



School of Economics and Management

EEH018F, Energy Transitions, Innovation and Trade, 7.5 credits

Energiomvandling, innovation och handel, 7,5 högskolepoäng
Third Cycle / Doktorandnivå

Details of approval

Approved by the Board of the Department of Economic History, Lund University School of Economics and Management 2021-03-09.

General Information

This is an optional course at the PhD programme.

The language of instruction is English.

Learning outcomes

On a general level the student will acquire advanced knowledge about innovation in the field of energy. More specifically, to pass the assessments students will be able to:

Knowledge and understanding

- demonstrate advanced knowledge about the development of global energy systems, including transport systems, their impact on climate change and present technological change in the field

Competence and skills

- transform theoretical models into testable empirical models and conduct the appropriate empirical investigation
- communicate their own and others results, both in writing and orally

Judgement and approach

- assess the benefits and drawbacks of various institutional settings for the promotion of innovation in the field of energy and transport
- analyse and interpret the findings of advanced theoretical and empirical applications
- assess the relevance and implications of their findings for research as well as policy purposes

- independently read, interpret and assess current research in growth and innovation as well as advanced professional reports and analyses.

Course content

The content of the course is delimited of both teaching and literature. Climate change has, more than anything else, imposed innovative challenges for present human energy systems. This course begins with an overview of global energy systems based on oil, carbon, nuclear and hydro power as well as supplementary systems. The overview includes resources/reserves of non-renewable energy sources, carbon capture and storage, climate and energy politics. Basic concepts, such as primary energy, conversion, emission factors, final use, energy carriers, energy, and power units are presented and problemised. Three areas are given particular emphasis: firstly, energy end use efficiency, its historical development and future prospects; secondly, renewable energy and the ongoing change at its technological frontier; thirdly, transports, their different systems, use of energy and impact on the environment as well as ongoing technological change.

Both positive and normative aspects of the interplay between economic growth and energy are treated. Among the first aspects is the so called decoupling of energy and GDP, as well as CO₂ and GDP. Relative and absolute decoupling is a central distinction of crucial importance for the sustainability of an energy system. Evidence and explanations for past decoupling are scrutinized, such as the third industrial revolution and the transition from commodity production to services. Normative aspects consider institutional and political factors which determine incentives for innovation.

The course themes will be complemented by laboratory exercises and excursions.

Course design

The course is designed as a series of lectures, exercises and work with projects reports.

Assessment

Grading is based on individual performance, via written exams, paper, presentations and other mandatory activities.

The University views plagiarism very seriously, and will take disciplinary actions against students for any kind of attempted malpractice in examinations and assessments. The penalty that may be imposed for this, and other unfair practice in examinations or assessments, includes suspension from the University.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Marking scale: Fail or Pass.

Entry requirements

PhD students applying for this course should have at least 60 credit points in either economic history, business administration, economic and social geography, economics, history, sociology or the equivalent knowledge.

Further information

This course cannot be included in the same degree as EKHM86.