DALARNA UNIVERSITY

Course Syllabus

Industrial Heat Technology 7.5 Credits*, First Cycle Level 1

Learning Outcomes

This is a course on industrial scale heat production and distribution mainly concerning bioenergy, district heating, different types of heating plants, the technology and calculations of distribution and use. After completion of the course the student shall be able to:

- Describe types and technologies of commonly occurring bioenergy their treatment, properties and environmental impact mainly for heat production
- Describe types and technologies of commonly occurring heat plants, combined heat and power plants and the use of waste heat.
- Describe types and technologies of commonly occurring heat distribution systems, technical solutions and important system parameters
- Analyze, solve and evaluate results of problem based on real scenarios regarding heat production and distribution using mathematical methods based on natural science

Course Content

This is a course on production, treatment distribution and characteristics of common bioenergy, their use in combined heats and power plants and the residuals. Also basic chemical and physical progressions, measure methods, equipment and calculations models for establish the biofuel characteristics.
The course also includes district heating, from heat plants, through distribution to the heat exchanger at the user. Study of the district heating system´s role in taking advantage of waste heat and how parameters in the system effects the efficiency, also combining heat and power generation. Further different components will be studied, calculations regarding power and energy demand, losses and dimensioning. The course will give a good knowledge in district heating, function and it´s role in society.

Assessment

Home assignment (2p)

Laboration (0,5)

Written examination (5p)

* 1 Credit = 1 ECTS

Forms of Study
Lectures, laboration, seminars, home assignment and study visit

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

Laboration and home asignment U-G

Den skriftliga tentamen styr slutbetyget på kursen.

Prerequisites
Thermodynamics, 7,5 credits

Other Information
Replaces parts of EG2009 och EG2003

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. Energy Technology

Progression Indicator within (each) main field of study:
1. G1F

Approved:
Approved 8 March 2018
Valid from 27 May 2018