

## **GEOA81, Geology: Earth, Water and the Environment, 15 credits**

*Geologi: Berg, jord och vatten i ett miljöperspektiv, 15  
högskolepoäng*  
**First Cycle / Grundnivå**

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2016-03-15 to be valid from 2016-07-01, autumn semester 2016.

### **General Information**

The course is a compulsory course at first cycle level for a Degree of Bachelor of Science in environmental sciences and an elective course at first cycle level for a Degree of Bachelor of Science in geology. The course is open to natural science students who want to broaden their education with geology at the basic level.

*Language of instruction:* Swedish

*Main field of studies*

Environmental Science

Geology

*Depth of study relative to the degree requirements*

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

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### **Learning outcomes**

The course offers broadened basic knowledge in geology with certain focus on environmental problems.

### **Knowledge and understanding**

On completion of the course, the students shall be able to:

- describe the structure and composition of Earth

- account for the endogenic and exogenic processes of Earth as well as the fundamentals of its development history at a general level
- describe the fundamentals of formation and distribution of rocks, minerals and loose deposits
- account for different geological resources, their use in society and related legislation
- explain basic hydrogeological concepts and contexts as well as account for their applications
- summarise the methodology of investigation and risk assessment of contaminated soil

### **Competence and skills**

On completion of the course, the students shall be able to:

- use basic geological terminology
- handle environmental problems from a geological perspective, for example at exploitation of different geological resources

### **Judgement and approach**

On completion of the course, the students shall be able to:

- argue for the importance of geological expertise at various types of resource exploitation, handling of waste deposits and other types of human interference with the environment
- evaluate the importance of geological characteristics for the health of people

### **Course content**

The course consists of two parts:

#### **Module 1:** Basic geology, 7 credits

Module 1 contains the following components:

- The origin and development of Earth
- Igneous, metamorphic and sedimentary rocks
- Endogenic and exogenic processes
- Minerogenic and organogenic deposits
- Glacial processes and land forms.
- Exercises: Minerals, Rocks, Quaternary deposits, Landscape analysis and Geological maps.
- Field trips: Bedrock and Quaternary deposits.

#### **Module 2:** Geological resources and the environment, 8 credits

Module 2 contains the following components:

- Geological resources, such as peat, coal, oil, gas, ores, industrial minerals, ballast and groundwater
- Energy exploitation from bedrock and loose deposits
- Carbon dioxide storage in bedrock
- Hydrogeology
- Medical geology
- Swedish environmental and exploitation legislation
- Environmental hazards connected to landfills and different types of open-pit mining
- Geophysical methods for investigation of contaminated soil
- Risk assessment of contaminated soil
- Water protection areas

## Course design

The teaching consists of lectures, exercises and field trips. Participation in exercises and field trips and thereby integrated other teaching is compulsory.

## Assessment

Examination takes place in writing in the form of examinations during the course.

Students who failed the first exam opportunity will be offered an additional exam opportunity shortly thereafter.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## Grades

Marking scale: Fail, Pass, Pass with distinction.

To pass the whole course requires passed examinations as well as passed compulsory components.

The grading scale for compulsory components includes the grades Failed and Passed. The grading scale for examinations includes the grades Failed, Passed and Passed with distinction. The final grade is decided through a joint assessment of the results of the examinations of the two modules in proportion to their extent.

## Entry requirements

General and courses corresponding to the following Swedish Upper Secondary School Programs: Biology 1, Chemistry 1, Mathematics 4, Physics 1a/1b1+1b2.

## Further information

The course may not be included in a degree together with GEOA01 Geology: Planet Earth- an Introduction, 15 credits, GEOA70 Earth Sciences: An Introduction, 15 credits, or GEOA80 Geology: Earth, Water and the Environment, 15 credits.

This is a translation of the course syllabus approved in Swedish

## Subcourses in GEOA81, Geology: Earth, Water and the Environment

Applies from H16

- 1601 Basic Geology, exam, 7,0 hp  
Grading scale: Fail, Pass, Pass with distinction
- 1602 Georesources and the Environment, exam, 8,0 hp  
Grading scale: Fail, Pass, Pass with distinction
- 1603 Mandatory Learning Activities, 0,0 hp  
Grading scale: Fail, Pass