

Course Code : ENCM 41564
Title : Applications in Environmental Economics
Pre-requisite : ENCM 31543
Co-requisite : None
Status : Compulsory, Theory

Learning Outcome

After completion of the course unit, the student will be able to;

- ✓ explain basic theories and concepts of economics and environmental economics,
- ✓ determine optimal pollution levels and solutions for pollution externalities,
- ✓ make decisions on new development project approval by performing a cost benefit analysis,
- ✓ assess environmental valuation techniques,
- ✓ perform extended CBA in project approval, and
- ✓ incorporate environmental values into project analysis.

Course Content

Basic economic theory and concepts: Resources, Scarcity, Organization of the economic system; Nature of Demand and Supply Curve, Equilibrium in the market, Determinants of market demand, Elasticity of demand and supply; Production Economic Theory – Production function, Factor-product relationship, Factor-factor relationship; Theory of Cost – Short run and long run cost functions, Economics of scale; Theory of Price – different types of markets (perfectly competitive, monopoly, oligopoly, monopolistic competition). Introduction to Environmental and Natural Resources Economics: scarcity, choice and opportunity cost, Basic ethics, value systems and the normative foundations of economics and other social systems, The requirements and equilibrium characteristics of a well- functioning competitive market, Market Failures in Environmental Economics (imperfect information, public goods, externalities). Economics of market allocation, Open access resources, tragedy of commons, The Marginal Damage Function, The Marginal Abatement Cost Curve. Economics of pollution control: Basic concepts – (fund and stock pollutants, allocation between generations, Designing policy instruments for pollution control; pollution standards, charges and marketable pollution permits; Evaluation of each instrument based on economic efficiency, Inducements for technological advancements and transaction costs; Industrial pollution as an externality; solutions for externality problem. Economic analysis of projects: Financial vs. economic analysis, Criteria for comparing costs and benefits – Discounted Payback period, Net Present Value, Internal rate of return, Benefit Cost Ratio; Advantages, disadvantages of each criteria; Spreadsheet modeling of calculation of each criteria. Cost Benefit Analysis: basis, methodology; the need for extended cost benefit analysis, limitations of Cost Benefit Analysis. Environmental Valuation: importance of valuation, the concept of total economic value. Environmental valuation methods: Theory, main assumptions, detailed methodology and estimation and validation issues: Travel cost method, Contingent valuation method, Hedonic price method, Shadow project approach etc. Applications of extended cost benefit analysis of projects; Case studies in Transport, Energy, Industry and Environmental management sectors. Applications of Environmental valuation: The use of economic value in policy making, Case studies.

Method of teaching and learning:

A combination of lectures, computer assisted learning, assignments and discussions.

Assessment Strategy: Continuous assessment and end of semester examination. Percentage given for each sub component indicates the percent contribution to the final marks.			
Continuous Assessment 40 %		Final Assessment 60 %	
Details:		Theory	Practical
Group presentations	20	60	-
Individual assignment	10		-
Quiz	10		

Recommended Reading

1. C. Karl., F. Ray & S. Oster (2013). Principles of Economics, 11th Edition. Pearson Education Limited, USA.
2. Hussen, A.M. (2000). Principles of Environmental Economics: Economics, Ecology and Public Policy. Routledge, New York.
3. Tietenburg, T. (2003.) Environmental and Natural Resource Economics. 6th Edition. Addison Wesley Longman, New York.
4. Hanley, N., & C. L. Spash (2003). Cost Benefit Analysis and the Environment, Edward Elgar, USA.

5. Willis, K. G. & J. T. Corkindale, (eds.) (1995), Environmental valuation: new perspectives, CAB International, Wallingford, England.