Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Natural Sciences

1MX009 Industriell ekologi, 7,5 högskolepoäng
Industrial Ecology, 7.5 credits

Main field of study
Environmental Science

Subject Group
Environmental Science

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by the Board of the School of Natural Sciences 2009-06-23

Revised 2010-05-25

The course syllabus is valid from spring semester 2011

Prerequisites
The Environmental Issues, 7.5 hp, Methods of production and their environmental impact 7.5 hp, Methodology in environmental science 7.5 hp, or equivalent.

Expected learning outcomes

Upon completion of the course, the student will be able to:
- briefly describe the basics of technical and industrial development in a historical perspective;
- describe the interaction between the nature's cycles and anthropogenic cycles;
- rationally manage problems within sustainable development for the creation of good economy, cultural and technological development;
- briefly discuss issues related to optimization of the overall material cycle from virgin material to the final product and the management of the end of life product;
- describe the design of industrial processes and products;
- describe the basic concepts of production under materials and energy efficiency;
- describe the handling of recycling products and materials, and the importance of their quality;
- describe the importance of good choice of material and product quality and related environmental effects;
- understand the relationship between the industry and the environment and the link between engineering and natural sciences in a practical and scientific way, and
- discuss environmental problems related to air, water, waste and land.

Content

• Connection between industrial ecology and environmental science.
• Technical development and industry
• Local, regional and global environmental impact on air, land and water
• The relationship between social and industrial development
• The nature's cycles and balances in time and space in relation to the man made material cycles
• Industrial material cycles and use of energy
• Industrial design and redesign, and ecodesign
• Industry waste and residues, and recycling
• Choice of materials for production
• Packaging, transportation and installation
• The interaction between production and environmental impact
• Design for recycling and sustainable development
• Water related urban and industrial issues
• Product development, technological change, ecological efficiency, eco-design and producer responsibility
• Human needs and desires and the future industry

Type of Instruction

The teaching consists of lectures, exercises and individual assignments, of which one is mandatory.
Participation in three course sessions at campus is mandatory.
The course participants need access to Internet.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
Examination is performed through assessment of course assignments and exercises and a final written exam.

A second examination is normaly offered within six weeks during the semester.
Examination opportunities are limited to five.

Examination criteria to pass the course are defined by the expected learning outcomes (see above).

Course Evaluation

Upon completion, the course will be evaluated by filling out an evaluation form. The results of the evaluations are turned into a summary report that will be kept in the administrational archives of the department. The outcome of the evaluation of the previous year, as well as possible measures taken, will be discussed with the educational program organiser, as well as with incoming students at the start of the next course.

Required Reading and Additional Study Material

Mandatory literature

Graedel, T.E. and Allenby, 1995 or 2002 Industrial Ecology, Prentice Hall, Englewood Cliffs, New Jersey 07632. ISBN 0131252380 or similar literature suggested by the course leader