

**University of San Francisco**  
**Department of Economics**  
**Econ 476/676: Natural Resource Economics and Development Policy**  
**Fall 2024, Tues 2:40-4:25pm**  
**Lone Mountain East 1225**

**Instructor:** Professor Jesse K. Anttila-Hughes

**Office:** McLaren 107

**Office Hours:** By appointment Calendly

**Office Phone:** (415) 422 - 6453

**Email:** [jkanttilahughes@usfca.edu](mailto:jkanttilahughes@usfca.edu)

**TA:** TBA

**CLASS DESCRIPTION AND OVERVIEW:**

Economics 476/676: Natural Resource and Development Policy seeks to provide an overview of the economics of natural resources and the environment, specifically in the context of developing countries. I will assume that all students have sufficient background in economics to understand basic concepts such as market equilibria, marginal vs. average costs, etc. By the end of the course students should have a working understanding of the basics of environmental and resource economics, the ways in which developing countries' experiences in environmental issues differ from developed countries, and a sense of what the major open problems in the field are. This is a very active area of research, and I encourage you approach this class with an attitude that you are studying what are, to a very real extent, some of the most pressing problems of our time.

This class will move through a large body of material fairly quickly; please make sure that you keep up with readings and lectures, allow yourself plenty of time to complete problem sets and study for exams, etc. I meanwhile will try to make the process of doing so as engaging and enjoyable as possible. I am a firm believer in both constructive criticism and human fallibility, so I urge you to let me know if you have any questions, concerns, or suggestions regarding either the material we will cover or the class in general.

**COURSE LEARNING OUTCOMES:** This class is intended for the senior undergraduate and graduate level. Core learning outcomes for this class are listed below by category, and will be assessed through a combination of quantitative and qualitative questions on problem sets and exams.

1. *Foundations of economic thought regarding the environment and development*
  - a. Students can identify the fundamental economic aspects of social issues related to the environment, and identify relevant tradeoffs being made

- b. Students understand and can apply core concepts in economics such as opportunity costs, marginal vs. average changes, the tension between supply and demand in creating prices, and the role of incentives
  - c. Students can place economic understandings in the larger context of social understandings informed by other areas of the social sciences, sciences, and humanities
- 2. *Understanding topics in natural resource and environmental economics*
  - a. Students understand and can apply core concepts and models of environmental economics such as externalities, public goods, cost benefit analysis, and optimal extraction of natural resources
  - b. Students can identify both real-life and hypothetical situations where core concepts in environmental economics apply and arrive at meaningful conclusions about economic tradeoffs, optimal policies, and likely outcomes
  - c. Students understand economics' relative strengths and weaknesses in dealing with different social topics relative to other fields
  - d. Students understand core policy recommendations of environmental economics such as taxes on pollution and their applicability to different problems and contexts
- 3. *Empirical knowledge*
  - a. Students identify the empirical interplay of different environmental and social forces involved in generating core issues covered in the course such as climate change and air pollution
  - b. Students can read and discuss scientific and economic research articles covered in the course at the graduate level, and can explain the significance of those findings in a larger social context
- 4. *Analytical tools*
  - a. Students can apply the core models and techniques of natural resource and environmental economics, including welfare analysis, use of supply and demand curves to identify price and quantity effects, and discounting to answer both quantitative and qualitative problems
  - b. Students can solve basic environmental economics problems using a variety of different approaches, including algebraic manipulation, graphical analysis (e.g., of model curves), and application of deductive reasoning
  - c. Students can apply a combination of knowledge and concepts to answer conceptual questions related to the likely effects of certain types of policies and behaviors on social outcomes related to the environment
- 5. *Critical skills*
  - a. Students can apply economic intuition and analytical thought to everyday situations to critically examine others' claims about environmental issues
  - b. Students can recognize which social outcomes (e.g., efficiency) are easier to examine using the tools and models of economics and which (e.g., equitability of outcomes) are not, and apply judgment to understand what mix of disciplines is necessary to fully understand a social or economic development issue

- c. Students can articulate an interesting and novel research paper idea, and write up a proposal for that paper covering the common inputs of research question, design, potential data, and contribution.

## **READINGS AND RESOURCES:**

**Text:** The primary materials for this class are the lecture slides and readings.

**Canvas:** I will post slides for lecture, assignments, papers, supporting material for the course, etc. on Canvas throughout the semester. Please remember to check Canvas regularly for announcements

## **COURSE REQUIREMENTS:**

**Class Attendance and Participation:** Please note that **you are expected to attend all lectures**. Failure to attend class in a consistent manner may result in punitive measures, and more importantly will likely impact your success in the class. Economics is not an easy subject, and we will be covering material in class that is not covered in any of the texts or readings.

Class participation is expected and strongly encouraged. Please feel free to raise your hand and ask me a question at any point during my lectures, and don't be surprised if I ask you the occasional direct question. Conversely, I understand that students have different levels of comfort as far as public speaking is concerned, so if you feel intimidated asking a question in front of the class I ask that you please feel welcome to either come to my office hours or email me directly.

**Problem Sets:** Problem sets are due at or before the beginning of class on the day they are due. Problem sets are intended to help you learn the material and practice for the exams, so I strongly recommend that you devote sufficient time to them. Please feel free to talk with other students about problem set problems, review online resources related the questions, etc. but do **not** simply copy answers from other students or the internet. I consider this to be a form of academic honesty (see below) and take it very seriously. No credit will be given for late sets.

**Referee Reports:** Students are expected to complete ~3 referee reports on notable research papers in environment and development economics. Referee reports briefly outline what the paper was about, point out significant contributions to the literature / economics in general / advancing social welfare, and address any major potential problems or issues. Referee reports should be ~2-3pages, double spaced, 12 point font with standard margins. More detailed instructions on referee reports will accompany the first assignment.

**Paper Proposal:** All graduate students must submit a short (~10-15 page) research proposal as part of their final grade. Proposals will identify a research question of appropriate subject matter, review prior literature and explain the proposal's place within that literature, identify possible data sources for the analysis, and outline methodological approach. Further details will be provided once the semester is underway.

**Exam:** The final will be cumulative, and will echo the problem sets in content and structure. There will be no make-up exam. No extra time will be given to students who arrive late to class on the day of an exam.

**Grading:** The grade distribution for **graduate students** will be as follows:

- Problem sets: 40%
- Referee reports: 15%
- Paper proposal: 20%
- Final exam: 25%

The grade distribution for **undergraduate students** *excludes the proposal*, as follows:

- Problem sets: 40%
- Referee reports: 25%
- Final exam: 35%

I reserve the right to adjust final grades up or down by a reasonable amount for appropriate reasons, e.g., for class participation.

## **ADDITIONAL COURSE-RELATED RESOURCES AND CONCERNS**

### **Academic Integrity**

As a Jesuit institution committed to *cura personalis*—the care and education of the whole person—USF has an obligation to embody and foster the values of honesty and integrity. USF upholds the standards of honesty and integrity from all members of the academic community. All students are expected to know and adhere to the University's Honor Code. You can find the full text of the code online at [www.usfca.edu/academic\\_integrity](http://www.usfca.edu/academic_integrity). The policy covers:

- Plagiarism — intentionally or unintentionally representing the words or ideas of another person as your own; failure to properly cite references; manufacturing references.
- Working with another person when independent work is required.
- Submission of the same paper in more than one course without the specific permission of each instructor.
- Submitting a paper written by another person or obtained from the internet.
- The penalties for violation of the policy may include a failing grade on the assignment, a failing grade in the course, and/or a referral to the Academic Integrity Committee.

### **Students with Disabilities**

If you are a student with a disability or disabling condition, or if you think you may have a disability, please contact USF Student Disability Services (SDS) at 415 422-2613 within the first week of class, or immediately upon onset of disability, to speak with a disability specialist.

If you are determined eligible for reasonable accommodations, please meet with your disability specialist so they can arrange to have your accommodation letter sent to me, and we will discuss

your needs for this course. For more information, please visit: <http://www.usfca.edu/sds> or call (415) 422-2613.

### **Behavioral Expectations**

All students are expected to behave in accordance with the Student Conduct Code and other University policies (see <http://www.usfca.edu/fogcutter/>). Open discussion and disagreement is encouraged when done respectfully and in the spirit of academic discourse. There are also a variety of behaviors that, while not against a specific University policy, may create disruption in this course. Students whose behavior is disruptive or who fail to comply with the instructor may be dismissed from the class for the remainder of the class period and may need to meet with the instructor or Dean prior to returning to the next class period. If necessary, referrals may also be made to the Student Conduct process for violations of the Student Conduct Code.

### **Learning & Writing Center**

The Learning & Writing Center provides assistance to all USF students in pursuit of academic success. Peer tutors provide regular review and practice of course materials in the subjects of Math, Science, Business, Economics, Nursing and Languages. Other content areas can be made available by student request. To schedule an appointment, log on to TutorTrac at <https://tutortrac.usfca.edu>. Students may also take advantage of writing support provided by Rhetoric and Language Department instructors and academic study skills support provided by Learning Center professional staff. For more information about these services contact the Learning & Writing Center at (415) 422-6713, email: [lwc@usfca.edu](mailto:lwc@usfca.edu) or stop by our office in Cowell 215. Information can also be found on our website at [www.usfca.edu/lwc](http://www.usfca.edu/lwc).

### **Counseling and Psychological Services**

Our diverse staff offers brief individual, couple, and group counseling to student members of our community. CAPS services are confidential and free of charge. Call 415-422-6352 for an initial consultation appointment. Having a crisis at 3 AM? We are still here for you. Telephone consultation through CAPS After Hours is available between the hours of 5:00 PM to 8:30 AM; call the above number and press 2.

### **Confidentiality, Mandatory Reporting, and Sexual Assault**

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a faculty member. I

am required to share information regarding sexual misconduct or information about a crime that may have occurred on USFs campus with the University. Here are other resources:

- To report any sexual misconduct, students may visit Anna Bartkowski (UC 5th floor) or see many other options by visiting our website:  
[www.usfca.edu/student\\_life/safer](http://www.usfca.edu/student_life/safer)
- Students may speak to someone confidentially, or report a sexual assault confidentially by contacting Counseling and Psychological Services at 415-422-6352.
- To find out more about reporting a sexual assault at USF, visit USFs Callisto website at: [www.usfca.callistocampus.org](http://www.usfca.callistocampus.org).
- For an off-campus resource, contact San Francisco Women Against Rape (SFWAR) (415) 647-7273 ([www.sfwar.org](http://www.sfwar.org)).

### **Student Accounts - Last day to withdraw with tuition reversal**

Students who wish to have the tuition charges reversed on their student account should withdraw from the course(s) by the end of the business day on the last day to withdraw with tuition credit (census date) for the applicable course(s) in which the student is enrolled. Please note that the last day to withdraw with tuition credit may vary by course. The last day to withdraw with tuition credit (census date) listed in the Academic Calendar is applicable only to courses which meet for the standard 15-week semester. To find what the last day to withdraw with tuition credit is for a specific course, please visit the Online Class Schedule at [www.usfca.edu/schedules](http://www.usfca.edu/schedules).

### **Financial Aid - FAFSA priority filing deadline (undergraduates only)**

March 2 - Priority filing deadline for FAFSA (The Free Application for Federal Student Aid - <https://fafsa.ed.gov/>) for continuing undergraduates.

## **GENERAL CLASSROOM ETIQUETTE:**

- The 2020s have been an unusual and upsetting time for many of us. Please feel free to presume that I will be kind and understanding of any problems you have, and please do not hesitate to ask me for help, guidance, advice, extensions, etc. Come to my office hours if you're having trouble.
- I expect everyone in the class to be polite and respectful of everyone else. Please feel free to approach me if you feel that anyone in the class (including me!) is not abiding by this rule.
- I take academic dishonesty VERY seriously. Cheating on exams, copying homework answers from other students, reproducing online or other material without citation, using ChatGPT or other LLMs to do your own work, and similar offenses can result in penalties ranging from a zero grade for the assignment to a failing grade for the class and referral to the Dean's office. If you are in doubt about the academic appropriateness of a given action, I encourage you to ask me.
- Zoom specific etiquette:
  - Please log into class on time. If you are consistently late to class I will speak with you about the matter; repeat offenders may see their grades penalized.
  - Please leave your screen on and microphone off as a default, unless you have a very specific and local reason not to. I encourage you to use a Zoom background if you like.
  - Please "raise your hand" to ask any questions you may have, and if I do not notice just unmute your mic and ask the question.

## **NOTABLE DATES :**

Tuesday, Aug 20<sup>th</sup>: First day of class

Friday, Sept. 6<sup>th</sup>: USF census date (*last day to drop classes with a refund*)

Monday-Tuesday Oct 14-15<sup>th</sup>: Fall break, no classes

Friday, Nov 1<sup>st</sup>: drop / withdraw deadline

Thursday-Friday, Nov. 28-29<sup>th</sup>: Thanksgiving Recess

Wednesday, Dec. 4<sup>th</sup>: Last Day of Classes

**Thursday, December 12<sup>th</sup> , 2024: In Class Final Exam 3-5pm**

## **LECTURE TOPICS READINGS AND ASSIGNMENTS:**

- **Lecture 1. Introduction / deep determinants of development**
  - Nunn - 2014 - *Historical Development* (in *Handbook of Economic Growth*)
  - Sandmo - 2015 - *The Early History of Environmental Economics*
- **Lecture 2. The identification revolution**
  - Angrist and Pischke - 2010 - *The Credibility Revolution in Empirical Economics*
  - Currie and Walker – 2011 – *Traffic Congestion and Infant Health*
  - **PS 1 assigned**
- **Lecture 3. Social choice and social welfare**
  - Polborn – *Public Economics* – Chapter 6 “*The Social Choice Approach to Political Decision Making*”
  - **Referee Report #1 assigned**
- **Lecture 4. Social Decisions and Externalities**
  - Miguel and Kremer– 2004 – *Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities*
  - Polborn – *Public Economics* – Chapter 6 *Externalities*,
  - Gruber - *Public Finance and Public Policy* Ch. 5 *Externalities*
  - Supplemental:
    - Bundy et al. - 2009 - *Deworming and Development - Asking the Right Questions, Asking the Questions Right*
- **Lecture 5. Pollution as an Externality**
  - Hernandez-Cortes and Meng – 2022 – *Do Environmental Markets Cause Environmental Injustice? Evidence from California's Carbon Market*
  - Taylor - 2021 - *Cicadian Rhythm: Insecticides, Infant Health and Long-term Outcomes*
  - Supplemental
    - Landrigan et al. – 2017- *The Lancet Commission on pollution and health*
    - Hanlon and Tian – 2015 – *Killer Cities: Past and Present*
  - **PS 2 assigned**
- **Lecture 6. Public goods**
  - Polborn – *Public Economics* - Ch. 3
  - Kremer and Miguel – 2007 – *The Illusion of Sustainability*
  - Supplemental
    - Barrett - 1999 - *Montreal vs Kyoto in UNDP - Global Public Goods*
  - **Ref Report #2 assigned**
- **Lecture 7. Paper idea class discussion**
  - **First draft paper proposals discussed in class**
- **Lecture 8. Infrastructure as a public good**
  - Duflo and Pande – 2007 – *Dams*
  - Donaldson – 2018 - *Railroads of the Raj: Estimating the Impact of Transportation Infrastructure*
  - **PS 3 assigned**
- **Lecture 9. Cost-Benefit Analysis**



- *Arrow et al. – 1996 – Is there a role for cost benefit analysis in environmental, health, and safety regulation?*
- *Costanza – 1997 - The value of the world's ecosystem services and natural capital*
- *Dasgupta – 2008 – Discounting Climate Change*
- *Supplemental*
  - *OECD - 2006 - Cost-Benefit Analysis and the Environment*
  - *Ackerman and Heinzerling - 2002 - Pricing the Priceless - Cost-Benefit Analysis of Environmental Protection*
- **Lecture 10. Valuation**
  - *Atkinson Bateman and Mourato - 2012 - Recent advances in the valuation of ecosystem services and biodiversity*
  - *Hausman - 2012 - Contingent Valuation - From Dubious to Hopeless*
  - *Supplemental*
    - *Ray Fisman – 2001 – Estimating the Value of Political Connections*
  - **PS 4 assigned**
- **Lecture 11: Climate Impacts as Valuation**
  - *Dell, Jones and Olken – 2014 – What do we learn from the weather?*
  - *Deschenes – 2022 - The Impact of Climate Change on Mortality in the United States: Benefits and Costs of Adaptation*
  - *Supplemental*
    - *Carleton and Hsiang – 2016 - Social and economic impacts of climate*
    - *Anttila-Hughes, Jina, and McCord – 2021 - ENSO Impacts Child Undernutrition in the Global Tropics*
  - **Referee Report #3 assigned**
- **Lecture 12. Natural resources I – Nonrenewable resources**
  - *Keohane and Olmstead Ch. 6*
  - *Sachs and Warner - 2001 - The curse of natural resources*
  - *Asher and Novosod - 2020 - Rent-Seeking and Criminal Politicians - Evidence from Mining Booms*
  - **PS 5 assigned**
- **Lecture 13. Natural resources II – Renewable resources**
  - *Keohane and Olmstead Ch. 7*
  - *McGuirk and Burke - 2020 - The Economic Origins of Conflict in Africa*
  - *Brander and Taylor - 1997 - The Simple Economics of Easter Island*
  - *Supplemental*
    - *Worm et al. – 2009 – Rebuilding Global Fisheries*
    - *Curtis et al. - 2018 - Classifying drivers of global forest loss*
  - **PS 6 assigned**
- **Lecture 14. Climate change as a complex problem**
  - *Intergovernmental Panel on Climate Change (IPCC) AR6 Working Group 1 – 2021- Summary for Policymakers*

- *Roser – 2020 - Why did renewables become so cheap so fast? And what can we do to use this global opportunity for green growth?* <https://ourworldindata.org/cheap-renewables-growth>
- *Meadows – 1999 – Leverage points*
- **PS 7 assigned**
- **Lecture 15. Disasters, technology, and the future of life on Earth**
  - *Botzen Deschenes and Sanders - 2019 - The Economic Impacts of Natural Disasters*
  - *Zalasiewicz - 2008 - Are we now living in the Anthropocene?*
  - *Proctor et al. - 2018 - Estimating global agricultural effects of geoengineering using volcanic eruptions*