	**System Estimation Methods (Cont.)** Seemingly Unrelated Models Simultaneous Equation Model Simultaneous Biased	W.15-16
	14/11/2019	**System Estimation Methods (Cont.)** Simultaneous Equation Model (Cont.) Indirect Least Squares (ILS) Two Stage Least Squares (2SLS) Three Stage Least Squares (3SLS)	W.15-16
15	19/11/2019	**Nonlinear Estimation Methods** Maximum Likelihood Estimation (MLE) Method Concept	Heij 4
	21/11/2019	**Nonlinear Estimation Methods (Cont.)** Maximum Likelihood Estimation (MLE) Method Computation	Heij 4
16	26/11/2019	**Nonlinear Estimation Methods (Cont.)** Maximum Likelihood Estimation (MLE) Method Computation (Cont.)	Heij 4
	28/11/2019	**Nonlinear Estimation Methods (Cont.)** Maximum Likelihood Estimation (MLE) Method Inferential Statistics	Heij 4
	Tue 3/12/2019 09:00-12:00	**Final Exam**	

Course Evaluation:

	Evaluation Method	Activities	Evaluation Date
1.	Assignments (20%)	Answers to problem sets	Every month
2.	Midterm Examination (35%)	Written Examination	Thursday, October 3, 2019 (12.00-14.00)
3.	Final Examination (45%)	Written Examination	Tuesday, December 3, 2019 (9.00 – 12.00)

***Late assignments count as 50% of your actual marks.**

Important Dates:

ACADEMIC CALENDAR SEMESTER 1/2019

Event	Semester 1 (August - December 2019)
Pre-Registration period (BE Portal)	July 8 - 10, 2019
Course Registration (Reg TU)	July 23 - 26, 2019
Payment	July 23 - 29, 2019
Classes Begin	August 13, 2019
Adding and Dropping Courses W/O Record	August 13 - 26, 2019
Payment	August 13 - 27, 2019
Mid-term Examination Period	September 30 - October 5, 2019
*His Majesty the late King Bhumibol Adulyadej Memorial Day**	*October 13, 2019*
*Substitution for His Majesty the late King Bhumibol Adulyadej Memorial Day**	*October 14, 2019*
Course Withdrawal With "W"	October 16 - 21, 2019
*King Chulalongkorn Memorial Day**	*October 23, 2019*
Last Day of Classes	December 1, 2019
Final Examination Period	December 2-4, 6-9,11-16, 2019
*The birthday of His Majesty the late King Bhumibol Adulyadej**	*December 5, 2019*
*Constitution Day**	*December 10, 2019*

Remark:

* Holiday, No classes during this period