



# SD2221 Vehicle System Technology 8.0 credits

Fordonssystemteknik

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 SD2221 valid from Autumn 2010

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Mechanical Engineering

## Specific prerequisites

Fundamentals of mechanical and electrical engineering.

**For "single course students": 150 university credits (hp) In engineering or natural sciences and documented proficiency in English corresponding to English B.**

# Language of instruction

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

# Intended learning outcomes

This introductory course will give you knowledge of vehicle system technology, and the vehicles role in the transport system and in society.

The aim of the course is to give the student a basic knowledge on road and rail vehicle design and performance.

After a completed course you should be able to:

- formulate problems and apply the methodology in the vehicle sector to seek and evaluate solutions
- apply knowledge and skills acquired during the studies, on problems in vehicle technology
- describe vehicles role in transportation
- describe vehicle types, structure, use and requirements
- describe vehicle systems, sub-systems and their function
- describe how vehicles effect the environment on local, regional and global level
- describe vehicle forces and its relation to weight, air resistance, rolling resistance, etc.
- calculate start, acceleration and retardation of vehicles,
- have basic knowledge on vehicle dynamic performance and comfort,
- describe vehicle development from a systems engineering perspective, from market, to requirements and product development. Innovations and patents.
- discuss the trends and future potential of vehicles

# Course contents

Vehicle types, structure, use and demands. Vehicles role in transportation. Requirements for vehicles. Wheels, tires and rolling resistance. Brakes. Innovations and patents. Drivetrain. Chassis. Rail vehicles. Terminals and signalling. Vehicle-track interaction. Statistical design of experiments. Vehicle dynamics and comfort. Traction Technology, energy and environment. Future trends.

# Course literature

Course literature will be available in BILDA by Div. of Vehicle Dynamics and Div. of Rail Vehicles, KTH.

# Examination

- INL1 - Exercises, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 4.0 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

Written Exam (TEN1; 4 hp; A/F), compulsory.

Exercises (ÖVN1; 4 hp; A/F), compulsory.

The number of points achieved for TEN1 and ÖVN1 are summed. The final grade is based on this sum.

## 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.