AH2909 C-Campus Course on Future Highway Design 7.5 credits

C-Campus kurs i framtida vägdesign

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 AH2909 valid from Autumn 2017

Grading scale

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

Education cycle

Second cycle

Main field of study

Built Environment

Specific prerequisites

150 credits (hp) Academic studies in Engineering or Science including documented proficiency in En B/En 6 (TOELF, IELTS e g)

Since the number of participants in this course is limited, a selection procedure will be applied based on a brief (1 A4) motivation letter that has to be attach to the application.

Language of instruction

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

Intended learning outcomes

This course aims at letting students experience the technical design process of a future highway, from the planning to the operations stage via lectures, self-study and project group exercises. As such, students will learn to relate long-term environmental, traffic and technical aspects to the choice of road design, road materials, safety and future road usage. The course will be given in the context of the C-Campus Virtual Learning platform, and aims therefore also at improving the students intercultural and multi-disciplinary skills.

When the course is done, those students taking part shall be able to:

- Evaluate the various social, technical and environmental aspects involved with highway engineering;
- Synthesize the role and place of planning in highway engineering;
- Make a rough traffic capacity estimate and link this to highway design;
- Analyze the factors influencing geometric roads design and material choice and link these to safety;
- Comprehend how to take into account relevant factors that leads to the final highway design;
- Explain mechanisms and factors influencing long term performance of highways;
- Synthesize a design of a highway and evaluate the most important assumptions in the procedure;
- Combine the future functions of highways with current engineering knowledge needed for its design,
- Have a better comprehension of effective intercultural collaboration in joined efforts.

Course contents

In this C-Campus course, students will learn all the basics associated with future highway engineering. In the course, the entire design process from its planning stages till its geometrical and mechanical design will be treated. In the design, both the urban development as well as a sustainability perspective will be treated. By participating in the course, the students will be exposed to the various steps related to highway engineering and will be able to relate long-term environmental, traffic and technical aspects to the choice of road location, road materials, safety and the choice of appropriate design tools. Intercultural aspects, personal leadership and creative learning are important parts in the course that will also be evaluated.

Disposition

The course will be given via the C-Campus virtual learning collaboration between KTH and Tsinghua University. As such, a large part of the course will be given via online modules with set-examination times. Regular non-virtual interactions between the students and the teachers will be organized. The course will be using a creative learning teaching method in which student groups between KTH and Tsinghua students will perform exercises.

Course literature

Course material will be posted online during the course lectures.

Examination

- TEN1 - Personal Examination, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises 1, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN2 - Exercises 2, 2.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN3 - Peer Review, 1.5 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.

Students will receive their end grade on the A-F scale, as a mean average of their assignment grades, their peer-review grading and their personal examination grade.

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.