

**SYLLABUS**

# **Thermodynamics and Heat Transfer 7.5 credits F0032T**

**Termodynamik och värmetransport**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

DECISION DATE  
**2022-02-14**

# Thermodynamics and Heat Transfer 7.5 credits F0032T

## Termodynamik och värmetransport

### First cycle, F0032T

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

### Main field of study

Energy Engineering

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and basic knowledge in thermodynamics about heat, energy, efficiency and heating machines. These are available, for example, in F0004T, Physics 1, 7.5 credits.

## Selection

The selection is based on 1-165 credits.

## Course Aim

The student should acquire the following skills in the course:

### 1. Knowledge and understanding

- to be able to describe the fundamental transport phenomenon for heat transport, conduction, convection and radiation
- to be able to describe the first and second law of thermodynamics for mass- and control volumes.

### 2. Färdighet och förmåga

- to be able to calculate heat transfer in different applications
- to be able to calculate energy transfer in cycles used in units for heat and power production
- to be able to calculate efficiency for power and refrigeration systems

### 3. Värderingsförmåga och förhållningssätt

- developed your ability to engineering thinking
- be able to critically assess energy systems design

## Contents

Basic thermodynamics for steam and gas turbine cycles, combined cycles and cycles for heat pumps and refrigerators.

Properties for pure substances.

First law of thermodynamics for open and closed systems

Entropy.

Heat transfer by conduction, convection and radiation.

Laboratory work in groups

Moist air

## Realization

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

Lectures. Group wise laboratory 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. Review of laboratory reports. Written exam.

## 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 F0032T is equal to MTM121

## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0003	Laboratory work	U G#	0.5	Mandatory	A11	
0004	Written exam	G U 3 4 5	7	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

by Department of Applied Physics and Mechanical Engineering 2007-02-28