

Economics of Regulation

ECO 14303: Economía de la Regulación

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Why do many governments set the prices of electricity, water, and gasoline? This course is about the regulator's problem: designing rules for firms with unobserved costs, facing pressure from multiple interest groups, while using tools that have unintended consequences. The organizing question is not: should we regulate? Instead, it is: how should we choose among imperfect institutions?

The first half of the course builds the toolkit: natural monopoly, pricing, asymmetric information, and the political economy of regulation. Mexico is used as the running example to illustrate these ideas. The second half turns to the harder job for a modern regulator: remaking and creating markets. Here we will analyze the design of markets for electricity, environmental emissions, and digital platforms.

By the end of this course, you should be able to do the following:

1. set up and solve the core economic models of regulation, in graphical and numerical form;
2. skeptically evaluate any proposed regulation, by identifying the market failure it claims to address, the interests behind it, its unintended consequences, and the alternatives;
3. interpret empirical evidence on the causes and effects of regulation;
4. apply the tools in practice, by writing and defending a regulatory filing, and designing bidding strategies in a wholesale electricity market; and
5. explain how the design of regulatory institutions shapes outcomes, both in Mexico and in other countries.

Prerequisites

This is a course for advanced ITAM undergraduates. I expect that most of you have taken intermediate micro, industrial organization, and econometrics. However, most of the topics will be self-contained, so anyone with a different background should be able to catch up.

Lectures

The lectures will be on Tuesdays and Thursdays, from 10:00am to 11:30am, in room PF103.

Lectures will be held in person. If you have to miss a lecture for health or other reasons, you should talk to your classmates to catch up on any material you missed, as not all lecture material will be posted on Canvas.

I want to make the lectures as interactive as possible. Therefore, you should treat the lectures as an opportunity for active participation and discussion. Please feel free to stop me and ask questions.

Devices such as laptops, tablets, and cell phones are neither required nor permitted during the lectures. Please keep these in your bag, and feel free to step out if you have an urgent call or message. The only exception will be for the electricity game sessions, when laptops will be required for submitting bids. Scientific calculators are always allowed and may be helpful for the in-class problems.

I may have to cancel one or two in-person lectures due to academic travel commitments. In that case, I will make up for any missed lectures with additional take-home material and/or adjustments to the schedule of topics.

Readings

Part of the course will be based on the following two textbooks, both of which are available in the ITAM library:

- Decker, Christopher. 2023. *Modern Economic Regulation: An Introduction to Theory and Practice*. 2nd ed. Cambridge: Cambridge University Press.
- Viscusi, W. Kip, Joseph E. Harrington, Jr., and David E. M. Sappington. 2018. *Economics of Regulation and Antitrust*. 5th ed. Cambridge, MA: MIT Press.

You are not expected or required to buy these textbooks.

There will be academic articles related to the course topics each week that are required reading. These articles will be posted on Canvas. There may be questions about these articles on the quizzes, midterm exam, and final exam.

Homework assignments

There will be approximately **13** weekly homework assignments to help you learn the course material. The quizzes, midterm exam, and final exam will be similar to the questions on the homework assignments.

Homework assignments will be distributed during the lectures. Your homework answers are **not** required to be turned in. The homework solutions will be posted on Canvas. I suggest using the posted solutions to grade your own work.

Note that most of the benefit of the homework comes from attempting to answer the questions on your own before reading the solutions. The problems always look easier once you have the answers! I encourage you to work together in small groups to discuss the homework problems.

Quizzes

There will be **six** short quizzes, 25 minutes long, roughly every second Tuesday (see course calendar). The quizzes will be based on the lectures, readings, and homework assignments since the previous quiz. Keeping up with the homeworks will be the best preparation for the quizzes. Doing the quizzes will be the best preparation for the exams.

The best **four** out of the six quizzes will count towards your final grade. Because I will drop the two lowest quiz grades, there will be no makeup quizzes. You do not have to let me know if you are unable to take a quiz.

Examinations

There will be a midterm exam, scheduled for Thursday, October 8. The midterm exam will cover all of the course material up until October 1, including the lectures, readings, homework assignments, and quizzes.

The final exam will be given as announced in the official ITAM exam schedule, which will be posted by early November. The exam period runs from December 7 to 19. The final exam will cover material from throughout the entire course, although there will be a slight weight towards material from after the midterm exam.

I will replace your midterm grade with your final exam grade if this helps to increase your overall grade. Therefore, there will be no makeups available for the midterm exam.

A makeup for the final exam will be allowed only for a documented medical or family emergency. You must submit your documentation to *Dirección Escolar* so that they can provide me with an official excuse letter. I reserve the right to choose how to make up for a missed final exam. This may include an oral exam and/or using your results from the quizzes and midterm.

All quizzes and exams are closed book. Answers will be handwritten in the exam booklets provided. Scientific calculators (without storage or communication functions) are allowed.

Group activities

We will have two multi-week group activities based on real-life regulatory situations.

The first is a simulated electricity rate hearing. I (as the regulator) will provide a proposed revision to the electricity tariff schedule in a stylized Mexico-like setting. There will be seven teams, each representing a particular interest group, who will submit comments on the proposed tariff. Teams will make their case and debate the submissions of the other groups. The live hearing is scheduled for the lecture on Thursday, October 1.

The second group activity is a simulation of a wholesale electricity market. There will be seven teams, each owning a portfolio of electricity generation assets. Across multiple rounds, teams will submit a set of price and quantity offers for each of their plants. At the end of each round, I (as the market operator) will report the market-clearing price, generation quantities, and cumulative team profits. There will be a live in-class auction to allocate the generation portfolios across the teams.

The grade for the activities will include a peer evaluation component. More details of the activities (including the schedules and grading rubrics) will be announced later.

AI policy

Full use of all AI tools is allowed for both group activities. You will be arguing with and competing against other teams who have access to the same tools. There will be interim and final reports required during and after each activity. You can use AI tools to help with drafting these reports. However, you are responsible for all content that is submitted.

All other course assessments are handwritten and closed book with no AI available.

Contact information

There are three ways to contact me for help with any aspect of the course.

1. Please feel free to ask me questions before or after the lecture.
2. Please feel free to email me, either using a Canvas message or directly to: shaun.mcrae@itam.mx.
3. I am available for office hours on Thursday afternoons, 3:00pm to 5:00pm, in my office in the ITAM Santa Teresa campus. While you do not need to make an

appointment, please send me an email so that I know you are coming. You can also send an email if you would like to arrange a meeting at a different time or place.

Course accommodations

Please let me know as soon as possible if you require any variation from the course policies. In most cases, accommodation requests for the course assessments will require a written letter from *Dirección Escolar*.

Course grade

The calculation of your overall grade will use the following percentage shares:

Rate hearing activity	12.5%
Electricity game	12.5%
Quizzes (best 4 of 6)	20%
Midterm exam	20%
Final exam	35%

As noted above, I will replace your midterm grade with your final exam grade, if this helps to increase your overall grade. In that case, your final exam would count for 55% of your overall grade.

Any form of cheating on the course assessments will be treated seriously and will potentially result in a grade of NA for the entire course. ITAM policy requires me to report all incidents of academic dishonesty to *Dirección Escolar*.

I will translate your final percentage grade into the official numerical grade based on the following conversion table:

95–100%	10
85–94%	9
75–84%	8
65–74%	7
55–64%	6
Below 55%	NA

If you are close to the cutoff between two grades, I may assign you the higher grade, as long as you have regularly attended and participated in the lectures.

Course topics and calendar (subject to change)

I will post the lecture readings and other class information on Canvas. Submission deadlines for the group activities will be announced with the activity materials. The date of the final exam will be set in the official ITAM exam schedule.

Part 1: The promise of regulation

Tue Aug 11 — Introduction: why regulate?
Thu Aug 13 — Natural monopoly and franchise bidding
Tue Aug 18 — Pricing I: marginal cost vs average cost
Thu Aug 20 — Pricing II: Ramsey pricing
Tue Aug 25 — **Quiz 1** + the Mexican tariff puzzle

Part 2: The practice of regulation

Thu Aug 27 — The regulator's information problem
Tue Sep 1 — Rate-of-return regulation
Thu Sep 3 — Price caps and incentive regulation
Tue Sep 8 — **Quiz 2** + political economy of regulation I
Thu Sep 10 — Political economy of regulation II
Thu Sep 17 — The Great Deregulation
Tue Sep 22 — Public ownership and privatization
Thu Sep 24 — Designing regulatory institutions
Tue Sep 29 — **Quiz 3** + the Mexican gasoline price cycle
Thu Oct 1 — **Group activity: the rate hearing**
Tue Oct 6 — Hearing debrief and midterm review
Thu Oct 8 — **Midterm exam**

Part 3: Remaking markets — electricity

Tue Oct 13 — The economics of electricity
Thu Oct 15 — Wholesale electricity markets
Tue Oct 20 — **Quiz 4** + market power in practice
Thu Oct 22 — **Group activity: electricity game launch**
Tue Oct 27 — Reliability and capacity markets
Thu Oct 29 — Retail electricity + **game portfolio auction**

Part 4: Pricing the unpriced — environment and risk

Tue Nov 3 — Pricing emissions: taxes vs caps

Thu Nov 5 — Cost-benefit analysis and risk regulation

Tue Nov 10 — **Quiz 5** + carbon markets in practice

Thu Nov 12 — Regulating renewables

Part 5: Frontiers of regulation

Tue Nov 17 — Digital platforms

Thu Nov 19 — Access pricing and universal service

Tue Nov 24 — **Quiz 6** + congestion pricing

Thu Nov 26 — Rent control and occupational licensing

Tue Dec 1 — Synthesis: AI and data centers