



FAF3901 Advanced Rheology of Bituminous Materials 7.5 credits

Avancerad reologi för bituminösa material

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 FAF3901 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Academic degree in civil engineering. Passed courses in basic pavement engineering.

Language of instruction

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

Intended learning outcomes

After the course, the student shall be able to

- analyze phenomenology of the flow behavior of bituminous materials;
- use linear and nonlinear viscoelasticity theories to quantify the influence of bituminous materials properties on their field performance;
- apply thermomechanics and viscoelastoplastic continuum damage theory to optimize fracture resistance of bituminous materials;
- use X-Ray CT and image-based modelling to quantitatively analyze asphalt mixtures internal structure;
- identify optimal experimental characterization techniques for determination of elastic, viscoelastic and viscoplastic properties of binders and mixtures.

Course contents

The purpose of this course is to give engineers, scientists and researchers a deeper insight into the rheology of the bituminous materials with an emphasis on methodologies and applications for research problems. The fundamental theoretical background, the experimental techniques and modelling strategies will be treated. Practical implications of recent research developments will be stressed.

Course literature

The literature will be announced at course start.

Examination

- HEM1 - Home assignment, 3.0 credits, grading scale: P, F
- PRO1 - Project report with oral presentation, 4.5 credits, grading scale: P, 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.

Other requirements for final grade

At least 80 % participation in the course activities is required.

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.