APPLIES TO ACADEMIC YEAR 2012/2013

GRA 8152 Renewable Energy and the Climate Challenge

Programme
Executive Master of Business Administration (EMBA) in Energy Management

Responsible for the course
Atle Midttun

Department
Department of Innovation and Economic Organisation

Term
According to study plan

ECTS Credits
5

Language of instruction
English

Introduction
This course addresses the need for energy leaders and policy makers to face current worldwide concerns about climate change, a low carbon economy, and pollution ; and to facilitate change towards sustainability.

Learning outcome
The course gives an overview of the climate change and renewable energy technologies, and provides theoretical and practical insights into business strategies, innovation, regulation and policy approaches to further sustainable energy systems.

Prerequisites
EMBA, general prerequisites

Compulsory reading
Books:
Chesborough, Henry. 2006. Open Innovation, Researching a New Paradigm. Oxford University press. Oxford. Chapter 1
Christensen, Clayton M.. 1997. The innovator's dilemma: when new technologies cause great firms to fail. Boston, Massachusetts, USA: Harvard Business School Press

Articles:
Midttun, Atle & Gautesen, Kristian. 2007. Feed in or Certificates, Competition or Complementarity? Combining a Static Efficiency and a Dynamic Innovation Perspective on The Greening of The Energy Industry. Energy Policy 2007
Midttun, Atle. 2012. The Battle of Modernities in Energy Transformation: Special Issue of Energy Policy. (forthcoming)
Schleicher-Tappeser, Ruggero. 2012. How renewables will change electricity markets in the next five years. Special Issue of Energy Policy (forthcoming)

Other:
IEA, International energy agency (2000): Experience Curves for Energy Technology Policy. 2000. IEA-OECD publications, Paris. Executive summary/ Introduction compulsory, the rest is recommended browsing
IPCC "Synthesis Report - Summary". 2007. (20 p)
IPCC "Working Group 1 - Summary". 2007. (20 p)
IPCC "Working Group 2 - Summary". 2007. (20 p)
IPCC "Working Group 3 - Summary". 2007. (20 p)
IPCC. 2011. “Renewable Energy Sources and Climate Change Mitigation”. Special Report of the Intergovernmental Panel on Climate Change.. Executive summary/ Introduction compulsory, the rest is recommended browsing. http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf
McKinsey & Company. 2009. Pathways to a Low-Carbon Economy. (20 p)
OECD. 2011. Green Growth Studies: Energy. EA-OECD publications, Paris. Executive

summary/ Introduction compulsory, the rest is recommended browsing.
www.oecd.org/greengrowth.
OECD/IEA. 2011. Deploying Renewables, Markets and Politics. IEA-OECD publications, Paris. Executive summary/ Introduction compulsory, the rest is recommended browsing
http://www.oecd-ilibrary.org/docserver/download/fulltext/6111271e.pdf?expires=1333808099&id=id&accname=ocid41017227&checksum=B86B2AE2DFCFB566199C2E8824007850

Recommended reading
Books:
Flannery, Tim. 2011. Our Changing Climate and What it Means for Life on Earth. London : Allen Lane. 306 p

Other:
Energy Roadmap 2050 – EU Commission.
http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf. Remix – 100% renewable electricity is achievable by 2050, German Adv. Council for the Environment
http://www.economicswebinstitute.org/essays/germanroadmaptodecarbonisation.pdf
Energy [R]evolution: A Sustainable World Energy Outlook, Greenpeace
http://www.greenpeace.org/international/Global/international/publications/climate/2010/summary.pdf.
http://www.greenpeace.org/international/Global/international/publications/climate/2010/summary.pdf
EU Energy Policy to 2050 Achieving 80-95% emissions reductions. A report by the European Wind Energy Association March 2011.
http://www.ewea.org/fileadmin/ewea_documents/documents/publications/reports/EWEA_EU_Energy_Policy_to_2050.pdf
Roadmap 2050 – European Climate Foundation (ECF).
http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf
Strategies of Major Electricity and Petroleum Companies. (check out webpages)
UNEP (2008) Kick the Habit, GRID Arendal. (part of 190 p)

Course outline
- Overview of climate challenge pollution, and other risk, but also opportunity issues facing energy industry today
- Overview of major renewable technologies and their performance characteristics
- Policy tools for sustainable energy development: market systems; regulatory approaches; and innovation policy approaches
- Business strategies and sustainable management in new multi-level regulatory frameworks
- Interfaces between the centralised energy sysem and new decentralised demand side energy management

Computer-based tools
It's Learning

Learning process and workload
Sessions include lectures, discussion with industry, regulators and stakeholders as well as class workshops and presentations.

Examination
The students are evaluated on the basis of a term paper written in groups of three students. The deadline for delivery is six weeks after the last module.

Examination code(s)
GRA 81521 - Term paper; accounts for 100 % to pass the program GRA 8152, 5 ECTS credits.

The course is a part of a full Executive Master of Business Administration Program in Energy Management and all evaluations must be passed to obtain a certificate for the degree.

Examination support materials

Re-sit examination
Re-takes are only possible at the next time a course will be held. When course evaluation

consists of class participation or process elements, the whole course must be re-evaluated when a student wants to retake a exam. Retake examinations entail an extra examination fee.

Additional information