



Lecture: “Advanced Energy Economics” (v2/Ü2, 13ss-28929)

Course Description

Ever-expanding demand and limited supply will ensure the eventual collapse of the non-renewable fossil fuel economy upon which the modern world is built. At the same time, unrestricted energy use, whether through fossil or biofuels, is a significant contributor to escalating levels of CO₂ and other pollutants. Research and investment in alternative sources of energy is growing rapidly, but informed opinion is skeptical of the possibility that we will transition to an economic system built on renewable energy in the near future.

Given these adverse trends, a deep and critical understanding of energy and how it impacts our national and global economies becomes more important with every passing day. This course has been designed to facilitate the development of that understanding. It will contain four basic modules, described below.

1. The first module explores the dominant theoretical and empirical perspectives on energy and its supply and demand. Students will be introduced to discounting, the standard models of renewable and non-renewable resource extraction and the econometrics of energy systems.
2. The next module focuses on the negative consequences of energy use. Factors affecting energy efficiency and use and modeling issues will be explored. We also look at the problem of pollution and how it can be controlled through economic mechanisms. These mechanisms include energy taxes and tradable permit (or green certificate) markets, such as those permitted under the Kyoto Protocol (Article 12).
3. The third module focuses on individual sources of energy. We will look at salient aspects of the oil, natural gas, coal, nuclear, biofuel and other alternative energy sectors. There will also be some discussion of energy security, transmission and distribution of electricity and deregulation of the electricity sector.
4. The final module explores risk management in the energy space and familiarizes students with real options modeling, futures markets and derivatives. It concludes with some discussion of energy policies and how they might affect outcomes in the sector.

Organization

Date and Location: Weekly on Thursday, 11:30 – 13:00 hrs, H 212 (Eisenhüttenkunde, Intzestraße 1). To participate successfully you have to register via CAMPUS and pass the exam (60 minutes) at the end of the course. A two-hour weekly recitation session will complement the lecture (Friday 14:15 – 15:45 hrs, E.ON ERC Main building Mathieustrasse Room 00.24). Course materials will be made available for download on the e-learning platform (L²P).

Target audience

This course is dedicated to diploma and master students in economics and engineering economics (BWL, WiWi-Zusatzstudium, Wirtschaftsingenieurwesen).

Requirements: Basic knowledge in Economics (Micro/Macro) and Energy Economics

Recommended literature:

1. Perman R., Ma Y., McGilray J. and Common M. (2003). Natural Resource and Environmental Economics, Pearson Education Limited, Harlow.
2. Bhattacharyya S.C. (2011). Energy Economics: Concepts, Issues, Markets and Governance, Springer-Verlag, London/Dordrecht/Heidelberg/New York.
3. Pindyck R. and Rubinfeld D. (2005). Microeconomics, 6th ed., Upper Saddle River, NJ: Prentice Hall.



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Prof. Dr. Reinhard Madlener, Chair of Energy Economics and Management

4. Mulder P. (2005). The Economics of Technology Diffusion and Energy Efficiency, Edward Elgar, Cheltenham/UK and Northampton/Mass.
5. Keppler J.H., Bourbonnais R. and Chevalier J. –M. (Eds.) (2007). The Econometrics of Energy Systems, Palgrave Macmillan, New York.