

ENV-723

Models for applied environmental economics

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Cursus	Sem.	Type
Civil & Environmental Engineering		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Oral presentation
Workload	30h
Hours	13
Courses	13
Number of positions	

Frequency

Every 2 years

Remark

Every two years/ Next time: Spring 2021 Minimum 5

Summary

Mainly based on the discussion of peer reviewed academic papers, the course introduces non economists to the main types of applied models used in environmental economic analysis: linear programming, partial and general equilibrium, game theory, and agent based models.

Content

For each type of applied environmental economic model, there is a brief general introduction, followed by a discussion of a peer-reviewed academic paper on an applied topic using that type of model.

Families of models presented and discussed:

- Linear programming (paper topic: urban pollution; model features in paper: spatial)
- Partial equilibrium (paper topic: timber industry and wildlife conservation; model features in paper: integrated assessment)
- Computable general equilibrium (paper topic: carbon taxes; model features in paper: multi-regional)
- Game-theoretic (paper topic: climate negotiations; model features in paper: cooperation)
- Agent-based (paper topic: diffusion of plug-in hybrid vehicles; model features in paper: spatial, stochastic)

Keywords

environmental economics
economic modeling

Learning Prerequisites**Recommended courses**

ENV-615, Environmental Economics for Engineers (before 2018) or ENV-620 Environmental Economics for Engineers (2018)". (after 2018)

Learning Outcomes

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

- to understand the differences between simulation and optimisation models
- to describe the main characteristics of each model type
- to discuss the main merits and limitations of each modeling approach

- to recognize attributes of well written papers

Resources

Bibliography

- Nalle, D.J. et al. (2004): Modeling joint production of wildlife and timber, *Journal of Environmental Economics and Management* 48, 997-1017.
- Beck, M. et al. (2015): Carbon tax and revenue recycling: Impacts on households in British Columbia, *Resource and Energy Economics* 41, 40-69.
- Eppstein, M.J. et al. (2011): An agent-based model to study market penetration of plug-in hybrid electric vehicles, *Energy Policy* 39, 3789-3802.

Ressources en bibliothèque

- [Nalle, D.J. et al. \(2004\): Modeling joint production of wildlife and timber, Journal of Environmental Economics and Management 48, 997-1017.](#)
- [Beck, M. et al. \(2015\): Carbon tax and revenue recycling: Impacts on households in British Columbia, Resource and Energy Economics 41, 40-69.](#)
- [Eppstein, M.J. et al. \(2011\): An agent-based model to study market penetration of plug-in hybrid electric vehicles, Energy Policy 39, 3789-3802.](#)