SYLLABUS

Vehicle systems 1 7.5 credits M0014T

Bilens system 1

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-17

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LULEÅ TEKNISKA UNIVERSITET

Vehicle systems 1 7.5 credits M0014T

Bilens system 1

First cycle, M0014T

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Farkostteknik	Vehicle 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 matematics and mechanics (statics and dynamics); M0038M Mathematics I - Calculus, M0043M Mathematics II - Calculus and linear algebra, F0004T Physics 1, F0006T Physics 3 or equivalent.

Selection

The selection is based on 1-165 credits.

Course Aim

After passing the course, the student should be able to:

- describe the function and structure of the car's mechanical components and systems.
- perform calculations to perform engineering assessments of the function and performance of the car's systems and components.
- independently identify relevant physics and mathematics required to solve an open ended problem based on the performance of different car components and systems
- orally and in writing present and discuss solutions to open end problems related to the car's mechanical system, with special regard to assumptions and reasonableness assessments.
- handle, evaluate and interpret measurement data from vehicle testing.
- explain and exemplify how mathematical modeling can be used to evaluate the function of the car's mechanical system.
- show insight into the possibilities and limitations of different vehicle technologies

Contents

The course deals with the design, function and analysis of the car's mechanical system and gives you the opportunity to develop basic engineering skills such as oral and written communication. The course puts special emphasis on working with open ended problems, similar to what can be expected in the engineering profession, where both too little and too much information to be able to solve the task is common. Subject areas in the course are given below:

- Analysis of vehicle components and system such as engine, drivetrain and brakes.
- Function of systems for wheel suspension, bearings, and wheels.
- Function of steering and power steering systems.
- Hydraulics and pneumatics
- Basic levels of tribology, lubrication and bearings.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
The teaching consists of lectures where important elements of the course are presented as well as lessons with calculation exercises. The assignments in the course consist of both laboratory work, quizzes and homework. The labs give you the opportunity to, in collaboration with others, learn more about the function of the car's mechanical system. The quizzes aim to develop your ability to handle open-ended problems and perform engineering calculations. Through assignments and homework, you can also practice writing reports. Furthermore, in the course you will be able to handle, analyze and interpret measurement data with the help of computer tools. By orally presenting your own analysis and interpretation of the measurement data, you will in the course have the opportunity to improve your ability to communicate orally. Guest lecturer is not a standing feature but occurs.

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.
The course is examined through a written exam at the end of the course and assignments during the course. The assignments consist of laboratory work, computer exercises and calculation exercises. These are examined through written reports, oral presentation and quiz submissions. Bonus points on the first regular written exam are given based on results from quiz submissions. Attendance is mandatory at all laboratory sessions and computer exercises.

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 M0014T is equal to MTM152

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Assignment	U G#	3.7	Mandatory	A07	
0003	Written exam	G U 3 4 5	3.8	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 Head Faculty Programme Director Niklas Lehto 2021-02-17

Syllabus established

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