



LUND UNIVERSITY  
Faculty of Science

## SYLLABUS

Date  
2014-02-14

Reg. Nr.  
U 2014/518

### ***Syllabus for Quaternary stratigraphy and glacial geology of Iceland and the interaction between ice and fire – a journey from past to present, NAGE002***

***Swedish title: Islands kvartära stratigrafi och glacial geology, och samspelet mellan is och eld – en resa från forntid till nutid***

The course syllabus was confirmed by the Faculty board for graduate studies on 2014-05-16. Third cycle course, 5 credits.

*This is a translation of the course syllabus approved in Swedish.*

#### **Learning outcomes**

After completing the course, the students shall have acquired the following knowledge, understanding, skills and abilities:

- briefly explain the geological structure of Iceland, and the interaction between internal and external forces during the construction and destruction of the island in the past 15 Ma,
- describe the Late Weichselian deglaciation and associated glacier dynamics and sea level changes, and how this is preserved in geological formations,
- report on the main changes in climate during the Holocene and from which proxies those changes have been reconstructed,
- explain ongoing processes in glacial environments and their relation to current changes in climate,
- identify common geological formations related to glacier growth and decay, rift tectonics and earthquakes, ice-volcano interaction and explosive volcanism,
- use modern geological processes as analogues to past environments, understand the consequences of natural hazards on society and recognize their geological/environmental fingerprinting.

#### **Course content**

The course consists of a seminar series dealing with the geological and climatic evolution in Iceland during the past 20 thousand years, and an excursion to key sites in Iceland where the geological signature of this evolution can be observed. The seminar series will focus on the dynamic geology of Iceland with examples from the places visited on the excursion. This includes literature studies and student presentations of some or all of the sites visited during the excursion. Thereby, the students will write parts the excursion guide themselves. Within 7 excursion days and a geographically restricted area, students will observe e.g. Late Weichselian tills, glaciotectonically deformed shallow marine sediments, late Pleistocene end moraine ridges and raised beaches, rift valleys, pillow lava, subglacial volcanoes (table mountains), crater rows and rootless cones, modern glaciers and glacial sediments and landforms, glacial outwash plains of modern and ancient age, historical lava flows, flood basalts, tephra accumulations and consequences of ice-volcano interaction, Miocene plant fossils, and various geological signatures of recent changes in climate, such as glacier recession, changes in glacial runoff and expansion of proglacial lakes.

**Teaching**

Teaching will be in the form of seminars and a one-week excursion to Iceland. Both parts of the course are mandatory.

**Assessment**

The examination takes place continuously during the course through oral and written assignments. Students who fail the examination will get a chance to do a larger written report instead. No alternative to the excursion will be offered.

**Grading scale**

Possible grades are Pass and Fail. In order to pass the course, written reports and literature studies, presentations and active participation in the excursion must be completed.

**Language**

The course is given in English.

**Entry requirements**

Students must be enrolled as PhD students in geosciences.