AH2032 Train Traffic Simulation 7.5 credits

Simulering av tågtrafik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for AH2032 valid from Spring 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

At least 120 credit academic studies and documented proficiency in Swedish B and English A or equivalent.

Special Qualifications:

AH2026 Railway Traffic - Market and Planning, bc, or equivalent knowledge.

Language of instruction

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

Intended learning outcomes

The course aims to provide an understanding of how and when railway simulation can be used and what its advantages and disadvantages are. The students should be able to perform simple simulations of train services on the Swedish rail network and from this draw conclusions about different kinds of conflicts between trains and the capacity of a railway line can be changed by varying the infra-structure, vehicles or traffic.

The students should after the course be able to:

- Be able to use simulation as an analysis method
- Explain the difference between reality and the simulated model
- Explain the difference between macro and micro simulation
- Be able to handle a specific railway simulator
- Analyze different train time tables in terms of capacity and robustness

Course contents

- Simulation theory, possibilities and limitations
- Quality demand of the input and output in a railway simulation
- Genomgång av olika simuleringssystem för tågtrafikanalys
- Review of various simulation systems for train traffic analysis
- Adaptation of infrastructure, vehicles and traffic in a common model
- Presentation and use of the simulator RailSys
- Various railway simulation approaches in line and network traffic applications
- Delays; how they are detected, compiled and implemented
- Construction of traffic operations, conflict resolution and adjustments for stable traffic arrangements
- Analysis of the implemented simulations and reconciliation with reality

Disposition

The course consists of twelve days of lectures to teach the theory of simulation and computer time to learn a train traffic simulation program and to execute a variety of applied exercises. Examination is a smaller exam and some exercises to be reported.

Course literature

Handed out course material

Examination

- PRO1 - Project, 5.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 2.0 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.

If the course is discontinued, students may request to be examined during the following two academic years.

- PRO1 - Project, 5.5 credits, grade scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 2.0 credits, grade scale: A, B, C, D, E, FX, F

Other requirements for final grade

A mandatory written examination equivalent to 2 cr with grading scale A-F and a mandatory project assignment equivalent to 5,5 cr with grading scale A-F.

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.