

SYLLABUS

Industrial Energy Processes

7.5 credits F7009T

Industriella energiprocesser

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-14

Industrial Energy Processes 7.5 credits F7009T

Industriella energiprocesser

Second cycle, F7009T

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Energiteknik	Energy Technology

Main field of study

Mechanical Engineering

Entry requirements

knowledge in thermodynamics and heat transfer, as well as in analysis of energy plants and energy engineering systems (equivalent to LTU courses F0032T Thermodynamics and Heat Transfer, F7011T Energy Plant and Systems Engineering). Good knowledge in English, equivalent of English 6.

Selection

The selection is based on 30-285 credits

Course Aim

The overall aim of the course is that you shall develop your ability to analyse and evaluate different industrial energy systems and processes, with focus on energy efficiency.

After the course, you should be able to:

1. Knowledge and understanding

- account for overall structure and development of industrial energy use,
- explain different industrial energy processes and energy conversion technologies,

2. Skills and abilities

- propose and analyse various types of measures within industrial energy systems, from technical, environmental and economic perspectives,
- evaluate system consequences, on different system levels, from different measures within industrial energy systems,
- analyse and solve open energy engineering problems, by integrating and applying data from various sources and previously acquired knowledge and skills,

3. Ability of assessment and attitude

- critically evaluate industrial energy systems and industrial energy systems measures,
- reflect on and evaluate your own efforts in problem solving in groups.

Contents

- energy use in industry,
- industrial energy systems,
- industrial energy processes, with focus on energy intensive industry,
- transformation of the industry towards increased share of renewable energy and reduced fossil CO2 emissions,
- barriers against and driving forces for industrial energy efficiency,
- analysis and evaluation of energy efficiency measures and consequences of implementing these measures,
- use of excess industrial heat (for example by integration with municipal energy systems for district heating).

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The basis is project work in groups, where industrial energy problems grounded in reality are analysed and solved. Lectures with theory and background are given as support. The course also contains compulsory study visits seminars. Collaboration with the industry is done through guest lectures, study visits and project work.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Project work with written and oral presentation with differentiated grades (group work and individual task). Passing the course also requires participation in compulsory elements, such as seminars and study visits.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course F7009T is equal to MTM114

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0005	Written and oral presentation	G U 3 4 5	6.5	Mandatory	A21	
0006	Compulsory course elements	U G#	1	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Niklas Lehto, Programme Director 2022-02-14

Syllabus established

The syllabus was established by the Department of Applied Physics and Mechanical Engineering 2007-02-28, and remains valid from autumn 2007.