Course title	Econometric Analysis II				
Responsible person				開講区分	単位数
to enter grades				1st semester	2.0
Numbering Code		Day · Period, etc.	Fri1(対面)	Timetable Slot Code	1J370
Lesson topic					
Building on foundational topics covered in Econometric Analysis I, this course delves into advanced econometric topics that go beyond the Ordinary Least Squares (OLS) model. The course will be divided into two parts to achieve this objective. During the first half, students will focus on how to identify and address problems related to endogeneity using instrumental variables and recent methods developed within the quasi-experimental literature. During the second half, the class focus will shift to issues often encountered within binary dependent variable models, including censoring, sample selection and endogeneity within a non-linear setting. Students will also be introduced to basic machine learning methods that can be used for, amongst other things, model selection.					
Lesson target					
Students will learn how to identify and address problems related to endogeneity using advanced statistical methods and some calculus. Students should also expect to develop their analytical and econometric modeling skills, while also learning how to address issues frequently encountered within limited dependent variable models.					
Syllabus and pla	n				
Week 1 - Introduction, Class Expectations and Review					
Weeks 2 and 3 - Instrumental Variables					
Weeks 4 and 5 - Research Designs with Panel Data (Difference-in-Difference)					
Weeks 6 and 7 – Regression Discontinuity Design					
Week 8 – Midterm Exam					
Week 9 - Maximum Likelihood (Logit and Probit) Review					
Weeks 10 and 11 – Truncation, Censoring, and Control Functions					
Weeks 12 and 13 – Introduction to Machine Learning					
Week 14 – Bootstrapping and Machine Learning Continued					
Weeks 15 and 16 - Wrap up, Summary, and Final Exam					
**Please note, classes scheduled between April 28th and May 14th will be conducted online and on an on-demand basis. Pre-recorded lecture videos will be provided to students for topics covered during this period.					
The schedule is subject to change as the semester progresses. This class will be conducted in principle face-to- face. I will notify you via Google Classroom and mention in class beforehand if a class will be conducted online as opposed to in person.					
In addition, due to university regulations the final exam will be conducted in person and will be scheduled during the 15th or 16th week of the course. During the non-exam week (i.e., either the 15th or 16th week), a final class will be held online or on-demand.					
Evaluation method					

Evaluation baseline

Students will be assessed on their ability to diagnose and address problems related to endogeneity using either an instrumental variables approach or another quasi-experimental methodology, such as the difference-in-difference or regression discontinuity method.

Upon completion of the course, students must also be familiar with advanced econometric modeling techniques that go beyond the basic OLS model. This includes the maximum likelihood estimator and other methods employed to address sampling bias/censoring within limited dependent variable models.

The final and midterm exams will be closed book. No notes are allowed during either exam. The final exam will cover all topics covered in Week 1 and onwards.

The grading scale used for this course is: 90 - 100: S 80 - 89: A 70 - 79: B 60 - 69: C <60: Fail

Notice (include info. on related class)

Exchange students (special auditing students) are allowed to register for this course. All students are expected to be proficient in calculus (derivatives and integrals) and intermediate-level statistics prior to taking this course.

In addition, students must have completed Econometric Analysis I (or a similar course) if they would like to attend this class. Students, in other words, should have a solid understanding of the theoretical underpinnings of the OLS model (i.e., Gauss-Markov assumptions, when these assumptions are violated, etc.) and know how to identify and address basic applied econometric problems. This includes, but is not limited to, misspecification errors, multicollinearity, serial correlation, and heteroskedasticity.

Review and preparation

Students are expected to read the corresponding articles/textbook chapters before coming to class. I will also post additional review material on the class webpage. Please make sure to check the course website regularly.

I would suggest reviewing mathematics, linear algebra, econometric statistics and your notes from Econometric Analysis I before the first day of class.

Office hour · Contact information

Office hours: by appointment only Office location: Frontier Hall for Social Sciences Room 812 Email: wolf@econ.kobe-u.ac.jp

Message for student

Please work through the examples discussed in class a second time at home to better your understanding of the course material. Feel free to ask questions if you are ever confused.

You will find this course cumbersome if you do not read the corresponding textbooks chapters/articles at home.

Improvemenets in Teaching

AE Introductory Econometrics: A Modern Approach 7th Edition / Jeffery Wooldridge : Cengage Learning ,2020 ,ISBN:9789814866088

Reference Material

Causal Inference: The Mixtape / Scott Cunningham : Yale University Press ,2021 ,ISBN:9780300251685 An Introduction to Statistical Learning with Applications in R Second Edition / Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani : Springer ,2021 ,ISBN:9781071614174

Classroom Language

English

Keywords

Regression Analysis, Difference-in-Difference, Instrumental Variables, Censoring, Sample Selection Bias, Exchange students (Special auditing students)

Text