ENV-471

Environmental economics

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Cursus	Sem.	Type
Environmental Sciences and Engineering	MA2, MA4	Opt.
Minor in Engineering for sustainability	E	Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	During the semester
Workload	120h
Weeks	14
Hours	**3 weekly**
Courses	2 weekly
Exercises	1 weekly
Number of positions	

Summary

Introduction to economic analysis applied to environmental issues: all the necessary basic concepts, including cost-benefit analysis, for environmental policy making and its instruments (examples: climate, waste, mobility). Introduction to financial calculation applied to project evaluation.

Content

Introduction to economic analysis: Actors, supply, demand / Markets and prices / Price and quantity regulation
Introduction to environmental policy: Cost-benefit analysis, objectives / Instruments for environmental policy / Comparison of instruments
Applications: Swiss climate policy (CO2 Act) / Waste management / Mobility pricing
Introduction to financial calculation: Arbitrage, discounting / Net present value / Risk, diversification
Project evaluation: Investment, costs (Capex, Opex) / Amortization and depreciation / Financial comparison of projects
Applications: Energy retrofitting of buildings / Reparation vs replacement / Student personal projects

Keywords

environmental economics, environmental policy, cost-benefit analysis, project evaluation, financial calculus

Learning Prerequisites

Important concepts to start the course

Basic algebra and using a spreadsheet such as Excel.

Learning Outcomes

By the end of the course, the student must be able to:

- Explain price formation
- Compare environmental policy instruments
- Argue for an environmental policy
- Compute the profitability of engineering projects
- Solve small mathematical problems

Transversal skills

- Take account of the social and human dimensions of the engineering profession.

- Take responsibility for environmental impacts of her/ his actions and decisions.
- Demonstrate the capacity for critical thinking

Teaching methods

In-depth teaching and educational support.

Expected student activities

Participate actively in class, learn the basic financial concepts from a MOOC in French with English subtitles.

Assessment methods

Intermediate exam (1/2 of grade) and final exam (1/2 of grade).

Supervision

Office hours	No
Assistants	No
Forum	Yes

Resources

Notes/Handbook

Slides will be made available on a Moodle page