



# AE2601 Hydraulic Engineering

## 7.5 credits

### Vattenbyggnad

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 AE2601 valid from Autumn 2007

### Grading scale

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

### Education cycle

Second cycle

### Main field of study

Built Environment

### Specific prerequisites

Fluid Mechanics for Built Environment besides Soil Mechanics and Foundation Engineering.

### Language of instruction

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

## Intended learning outcomes

After completion of the course the student shall: (i) Know and understand design principles for concrete and embankment dams and be able to perform stability computations for some of these dam types. (ii) Be able to perform hydraulic design of spillways and energy dissipators for dams and channels, tunnels and tubes (iii) Have computational ability regarding some types of unsteady flow iv ) Have basic knowledge about erosion and erosion protection v) Have knowledge about hydropower plants and river regulation vi) Have knowledge and computational ability regarding wave mechanics and wind generated wave.

## Course contents

Concrete and embankment dams: design, stability computation, surveillance, dam safety. Spillways, energy dissipators, channels, tunnels: hydraulic design. Unsteady flow such as water hammer and surges. Numerical methods in fluid mechanics. Erosion: critical conditions, design of erosion protection. Hydropower plants: design, hydraulic computation, energy production.. Long and short term river regulation. Wind generated waves: wave mechanics, computation of waves and wave forces.

## Course literature

Compendium produced by the department

## Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 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

Approved written examination (TEN1; 3,5 cr ) and approved assignment course (ÖVN1; 4 cr)

## 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.