FSD3201 Vehicle dynamics, literature course 6.0 credits

Fordonsdynamik, litteraturkurs

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 FSD3201 valid from Autumn 2018

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

PhD student in the doctoral program Vehicle and Maritime Engineering.

Language of instruction

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

Intended learning outcomes

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

- Understand fundamental concepts in vehicle dynamics
- Describe vehicle movements caused by various types of interference.
- Describe the steering system and its influence on vehicle dynamics.
- Describe the roll characteristics and its impact on vehicle dynamics.
- Describe vehicle movements during acceleration and braking.
- Know different types of vehicle control at different levels of actuation.
- Describe the interaction between vehicles and drivers.

Course contents

Fundamental theory in vehicle dynamics. Vehicle motion by disturbances. Steering systems and vehicle dynamics. Vehicle body roll and vehicle dynamics. Vehicle motion with traction and braking. Vehicle active motion controls. Vehicle motion with all-wheel control. Vehicle motion with human driver. Vehicle handling quality.

Disposition

The course is intended to deepen the knowledge within ground vehicle dynamics.

The course starts with an introduction to the fundamental theory within vehicle dynamics. Then important parts within vehicle dynamics are presented. Exercises to practice the gained knowledge are performed.

Different computer tools are introduced and used to get deepened insight for the students.

The student chooses a specific area and performs a literature study within that area. The aim is to summarise the state-of-art in the chosen area. This is examined through at written report and an oral presentation.

Finally a written exam is given.

Course literature

Lecture notes and material handed out during lectures and assignments.

Masato Abe. Vehicle Handling Dynamics – Theory and Applications 2nd edition. Elsevier 2015, ISBN: 978-0-08-100390-9

Equipment

The department provides relevant computer capacity and software.

Examination

- INL1 - Assignments, 3.0 credits, grading scale: P, F
- TEN1 - Exam, 3.0 credits, grading scale: P, 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

- Hand in the calculated exercises
- Perform a literature study in the chosen field of vehicle dynamics
- Perform the computer exercises
- Pass the exam

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.