DALARNA UNIVERSITY

Course Syllabus

Resource Management and Environmental Impact of Energy Systems 5 Credits*, First Cycle Level 2

Learning Outcomes

Upon completion of the course, the student will be able to:

- use various methods for calculating resource use in energy systems in a life cycle perspective and evaluate them critically
- make assessments with regards to relevant scientific, social and ethical aspects with respect to the use of land, air and water for energy systems relative to other applications
- identify, formulate and deal with problems regarding the climate and the environmental impact of energy systems, both locally and globally
- evaluate critically different methods for calculating environmental and climate evaluation and certification
- work in groups and interact with companies or other external parties when executing a project
- both orally and in writing, present and discuss project results

Course Content

The course provides the students with knowledge to put energy technologies and systems in a context that connects to how resources are used and what effect this has on the climate and the environment both locally and globally.

The course takes its starting point in sustainable development, and in particular sustainable energy and resource management and environmental impact. The course also includes resource issues related to non-renewable and renewable energy resources, as well as how energy systems utilize land, sea and airspace and how this interacts with ecosystem services and society´s collective resource needs. During the course, calculation methodologies for environmental and energy assessment are presented, and their connection to certification and classification systems is established.

The course starts out with lectures on the concept of sustainability, resource-efficient use of Earth´s limited resources in their entirety for various purposes , energy and environmental valuation methodology , certification and classification systems ,

environmental assessments and policy instruments. Exercises include LCA (life cycle assessment) and calculations according to various energy and environmental valuation methodologies using calculation tools.

The course includes a project where students in groups work with environmental and resource issues within the project in the course Energy Systems.

Assessment
Project (including written report and oral presentation) (2,5 credits)
Individual assignments (2,5 credits)

Forms of Study
Lectures, exercises, home assignments, seminars and project.

Grades
The Swedish grades U, 3, 4, 5.

Individual assignments U, G

Prerequisites
Renewable Power Generation 7,5 credits first cycle level 2 or equivalent knowledge

Subject:
Energy Technology

Group of Subjects:
Energy Technology

Disciplinary Domain:
Technology, 100%

This course can be included in the following main field(s) of study:
1. No main field of study

Progression Indicator within (each) main field of study:
1. G2F

Approved:
Approved 8 October 2015
Valid from 1 December 2015