



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Banteknik för ingenjörer

Track and Permanent Way for Engineers

VTVA36, 7,5 credits, G1 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED V

Date of Decision: 2023-03-21

General Information

Compulsory for: IBYI2

Language of instruction: The course will be given in Swedish

Aim

The aim of the course is to provide students with fundamental knowledge of track and permanent way on both system and component levels. It also intends to provide an insight into track and permanent way problems in projection, building and maintenance.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to give an account of track and permanent way installations in terms of construction, design and function
- be able to give an account of the forces that arise in a railway and how they arise and are dealt with
- be able to give an account of the method and principles by means of which track and permanent way installations are maintained, and understand the importance of well functioning maintenance.

Competences and skills

For a passing grade the student must

- Be able to give an account of the fundamental concepts of rail geometrics and dimension and apply geometrics according to the rules and norms
- Be able to implement a mathematical optimisation of a rail line

- Give an account of a solution to a geometric dimensioning problem in a technical report

Judgement and approach

For a passing grade the student must

- Analyze maintenance data and assess suitable measures and their effects.

Contents

The course contains sections centred around the railway's superstructure and substructure, detailed parts and how these interact in a system.

The track geometry and inspection of the track geometry are also dealt with thoroughly, the focus being on what characterises "good" geometry.

The projection, building and maintenance phases are emphasised. Particular interest is also shown in the operation and maintenance of track and permanent way installations, including the relevant maintenance machines and tools.

The section surfaces between track and permanent way and adjoining technical areas (electric, signalling and telecommunications) are focused on to give a comprehensive picture of the whole railway system.

Basic geology and soil characteristics

Common geotechnical test methods

Geotechnical investigations during the planning phase and ongoing work

Teaching/learning is individual and in groups. Lectures are alternated with practical exercises at the Railway Training Centre.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Exam and project reports.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: VTVA46 Road and Railway Engineering

The number of participants is limited to: No

The course overlaps following course/s: VTVA35

Reading list

- Bårström, S. & Granbom, P.: Den svenska järnvägen. 2012, ISBN: 978-91-7467-227-

5.

Contact and other information

Examinator: Andreas Persson, andreas.persson@tft.lth.se

Course coordinator: Markus Gustavsson, markus.a.gustavsson@trafikverket.se

Course homepage: <https://www.tos.lth.se/utbildning/grundutbildning/>

Further information: The course is held at Trafikverksskolan in Ängelholm.