
ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Days and Time	Credit Value
Environmental Economics and Policy: Empirical Analysis.	FRE 527	MW 10 – 11:30 AM	1.5

DESCRIPTION

Establishing the causal effect of environmental policy is essential to evaluate its effectiveness. To do this, in economics researchers will often use three tools: panel data analysis with time invariant fixed or random effects, a difference in difference analysis, and instrumental variable techniques.

In this course, I will introduce these techniques sequentially, and then use the tools to study the economics of the urban environment: urban development and biodiversity, and transportation. You will learn about the fundamental law of road congestion, congestion pricing, and the effectiveness of subsidies to support hybrid and electric vehicles, among other topics.

PREREQUISITES

MFRE courses required in your first semester, or permission of the instructor.

CONTACTS

Course Instructor(s)	Contact Details	Office Location	Office Hours
Sumeet Gulati	+1 (604) 822-2144, sumeet.gulati@ubc.ca .	MCML 341	Wednesday 11:30 – 12:30 PM.

COURSE INSTRUCTOR BIOGRAPHICAL STATEMENT

I am a Professor in Environmental and Resource Economics at the University of British Columbia. Among other things, I study the cost of conflict with wildlife to farmers living in proximity of wildlife reserves in India. This includes direct damages from conflict: lost crops and livestock, human injury and death. My projects in the economics of conservation are listed at [the Wildlife and Conservation Economics Laboratory](#).

OTHER INSTRUCTIONAL STAFF

You will also interact with a Juan Fercovic who will be your resource for course material, and for issues in grading.

COURSE STRUCTURE

In this course you will attend lectures, read material, and watch some asynchronous lectures before hand. You will also write two blog posts on topics related to the course material, and submit a final report exhibiting proficiency in one of the two techniques taught in class. Your learning will be through course lectures, assignments/reports, and quizzes/tests. Assignments/blogs and reports, play an important part in the learning of the topics presented.

SCHEDULE OF TOPICS

Wherever possible I provide a stable link to the paper. While some of these links will work anywhere, many of them are digitally protected requiring a subscription. You can access this material by logging in through your account at the UBC library, or on any computer connected via Ethernet on the UBC network. For some articles I do not provide a link, in that case, please search for the article (if you search via the UBC library you will find access to its electronic version).

This outline is subject to change. I might add/replace material as the course proceeds.

1. Introducing Panel Data Analysis.

Wooldridge, Jeffrey M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Chapter 10. Basic Linear Unobserved Effects Panel Data Models, pp: 247-297.

Angrist, J. D., & Pischke, J. S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 5. Parallell Worlds: Fixed Effects, Differences in Differences, and Panel Data.

Case Study: Carbon Emissions from Households across cities in North America.

Glaeser E. L., and M. E. Kahn (May 2010), "The greenness of cities: Carbon dioxide emissions and urban development," *Journal of Urban Economics*, 67(3), 404-418.

Fercovic, Juan and Sumeet Gulati, (Sept 2016) "Comparing Household Greenhouse Gas Emissions Across Canadian Cities." *Regional Science and Urban Economics*, vol 60, pp. 96-111.

2. Introducing Instrumental Variables Regression.

Stock J.H. and Watson, M.W. (2007) "Introduction to Econometrics," *Boston: Parson/Addison Wesley*. Chapter 12.

Angrist, J. D., & Pischke, J. S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 3. Instrumental Variables in Action: Sometimes You Get What You Need.

Case Study: The Economics of Driving.

Christopher R. Knittel (Winter 2012), "Reducing Petroleum Consumption from Transportation," *Journal of Economic Perspectives*, 26(1).

Gilles Duranton and Matthew A. Turner (October 2011), [The fundamental law of road congestion: Evidence from the US](#), *American Economic Review*, 101(6):2616-52.

Werner Antweiler and Sumeet Gulati (August 2013) "Market-Based Policies for Green Motoring in Canada," *Canadian Public Policy*, 39 (2).

Antweiler, Werner and Gulati, Sumeet, Frugal Cars or Frugal Drivers? How Carbon and Fuel Taxes Influence the Choice and Use of Cars (May 11, 2016). Available at SSRN: <https://ssrn.com/abstract=2778868> or <http://dx.doi.org/10.2139/ssrn.2778868>.

3. Introducing Difference in Difference Techniques.

Angrist, J. D., & Pischke, J. S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton university press. Chapter 5. Parallell Worlds: Fixed Effects, Differences in Differences, and Panel Data.

Case Studies: Wildlife and Conservation Economics.

Ferris, A. E., & Frank, E. G. (2021). Labor market impacts of land protection: The Northern Spotted Owl. *Journal of Environmental Economics and Management*, 109, 102480.

Madhok, R., & Gulati, S. (2022). Ruling the roost: Avian species reclaim urban habitat during India's COVID-19 lockdown. *Biological Conservation*, 109597.

LEARNING OUTCOMES

Through this course I will help you,

- To be familiar with commonly used empirical tools used in analyzing the effectiveness of environmental policies. Specifically,
 - Panel Data Analysis.
 - Instrumental variable techniques.
 - Difference and Difference Analysis.
- To be proficient in the use of one of these techniques in analyzing a dataset we provide.
- To learn about certain fundamental issues in environmental economics of urban development including how to deal with road congestion, and lower the fuel consumption of personal transportation.
- To gain experience in writing brief economic analysis reports describing the operation and effectiveness of environmental policies.

LEARNING ACTIVITIES

Preparation for lectures.

Asynchronous, and Synchronous lectures.

Active participation in class.

Assignments, and tests.

LEARNING MATERIALS

Available at Canvas: <http://www.canvas.ubc.ca>. You are required to regularly login to your course page for FRE 527. Your syllabus, course-lecture slides, additional material, announcements, assignments, and grades will be available there.

ASSESSMENTS OF LEARNING

Your grade shall be determined as follows (dates tentative)

Exams and Problem Sets	Date	Percent of Grade
2 Blogs	March 10, and 24	30 percent
Exam	TBA.	20 percent
Final Project	Overall.	45 percent
1st deliverable: data.	March 17 th .	10%
2nd deliverable: Lit review.	April 7 th .	8%
Final Report	April 21 st .	27%
Class Participation	Contributions to class discussions.	5 percent

Blogs

The two blogs will consist of a short essay (800 words) following a specific criteria published on Canvas. The topics for the blog writing will be: congestion, densification, or conservation policy. These posts will provide practice in writing brief economic summaries of environmental policy.

Exam

The exam will test students on analytical material taught in class, and on their reading of assigned material. Much of the analytical material is designed to help you understand commonly used applied econometric techniques. The goal of the exam is to ensure that you review this material in preparation.

Project

The final project is a written report based on individual analysis. It will have a maximum 10-page (double spaced) length. You will be provided with a dataset and a specific research question to answer. Your report, will introduce the research question, provide visual and summary analysis of the data, and conduct appropriate regression analysis.

You will be turning this project in three parts. First, a description of your data, with tables and figures. Then a review of the literature relative to your research question, and finally the full report.

Class Participation

Your participation grade depends on your contribution to class discussions. All contribution is appreciated; even questions asking me to clarify previously taught material. The sole aim of assigning a participation grade is to encourage active learning for everyone.

You will keep note of your individual participation during class, making a note of every time you ask a question, answer a question I ask, or contribute to the class discussion using the chat button on our online learning platform. These participation logs will also be submitted every two weeks on Canvas.

Academic honesty

Academic dishonesty will not be tolerated. The **minimum** penalty for any incident of academic dishonesty will be an automatic grade of zero in the relevant course requirement. You may have additional marks subtracted from your class grade, receive a failing grade in the course, and be reported to the faculty for further disciplinary action.

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).

Academic Accommodation for Students

The University accommodates students with disabilities who have registered with the Disability Resource Centre. The University also accommodates students whose religious obligations conflict with attendance or scheduled tests or exams. Other absences for varsity athletics, family obligations or other similar commitments are not part of University policy and students should not assume that they would be accommodated. Academic accommodations help students with a disability or ongoing medical condition overcome challenges that may affect their academic success. Students requiring academic accommodations must register with Access & Diversity. A&D will determine that student's eligibility for accommodations in accordance with Policy 73: Academic Accommodation for Students with Disabilities. Your instructors do not determine academic accommodations, however, your instructor may consult with Access and Diversity should the accommodations affect the essential learning outcomes of a course. If you have a pressing issue those conflicts with an exam, you should discuss this with your instructor as soon as possible. Refer to the UBC Calendar for details of 'academic concession'.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity.

At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work.

Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

For International Students - Issue of controversial topics in online learning

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom).

Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/supportresources/freedom-expression>

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I permit students to record my classes.

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