Industrial Symbiosis

Programme course

6 credits

Industriell symbios

TKMJ38

Valid from: 2017 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2017-01-25

Main field of study
Energy and Environmental Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Energy-Environment-Management

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Industrial ecology for improved resource efficiency

Intended learning outcomes
After completion of the course the student will be able to:

- Explain core concepts of industrial symbiosis;
- Demonstrate basic understanding of the role of technical, socio-economic, managerial and political conditions for industrial symbiosis development;
- Explain and discuss different approaches to the dissemination of industrial symbiosis strategies;
- Investigate and communicate how industrial symbiosis can be useful in a business perspective
- Collect and analyse information relevant for industrial symbiosis development for an industrial area
- Uncover, map and analyse symbiotic connections between existing businesses in an industrial area

Course content

This course is about the opportunities offered by connecting one business to other businesses and actors nearby. Geographic proximity is sometimes an overlooked dimension when it comes to development of a business's activities and could be seen as a complementary approach to management of supply chains. One definition of Industrial symbiosis is; "Studies of processes where materials, water, energy and information are transferred between companies with geographic proximity aiming at developing their activities and relations".

The course will introduce the concept of industrial symbiosis and how it may be usefully applied within a business context through the use of case studies and theoretical understanding. More specifically, the course will deal with how businesses can achieve resource efficiency and savings through links with other businesses. Students will explore key concepts and then apply the knowledge acquired to industrial areas to learn more about the practical relevance of the industrial symbiosis approach. The findings about industrial areas will be a contribution to an online web-portal on industrial symbiosis that is under development in a European research network.

Course components include; By-product exchanges and utilities sharing, uncovering of industrial symbiosis, planning and facilitating industrial symbiosis, case study descriptions, eco-industrial parks, environmental performance of industrial symbiosis, social, political and strategic dimensions of industrial symbiosis development, and experiences from industrial symbiosis dissemination programs

Teaching and working methods

The course will consist of lectures, workshops, one literature seminar and a project assignment to be carried out in groups.

Examination

UPG1	Approved Project Assignment and Literature Seminar	3 credits	U, G
TEN1	Written Examination	3 credits	U, 3, 4, 5

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses: Environmental systems analysis, Sustainable City Development

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent
Niclas Svensson

Examiner
Mats Eklund, Murat Mirata

Course website and other links

Education components
Preliminary scheduled hours: 49 h
Recommended self-study hours: 111 h

Course literature
Regional Resource Synergies for Sustainable Development in Heavy Industrial Areas: An Overview of Opportunities and Experiences. 2007. Centre of Excellence in Cleaner Production Curtin University of Technology. Kompletterande material på kurshemsida.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.