



# FAF3909 Future Transport and Infrastructure Systems 7.5 credits

## Framtida transport och infrastruktursystem

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 FAF3909 valid from Autumn 2015

## Grading scale

G

## Education cycle

Third cycle

## Specific prerequisites

- Completed transport related M.Sc. courses (either focusing on vehicle technology, transport systems, building/infrastructure materials or infrastructure design)
- At least 150 credits in Engineering or Science on B.Sc. level
- Documented proficiency in English B or equivalent

## Language of instruction

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

## Intended learning outcomes

Our society is faced with the important task of finding solutions for a sustainable development of our transportation infrastructure against constrained public-sector budgets, higher and more volatile resource costs and the additional challenges of making our transportation infrastructure resilient to climate change and less harmful for the environment. Moreover, we are dealing globally with a rapid population growth and vehicle fleet, which is leading to serious congestion problems on our transportation infrastructure that is already suffering from a lack of maintenance and upgrading investments. The objective of the course is for the students to develop technically sound designs that provide an integrated solution for our future transportation system, while working in multi-cultural and cross-disciplinary teams using the latest on-line learning tools.

## Course contents

In this C-campus course the students will work in small groups of students from KTH and Tsinghua University to develop a design for a new transportation system or infrastructure concept. In this, each design needs to have an overall holistic background which meets one or more of the challenges and opportunities for our future transportation system. Each group will then focus on a specific component of their design in which they are going to further design and specify the technical details of the solution. The technical focus point may be towards, but is not limited to, integrated vehicle and infrastructure designs, novel infrastructure building or maintenance solutions, multi-functional materials that enable future transportation solutions or system solutions that enhance future mobility in a carbon free society. The students will be supported by

1. industry mentors from Chinese and Swedish companies and authorities for their concept development that cover relevant and actual societal challenges in this domain, and by
2. teachers from Tsinghua and KTH for their methodology choices and technical details of their design.

## Disposition

The course will be performed on 'C-Campus' which is an online (cloud) campus, where the students meet each other to work on their designs, study the course materials and get support from the teachers and mentors. In addition to this a number of "live" class-room meetings are held in which the students from Tsinghua and KTH and their teachers meet each other and discuss and present their developed designs.

## Course literature

C-Campus library material provided by the industry mentors and teachers.

## Examination

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.

The students will be graded on the basis of the quality of the draft and final group design, the peer-review evaluation and a personal oral examination. In this,

1. technical soundness of the chosen methodology
  2. creativity of the integrated design
  3. cross-disciplinary and multi-cultural group collaboration and
  4. individual leadership
- will be important evaluation criteria.

## 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.