SGO 31xx Environment and innovation

To innovate is to develop something new that challenges something that is well-established. Whether an idea, method, product or process, innovations respond to new requirements or needs. They may result from changing markets, transformed perceptions, or new understandings based on the latest science. Although many of the innovations of the Industrial Age introduced great convenience and new opportunities, they have often come at a high environmental cost. Innovations in the Information Age have also had environmental consequences, particularly in relation to the use of energy, water and mineral resources. These costs include biodiversity loss, land degradation, changes in water quality and availability, ozone depletion, and anthropogenic climate change. To move towards a sustainable future, new types of innovation are called for – innovations that address the "grand challenges" of global change, while taking into account the environmental and social consequences of new innovations. Can we innovate our way to a diverse, low-carbon, green society?

This course will explore the relationship between innovation and the environment, including the potential to move toward a "green economy". The role of technological and social innovations in response to problems such as climate change, biodiversity loss, and land use change will be critically assessed. The **first module** of the course presents the new context for innovation in the 21st Century, providing the historical and scientific background of the serious environmental challenges facing society. Diverse perspectives on the role of technology and the future will be presented, ranging from technophobia to Kurzweil's "singularity". The **second module** of the course considers new technologies and green innovations as a response to environmental problems. Students will be introduced to innovation studies, including the major approaches in the literature. The institutionalization of innovation will also be discussed, with an emphasis on the role of learning, knowledge, and policy. The **third module** looks at empirical studies of green innovations, including new energy technologies such as wind and solar power. New transportation technologies, "smart cities", and innovations in the bio economy, including bio mimicry, will be discussed. Finally, the **fourth module** will critically assess the potentials and limits of innovations as a response to environmental problems, and discuss the role of social innovation in transformations to sustainability.

The course will consist of ten lectures and four seminars. In the seminars, each student will choose an example of an innovation in Norway and assess it from the perspective of its environmental and social impacts, leading to a short paper and presentation. The literature will consist of both articles and book chapters. It is recommended that students have taken either SGO2302 Environment and Society or SGO2200 Economic Globalization and Regional Development, or ideally both courses.

Omfang: 10 forelesninger I perioden 10. januar til ??? Fire seminar – ett til hver modul

Exam: 6 timer skoleeksamen??

Language: Engelsk/norsk

Obligatoriske aktiviteter: Delta på minst tre seminar, presentere tekst på seminar

To be offered each spring term, starting spring 2014

Some book chapters/articles to consider for the pensum:

Module 1:

Suggest some overviews such as:

UNEP Geo-5 Summary for Policymakers (http://www.unep.org/geo/pdfs/GEO5_SPM_English.pdf)
IPCC WGI Summary for Policymakers
OECD Green Growth for Development (http://www.oecd.org/development/environment-development/Putting%20Green%20Growth%20at%20the%20Heart%20of%20Development_Summary%20For%20Policymakers.pdf)

Module 2: Innnovation – the basics

Klassiske tekster:

Freeman, C. (1992). A green techno-economic paradigm for the world economy. In Freeman, C – The Economics of Hope. Pinter Publishers, London. 21 sider

Lundvall, B. Å. and Johnsen, B. (1994). The Learning Economy. Journal of Industry Studies, Vol 1, pp 23-42 (19 sider)

Kontemporære tekster

Asheim, B.T. (2005). The Geography of Innovation: Regional Innovation Systems. In Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2005). The Oxford Handbook of Innovation. Oxford, Oxford University Press. (26 sider)

Fagerberg, J. (2005). Innovation: A Guide to the Literature. In Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2005). The Oxford Handbook of Innovation. Oxford, Oxford University Press. (28 sider)

Liu, J. Chaminade, C. Asheim, B. 2013. The Geography and Structure of Global Innovation Networks: A Knowledge Base Perspective. European Planning Studies (published online).

Prahalad, C.K. and Ramaswamy, V. 2003. The New Frontier of Experience Innovation. MIT Sloan Management Review. Summer. http://sloanreview.mit.edu/article/the-new-frontier-of-experience-innovation/

Module 3:

Dalal-Clayton, B. 2013. Technology and Innovation for a Green Economy. Review of European, Comparative & International Environmental Law. 22(1) 62-67.

Forsman, H. (2013). Environmental Innovations as Sources of Competitive Advantage or Vice Versa? Business Strategy and the Environment, 22, 306-320. 14 sider

Gouvea, R., Kassicieh, S. and Montoya, M.J.R. 2013. Using the quadruple helix to design strategies for the green economy. Technological Forecasting and Social Change 80(2): 221-230.

Peters, T. 2011. Nature as Measure: The Biomimicry Guild. Architectural Design 81(6): 44-47.

Porte, M.E. and Linde (1995). Green and Competitive. Harvard Business Review. 10 sider

Reve, T. and Sasson, A. (2012). De framvoksende kunnskapsnæringene – fornybar energi og miljø. Kapittel 10 i boken Et kunnskapsbasert Norge. Universitetsforlaget, Oslo. 20 sider.

Sæther, B. (2000). Continuity and convergence: Reduction of water pollution in the Norwegian pulp and paper industry. Business Strategy and the Environment, 9, 390-400. 10 sider

Module 4:

Bornstein, D. How to Change the World: Social Entrepreneurs and the Power of new Ideas. Oxford (select chapters).

Gibson-Graham, J.K. and Roelvik, G. (2009). An Economic Ethics for the Anthropocene. Antipode, 41, pp. 320-346.