TQF 3 Course Specifications

Section 1 General Information

1. Course code and course title
   Thai ICBE448/ICBE 373 เศรษฐมิติ / เศรษฐมิติและการวิเคราะห์ข้อมูล
   English ICBE448/ICBE 373 Econometrics / Econometrics and Data Analysis

2. Number of credits 4 (4-0-8)
   (Lecture 4 hours – Laboratory 0 hours - Self-study 8 hours/week)

3. Program and type of subject
   3.1. Program Undergraduate Degree (International Program)
   3.2. Type of Subject Major Required

4. Course Responsible Lecturer and Course Lecturer
   4.1. Course Responsible Lecturer
   Asst.Prof.Dr. Varang Wiriyawit
   Business Administration Division, MUIC
   Tel: 02-700-5000 Ext.4424
   Email: varang.wir@mahidol.edu
   4.2. Course Lecturer
   Asst. Prof. Dr. Monthien Satimanon
   Email: muicmonthien@gmail.com

5. Trimester/ Year of Study

   Course Capacity 40 students per section

6. Pre-requisite ICMB203 or ICMB205 - Microeconomics,
   ICMB204 or ICMB206 – Macroeconomics/
   and ICMB 201 Business Statistics for students ID61 and above
7. Co-requisites N/A
8. Venue of Study On-site Room A250
   Online Via Zoom: Meeting ID 7178169150, Google Classroom, and Sky MUIC. The live session is on Tuesday and Thursday from 12.00 to 13.50 p.m.

Section 2 Goals and Objectives

1. Course Goals

In the fast-changing world, understanding the economic/business situation, making the sound judgment, and finding appropriate solutions will be necessary for entrepreneurs, investors, and business employees alike. This course aims to prepare students with quantitative models and technical tools to make logical evidence-based decisions, answer business issues, and forecast business trends.

2. Objectives of Course Development/Revision

2.1. Course Objectives

This course introduces students to the field of econometrics and provides theoretical knowledge on econometric concepts, methodologies, tools, and techniques, with opportunities to gain experience in economic/business applications. Students are expected to be able to select and apply appropriate tools on actual cross-sectional, panel data and time series to solve economic/business problems using econometric software packages such as Stata ®, R, or Python.

2.2. Course-level Learning Outcomes: CLOs

By the end of the course, students will be able to:

CLO1 understand mathematical and statistical foundations of econometrics.

CLO2 understand basic knowledge about main concepts, models, estimation methods and techniques used in cross-sections, panel data and time series econometrics.

CLO3 apply appropriate econometric methods/models to real economic data to solve economic/business problems using econometric software packages.

CLO4 analyze and interpret results for economic/business problems.

Section 3 Course Management

1. Course Description

เศรษฐมิติเบื้องต้น การวิเคราะห์การถดถอยแบบง่าย การวิเคราะห์การถดถอยพหุ การทดสอบสมมติฐาน ภาวะร่วมเส้นตรงเชิงพหุ ความคลาดเคลื่อนมีความแปรปรวนไม่คงที่ ตัวแปรหุ่น แบบจำลองสำหรับข้อมูลภาคตัดขวาง แบบจำลองสำหรับข้อมูลที่ประกอบด้วยข้อมูลอนุกรมเวลา การประยุกต์ใช้วิธีการทางเศรษฐมิติกับข้อมูลจริงโดยใช้โปรแกรมคอมพิวเตอร์ทางเศรษฐมิติ

The course is an introduction to the field of econometrics; simple regression analysis; multiple regression analysis; hypothesis testing; multicollinearity; heteroskedasticity; dummy variables; panel data models; time series models; applications of econometric methods to actual data using econometric software packages, such as Stata®, R, or Python.

2. Credit hours per trimester

Lecture (Hour(s))	Laboratory/field trip/internship (Hour(s))	Self-study (Hour(s))
48 hours (4 hours x 12 weeks)	0	96 hours (8 hours x 12 weeks)

3. Number of hours that the lecturer provides individual counseling and guidance:
   - The responsible lecturer provides 4 hours per week of office hours.
   - Students can request appointments whenever necessary and agree with the responsible lecturer (Monday – Friday, during office hours).

Section 4 Development of Students' Learning Outcome

1. Expected outcome on students' skills and knowledge (CLOs).
   By the end of the course, students will be able to:
   CLO1 understand mathematical and statistical foundations of econometrics.
   CLO2 understand basic knowledge about main concepts, models, estimation methods and techniques used in cross-sections, panel data and time series econometrics.
   CLO3 apply appropriate econometric methods/models to real economic data to solve economic/business problems using econometric software packages.
   CLO4 analyze and interpret results for economic/business problems.

2. Teaching methods for developing the knowledge or skills specified in item 1 and measuring the course learning outcomes

CLOs	Teaching methods	Evaluation Methods
CLO1	- Online Interactive live lecture - Problem-based learning	- Exams
CLO2	- Online Interactive live lecture - Problem-based learning - Group assignment - Discussion	- Exams - Homework assignments - Group project and Presentation
CLO3	- Online Interactive live lecture - Problem-based learning - Group assignment - Discussion	- Exams - Homework assignments - Group project and Presentation
CLO4	- Online Interactive live lecture - Problem-based learning - Group assignment - Discussion	- Exams - Homework assignments - Group project and Presentation

Section 5 Teaching and Evaluation Plans

1. Teaching plan

Week	Topic	Number of Hours		Teaching Activities/ Media	Lecturer CLOs
		Lecture Hours	Lab/ Field Trip/ Internship Hours		
1	- Course outline - Introduction to econometrics - Introduction to programming software	4	0	- Online Interactive lecture - Problem-based learning	Monthien CLO 1,2
2	- Simple regression analysis: estimation and inference	4	0	- Online Interactive lecture - Problem-based learning	Monthien 2,3,4
3	- Multiple regression analysis: estimation and inference	4	0	- Online Interactive lecture - Problem-based learning - Homework assignment	Monthien CLO 2,3,4
4	- Multiple regression analysis: estimation and inference	4	0	- Online Interactive lecture - Problem-based learning	Monthien CLO 2,3,4
5	- Multiple regression analysis • Hypothesis testing • Confidence intervals	4	0	- Online Interactive lecture - Problem-based learning - Homework assignment	Monthien CLO 2,3,4
6	- Multiple regression analysis - Hypothesis testing - OLS asymptotics	4	0	- Online Interactive lecture - Problem-based learning	Monthien CLO 2,3,4
7	- Multiple regression analysis: Qualitative information and dummy variables	4	0	- Online Interactive lecture - Problem-based learning	Monthien CLO 2,3,4
	Midterm exam				
8	- Multiple regression analysis: Heteroskedasticity and Autocorrelation.	4	0	- Online Interactive lecture - Problem-based learning - Homework assignment	Monthien CLO 2,3,4
9	- Multiple regression analysis: - Other Regression Problems	4	0	- Online Interactive lecture	Monthien CLO 2,3,4

	- Endogeneity			- Problem-based learning	
10	- Regression analysis with time-series data	4	0	- Online Interactive lecture - Problem-based learning	Monthien CLO 2,3,4
11	- Simple panel data methods (First differencing)	4	0	- Online Interactive lecture - Problem-based learning - Homework assignment	Monthien CLO 2,3,4
12	- Group project presentations - Revisions, Q&A	4	0	- Group project. - Discussion	Monthien CLO 2,3,4
	Final Exam				
	Total	**48**	**0**		

2. Plan for Assessing Course Learning Outcomes

a. Assessing and Evaluating Learning Achievement

a. Formative Assessment

1. Non-graded assignments and feedback
2. In-class problem/case discussion feedback
3. Group project analysis consultation.

b. Summative Assessment

(1) Tools and Percentage Weight in Assessment and Evaluation

Learning Outcomes	Assessment Methods	Assessment Ratio (Percentage)	
CLO1 understand mathematical and statistical foundations of econometrics.	Midterm exam	5	10
	Final exam	5	
CLO2 understand basic knowledge about main concepts, models, estimation methods and techniques used in cross-sections, panel data and time series econometrics.	Midterm exam	5	30
	Final exam	9	
	Homework assignments or group projects and work	12	
	Participation in Class activities and Discussions	4	
	Midterm exam	5	31

Learning Outcomes	Assessment Methods	Assessment Ratio (Percentage)	
CLO3 apply appropriate econometric methods/models to actual economic data to solve economic/business problems using econometric software packages.	Final exam	8	
	Homework assignments or group projects and work	15	
	Participation in Class activities and Discussions	3	
CLO4 analyze and interpret results for economic/business problems.	Midterm exam	5	29
	Final exam	8	
	Homework assignments or group project and work	13	
	Participation in Class activities and Discussions	3	
Total			**100**

Evaluation Methods	Expected Learning Outcomes (CLO)	Week	Percentage
Midterm exam	CLO 1, 2, 3, 4	1-6	20%
Final exam	CLO 1, 2, 3, 4	7-12	30%
Homework assignments	CLO 1, 2, 3, 4	1-12	20%
Group project	CLO 2, 3, 4	12	20%
Participation in Class activities and Discussions	CLO 1, 2, 3, 4	1-12	10%
Total			**100%**

(2) Grading System

Grade	Score	Achievement	GPA
A	90-100	Excellent	4.0
B+	85-89	Very Good	3.5
B	80-84	Good	3.0
C+	75-79	Fairly Good	2.5
C	70-74	Fair	2.0
D+	65-69	Poor	1.5
D	60-64	Very Poor	1.0
F	<60	Fail	0.0

The student should earn “D” grade and above to pass the course.

Other letter grades, without credit points, are assigned for course work taken as follows:

Grade	Explanation
I	Incomplete
T	Transfer of Credit
X	No report from the instructor
P	In progress
S	Satisfactory
U	Unsatisfactory
AU	Audit (No credit granted)
W	Withdrawal

(3) Re-examination (If course lecturer allows having re-examination)

The students will be allowed to retake the exam based on Mahidol University’s examination codes and regulations.

3. Student Appeals

During office hours or appointments, students can seek academic advice, content, and evaluation clarifications from instructors and Program Directors. In addition, MUIC allows students to formally appeal on academic- related matters through an appellant letter submitted to the college.

Section 6 Teaching Materials and Resources

1. Primary texts and documents (Required Texts)
   1) Main text: Wooldridge, J.M. (2019). Introductory Econometrics: A Modern Approach (7th edition), Cengage Learning.

2. Recommended documents and information (Suggested Materials)
   - Econometrics with R. and Econometrics with Python
3. Other Resources (If any)
   - Stata 17®

Section 7 Evaluation and Improvement of Course Management

1. Strategies for evaluating course effectiveness by students
   - Mid-trimester feedback that is anonymous from students
   - Formal student evaluations at the end of the trimester with the results monitored by a Program Director
2. Strategies for evaluating teaching methods
   - Peer evaluation based on class visits
   - Formal student evaluations at the end of the trimester on teaching methods
3. Improvement of teaching methods
   - Attendance of teaching and learning training/seminars
   - Improvement through Closing the Loop activity using feedback from students and results of the evaluation of Course Learning Objectives
   - Dialogue with peers
4. The verification process for evaluating students' standard achievement outcomes in the course
   - Comments from students on learning outcomes and evaluation criteria
   - Formative feedback to students' project and papers are communicated to students
   - Faculty members' evaluations of Course Learning Objectives through several evaluation methods are recorded in an Assurance of Learning (AoL) report.
5. Review and plan for improving the effectiveness of the course
   - Continuous improvement through Closing the Loop activity using feedback from students and results of the evaluation of Course Learning Objectives
   - Formal dialogue among Program Directors, AoL and Curriculum Development subcommittee, and responsible faculty members

Section 8 Online Instructional Guideline: If needed

I. Technical requirement

a. Basic computer with video and audio equipment
b. Headset with microphone
c. Computer with the updated operating system, i.e., Microsoft Windows, Mac
d. Internet connection
e. MUIC e-learning (muicelearning.mahidol.ac.th)

f. Zoom (*www.zoom.us*)

g. mahidol.edu account (*you must register for an account*)

II. Instructional guideline

a. Joining the classroom – discussion based LIVE session will be conduct via Zoom (*link, meeting ID and password will be provided via MUIC e-learning platform.*)

b. Conducting the lectures – lecturer throughout the term will be provided through Live online session of the power point presentation. Students can access via Zoom and Google classroom.

c. Accessing course material – other course materials such as assignment can be access via Google Classroom.

d. Submitting class assignments – All assignments for this course will be submitted electronically through e-learning platform unless otherwise instructed. Only exceptional case of video presentation is to be uploaded via google drive of this class.

e. Taking midterm and final examinations

i. Midterm examination (*online midterm exam will be posted via Google Classroom*)

ii. Final examination (*online final exam will be posted via Google Classroom*)

III. Communication and Netiquette guideline

a. Be on time for classes.

The instructor will check that everyone is present at the beginning of each online lesson. If you are not there, you will be marked absent, even if you join later. Please send your name and student ID via public chat box when you enter the room.

b. Mute your microphone during classes (except discussion).

To avoid the sound feedback, students must mute their microphones during classes. Except when students want to participate/discuss/ask questions, students can turn on their microphones.

c. Stay in a quiet place.

- Be in a quiet room, so there are no distraction or people in the background while in class session.

- Make sure family members are aware of your schedule and do not disturb your classes.

d. Dress appropriately. All students are expected to dress appropriately during classes.

e. Always use your first name and last name as your sign in name/ID

f. Participate during classes.

- Questions can be asked using the chat function or by using microphone.
- Preparing for class is very important, so complete all homework exercises.

g. Communicate appropriately.

- All communications - verbal and by text message - must show respect for classmates and instructors and follow MUIC's e-learning policies.
- No impolite or inappropriate messages. Anyone who violates this rule may be excluded from the lesson.

IV. Virtual Office hours

a. E-Mail (*Please send me an e-mail to arrange an appointment*)

V. Assessment of online participation and attendance

Students are expected to participate in all online activities as listed on course calendar. Attendance will be checked according to your login to access e-learning course material and well as at the beginning of live session.

Appendix

Alignment between Courses and Programs

Table 1 The relationship between course and Program Learning Goals (PLGs)

Course code and title	Program Learning Goals (PLGs)					
	LG1	LG2	LG3	LG4	LG5	LG6
ICBE 373 Econometrics and Data Analysis						R
ICBE 448 Econometrics						R

Table 2 The relationship between CLOs and Program Learning Objectives (PLOs)

Course Learning Objectives	Program Learning Goals (PLGs)					
	LG1	LG2	LG3	LG4	LG5	LG6
CLO1 understand mathematical and statistical foundations of econometrics.						PLO6.1 (FM) PLO6.2 (FM) PLO6.3(BE)

Course Learning Objectives	Program Learning Goals (PLGs)					
	LG1	LG2	LG3	LG4	LG5	LG6
CLO2 understand basic knowledge about main concepts, models, estimation methods and techniques used in cross-sections, panel data and time series econometrics.						PLO6.1 (FM) PLO6.2 (FM) PLO6.3(BE)
CLO3 apply appropriate econometric methods/models to real economic data to solve economic/business problems using econometric software packages.						PLO6.1 (FM) PLO6.2 (FM) PLO6.3(BE)
CLO4 analyze and interpret results for economic/business problems.						PLO6.1 (FM) PLO6.2 (FM) PLO6.3(BE)

Table 3 The description of PLGs and PLOs of the course

Business Economics (BE)

PLGs	PLOs
PLG6 Students are able to use discipline-specific knowledge and skills to solve actual business problems	PLO6.3 (BE) Students are able to appropriately employ quantitative models for business and economics analyses.

Finance (FM)

PLGs	PLOs
PLG6 Students are able to use discipline-specific knowledge and skills to solve actual business problems	PLO6.1 Students are able to apply theoretical and practical financial knowledge when performing financial analyses.
	PLO6.2 Students are able to develop appropriate financial models to address business related issues and problems.