# AH2030 Railway Signalling System - Reliability 7.5 credits

## Järnväg signalteknik - systemsäkerhet, tillförlitliga system

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

## Establishment

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

The Built Environment

## Specific prerequisites

At least 180 credit academic studies and documented proficiency in Swedish B and English A or equivalent.

**Special qualification**:

AH2029 Järnvägssignalteknik-Signalsystem.

## Language of instruction

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

## Intended learning outcomes

The student will after the course be able to:

- Understanding reliability and safety in the development process
- Calculate the MTBF, reliability/availability/security in a reliability system
- Describe/explain the relevant terms, methods and demands of the system life cycle
- Derive the necessary formulas for the reliability analysis

## Course contents

- Definition and terminologies
- Traditional solutions and Fail-safe technology
- Reliability Calculations, Structural, MTBF, availability
- Applications of the Markov Process
- Different methods of analysis: Danger origin analysis, risk analysis, Fault trees (FTA), Fault effect (FMECA)
- Different methods of construction for the safety of hard and software and transmission, and monitoring of claims against the manufacture, installation, operation and maintenance
- Applicable standards preferably within the railway reliability area
- Introduction of development processes, including verification and validation and approvals

## Disposition

The course consists totally of twelve days of lectures by the basic knowledge needed to understand the subject. This is supplemented with exercises, to provide applications on the subject. Examination is a written exam. The course can partly be read at a distance.

## Course literature

Course compendium

## Examination

- TEN1 - Examination, 7.5 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.

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

TEN1 - Examination, 7,5 credits, grade scale: A, B, C, D, E, FX, F

## Other requirements for final grade

A mandatory written examination equivalent to 7,5 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.