ENVIRONMENTAL ECONOMICS

Spring 2026

Jindal School of Government and Public Policy

O.P. Jindal Global University

Course Information

Type: Cross-elective
Course Duration: 45 Hours
Credit Hours: 4
Meetings: To be decided
Location: To be decided

Prerequisites: 'Microeconomics' and 'Mathematical Methods for Economics'
Equivalent Courses: None
Exclusive Courses: None

Instructors' Information

Faculty Name – Dr. Priti Agarwal
Biography- Dr. Priti Agarwal is an Associate Professor at the Jindal School of Government and Public Policy, OP Jindal Global University. She completed her Ph.D. in Economics in 2021 from the Centre for International Trade and Development, Jawaharlal Nehru University, New Delhi. She is particularly interested in empirical work pertaining to Sustainable Development, Environmental and Natural Resource Economics.
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Office Hours: To be decided
Homepage: Dr. Priti Agarwal | O.P. Jindal Global University (jgu.edu.in)

Course Description: This Elective Course in Environmental Economics is designed to equip students with an analytical approach to understand the present-day environmental issues through the lens of an economist. The course begins with an introduction to the Material Balance model which brings out the economy-environment interaction and the resulting externalities. It gives a comprehensive coverage of various methods of valuation of non-marketed environmental goods and services. Select articles on valuation of eco-system services and case studies on 'contingent valuation' methods will equip students with knowledge of practical application of valuation techniques learnt. Various approaches to environmental regulation ranging from prescriptive to market-based are covered in the course. Application of these instruments can be understood with the help of case studies on 'carbon-emissions trading' and 'deposit-refund system' which are included in the 'supplementary readings'. In the context of growth-environment debate, 'sustainable development' is the keyword. A unit covering 'intergenerational well-being' and the concepts of weak and strong sustainability is included.

1. Course Intended Learning Objectives

Course Intended Learning Outcomes	Teaching and Learning Activities	Assessments/ Activities
1. Understanding the linkages between the economy and the environment.	Lectures, class discussions, presentations	Research articles, assignments, written tests, presentations
1. Learning about Environmental Externalities and Market Based Instruments	Lectures, class discussions, presentations	Research articles, assignments, written tests, presentations
2. Understanding how economic valuation of environmental goods and services is done.	Lectures, class discussions, presentations	Research articles, assignments, written tests, presentations
3. Sustainable Development	Lectures, class discussions, presentations	Research articles, assignments, written tests, presentations

2. Scheme of Evaluation and Grading

Focus will be on economic models and numerical based questions.

1. Research Aptitude Test: 15%
2. Environmental Data Analysis: 15 %
3. Written test 1- Mid-Sem (on Modules 1 and 2): 40%
4. Written test 2- End-Sem (on Modules 3 and 4): 30%

Academic Integrity

- Attendance as per University rules.
- 'Examination code of conduct' to be followed during written exams.
- All submissions will be tested for plagiarism.

3. **Keywords-** environmental economics, sustainable development, market based instruments, Coase theorem, externalities, pollution abatement

Course Content

Module 1: The Economy and the Environment (6 lectures)

Weeks 1-3

- Economy-Environment interaction- Material Balance Model
- Introduction to Environmental Economics
- Distinction between Environmental Economics, Resource Economics and Ecological Economics
- Substituting for environmental services
- Ecology-stability and resilience
- IPAT identity
- The Environmental Kuznets Curve Hypothesis
- Limits to Growth

Core Readings:

- **Kolstad, C. D. (2011)**, *Intermediate Environmental Economics*, International 2nd ed. Oxford University Press.
  - Chapter 1: Economics and the Environment
  - Chapter 2: Positive vs Normative Analysis
- **Perman, R., Ma, Y., McGilvary, J. and M. Common (2003)**, 'Chapter 2: The Origins of the Sustainability Problem' in *Natural Resource and Environmental Economics, 3rd Edition*

Supplementary Readings/Research Articles

- Fullerton, D. and R. Stavins, (1998) 'How Economists See the Environment', *Nature* 395 (1998): 433–434
- Stern, D. I (2004), 'The Rise and Fall of the Environmental Kuznets Curve', *World Development*, Volume 32, Issue 8, 2004, Pages 1419-1439

Module 2: Environmental Externalities and Market Based Instruments (6 lectures)

Weeks 4-6

- Externalities
- Pigouvian Taxes/Subsidies
- Coase Theorem
- Tradable Permits
- Market Driven Voluntary Actions

Core Readings:

- **Harris, J.M., & Roach, B. (2018)**. "Chapter 3: The Theory of Environmental Externalities", Environmental and Natural Resource Economics: A Contemporary Approach (4th ed.). Routledge.
- **Kolstad, C. D. (2011)**, *Intermediate Environmental Economics*, International 2nd ed. Oxford University Press.
  - Chapter 13: Markets and Property Rights (only Section II- Tradable Permits)
  - Chapter 14: Voluntary Measures (only Section II- Market Driven Voluntary Actions)
- **Tietenberg, T. and L. Lewis (2018),** 'Chapter 2: The Economic Approach: Property Rights, Externalities, and Environmental Problems', in *Environmental and Natural Resource Economics, 11th Edition*

Supplementary Readings/Research Articles

- Coase, R. H. (1960), 'The problem of social cost', *Journal of Law and Economics* 3: 1-44
- Perman, R., Ma, Y., McGilvary, J. and M. Common (2003), 'Chapter 7: Pollution Control: Instruments' in *Natural Resource and Environmental Economics, 3rd Edition*
- Hanley, N., Shorgen, J. F. and B. White (2007), 'Chapter 3: Market Failure' in *Environmental Economics in Theory and Practice*, Palgrave Macmillan

Module 3: Valuation of Environmental Goods and Services (8 lectures)

Weeks 7-10

- Total Economic Value (TEV) of Environment
- Willingness to Pay/Accept
- Revealed Preference Methods
- Stated Preference Methods

Core Readings:

- **Tietenberg, T. and L. Lewis (2018)**, 'Chapter 4: Valuing the Environment: Methods' in *Environmental and Natural Resource Economics, 11th Edition*
- **Kolstad, C. D. (2011)**, *Intermediate Environmental Economics*, International 2nd ed. Oxford University Press.
  - Chapter 7: Demand for Environmental Goods
  - Chapter 8: Revealed Preference: Pollution, Land Prices and Wages (only Section IV- Hedonic Pricing Theory)

- Chapter 9: Revealed Preference: Defensive Expenditures and Travel Cost (only Section II- Travel Cost)
- Chapter 10: Stated Preference, Experiments and Referenda

Supplementary Readings/Case Studies

- Verma, M., Negandhi, D., Wahal, A. K. and R. Kumar (2013), 'Revision of rates of NPV applicable for different class/category of forests', *Indian Institute of Forest Management*, Bhopal, India. June 2013.
- Whittington, D (1998). 'Administering contingent valuation surveys in developing countries', *World Development*, 26(1), 21-30.
- Das, S. (2007). Storm protection by mangroves in Orissa: an analysis of the 1999 super cyclone, *SANDEE Working Paper*, No. 25-07
- Guha, I. and S. Ghosh (2009), 'A Glimpse of the Tiger: How Much are Indians Willing to Pay for It?. *SANDEE Working Paper*, No. 39-09
- Mishra, P. P (2014), 'Potential Benefits and Earnings from Improving the Hussain Sagar Lake in Hyderabad: A combined revealed and stated preference approach', *SANDEE Working Paper*, No. 90-14.

Module 4: Economic Growth and Sustainable Development (6 lectures)

Weeks 11-13

- The Capital Approach to Sustainability
- Weak and Strong Sustainability
- Dynamic Efficiency and Sustainable Development
- Hartwick Rule
- Shadow Prices

Core Readings:

- **Tietenberg, T. and L. Lewis (2018)**, 'Chapter 5: Dynamic Efficiency and Sustainable Development', in *Environmental and Natural Resource Economics, 11th Edition*
- **Jérôme, P. and T. Dedeurwaerdere (2015)**, "Weak versus Strong Sustainability". Brief for GSDR 2015, Accessed: Microsoft Word - 122-Pelenc-Weak Sustainability versus Strong Sustainability (un.org)

Supplementary Readings/Research Articles

- Dasgupta, P. and K. Mäler (2009), 'Environmental and Resource Economics: some recent developments' in *Handbook of Environmental Economics in India* Edited by Kanchan Chopra and Vikram Dayal. 17-66. Delhi: OUP
- Dasgupta, P. (2001), 'Chapter 9: Wealth and Well-being' in *Human Well-being and the Natural Environment*, Oxford University Press.
- Arrow, K., Dasgupta, P., Goulder, L., Daily, G., Ehrlich, P., Heal, G., Levin, S., Mäler, K., Schneider, S., Starrett, D. and B. Walker (2004), 'Are We Consuming Too Much?,' *Journal of Economic Perspectives*, 18 (3): 147–172
- Arrow, K., Dasgupta, P., Goulder, L., Mumford, K. J. and K. Oleson (2012), 'Sustainability and the measurement of wealth', *Environment and Development Economics*, 17, pp 317-353
- World Bank (2021), "*The Changing Wealth of Nations 2021: Managing Assets for the Future*". © Washington, DC: World Bank.
- Managi, S., and P. Kumar (2018), "*Inclusive Wealth Report 2018: Measuring Progress Towards Sustainability*", (1st ed.). Routledge.
- Agarwal, P and A. Sawhney (2021), 'Sustainability and comprehensive wealth accounting: the case of India', *Environment, Development and Sustainability*, Springer, Volume 23, Number 3, pp 3762-3786

Additional Readings

Case studies from – The Economics of Ecosystem and Biodiversity (TEEB)
Home - The Economics of Ecosystems and Biodiversity (teebweb.org)

Case studies from – The Millenium Ecosystem Assessment
Millennium Ecosystem Assessment (millenniumassessment.org)

POLITICAL ECONOMY OF THE ENVIRONMENT SERIES- JAMES K. BOYCE

Political Economy of the Environment Series — JAMES K. BOYCE (jameskboyce.com)

1. The economy & the environment
2. Limits to growth – of what?
3. Discounting the future
4. The environmental Kuznets curve
5. Market failure & government failure
6. The tragedy of the commons
7. The Coase theorem
8. Externalities
9. Regulation & environmental protection
10. Carbon pricing: 1. Why & how?
11. Carbon pricing: 2. The social cost of carbon.
12. Carbon pricing: 3. Revenue allocation

Some Environmental Data Sources
State of Environment Report: India 2009 (Ministry of Environment and Forests, Government of India, 2009): Chapter 2 (State and Trends of the Environment): Land. Air, Water, Biodiversity (p. 9 to 71).
Useful source of environmental statistics:
http://www.indiaenvironmentportal.org.in/content/453907/envistats-india-2018/