

# Syllabus

for course at first level

**Digital Processing of Marine Geophysical Data**  
**Digital behandling av maringeofysiska data**

**7.5 Higher Education  
Credits**  
**7.5 ECTS credits**

<b>Course code:</b>	GG4210
<b>Valid from:</b>	Autumn 2018
<b>Date of approval:</b>	2017-01-16
<b>Department</b>	Department of Geological Sciences
<b>Main field:</b>	Earth Sciences
<b>Specialisation:</b>	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

## Decision

This syllabus was approved by the Faculty of Science at Stockholm University 2017-01-16.

## Prerequisites and special admittance requirements

Admission to the course requires completion of 45 credits in Geology or Earth science, including Geology and geophysics 15 credits, Mathematical methods in earth science 7.5 credits and Statistical methods in earth science 7.5 credits or Tellus I - Geology 15 credits, Tellus II - Geology 12.5 credits, Tellus III - Geology 2.5 credits and 15 credits in mathematics and statistics are included or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
HELA	Digital processing of marine geophysical data	7.5

## Course content

The course addresses:

- digital processing and presentation of geological, geographical and geophysical data
- programming where the results from the programming exercises are used for terrain modelling and digital map making in GIS (geographical information systems)
- practical knowledge in digital data preprocessing, cartography and analysis for science and industry in the geosciences

## Learning outcomes

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

- explain how spatial digital data are stored on a computer
- read and understand the contents of technical descriptions of common data formats in the geosciences
- write scripts that can read/write data from/to files, format data perform basic calculations
- describe the fundamental data models for geospatial data, and the structure of GIS-databases.
- use appropriate map projections and coordinate systems for various regions, map types and usages.
- choose appropriate algorithms for interpolation and extrapolation of elevation/bathymetry data for terrain modelling
- use GIS for practical map making of geoscientific maps and geospatial analysis
- use 3D-visualisation as a tool for analysis of geospatial data

## **Education**

The course consists of lectures, seminars and exercises. Participation in exercises and seminars and in any associated integrated instruction is compulsory. In the event of special circumstances, the examiner may, after consultation with the teacher concerned, grant a student exemption from the obligation to participate in certain compulsory instruction. The teaching language is English.

## **Forms of examination**

- a. Knowledge assessment and examination are in the form of written and oral examinations.
- b. Grades will be set according to a seven-point scale related to the learning objectives of the course:  
A = Excellent  
B = Very good  
C = Good  
D = Satisfactory  
E = Adequate  
Fx = Fail, some additional work required  
F = Fail, much additional work required
- c. The grading criteria will be distributed at the beginning of the course.
- d. In order to pass the course, students must receive the minimum passing grade E on all course units and participate in all mandatory instruction.
- 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.
- f. There is no facility to improve the grade Fx to a pass grade in this course.

## **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 course instruction has ended. Requests must be made to the department board. The provision also applies in the case of revisions to the course plan.

## **Limitations**

The course may not be included in degree with Digital Processing of Geoscientific data (GG4123/GG5103) or equivalent.

## **Misc**

The course is part of the Bachelor's Programme in Geology, Geochemistry and Geophysics and the Bachelor Programme in Earth Science, but can also be read as a separate course.  
The course may include field trips that can entail costs for the student.

## **Required reading**

The course literature is decided by the department board and published on the Department of Geological Sciences website at least two months before the start of the course.