

LH-M-E09: Environmental Economics

Fall 2025

Instructor information

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Course description

This is an introductory course on environmental economics and policy that exposes the students to the importance of the environment and natural resources, the relationship between environment and economics, major environmental problems and role of government in environmental regulation. The course begins with a recap of market economics and emphasizes why the market allocation is not optimal/efficient in the case of the environment through the exposition of externalities and public goods. Then, we study the classical remedies to externalities in detail and some well-known applications. Next, we study inter-temporal resource allocation, emphasizing on the departure between optimal allocation and market outcome when myopic individuals act upon self-interest. Then, we study the classic cost-benefit analysis and the valuation of environment and natural resources. Finally, when the students understand the economics of the environment theoretically, we expose them to the reasons and effects of the major environmental crises humanity faces today- air pollution, climate change and water scarcity. Through the theoretical training and discussion of major environmental issues, the course aims to teach the students how to design effective environmental policies and associated challenges.

Course evaluation

The evaluation will be based on class participation, homework assignments, midterm topic writing/presentation and final examination. The weightage of each component will be as follows:

- Class participation (10%)
- In-class and homework assignments (20%)
- Midterm term paper/examination (30%)
- Final Examination (40%)

Textbook and references

This course will broadly follow the following textbooks and references, denoted by T and R in the end respectively (within parenthesis). Selected relevant research articles will be additionally referred to and provided to the students by the instructor at the due course in time.

- ❖ **Environmental and natural resource economics: a contemporary approach** by *Jonathan M. Harris and Brian Roach* (T)
- ❖ **Environmental Economics** by *Charles Kolstad* (T)
- ❖ **Public economics of the environment** by *Agner Sandmo* (R)

- ❖ **The Economics of the Environment** by *Peter Berck and Gloria Helfand*. ISBN-10: 0321321669 ISBN-13: 9780321321664 (R)
- ❖ **Intermediate microeconomics** by *Hal R. Varian*. (For basic economics)

Topics and Timeline (tentative)

- ❖ Week 1: An introduction to environmental economic issues.
 - Basic environmental issues.
 - What is environmental economics and how economics can help.
 - Basic understanding of environmental economic problems and policy.
- ❖ Week 2: Introduction to theoretical and empirical tools
 - Market equilibrium and efficiency: Welfare theorem
 - Taxation and efficiency loss
 - Benefit cost- an introduction.
- ❖ Week 3: Externalities and market failure
 - Externalities- positive and negative
 - Market failure- inefficiency
 - Application to the environment
- ❖ Week 4 and 5: Optimal pollution regulation
 - Pigouvian taxes- theory and literature
 - Pollution permits- Cap-and-trade
 - Coase bargaining
 - Prices vs Quantities (Weitzman 1974)
- ❖ Week 6: Intertemporal resource allocation
- ❖ Week 7: Introduction to Public good
 - Optimal public provision
 - Under-provision in market economy
- ❖ **Week 8: Midterm Evaluation.**
- ❖ Week 9-11: Measurement of environmental valuation
 - Revealed preference or Hedonic price method
 - stated preference or contingent valuation methods
 - Cost benefit analysis
- ❖ Week 12-13: Environmental policy: regulation of airborne particulate matter (pm)
 - Economics and policy of pollution control
 - Scale of pollution impacts
 - Assessing pollution control policies
- ❖ Week 14-15: Environmental policy: Climate change and global warming
 - Causes and consequences of global climate change
 - Response to climate change
 - Climate change mitigation: economic analysis
 - Climate change: the technical challenge
 - Climate change policy and economic policy proposals
- ❖ **Week 16: Final Examination**