



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Drift och underhåll av vägar **Highway Maintenance**

VVBN05, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED V

Date of Decision: 2023-03-21

General Information

Compulsory for: IBYV3

Elective for: V5-at, V5-bf, V5-tv

Language of instruction: The course will be given in Swedish

Aim

The aim of the course is to provide the student with national and international knowledge about management and maintenance of the roads and streets. Important areas such as evaluation of bearing capacity, different material control methods to document the deterioration of the pavements are discussed. The subject of Pavement Management Systems is deeply studied in the course

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Describe how various technical aids for determining the condition of the pavement (laser measuring vehicle, falling weight deflectometer and georadar) can be used for maintenance planning
- Explain the principles for prioritising among different objects for winter road maintenance
- Understand the effects of water on deterioration of the pavements
- Analyse and understand the mechanism behind deterioration of the pavements
- Understand the effects of traffic on different pavement deterioration
- Describe differences between management and maintenance of the roads

Competences and skills

For a passing grade the student must

- Develop and apply a Pavement Management System on object level in order to choose optimal, cost-effective maintenance strategies based on national economic grounds
- Carry out an investigation on road condition and evaluate it with falling weight measures.
- Motivate and discuss different maintenance strategies and their economic consequences
- Carry out visual distress surveying according to the “sink or swim” principle

Judgement and approach

For a passing grade the student must

- Understand importance of systemically management and analyse information that is used in maintenance planning and evaluate the reliability of the results based on accessible information.

Contents

National and international knowledge about maintenance of roads with focus on issues such as evaluation and examination of bearing capacity

In-depth studies of different types of material control and measurement methods for the documentation of road deterioration

Intensive survey of pavement deterioration models and Pavement Management Systems (PMS). Comparison of output data from different deterioration models

Collection of basic data for PMS and formulation of a cost-benefit model in which the effects of various maintenance measures are simulated

The mechanism and reasons for different types of surface damage are discussed in theory and practice

Effects of climate factors on surface deterioration

Distress surveying of pavement surfaces

Issues relating to the reuse of asphalt surfaces

Alternative super structure material for roads, and methods and analysis

Management and maintenance in Sweden on objects and road network level

Winter road maintenance and associated environmental problems

Environmental issues on maintenance of pavements

Examination details

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

Assessment: For a passing grade the participant must hand in three projects and report. Oral examination of parts of the assignments. A written exam is included in the course.

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

Admission requirements:

- VTVA45 Road and Railway Engineering or VTVA46 Road and Railway Engineering or VVBF20 Road Construction

Assumed prior knowledge: VVBN10 Pavement design, VGTF05 Geotechnics and VTVN01 Highway Design.

The number of participants is limited to: No

The course overlaps following course/s: VTVF55

Reading list

- Lars-Göran Wågberg: I valet & kvalet: handbok för val av beläggningsåtgärd. Svenska kommunförbundet, 2001, ISBN: 9172890096.
- Lars-Göran Wågberg: Bära eller brista. Handbok i tillståndsbedömning av belagda gator och vägar, Handbok i tillståndsbedömning av belagda gator och vägar. Svenska kommunförbundet, 2003, ISBN: 9172891726.
- Trafikverket: Förstråkningsåtgärder. 2009.

Contact and other information

Teacher: Ebrahim Parhamifar, Ebrahim.Parhamifar@tft.lth.se

Course coordinator: Sven Agardh, Sven.Agardh@tft.lth.se

Examiner: Sven Agardh, sven.agardh@tft.lth.se

Course homepage: <http://www.tft.lth.se>

Further information: The course is offered in Lund. As part of engineering skills a written report and an oral presentation are included in the course.