

Generic Elective (GE-12): Basic Resource and Energy Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Basic Resource and Energy Economics – ECON066	4	3	2	0	Class 12th with Mathematics	Introductory /Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

This course will introduce the basics of Resource and Energy economics. The objective of this course is to provide theoretical and empirical topics on Resource economics, energy economics, energy transition, and energy security. This course introduces the conceptual and theoretical foundations of Resource Economics. In particular, the policies and potential sources are both renewable and non-renewable. The objective of this course is to provide knowledge on the principles of governing and managing natural resources.

Learning outcomes

The Learning outcomes of this course are as follows:

The students will learn some issues of resource economics relating to the basics of supply, demand, and prices, income elasticities, world oil markets, and depletable resources, pathways of energy transition from conventional to renewable energy sources.

Syllabus

UNIT I: Resource Economics (Renewable and non-renewable sources) (15 hours)

Optimal extraction of a non-renewable resource, Optimal management of renewable resources -Fishery and Forestry, Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9th edition, Chapter 5,6,12 and 13

UNIT II: Energy Economics (15 hours)

Types of energy sources, Introduction to Basics of supply, demand, and prices, energy supply and economics of depletable resources, world oil markets

UNIT III: Energy transition and energy security Pathways of energy transition from conventional to renewable energy sources, Policy instruments, Energy security, accessibility and 4 A definition, and Energy poverty (15 hours)

Recommended readings

- Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9th edition
- Review of the Basics of Supply, Demand and Price Formation in Competitive Markets Pindyck and Rubinfeld. 2005
- Fouquet, R. Historical energy transitions: speed, prices and system transformation. Energy Res. Soc. Sci. 22, 7–12 (2016).
- McGowan, J., and S. Connors. "Windpower: A Turn of the Century Review." Annual Review of Energy and the Environment 25(2000):147-197.

- Chen, B., Xiong, R., Li, H., Sun, Q., & Yang, J. (2019). Pathways for sustainable energy transition. *Journal of Cleaner Production*, 228, 1564-1571.
- Palmer, K., and D. Bullaw. "Cost-Effectiveness of Renewable Electricity Policies." *Energy Economics* 27 (2005): 873-894
- Deffeyes, K. *Hubbert's Peak: The Impending World of Oil Shortage*. Princeton, NJ: Princeton University Press, 2001, chapter 1. ISBN: 0691116253.
- Lynch M. "The Pessimism About Petroleum Resources: Debunking the Hubbert Model (and Hubbert Modelers)." *Minerals and Energy - Raw Materials Report* 18, no. 1 (2003): 1-18.
- Watkins, G. "Oil Scarcity: What Have the Past Three Decades Revealed?" *Energy Policy* 34 (2006): 508-514.
- Cherp, A., & Jewell, J. (2014). The concept of energy security: Beyond the four As. *Energy Policy*, 75, 415-421.
- Carley, S., & Konisky, D. M. (2020). The justice and equity implications of the clean energy transition. *Nature Energy*, 5(8), 569-577.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.