AE1602 Hydrology 7.5 credits

Hydrologi

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

Establishment

The course syllabus is valid from Autumn 2025 according to faculty board decision: A-2024-0872, 3.2.2. Decision date: 2024-09-05

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic knowledge in Fluid Mechanics equivalent to a minimum of 1,5 ECTS in the course AE1603 Fluid Mechanics for Energy and Built Environment

Language of instruction

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

Intended learning outcomes

After passing the course the student should be able to:

- explain the hydrological cycle and identify significant reservoirs and fluxes of water on different spatial and temporal scales
- describe investigation and evaluation methodologies linked to hydrological processes in land and water systems
- apply physical, empirical and statistical relationships to solve applied hydrological problems
- describe in detail surface water processes and apply open channel flow calculations

Course contents

The hydrological cycle: water availability, water balance calculations on different spatial and temporal scales

Atmospheric water: precipitation, evaporation, evapotranspiration, data availability and measurement methods

Groundwater: formation and occurrence, aquifer properties, groundwater flow in confined and unconfined aquifers, groundwater pumping wells, data availability and measurement methods

Soil water: formation and occurrence, matric potential and capillarity, infiltration, flow in it the unsaturated zone, data availability and measurement methods

Hydrogeology: technical and hydraulic properties of soil and rock and its connection to land use, climate change and soil contamination

Surface water: surface runoff, flow conditions, hydrology of lakes, hydrographs, data availability and measurement methods

Catchment models: the rational method, the time-area method, the unit hydrograph method

Statistical methods: basic hydrological statistics, frequency analysis, hydrological design and risk analysis

Examination

- TEN2 - Written exam, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN2 - Exercises and field exercises, 3.5 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.

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.

Additional regulations

Recommended prerequisites:

Course AE1106 Geoscience