

Energy Economics (4.0 Credits)

[**Note:** Before teaching this syllabus, the teacher should deal with some basic concepts in Economics such as Public Goods, Production Possibility Frontier, Economies of scale, Externalities, Market failures etc. and teach with the Case studies wherever applicable]

Module 01: Energy Economics: Background (C-1, L- 10, 5 -S/ D/ T)

Origin and Definitions of Energy Economics, Link between Economics and Energy, Energy Resources and Energy Commodities; Properties of Energy Resources and Energy Commodities, concept of Energy conservation and Energy efficiency.

Module 02: Concept of Markets with Special Reference to the Energy Markets (C-1, L- 10, 5 -S/ D/ T)

Global and National scenario

Trend and Patterns of Energy Consumption and the Energy Crisis (since 1970 the Oil shocks and other events)

Energy Pricing and Taxation: Production Cost versus Return on Investment, Models of Pricing, Market Failures, Peak and Off-peak Pricing, Subsidies, The role of regulatory bodies like MERC,

Energy Finance: Banks, International organisations, Green Finance initiatives

Module 03: Demand for and Supply of Energy (C-1, L- 10, 5 -S/ D/ T)

Demand for Energy as a Derived Demand, World Energy Consumption – Economic Growth and World Energy Consumption, Demand substitution and energy use

Classification of Energy supplies: renewable and non-renewable, Fossil fuels (coal, oil, natural gas), Renewable energy (Hydro, Marine, wind, solar, Geothermal, bio), Nuclear power, Trend and patterns of energy production

Module 04: Link Between Sustainable Development, Economics of Climate Change, and Energy Policy (C-1, L- 10, 5 -S/ D/ T)

Concept of Sustainable Development and SDGs, Energy Security: India's initiatives, Energy and Climate Change, Energy Efficiency and carbon emissions: Global and National trends, Energy Policy

The Economics of Climate Change, Climate Change Background, Overview of GHG Emissions, Economic Approach to Control the Greenhouse Effect,

Options to Cope with Global Warming, Generic Options, National Policy Options, Emissions Trading System (ETS)

Grading and assessment would include a Research Project / Term Paper/ Field visit to Energy company/firm and report writing

Reference readings:

- 1) Pindyck, R., and D. Rubinfeld. *Microeconomics*. 6th ed. Upper Saddle River, NJ: Prentice Hall, 2005. ISBN: 0130084611
- 2) *International Energy Markets: Understanding Pricing, Policies, and Profits*. 2nd Edition. Carol A. Dahl. PennWell.
- 3) *Energy Economics: Concepts, Issues, Markets and Governance* by Subhes C. Bhattacharyya
- 4) Springer Science & Business Media, 28-Feb-2011
- 5) *Energy Economics: Theory and Applications* Peter Zweifel, Aaron Praktiknjo, Georg Erdmann Springer, 27-Mar-2017