

**SYLLABUS**

# **Internal Combustion Engines 7.5 credits F7020T**

**Förbränningsmotorteknik**

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

**DECISION DATE  
2022-02-14**

# Internal Combustion Engines 7.5 credits F7020T

## Förbränningsmotorteknik

### Second cycle, F7020T

**Education level**  
Second cycle

**Grade scale**  
G U 3 4 5

**Subject**  
Energiteknik

**Subject group (SCB)**  
Energy Technology

### Main field of study

Mechanical Engineering

## Entry requirements

Knowledge of thermodynamic principles (e.g. F0032T, Thermodynamics and heat transfer). Good knowledge in English, equivalent to English 6.

## Selection

The selection is based on 30-285 credits

## Course Aim

After completing the course, students should:

### 1. Knowledge and understanding

- be able to identify basic phenomena in energy conversion and formation of hazardous chemical species in internal combustion engines
- be able to illustrate components and technologies used in internal combustion engines

### 2. Skills and abilities

- be able to perform basic calculations about the main quantities related to engine performance
- be able to solve basic problems about the chemistry, heat and fluid flow in internal combustion engines

### 3. Evaluation and attitude

- be able to evaluate the influence of different design parameters and different technologies on engine performance
- be able to briefly discuss the issues related to energy conversion and pollutant emissions in internal combustion engines.

## Contents

Design and operation parameters, thermochemistry and fluid properties of the working medium, ideal cycles, gas exchange in engines. Combustion in Otto- and Diesel engines, formation of pollutants.

## Realization

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

Teaching consists of lectures with theory review. Submission of bonus assignments.

## 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. Individual written exam with differentiated grades in the scale G U 3 4 5.

## 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.

## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	7.5	Mandatory	S07	

## 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