



MF2047 Internal Combustion Engines 1 6.0 credits

Förbränningsmotorteknik 1

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for MF2047 valid from Autumn 2013

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Courses in mathematics, mechanics and thermodynamics from the first three years of the M, P and T programmes or equivalent Bachelor degree.

Minimum 120 credits.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The aim of the course is to give

- To give a good foundation for working with use and implementation of engines in vehicles and transportation systems and how the engine and its fuels interacts with its boundaries (vehicle and environment).
- General orientation of the main characteristics of current internal combustion engines
- Knowledge about related thermodynamic and combustion
- Knowledge in exhaust emissions from CI- and SI-engines and how to reduce them
- Obtain enough knowledge about the ICE to select appropriate engine and fuel for a given application

Course contents

Repetition of basic thermodynamics applied on combustion engines. Common idealised processes, turbocharging and charge-air cooling are included.

The basics in combustion for diesel- and SI-engines are discussed.

A modern car engine is disassembled and assembled.

A passenger car engine is tested in a lab exercise.

A written assignment is submitted on the diesel engine.

Ignition- and fuel- and control-systems are discussed.

Course literature

Bosch Automotive Handbook.

Optional: Heywood, Internal Combustion Engine Fundamentals (McGraw-Hill).

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Written examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Lab exercises ((LAB1; 1,5 credit). Written exam (TEN1; 4,5 credits).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.