

SYLLABUS

Urban Water systems 7.5 credits V0016B

VA-system

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2023-02-13**

Urban Water systems 7.5 credits V0016B

VA-system

First cycle, V0016B

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	VA-teknik	Civil Engineering

Main field of study

Natural Resources Engineering, Civil Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and University courses corresponding to 60 credits. Should include at least 7,5 credits in Mathematics (for example M0047M Differential Calculus) and 7,5 credits in Physics (for example F0004T Physics 1).

Selection

The selection is based on 1-165 credits.

Course Aim

You should be able to:

1. Perform hydraulic calculations for pipes.
2. Dimension pipes, pumps and reservoirs for systems for potable water and wastewater.
3. Calculate storm water flows with the "rational method" and the "Time-area-method".
4. Describe the systems for potable water and wastewater and be able to explain the function of its components.
5. Describe differences in quality between different waters.
6. Describe different treatment units at water and wastewater treatment plants and be able to explain their functions.
7. Give examples of advantages and disadvantages of different urban water systems and relate these systems to the development of sustainable urban water systems and UN sustainable development goals.
8. Present collected data in suitable and well-designed diagrams and figures.
9. Refer to references in written text according to common methods used in the engineering field of science, and present collected data in appropriate diagrams.

Contents

This course give you an overall picture of the urban water system and how it has developed over time. You achieve knowledge about how urban areas are supplied with drinking water and how the wastewater is treated. You learn to carry out hydraulic calculations on pipe systems and how to dimension the water supplying network as well as the sewer system. You also learn how other components in the water supplying system are dimensioned, such as water reservoirs and pumps. You will get the possibility to broaden your knowledge about the urban water system, for instance how the drinking water and sewage are managed at the countryside or learn about new types of pipe systems, such as vacuum systems. During the course, you visit a wastewater treatment plant and get opportunities to meet and talk with urban water engineering, working in the water sector.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Fundamental system knowledge is acquired by lectures and literature studies during the course. To achieve calculation knowledge, you should participate at the lectures and work with calculation tasks. The calculation task is presented by a report and will be orally presented. The oral presentation is mandatory. A project task and a field task are carried out (group tasks) to get a deeper understanding of the systems for potable water and wastewater. Sustainability aspects will be involved in the project task. During the field task, the water quality is investigated by laboratory methods. A field report is written in small groups. During the work with the project report you are introduced to common methods how to refer to literature references in the text. The project task is presented orally and with a written report in which the content as well as the quality of the reference management is evaluated. In order to further penetrate sustainability aspects for urban water systems, a seminar will be performed. Active presence during the field task, seminar and at presentations is compulsory.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Fundamental system knowledge and calculation and dimensioning knowledge (aims 1, 2, 3, 4, 5, 7) are examined by two intermediate written exams (#0011 och #0012) during the course. More comprehensive calculation knowledge (aims 2, 3, 4) examined during the course by a calculation task (#0009) that is examined by a written report and an oral presentation. The project task (#0010), examining the aims that are related to a broader knowledge about the urban water system as well as reference management (aims 5, 8, 10) is also examined by a written report and an oral presentation according to a graded scale. The Field task (#0005) examines the course aims about water quality differences, treatment processes and data presentation (aims 6, 7, 9) short written report graded with (F/P). The seminar (#0006) examines the course aims related to a broader knowledge about the urban water system (mål 5, 8) with active participation.

To achieve a final grade of the course you have to pass all the examination items and attend and be active at the mandatory seminar, field trip and scheduled oral presentation lessons. If you have not attended any of the scheduled field task lessons, you have to do the field task another year, if there is room for additional students.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0005	Field task	U G#	0.5	Mandatory	A09	
0006	Seminar	U G#	0.1	Mandatory	A09	
0009	Calculation task	G U 3 4 5	1.8	Mandatory	A12	
0010	Project task	G U 3 4 5	1	Mandatory	A12	
0011	Short written exam 1	G U 3 4 5	0.8	Mandatory	A13	
0012	Short written exam 2	G U 3 4 5	3.3	Mandatory	A13	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2023-02-13

Syllabus established

by Department of Civil and Environmental Engineering 2009-01-20