



## DEPARTMENT OF EARTH SCIENCES

### **GV1410 Geosciences, Basic Level Course, 30 credits**

Geovetenskap: Grundkurs, 30 högskolepoäng

*First Cycle*

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#### **Confirmation**

This course syllabus was confirmed by Department of Earth Sciences on 2011-11-02 and was last revised on 2023-02-06 to be valid from 2023-08-28, autumn semester of 2023.

*Field of education:* Science 100%

*Department:* Department of Earth Sciences

#### **Position in the educational system**

The course includes 30 credits at undergraduate level and is a compulsory course in the N1GVS Bachelor's Programme in Earth Sciences. The course is offered as an elective course subject to availability.

The course can be part of the following programmes: 1) Bachelor's Programme in Earth Sciences (N1GVS) and 2) Bachelor of Science in Environmental Science (N1MVN)

#### *Main field of studies*

Earth Sciences

Environmental Science

#### *Specialization*

G1N, First cycle, has only upper-secondary level entry requirements

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#### **Entry requirements**

#### **Learning outcomes**

On successful completion of the course the student will be able to:

#### *Knowledge and understanding*

Subcourse 1 Geosphere

- The deep Earth:

- large-scale processes; plate tectonics and mantle convection.
- Earth's composition - mineralogy and geochemistry.
- volcanoes formation, earthquakes and geophysics.
- formations, transformation and deformation of rocks.
- geological natural resources (ores and industrial raw materials).

- The shallow Earth:

- primary processes that transform the landscape.
- landforms and their evolution.
- sedimentological and stratigraphic principles.

- History of the Earth:

- evolution of continents and oceans.
- geological periods.
- evolution of life.
- Earth's climate history

Subcourse 2 Hydrosphere, biosphere, weather and climate:

- the hydrological cycle, surface water, soil and groundwater and the dynamics of watercourses.
- soil development and structure, physical and chemical properties of soils, and biogeochemical cycles.
- atmospheric physics, meteorology - weather, clouds, precipitation, wind, atmospheric circulation - radiation balance and wind systems, regional climatology, Scandinavian climate, local climatology.

*Competence and skills*

Subcourse 1 Geosphere:

- identify minerals, rocks, soils and fossils.
- calculate the strike and dip/direction of different geological structures and geological profiles.
- using remote sensing to identify landforms and other geological structures.

Subcourse 2 Hydrosphere, biosphere, weather and climate:

- use simple programming methods for calculation and simulation.
- perform basic climatological analyses.

*Judgement and approach*

- develop a scientific approach.

- evaluate and analyse literature and data.

The course is sustainability-focused, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria. The content also constitutes the course's main focus.

### Course content

The course consists of two modules:

#### *Sub-courses*

#### **1. Geosphere** (*Geosfär*), 15 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

The module is divided in two parts:

##### 1. The deep Earth, 7,5 credits

Covers plate tectonics, minerals and rocks resources, volcanoes, earthquakes, geophysics, structural geology, natural resource, early history of the Earth, "deep time" and geological principles.

##### 2. The shallow Earth, 7,5 credits

Covers geomorphology, Quaternary geology, Phanerozoic evolution, landslides and sea level changes.

#### **2. Hydrosphere, biosphere, weather and climate** (*Hydrosfär, biosfär, väder och klimat*), 15 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

The module is divided in two parts:

##### 1. Hydrosphere and biosphere, 5 credits

Covers the hydrological cycle, surface, soil and groundwater, watercourses dynamics, soil science, physical and chemical properties of soils and biogeochemical cycles in soils.

##### 2. Water and Climate, 10 credits

Covers the physics of the atmosphere, meteorology - weather, clouds, precipitation, wind, atmospheric circulation, radiation balance and wind systems, regional climatology, climate of Scandinavia, local climatology.

### Form of teaching

The teaching consists of lectures, compulsory field trips/excursions, compulsory practical sessions and self-study.

*Language of instruction:* Swedish

Some lectures and/or course literature may be in English.

### **Assessment**

The Deep Earth, Theory, 5 credits: U/G/VG

The Deep Earth, Exercises and excursions, 2,5 credits: U/G

The Shallow Earth, Theory, 5 credits: U/G/VG

The Shallow Earth, Exercises and reports, 2,5 credits: U/G

Hydrosphere and biosphere, Theory, 2,5 credits: U/G/VG

Hydrosphere and biosphere, Exercises and reports, 2,5 credits: U/G

Weather and climate, Theory, 7 credits: U/G/VG

Weather and climate, Exercises and reports, 3 credits: U/G

Written examination is given for each module. Other forms of examination may also occur.

If the student who has twice received a failing grade for the same examination component wishes to change examiner ahead of the next examination session, such a request should be made to the department in writing and should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the Higher Education Ordinance).

If a student has received a recommendation from the University of Gothenburg for study support for students with disabilities, the examiner may, where it is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be guaranteed at least three examination sessions (including the ordinary examination session) over a period of at least one year, but no more than two years after the course has ceased/been changed. The same applies to internships and professional placements (VFU), although this is restricted to just one additional examination session.

### **Grades**

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

For the grade Pass (G) for the entire course it is required that all parts within all modules must be passed. To receive the grade Pass with Distinction (VG) for the entire

course, at least 12 credits graded Pass with Distinction (VG) in the modules grade U/G/VG.

**Course evaluation**

The students are given the opportunity to make an anonymous written evaluation of the course.

The results of and possible changes to the course will be shared with the students who participated in the evaluation and students who are starting the course.