UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Economy for Environment and Place

2526-3-E1501N147

Learning objectives

The course aims to extend the treatment of economic fundamentals to include the environmental implications of prevailing paths of economic development. More precisely, by the end of the course, the student will be able to:

- (Knowledge and understanding): Understand the concept of sustainable development as defined by the UN Sustainable Development Goals (Agenda 2030), by the “Green Economy” as discussed by the United Nations Environment Programme, and, more recently, by the “Circular Economy” model proposed by the European Commission, and critically analyze their implications.Analyze the main models of environmental economics and their implications. Study the main European environmental regulations that influence the choices made by economic agents.
- (Applying knowledge) and understanding): Interpret the main environmental policies and understand how they guide technological change and affect the ecosystem in which economic activities take place, from a critical perspective; be able to read and critically appreciate scientific literature written in English.
- (Making judgments): Critically evaluate scientific literature and place it in relation to the theory and applications previously addressed in the course.
- (Communication skills): Communicate to the class a well-reasoned and critical summary of an article selected by the instructor.
- (Learning skills): Develop the ability to independently update one's knowledge of environmental challenges, policies, and economic-environmental theories, identifying relevant scientific sources.

Contents

Advanced course in economics: environmental economics and economics of innovation, the latter with respect to the role of technological change in "decoupling" emissions from economic growth

Detailed program

**PART I: SUSTAINABLE DEVELOPMENT AND GREEN ECONOMY
Introduction
–Climate change main evidence from the last IPCC – 6th Assessment Report

Economic Growth and Environment
– Limits to growth
Sustainable Development
– Agenda 2030 and SDGs
– Definitions and strategies for “green economy”

Causes and analysis of environmental degradation
– Market and Policy failures

- Cost benefit analysis
- Dealing with uncertainty
  **PART II: REGULATION, INNOVATION AND SUSTAINABLE DEVELOPMENT
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  Policy and sustainable development

– Regulation and climate change

- Economi models to protect environemnt: taxes, standard, regulation, carbon tax...
  -Renewable and exhaustible resources
- Policy and technological change
- Risks in policy: stringency and carbon leakage

Circular Economy
– Linear to Circular Economy

- Circular Business Models
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European Trading Scheme ETS:
– “cap and trade” model
– 4 phases
– Carbon leakage

Environmental Kutznets Curve
– Growth and environmental degradation

Eco-Innotion
– Definitions
– Determinants
– Effetts
– Models
– Porter Hypothesis
– Employment returns

– Local effects

Twin: green and digital transition
– “Twin transition”: concept and effects

Prerequisites

Sufficient math and logic skills; comprehension and communication skills (written and oral). Basi economics skills. Understanding of articles in English: hybrid Italian-English teaching

Teaching methods

Lectures, real-life applications and case studies, some presented by students

Assessment methods

Written exam on full program, held in IT lab,
Structure:

- PART I (compulsory to anyone) 8 multiple choice questions (0-2 points each: max 16) for extensive comprehension of course's contents in Part I and II of the syllabus
  -PART II 3 open ended questions (0-5 points each: max 15) for intensive comprehension of course's contents

- Students actively presenting in class part of the contents agreed in the first days of class will be exhempted from answering Open ended questions during the exams: presenations will be graded up to 15 points. ONLY FOR ONE EXAM DATE IN JANUARY or FEBRURARY
- Exam duration : 20 min PART I, 20 minutes PARTE II (40 min total)

Textbooks and Reading Materials

**Part I

- IPCC 6th Assessment Report (Only those parts discussed in class and available into slide – Uploaded in E-Learning)
  Part II
- Turner R. K. - Pearce D.W. - Bateman I., Economia ambientale, il Mulino Manuali, Bologna, 2003.
  Part III
- Clayes G., Le Mouel M., Tagliapietra, S. Wolff, G. B e Zachmann G. 2024 The macroeconomics of decarbonization. Implications and Policies. Cambridge University Press. ISBN: 978-1-009-43839-1
- Slides
- Articles uploaded in dedicated folders (under materials for presentation):
- Environmental Kuznets Curve:

o Grossman, G. M., & Krueger, A. B. (1991). Environmental impacts of a North American free trade agreement

o Stern, D. I. (2004). The rise and fall of the environmental Kuznets curve. World development, 32(8), 1419-1439.

- Pollution haven Hypothesis:
  o Brunnermeier, S. B., & Levinson, A. (2004). Examining the evidence on environmental regulations and industry location. The Journal of Environment & Development, 13(1), 6-41.
- Porter Hypothesis:
  o Porter, M. E., & Linde, C. V. D. (1995). Toward a new conception of the environment-competitiveness relationship. Journal of economic perspectives, 9(4), 97-118.
  o Lanoie, P., Laurent?Lucchetti, J., Johnstone, N., & Ambec, S. (2011). Environmental policy, innovation and performance: new insights on the Porter hypothesis. Journal of Economics & Management Strategy, 20(3), 803-842.
- Twin transition:
  o Creutzig et al. 2022 “Digitalization and the Antropocene”, Annual Review of Environment and Resources, Volume 47, 2022 Creutzig, pp 479-509 https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-120920-100056
  Optional reading: Diaz-Lopez, Mazzanti and Zoboli (2023) – Handbook on Innovation, Society and the Environment, EE Elgar Handbooks in Energy, the Environment and Climate Change ISBN 978-1-80220-005-8

Sustainable Development Goals

AFFORDABLE AND CLEAN ENERGY | DECENT WORK AND ECONOMIC GROWTH | INDUSTRY, INNOVATION AND INFRASTRUCTURE | SUSTAINABLE CITIES AND COMMUNITIES | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION | LIFE ON LAND