Universitas Indonesia | Faculty of Economics and Business

International Undergraduate Programme

SYLLABUS

EKONOMETRIKA CROSS SECTION AND PANEL DATA

FIRST SEMESTER 20/21

Lecturers and Tutors

No.	Lecturers	Tutors
1	Jahen F. Rezki	Raka Rizky Fadila

Subject Code	ECEU601304
Subject Title	**EKONOMETRIKA CROSS SECTION AND PANEL DATA**
Credit Value	3
Year/Semester	2022/2023, Term 1
Day/Hour	-
Subject Type	Compulsory Subject
Pre-requisite	-
Course Description	This is an undergraduate level of applied econometric course. The objective of the course is to equip students with a wide range of experimental and quasi-experimental technique of modern econometrics. The lectures emphasize econometrics as a causal inference tool. Topics include an introduction to causal inference, Rubin's counterfactual framework, followed by a review of the basic OLS (Ordinary Least Square) and its usage for causal inference and sets of quasi-experimental techniques. The course uses **Stata** software, hence coding skills is an advantage when enrolling this course. There are five main textbooks used in this course: **A.** Angrist, Joshua D., and Jörn-Steffen Pischke. Mastering'metrics: The path from cause to effect. Princeton University Press, 2014. **B.** Angrist, Joshua D., and Jörn-Steffen Pischke. Mostly harmless econometrics: An empiricist's companion. Princeton university press, 2008. **C.** Cameron, A. Colin, and Pravin K. Trivedi. Microeconometrics: methods and applications. Cambridge university press, 2005. **D.** Cunningham, Scott. Causal Inference: The Mixtape. 2018. **E.** Wooldridge, Jeffrey M. Introductory econometrics: A modern approach. Nelson Education, 2016.

Subject Learning Outcomes	**Course Objective:** The objective of the course is helping student in understanding the concept of causal inference in econometrics and its application with empirical data. Students are expected to have solid background in statistics, matrix, and economics theory. The course provides theoretical groundwork of linear models with some flavor of recent developments in the econometrics theory. Students are expected to understand in applying econometrics to several applications such as public policy, public finance,

	monetary theory, international trade, international finance, etc. The objectives of the course include: 1. Providing students general introduction to econometrics theory and its applications 2. To distinguish correlation and causation in econometrics. 3. Giving students the tools to identify and analyze strengths and weaknesses of specific econometrics results. 4. Giving students understanding how to carry out an empirical analysis using econometrics
	AACSB Learning Goal (LG) and Learning Objective (LO): <u>LG and LO to be assessed:</u> a. LG : Analytical Skill (AS): Students are competent in quantitative and qualitative methods for analyzing economic issues LO: Students are able to apply basic quantitative methods by using appropriate tools (LG AS – LO1) [1] Students are able to choose relevant economic data for analyzing specified economic issues [2] Students are able to choose appropriate quantitative research methods [3] Students are able to have correct interpretation of the result from the chosen method <u>LG and LO for Teaching and Learning Activities (TLA):</u> b. LG : Critical Thinking (CT): Students are able to demonstrate critical and integrative thinking in policy design LO: Students are able to provide policy recommendations to solve economic problem (LG CT – LO1) [4] Students are able to identify problems [5] Students are able to analyze problems

Subject Synopsis/ Indicative Syllabus

Session	Topics	Subtopics	Readings
1	Philosophy and Introduction to Econometrics	- What is econometrics? - What is regression? - Three types of data - Examples and recent application especially in policy making in Indonesia	**A2, D1, C3**
2	Regression theory	- Population regression theory and CEF (orthogonality assumption) - Regression justification theorem I, II and III (tentative)	**A2, B3.1, D3, C4**
3-4	Ordinary least square and its properties	- Least square formula - Goodness of fit - Distinguishing implication of using OLS property and orthogonality assumption	**D3, E2, B3**
5	Inference and hypothesis testing	- Expected value and variance of OLS estimators (standard error) - Robust standard error - CLT and Slutsky Theorem - Hypothesis testing in OLS	**D3, A1, B3**
6	OLS and causal inference	- What is counterfactual outcome framework - Obtaining exogenous X - ATE and its interpretation - Balance test	**B2, A1, D5, C2**

	7	Omitting variable bias formula and how to use control	- Short and long version regression - OVB derivation - What is controlling for means?	**B3, A2**
	8	Recovering unbiassed parameter: getting good controls	- CIA theorem or selection-on-observables model - DAG - Application: Return on education regression	**B3, A2**
	9-10	Recovering unbiassed parameter: Instrumental variable	- Instrument concept, exclusion restriction and Wald Formula - IV theorem - First stage relevance and strength - IV interpretation and LATE	**A3, A4, D8**
	11	Recovering unbiassed parameter: Panel Data Fixed-Effect	- Panel data estimate - LSDV or within estimate concept - Its relevance for time invariant omitting variable bias	**B5, D9**
	12	Recovering unbiassed parameter: Double difference regression	- Parallel trend assumptions and identification using double difference - DD Formula - Granger placebo test and parallel trend test	**A5, B5, D10**
	13	How to use regression estimates for policy discussions	- Making sense the number - Clustering Standard Error	**Paper (TBA)**
	14	Review	-	
	Final Examination			

Teaching/Learning Methodology	This course consists of 14 sessions, with each sessions is for 150 minutes. Each session will be filled with theoretical concept in practical and popular approach as an introduction. Students are also given an example of public policy cases/issues that can be analysed using econometric methodology that is being discussed. To sharpen the student insights and understanding of empirical studies, this course will also give computer laboratories session in 5 sessions @tp ad 120 minutes at a computer lab that has been provided. The Stata software will be used. This course will use exercise approach with real public policy case to make it more applicable. If possible the students expected to bring a Laptop/Notebook in each session. The Evaluation of the course consists of a midterm test (35%), final test (35%), Lecture assignment (10%), Tutor Assignment (15%), and class participation (5**%).** <u>Participation:</u> Individually, each student is required to participate actively in teaching and learning, in the form: 1. Ask questions in accordance with the topic. 2. Preparing to answer questions. 3. Discuss issues related to the topic. To be eligible, students must read textbooks and other materials provided. <u>Attendance:</u> Minimum 80% of Total Lecture:

<table>
<tr><td></td><td colspan="6">1. A maximum of 3 (three) times absent, for no reason.
2. Students who came 15 minutes after class begins is considered not present.</td></tr>
<tr><td rowspan="9">Assessment Method</td><td colspan="2">Description</td><td>Percentage of evaluation*</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Individual Assessment</td></tr>
<tr><td colspan="2">Lecture
Assignment</td><td>10%</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Tutor Assignment</td><td>15%</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Mid Term Examination</td><td>35%</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Final Examination</td><td>35%</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Class Participation</td><td>5%</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Total</td><td>100%</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Reading list for replication and reading</td><td colspan="6">REPLICATION

R1. Sparrow, Robert, Asep Suryahadi, and Wenefrida Widyanti. "Social health insurance for the poor: Targeting and impact of Indonesia's Askeskin programme." Social science & medicine 96 (2013): 264-271.
R2. Bedi, Arjun S., and Noel Gaston. "Using variation in schooling availability to estimate educational returns for Honduras." Economics of Education Review 18.1 (1999): 107-116.

READING
Duflo, Esther. "Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment." American economic review 91.4 (2001): 795-813.

Pradhan, Menno, Daniel Suryadarma, Amanda Beatty, Maisy Wong, Arya Gaduh, Armida Alisjahbana, and Rima Prama Artha. 2014. "Improving Educational Quality through Enhancing Community Participation: Results from a Randomized Field Experiment in Indonesia." American Economic Journal: Applied Economics, 6 (2): 105-26.</td></tr>
<tr><td>Plagiarism</td><td colspan="6">Students should maintain originality and respect intellectual property rights. Therefore, students should avoid conducting any act of plagiarism when doing written assignments (if any), which may take a form of short individual / group paper and / or summary.
The followings are acts of plagiarism:
• Copying paragraphs, sentences, a single sentence, or even a significant part of a sentence directly without enclosing them in quotation marks and appropriately footnoted;
• Using and / or developing other’s ideas found in printed materials or film elsewhere without explicitly referencing them to the respective author or the source of the idea.
Plagiarism is a serious infringement of intellectual property rights. Any assignment that contains presumed plagiarism will be marked 0 (zero).</td></tr>
</table>