AE2612 Hydraulic Engineering 7.5 credits

Vattenbyggnad

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

Establishment

The official course syllabus is valid from spring semester 2026 Spring 2026 as decided by the Director of First and Second Cycle Education. Decision date: 2025-09-25.

Grading scale

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

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

Bachelor's degree in the field of civil engineering, environmental engineering, or another subject with clear relevance to the course, of at least 180 higher education credits, which includes the following: Basic knowledge in mathematics for at least 20 higher education credits; Basic knowledge in numerical analysis, programming, or equivalent, for at least 6 higher education credits; Fluid mechanics for at least 5 credits.

Proficiency in English, English B or equivalent.

Intended learning outcomes

After the course the student should be able to:

Perform hydraulic design of spillways, energy dissipators and selected hydraulic structures.

Perform computations for different types of unsteady flow, for example: water hammer, mass oscillations in pipe systems - surge chambers, surge waves in open channels.

Describe the erosion process and design erosion protection for a channel.

Analyse and design different flood mitigations measures.

Course contents

Spillways: hydraulic design and computations of overflow spillways, bottom outlets and energy dissipators and transport of water.

Hydraulics: unsteady flow, water hammer, mass oscillation and pressure transients in pipes and surge shafts, surge waves in channels.

Erosion: critical shear stress, Shields diagram, design of erosion protection.

Hydropower plants: design, fundamental hydraulic computations.

Flood mitigation measures: detention basins, levees, reservoir regulations.

Examination

- ÖVN1 - Assignment, 4.0 credits, grading scale: P, F
- TEN1 - Written Examination, 3.5 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.

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.