

Syllabus for Energy and Environmental Markets, MBA212
Haas School of Business, University of California at Berkeley
Spring 2024

Course Description: This course is about the economics of energy and environmental markets. Topics include the drivers of supply and demand, organized spot and futures markets, market power and regulation, energy transportation and storage, environmental policy, climate change, innovation, and the energy transition. While the course focuses on energy and the environment, the emphasis is on microeconomic tools that are broadly applicable.

Instructor:



Lucas Davis [in](#)
Email: lwdavis@berkeley.edu
Office Hours: Tuesdays 12:30–1:30 in F673

Graduate Student Instructor:



Kendra Marcoux [in](#)
Email: kendra_marcoux@berkeley.edu
Office Hours: By appointment

Class Meeting: Tuesdays and Thursdays, 11:10–12:30, Chou Hall N570.

Sections: The GSI will hold nine optional discussion sections as indicated on the section schedule, all on Fridays 2:40–4:00 in Chou Hall N570. If a Friday is not listed on the section schedule then there is no section that week. The main purpose of these sections is to work through the more quantitative material introduced in the class during the previous week and to prepare for the quizzes and the final exam.

Course Website: We will use *bCourses* for posting homework, readings, quizzes from previous years, and other materials. These materials are intellectual property of the Haas School of Business so please do not repost. We will not be using *Study.Net* for this course.

Course Prerequisites: MBA-level microeconomics or undergraduate intermediate microeconomics is required. This is a class about economics. We talk about supply and demand, competition, market power, producer and consumer surplus, and related topics. This class is not a good choice if you haven't taken at least a solid undergraduate microeconomics course.

Classroom Norms: Class attendance is required. Please let me know before class if you are unable to attend class. Please be courteous to your fellow classmates and arrive on time.

Electronics Policy: Please plan to bring a laptop or tablet to class. We will often do in-class exercises and other activities for which it will be useful to be able to access bCourses. At the same time, however, please also get in the habit of putting all electronics away during classroom discussions. When we are discussing thought questions, for example, you will not need laptops, cellphones, or other devices, so please put those electronics away.

Textbooks: There is no required textbook for this course. If you are looking for additional background or an alternate presentation of material, I recommend N. Keohane and S. Olmstead, *Markets and the Environment*, 2nd edition, Washington, DC: Island Press, 2016. This textbook is available for free in digital form through the UC Berkeley library: [here](#).

Other Readings: All required readings, mostly newspaper articles, will be available on bCourses. We often assign articles from the *Wall Street Journal* and *New York Times*. All UC Berkeley graduate students have free and unlimited access to both newspapers through the library [here](#). Please read required reading before the day on which the reading will be discussed. We also list additional optional material on bCourses for those who want to learn more about a topic.

Screencast Videos (SV): Because there is no textbook that fits the course, we will be using a collection of screencast videos recorded by me and based closely on material from Severin Borenstein, the previous instructor of the course. These videos feature my voice over slides and cover much of the foundational material for the course. In order to allow more time in class for interactive learning, there will be screencast videos required before almost all classes. The videos (typically less than 30 minutes per topic) will be posted on bCourses. You will need to watch them before the relevant class.

Homework (HW): For most days we will post a document with homework questions and suggested solutions. Homework is ungraded and does not need to be turned in. Please make a heartfelt attempt to solve the homework questions by yourself before looking at the solutions. It will typically be most useful to do homework after watching the SVs and before each relevant class. Homework questions are also helpful preparation for quizzes and the final exam.

Thought Questions (TQs): For most days we will also provide two or three thought questions, available in the same HW document. Solutions are not provided. These tend to be bigger picture questions, often referring to newspaper articles or recent events in energy markets, relevant to the day's topic. We discuss these questions in class.

Electricity Strategy Game (ESG): The ESG is an electricity market simulation in which teams own and operate a portfolio of power plants. The ESG starts with a relatively simple cost and bidding structure. Later, complexity is added with transmission constraints, alternative auction formats, a cap-and-trade system for carbon dioxide, and other unforeseen events. The schedule for the ESG is on the last page of this syllabus.

Quizzes: There will be three quizzes (40 minutes each) as indicated on the course schedule. These will be on bCourses and include multiple choice, true/false, and short answer problems. These will

be open note so you may use any course materials you'd like, but are *individual* assignments so there should be no communication between class participants for any reason. If you have a conflict please let us know as soon as possible so that we can try to schedule an alternative time.

Final Exam: There will be a final exam (75 minutes) as indicated on the course schedule. The final exam will be on bCourses and include multiple choice, true/false, and short answer problems. The final exam will be open note so you may use any course materials you'd like, but is an *individual* assignment so there should be no communication between class participants for any reason. If you have a conflict please let us know as soon as possible so that we can try to schedule an alternative time.

Grading: Course grades will be determined as follows: 10% attendance and participation, 10% ESG, 50% quizzes, 30% final exam.

Daily Indicator: Once during the semester, each class participant will present the “indicator”. The indicator is some piece of data or numerical fact on a topic related to energy and environmental markets. In five minutes or less explain the data and why you think it is interesting. In bCourses there is a link to a sign-up sheet.

The screenshot shows the sharing settings for a Google Slides presentation titled "Share 'My Daily Indicator'". At the top right are help and settings icons. Below the title is a search box with the placeholder text "Add people, groups, and calendar events". Underneath is a section for "People with access" listing "Lucas W Davis (you)" as the "Owner" with the email "lwdavis@berkeley.edu". Below that is the "General access" section, which is currently set to "Anyone with the link" (with a dropdown arrow) and "Viewer" (with a dropdown arrow). A description below the access level reads "Anyone on the internet with the link can view". At the bottom are two buttons: "Copy link" and "Done".

Sharing Your Daily Indicator: The day you are set to present, include a link to your slides on that same sign-up sheet. Please make sure your slides can be viewed by everyone. For example, in Google Slides set sharing to “Anyone with the link”. Your indicator will count toward your participation grade.

Grade Dispute Policy: If you want to request that a quiz or the final exam be re-graded, please send me an email within 48 hours that clearly explains the specific issue you have with the grading.

Privacy and Recording Notice: Haas classes are recorded and may possibly be viewed by people who are not enrolled in the class. For more information see [here](#).

Honor Code: As members of the UC-Berkeley community, our expectation is that you will adhere

rigorously to the UC-Berkeley Honor Code. Anyone caught cheating on a quiz or on the final exam will receive a failing grade in the course and will also be reported to the University Center for Student Conduct. For more information see [here](#).

Accommodations: If you need disability-related accommodations, please let me know during the first week of classes. For additional campus resources see [here](#).

Course Schedule

Part 1: Markets

January 16	Course Introduction
January 18	Competitive Markets
January 23	Market Power
January 25	Energy Transportation
January 30	Auctions
February 1	Energy Storage
February 6	Hedging Strategies
February 8	Futures Curves
February 13	Quiz 1

Part 2: Regulation

February 15	Monopoly Regulation in Theory
February 20	Monopoly Regulation in Practice
February 22	ESG Portfolio Auction
February 27	Price Controls
February 29	Deregulation
March 5	Vertical Structure
March 7	Tax Incidence
March 12	ESG Debrief
March 14	Quiz 2

Part 3: Externalities

March 19	Externalities
March 21	Mandates vs Markets
	Spring Break
April 2	Cap-and-Trade
April 4	Carbon Pricing in Practice
April 9	Hybrid Regulation
April 11	Energy Efficiency
April 16	ESG Team Meetings
April 18	Quiz 3

Part 4: Wrap Up

April 23	Project Finance
April 25	Innovation
April 30	ESG Debrief
May 2	Final Exam

Section Schedule

January 19	Microeconomics Refresher
January 26	Review Dominant Firm, Competitive Fringe
February 2	Review Using Excel for ESG
February 9	Review for Quiz 1
February 23	Review Monopoly Regulation
March 8	Review for Quiz 2
April 5	Review Cap-and-Trade
April 12	Review for Quiz 3
April 26	Review for Final Exam

Electricity Strategy Game Schedule

Year 1

January 30 (Tu)	ESG team assignments posted for ESG Years 1 and 2
January 30 (Tu)	Introduction to the ESG in class
February 5 (M)	Bids due by 5pm for Day 1
February 7 (W)	Bids due by 5pm for Day 2

Year 2

February 22 (Th)	ESG portfolio auction, in class
March 1 (F)	Bids due by 5pm for Day 1
March 4 (M)	Bids due by 5pm for Day 2
March 6 (W)	Bids due by 5pm for Day 3
March 11 (M)	Bids due by 5pm for Day 4

Year 3

April 9 (Tu)	Sealed-Bid Portfolio Auction, bids due by 5pm
April 11 (Th)	Sealed-Bid Permit Auction, bids due by 5pm
April 15 (M)	Bids due by 5pm for Day 1
April 17 (W)	Bids due by 5pm for Day 2
April 22 (M)	Bids due by 5pm for Day 3
April 24 (W)	Bids due by 5pm for Day 4
April 29 (M)	True-Up Deadline for Permits, 5pm
April 30 (Tu)	ESG debriefing, in class