



School of Economics and Management

## **EKHM83, Innovation, Energy and Sustainability, 7.5 credits**

*Innovation, energi och hållbarhet, 7,5 högskolepoäng*

**Second Cycle / Avancerad nivå**

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### **Details of approval**

The syllabus is an old version, approved by The Board of the Department of Economic History on 2016-10-11 and was valid from 2017-01-16, spring semester 2016.

### **General Information**

This is a course at the graduate level, which can become part of a Master of Science degree. The course is mandatory for the master's programme EAISD Innovation and Spatial Dynamics. It is optional for the master's programmes EAETU Economic Growth, Population and Development, EAEUT Economic Development and Growth and EAGCH International Economics with a Focus on China. It can also be studied as a single-subject course.

*Main field of studies*

Economic History

*Depth of study relative to the degree requirements*

A1N, Second cycle, has only first-cycle course/s as entry requirements

### **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.

Overall structure and content

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 CO<sub>2</sub> 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.

## Grades

Marking scale: Fail, E, D, C, B, A.

At the School of Economics and Management grades are awarded in accordance with a criterion-based grading scale UA:

A: Excellent

B: Very good

C: Good

D: Satisfactory

E: Sufficient

U: Fail

### Grade (Definition). Characteristic

**A** (Excellent). A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability and independent thought.

**B** (Very good). A very good result with regard to theoretical depth, practical relevance, analytical ability and independent thought.

**C** (Good). The result is of a good standard with regard to theoretical depth, practical relevance, analytical ability and independent thought and lives up to expectations.

**D** (Satisfactory). The result is of a satisfactory standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.

**E** (Sufficient). The result satisfies the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought, but not more.

**F** (Fail). The result does not meet the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought.

To pass the course, the students must have been awarded the grade of E or higher.

Students who do not obtain grades A-E on their written class room exam will be offered opportunities to retake the exam in which case the student will be assessed according to regular procedure. In the case of home exams that are handed in after the set deadline the teacher can: a) hand out a new exam which will be assessed according to regular procedure, b) may penalize the student by handing out a lower grade on the assignment in question unless the student can demonstrate special circumstances for the delay.

## Entry requirements

Students accepted for the following master's programmes are qualified for this course: EAETU Economic Growth, Population, and Development, EAEUT Economic Growth and Development, EAISD Innovation and Spatial Dynamics EAGCH International Economics with a Focus on China. Other students applying for this course should have at least 60 credit points in either economic history, economics,

history, economic and social geography, sociology or the equivalent knowledge.

### **Further information**

This course was previously labelled EKHP08 and EKHM33 and cannot be included in the same degree as any of these courses.