

Syllabus

for course at second level

Vattenresurser och hållbarhet
Water Resources Sustainability

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	GE7094
Valid from:	Autumn 2025
Date of approval:	2024-12-10
Changed:	2024-12-13
Department:	Department of Physical Geography
Subject group:	Earth Science and Physical Geography
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements
Main field:	Physical Geography and Quaternary Geology

Decision

Finalized by: Områdesnämnden för naturvetenskap, 2024-12-10

Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to 90 credits in any of the major subjects biology-earth sciences, geography, earth sciences or environmental sciences.

Or knowledge equivalent to the courses Globalization, Environment and Social Change, 15 credits (KG7242) and Global Climate and Environmental Change, 15 credits (GE7063).

Or knowledge equivalent to the course Systems analysis for environmental management, 15 credits (GE7093).

Also required is knowledge equivalent to Swedish upper secondary school course English 6.

Course structure

Examination code	Name	Higher Education Credits
DEL1	Water Management and Dynamic Modelling	7.5
DEL2	Water-Related Decision Making	7.5

Course content

a. This course addresses water related sciences as hydrology, water resources and sustainability.

b. The course consists of the following modules:

1. Water Management and Dynamic Modelling (Vattenhantering och dynamisk modellering), 7,5 credits.

The module addresses:

- Dynamic system and/or hydrological modelling of water use and allocation between several competing sectors (energy, food, household, industry) and ecosystems.
- Feedback mechanisms and tipping points within climate systems and hydrological systems.

2. Water-Related Decision Making (Vattenrelaterat beslutsfattande), 7,5 credits

The module addresses:

- Different policy and sustainability frameworks dealing with the sustainability of human water use and consumption, the mitigation of impacts to scarce water resources and the resilience of the freshwater system to hydroclimatic change and human impacts.
- Environmental Impact Assessments of a large hydropower project.

Learning outcomes

After completing the course, the student is expected to be able to:

- identify, extract and combine relevant information and data for analysis and estimation of water quantity availability on local, regional and global scales (module 1),
- explain the principles behind the sustainability and resilience of water resources and the water system from local to global scales (module 1),
- estimate and quantify the allocation and availability of water, based on dynamic modelling and focusing on the efficient and sustainable allocation of water between competing interests (module 1),
- perform simple hydrological modelling in a river basin, estimating water flux components (module 1, module 2),
- determine the environmental and hydrological feasibility of water infrastructure projects (module 2),
- take science-based decisions for water allocation and management and be able to propose strategies for improvements in water availability and quality (module 2).

Education

Teaching consists of lectures, exercises, computer laboratory sessions, workshops, seminars, excursions and project work.

The course is offered in English.

Forms of examination

a. The course is examined in the following manner:

Assessment of module 1 takes place through written assignments and oral presentations, lab reports and active participation in seminars.

Assessment of module 2 takes place through written assignments and oral presentations.

The examiner can decide on adapted or alternative examination formats for students with disabilities.

Late submission of written assignments has consequences for the final grade of the course. These consequences are described in detail in the grading criteria of the course.

The examination will be conducted in English.

b. A passing final grade requires participation in seminars, exercises, laboratory sessions, workshops and excursions. If special reasons exist, following consultation with the teacher involved, the examiner may grant the student exemption from the obligation to participate in certain compulsory instruction.

c. Grading: The course's final grade is set according to a seven-point criterion-referenced scale:

A = Excellent

B = Very good

C = Good

D = Satisfactory

E = Adequate

Fx = Failed, some additional work is required

F = Failed, much additional work is required

Grades of module 1 and 2 will be set according to a seven-point criterion-referenced scale.

A passing final grade requires passing grades on all included parts.

The final grade of the course is determined by weighing the grades from both course modules, where each grade is weighed in relation to the scope of the course modules.

d. The course's grading criteria are handed out at the start of the course.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course syllabus is still valid. The number of examination opportunities is not limited. A student who has received a passing grade on an examination may not retake the examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed to the subsequent examination, unless there are special reasons to the contrary. Such requests should be made to the department board.

The course includes at least three examination opportunities per academic year the course is offered. For the academic years that the course is not offered, at least one examination opportunity is offered. For practical course elements such as laboratory sessions, demonstrations, excursions, seminars and oral presentations, examination opportunities are only offered during the period of time when the course is given.

f. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides on the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination opportunity.

Interim

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two-year period after the course was discontinued. Requests must be made to the departmental board. The provision also applies in the case of revisions of the course syllabus and revisions of the required reading. After the settlement period no more examination is given.

Limitations

This course may not be included in a degree together with the courses Local to Global Water Vulnerability and Resilience (GE7025), Water Resources Sustainability (GE7086), Land-Water Risk Assessment and Management Methods (GE8031) or with equivalent courses.

Misc

This course is part of the Master's Programme in Water Resources, but may also be taken as a separate course.

This course includes field studies, which entails costs to the student.

The required reading is decided by the department board and published on the course page in the digital course catalogue at least 2 months before the start of the course.