



BACHELOR OF  
ECONOMICS  
THAMMASAT UNIVERSITY

## Course Outline

### EE 325 Introductory Econometrics

Semester 2/2023

#### Class Time and Logistic

**Class day:** Thursday

**Class time:** 9:00 – 12.00 hours

**Venue:** Room 302

**Teaching Materials Platform:** Google Classroom

#### Instructor:

**Name:** Theepakorn Jithitikulchai

**Office Hours:** By appointment

**Email:** theepakorn@econ.tu.ac.th

**Number of Credit:** 3 credits

**Prerequisite:** EE211 (or EE213), EE212 (or EE214), MA216 (or MA211)  
and ST216 (or ST211)

*(Credit will not be awarded to students who are taking or have completed EE425)*

**Course Description:** Applying statistical methods and economic theories to analyze economic data using the simple and multiple regression. Topics also include dummy variable, multicollinearity, heteroscedasticity, autocorrelation, and specification error. This course focuses on how to choose the appropriate tool for an empirical study, with the emphasis placed on using some econometric software.

**Aims and Objectives:** This course provides an introduction to basic results and techniques of econometric theory. The emphasis will be on principles of econometrics and the application of econometric techniques rather than the derivation of theoretical statements. It is expected that at the completion of the course, students will be able to employ econometric investigation in their preparation for writing a seminar paper and to read critically empirical literature.

**Instructor's Note:**

This is an introductory course for econometric analysis. To understand and be able to apply it effectively, you need to learn some basic theories and the reasoning underlying an estimated equation. Some applied examples will be discussed in class but exercises in homework will provide various examples of econometric application for students. Students are expected to use an econometrics computer package to do the homework. We will primarily use Stata statistical and econometrics software package for computer work in this course. There will be STATA workshops in the student computer lab. The dates and times will be announced in class accordingly.

Homework will be assigned on a regular schedule. An assortment of assignments based on theory and some computer applications that involve programming. Homework assignments are expected to be handed on time. There will be online- and paper-based homework. Late submission will be penalized. There will be occasional, possibly unannounced, quizzes during the semester. Missed quizzes may not be made up (unless this is the result of an officially excused absence)

**Expected Learning Outcomes****1. Morality and Ethics EE325**

Applicability	Expected Learning Outcomes	Evaluation Method
●	1. Students demonstrate integrity.	Class participation and exam
○	2. Students prioritize social and public benefits over personal ones.	Class participation
●	3. Students are punctual and comply with the code of conduct of the institution and society at large.	Class participation and exam
○	4. Students are responsible and accountable to society, the nation, and the subject of economics.	Class participation and exam
○	5. Students realize the cultural and environmental value of a sustainable society.	Class participation and exam

**2. Knowledge**

Applicability	Expected Learning Outcomes	Evaluation Method
●	1. Students know and understand modern economics principles and theories, and are up to date with new developments.	Class participation and exam
●	2. Students know and understand Thai and global economic structure and the importance of major international economic events.	Class participation and exam
●	3. Students know and understand the instruments of economic analysis.	Class participation and exam
●	4. Students know and understand applied fields in economics, including monetary, public, international, business, natural resource, and environmental, industrial, agricultural, cooperative, political, developmental, and entrepreneurial economics as well as agribusiness.	Class participation and exam

○	5. Students are informed about related fields including sociology, business administration, education, law policy, and science.	Class participation and exam
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### 3. Intellectual Development

Applicability	Expected Learning Outcomes	Evaluation Method
●	1. Students have developed individual critical thinking.	Class participation and exam
●	2. Students are sufficiently trained in research skills.	Class participation and exam
●	3. Students demonstrate an ability to analyze and synthesize data, as well as appropriately integrate economics concepts to understand the causes of current economic problems in Thailand. Based on analysis and synthesis, students demonstrate an ability to propose policy guidelines to resolve problems.	Class participation and exam

### 4. Interpersonal Skills and Responsibilities

Applicability	Expected Learning Outcomes	Evaluation Method
●	1. Students are responsible for assigned tasks and work in groups effectively.	Class participation and exam
●	2. Students have problem-solving skills.	Class participation and exam
○	3. Students show leadership skills and team spirit.	Class participation and exam
●	4. Students are always improving themselves.	Class participation and exam
○	5. Students have good interpersonal skills, adapt, and work under different conditions.	Class participation and exam

### 5. Quantitative Analysis, communication, and information technology

Applicability	Expected Learning Outcomes	Evaluation Method
●	1. Students select and apply appropriate statistical and mathematical methods for data processing, interpretation, conclusions, and recommendations to resolve problems.	Class participation and exam
○	2. Students communicate effectively and select appropriate presentation methods.	Class participation and exam
●	3. Students use information and communication technologies appropriately to gather data as well as process, interpret, and present results.	Class participation and exam

Remark: ● Primary expected outcome ○ Secondary expected

**Main Text:**

1. \*\* Gujarati, D.N., and D.C. Porter, **Basic Econometrics. 5th ed.**, N.Y., McGraw-Hill, 2009.
  2. \*\*Wooldridge, J. M. **Introductory Econometrics: A Modern Approach. 6th ed.** Thompson: South-Western, 2016.
- \*\*Main Text

**Recommended Texts & Materials:**

Jame H. Stock and Mark W. Watson, **Introduction to Econometrics**, 2<sup>nd</sup> Edition, Boston: Pearson Addison Wesley (2007)

William E. Griffiths, R. Carter Hill and George G. Judge, **Learning and Practicing Econometrics**, John Willey & Sons (1993 or latest edition)

Joshua D. Angrist and Jörn-Steffen Pischke, **Mostly Harmless Econometrics: An Empiricist's Companion**, Princeton University Press (2009)

ISBN-13: 978-0-691-12035-5

**Other teaching materials:**

Teaching materials will be uploaded on Google Classroom prior to the class.

**Grading Criteria:**

Homework Assignments	10 points
Class Attendances, Quizzes and participations	15 points
Midterm Exam	35 points
Final Exam	40 points

**Academic Honesty**

You are expected to be honest in all your academic work. Copying is plagiarism and will be treated as an honor code violation. Potential sanctions include failure in the course and suspension from the university.

## **Tentative Class Schedule:**

### **Introduction**

- What is econometrics?
- Methodology of econometrics
- Types of economic data  
(Wooldridge, ch.1 or Gujarati, ch. 1)

### **Review of Some Statistical Concepts**

- Random variables and distributions
- Expectation, variance, covariance and correlation
- Estimators and desirable properties of estimators  
(Wooldridge, Appendix B or Gujarati, Appendix A, pp.869-912)

### **Simple Regression Models**

- Principle, assumptions and derivation of ordinary least squares (OLS) estimators
- Properties of OLS estimators
- Statistical inference
- Prediction
- Regression Through the Origin
- Data scaling on OLS statistics
- More on functional forms  
(Wooldridge, ch. 2 and 6, (6.1 and 6.2) or Gujarati, chs. 2 – 6)

=====MIDTERM EXAM: Thursday, February 29, 2024, 12.00-14.00 hrs =====

### **Multiple Regression Analysis (Estimation)**

- Motivation
- Model and assumptions
- Estimation of parameters and properties of estimators
- Meaning of partial regression coefficients
- Measuring goodness of fit:  $R^2$  and adjusted  $R^2$
- The matrix approach to linear regression model  
(Wooldridge, ch. 3 or Gujarati: ch. 7, Appendix B, C)

### **Multiple Regression Analysis (Inference)**

- Sampling Distribution of the OLS estimators
- Test on individual regression coefficients
- Testing the multiple linear restrictions
- Testing the equality of two regression coefficients
- Testing for equality or stability of parameters (Chow test)
- Prediction with general linear model  
(Wooldridge, ch. 4 or Gujarati: ch. 8)

### **Dummy Variable Regression Models**

- Describing Qualitative Information
- Models with a single dummy independent variable
- Using dummy variables for multiple categories
- Interactions involving dummy variables  
(Wooldridge, ch. 7 or Gujarati: ch. 15)

### **Multicollinearity Problem**

- Nature and Consequences of Multicollinearity
- Detecting Multicollinearity  
(Wooldridge, ch. 3 (3.4) or Gujarati, ch. 10)

### **Heteroscedasticity Problem**

- Nature and Consequences of heteroscedasticity for OLS
- Testing for heteroscedasticity
- Remedial measures (weighted least squares estimation)  
(Wooldridge, ch. 8 or Gujarati, ch. 11)

### **Autocorrelation Problem**

- Nature and Consequences of Autocorrelation, Serial Correlation
- Testing for Autocorrelation
- Remedial measures  
(Wooldridge, ch. 12 (12.1-12.3) or Gujarati, ch. 12)

### **Specification Errors and Data Problems**

- Type of specification errors
- Consequences of specification error
- Tests of specification error
- Errors of measurement  
(Wooldridge ch. 9 or Gujarati: ch. 13)

=====FINAL EXAM: Thursday, May 16, 2024, 13.30-16.30 hrs =====

### **Remarks:**

- ◆ **Mid-Term Examination: Thursday, February 29, 2024, 12.00-14.00 hrs**
- ◆ **Final Examination: Thursday, May 16, 2024, 13.30-16.30 hrs**

## ACADEMIC CALENDAR

### Semester 2/2023

(January 8-May 4, 2024)

Semester 2/2023 (January 8 – May 4, 2023)	
Registration (Create Plan from Quota via TU Greats App) (*ID.62-66)	December 18 – 21, 2023.
Tuition Fee Payment Period (Via TU Greats App)	December 18 2023 - January 5, 2024.
Classes Begin	January 8, 2024
Add-drop period	January 8 – 21, 2024 <i>(from 9.00 AM of January 8 to 10.30 PM of January 21).</i>
Tuition Fee Payment Period (Via TU Greats App)	January 8 – 22, 2024 <i>(9 AM - 10.30 PM)</i>
Mid-term Examination Period	25, 27 - 29 February - 4 March, 2024
<i>Substitution for Makha Bucha Day *</i>	<i>February 26, 2024</i>
Withdrawal period with “W” on record	January 24 – March 17, 2024 <i>(from 9.00 AM of January 24 to 10.30 PM of March 17).</i>
Special Withdrawal with “w” on record	March 18 – April 22, 2024
<i>Substitution for Chakri Memorial Day*</i>	<i>April 8, 2024</i>
<i>Songkran Festival Day*</i>	<i>April 11 – 17, 2024</i>
Last day of class for Semester 2/2023	May 4, 2024
<i>Substitution for Coronation Day*</i>	<i>May 6, 2024</i>
Final exam period	May 7 - 21, 2024
Submitting Forms for Degree Conferral	January 8 – 21, 2024

**Remark\* Holiday, No classes during this period**