Department of Physical Geography

Stockholm University

Syllabus

for course at advanced level

Hydrological Modelling
Hydrologisk modellering

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	GE8034
Valid from:	Autumn 2021
Date of approval:	2020-08-17
Department	Department of Physical Geography
Main field:	Physical Geography and Quaternary Geology
Specialisation:	A1F - Second cycle, has second-cycle course/s as entry requirements

Decision

This course syllabus was approved by the Board of Science at Stockholm University on 17/08/2020.

Prerequisites and special admittance requirements

For admission to the course, knowledge is required equivalent to Water Resources Sustainability, 15 credits (GE7086). Swedish upper secondary school course English 6 or equivalent.

Course structure

Examination code	Name	Higher Education Credits
DEL1	Computer Exercises	5
DEL2	Modelling Theory	4
DEL3	Individual Modelling Project	6

Course content

a. The course covers information and modeling systems for water resources as well as numerical methods for solving various hydrological and geoscientific problems. The course provides an overview of different types of models, modeling methods and how these are used. This also includes basic mathematical equations, which describe water flow and contaminant transport processes, and their numerical solution. Furthermore, the course covers simple statistical methods for evaluation and analysis of data and model results.

b. The course consists of the following modules:
1. Computer Exercises, 5 ECTS credits
2. Modelling Theory, 4 ECTS credits
3. Individual Modelling Project, 6 ECTS credits

Learning outcomes

After completing the course, the student is expected to be able to:
• perform hydrological and geoscientific calculations using mathematical and numerical methods (module 1, module 3)
• describe different types of models and modeling methods (module 2)
• independently choose and apply suitable modeling methods for a given problem in hydrology and geosciences (module 3)
• apply hydrological and geoscientific models and critically discuss model results (module 1, module 2, module 3)

Education
Instruction consists of lectures, seminars, exercises, project work and laboratory work.

Instructions are in English.

Forms of examination
a. The course is examined as follows:
• Assessment of module 1 takes place through written exams of laboratory reports
• Assessment of module 2 takes place through written and oral exams
• Assessment of module 3 takes place through practical programming examination and through written and oral exams of projekt work.

The examination will be conducted in English.

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

Late submission of the individual assignment/take-home examination has consequences for the final grade of the course. These consequences are described in detail in the grading criteria of the course.

b. A passing final grade requires participation in seminars, exercises and laboratory work. 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 will be set according to a two-point grading scale: fail (U) or pass (G).

Grades of module 2 and module 3 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 moduel 2 and module 3, 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 is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. 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, 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.

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.

Limitations
This course may not be included in a degree together with the courses Geoscience Application of Numerical

Methods (GE7029) and Hydrological Modelling Methods in Geoscience (GE7028) and Information and Modelling Systems for Land and Water Resources (GE7006/GE8029) or with equivalent courses.

Misc

The course is part of the Master's Programme in Hydrology, Hydrogeology and Water Resources but can also be read as a separate course.

Required reading

The required reading is decided by the department board and published on the Department of Physical Geography’s website at least 2 months before the start of the course.