



AN ARCTIC GEOLOGY SUMMER

– study cryosphere and Quaternary geology in Svalbard (4 courses totalling 40 ECTS)

The Geology Department at The University Centre in Svalbard, UNIS, celebrates the International Polar Year by offering a full summer package of 4 courses at master/Ph.D. level in cryosphere and Quaternary research, from **18 June to 1 October**. Course activities are linked to several IPY projects in Svalbard. More details on these courses see www.unis.no under studies in geology.

AG-327 Holocene and recent climate changes and the high arctic Svalbard landscape 18 June - 7 July 2007: This course provides advanced training in studying the effects of Holocene climate change on landscape evolution, making use of the natural laboratory of the Kapp Linné region of western Spitsbergen. The course has a theoretical component at UNIS with lectures and seminars, and a 2-week field component at Kapp Linné. Examples of study topics: Permafrost and ground thermal properties, glacial and periglacial geomorphology, karst landforms, coastal geomorphology and raised beach sequences. Evaluation of a individually-submitted written report on the field work.

AG-329 Glacial Processes and Landsystems

9 July – 4 August: This course provides a comprehensive overview of glacial geomorphic processes, sediments and landforms in arctic and alpine environments, *and* practical training in modern research methods. Three weeks of lectures and seminars at UNIS will explore the relationships between process and form at a range of scales, from individual depositional events to long-term and large-scale landscape change. The course also includes a week of fieldwork on modern glacier forelands, when students will gain experience of research design and a range of modern techniques, including process monitoring, and sediment logging and mapping.

AG-332 Arctic Terrestrial Quaternary stratigraphy

8-27 August: The course explores the Quaternary terrestrial stratigraphical and morphological records of western Spitsbergen. It aims at giving the participants an opportunity to critically review stratigraphies at key sites on the Svalbard west coast, as well as visiting key sites with raised beaches that are important in current ice-sheet reconstructions. At the heart of the course is a one-week cruise, which will transport the participants to key sites, including Kapp Ekholm (Billefjorden), Skilvika (Bellsund), Poolepynten (Prins Karls Forland), St Johns fjorden, Linnédalen (outer Isfjorden), Brøggerhalvøya and Kongsfjorden. The selected sites all occupy strategic positions with respect to the dynamics of the western margin of the Barents Ice Sheet and current reconstructions of its glacial history.

AG-326 The Quaternary glacial and climate history of the Arctic

3 September - 1 October: This course extends the Svalbard perspective of preceding field-based courses towards the Arctic region. Students will be trained to critically assess the geological and climatic history of the continental areas of the Arctic region through glaciations and interglacials. Svalbard will serve as a reference area in order to address the Quaternary geological development of Greenland, Iceland, Arctic Canada, Alaska, Northern Russia, Siberia and Scandinavia. The role of the Arctic basin for environmental changes will be addressed implying the Arctic Ocean and palaeoclimatic proxies.



UNIS AG-327 Holocene and recent climate changes in the high arctic Svalbard landscape



Time:

18. June - 7. July 2007

Field component: Two weeks mid-course.

Application deadline:

15. April 2007

More information:

www.unis.no/studies

BACKGROUND

This course has the objective of juxtaposing the natural laboratory of the Kapp Linné region of western Spitsbergen with available logistical infrastructure at Isfjord Radio, in order to provide advanced training in effects of Holocene climate change on landscape evolution.

Several independent lines of evidence suggest that recent environmental changes, ultimately linked to climate, are occurring in this region, providing both a highly relevant pedagogical framework, as well as a sense of urgency in refining our understanding of the processes involved. As such, the course aims to complement existing UNIS training in geomorphology, physical geography, and Quaternary geoscience.

COURSE CONTENT

The course will begin with **mandatory safety training**, including the use of firearms in polar bear country. Thereafter, there will be a series of introductory lectures on general topics and a one-day field excursion in Adventdalen, near Longyearbyen. Subsequently, the group will sail to Kapp Linné (2-3 hours) and get installed at Isfjord Radio. The following two weeks will be spent conducting daily work in the region, receiving lessons both in the field and at base-camp, and preparing measurements pertaining to a final individually-submitted project on which the course's evaluation will be based.

A range of topics may be addressed for individual projects, and these activities may be coordinated by groups in the field. Broadly, students may address questions among following general topics, all accessible with relative ease in the Kapp Linné and Linnédalen regions: Permafrost and ground thermal properties, glacial and periglacial geomorphology, karst landforms, coastal geomorphology and raised beach sequences.

PREREQUISITES: Graduate or advanced undergraduate level training in physical geography and/or Quaternary geoscience; ability and willingness to conduct fieldwork in a high arctic environment.

CREDITS: 10 ECTS, graded as A-E (pass) and F (fail) in accordance to the Norwegian university system.

INSTRUCTORS AND CONTACTS

Ole Humlum, UNIS and University of Oslo oleh@unis.no and Ole.Humlum@geo.uio.no

Hanne Christiansen, UNIS hanne@unis.no +47 7902 3320



Patterned ground, raised beach ridges, rock glaciers, talus sheets and rock headwalls at Kapp Linné.



UNIS AG-329 Glacial Processes and Landsystems



Time:

July 9th – Aug. 4th 2007

Field component: July 23- July 29

Application deadline:

15. April 2007

More information:

www.unis.no/studies

BACKGROUND

Our ability to reconstruct past environments from glacial sediments and landforms depends upon sound knowledge of the links between process and form observed in modern environments. This course takes full advantage of the unique setting of UNIS to provide students with practical experience of modern glacial sedimentological research methods, and a thorough knowledge of glacial geomorphic processes, sediments and landforms in arctic and alpine environments.

COURSE CONTENT

The course will begin with **mandatory safety training**, including the use of firearms in polar bear country. The course then has three components: 1) a theoretical part with lectures; 2) seminars, exercises and group work; and 3) field projects and excursions. Lectures will explore the relationships between process and form at a range of spatial and temporal scales, from individual depositional events to long-term and large-scale landscape change. Particular emphasis will be placed on the role of glaciers as geomorphic agents in permafrost regions. Seminars will focus on analysis of key papers on the glacial geomorphology of Svalbard and other glacierized regions, and students will be encouraged to critically assess strengths and weaknesses of selected papers, and to devise ways of developing and improving research methodologies. Exercises will include computer-based data processing and analysis. The third part consists of a week-long field excursion, when students will conduct group research projects on modern glacier forelands and gain experience of research design and a range of modern techniques, including process monitoring, and sediment logging and mapping. In addition, day excursions will be made to cirque glaciers around Longyearbyen.

QUALIFICATIONS

Graduate or advanced undergraduate level training in physical geography and/or Quaternary geoscience. Ability and willingness to conduct fieldwork in a high arctic environment.

CREDITS

10 ECTS, graded as A-E (pass) and F (fail) in accordance to the Norwegian university system.

INSTRUCTORS AND CONTACTS

Doug Benn, UNIS and University of St Andrews. Doug.Benn@unis.no

David Evans, University of Durham, UK

Jan Piotrowski, University of Aarhus, Denmark

Ole Humlum, UNIS and University of Oslo



Discussing Kapp Ekholm stratigraphy; Photo: Ólafur Ingólfsson

Time:
Sept 9th – Aug 27th 2007
Field component: August 13-21

Application deadline:
15. April 2007

More information:
www.unis.no/studies

Qualifications: The course is suitable for MSc and PhD students in Quaternary geology, glacial geology and geosciences.

Background:

Based on field studies of sediment successions and processes, the students will obtain an understanding of the Quaternary history of Svalbard, and of the long-term climatic fluctuations between glacial and interglacial periods in the Arctic.

Course content:

The course objective in 2007 is to explore the Quaternary terrestrial stratigraphical and morphological records of western Spitsbergen. It aims at giving the participants an opportunity to critically review stratigraphies at key sites on the Svalbard west coast, as well as visiting key sites with raised beaches that are important in current ice-sheet reconstructions. At the heart of the course is a one-week cruise, which will transport the participants to key sites, including Kapp Ekholm (Billefjorden), Skilvika (Bellsund), Poolepynten (Prins Karls Forland), St Johns fjorden, Linnédalen (outer Isfjorden), Brøggerhalvøya and Kongsfjorden. The selected sites all occupy strategic positions with respect to the dynamics of the western margin of the Barents Ice Sheet and current reconstructions of its glacial history.

CREDITS

10 ECTS, graded as A-E (pass) and F (fail) in accordance to the Norwegian university system.

Home page: <http://www.hi.is/~oi>



UNIS

AG-326 The Quaternary Glacial and Climate History of the Arctic



Kapp Ekholm sections in Billefjorden; Photo: Ólafur Ingólfsson

Time:

Sept 3rd – Oct 1st 2007

55 hours of lectures/seminars, 1 day local field work

Application deadline:

15. April 2007

More information:

www.unis.no/studies

Qualifications: The course is suitable for MSc and PhD students in Quaternary geology, glacial geology and geosciences.

Background: AG-326 aims to provide students with insight knowledge on the climate, glacier and palaeo-environmental history of the Arctic. It is strongly tight to the field-based AG-332 (former AG-301/321). Students without AG-210/AG-332 are required to obtain the theoretical background from this course. The course aims specifically to encourage students to develop a critical assessment to literature and research data.

Course content: The course closes the circle of field-based courses starting with AG-327 in June, continuing with AG-331 and 332. Students will be trained to critically assess the geological and climatic history of the continental areas of the Arctic region through glaciations and interglacials. Svalbard will serve as a reference area in order to address the Quaternary geological development of Greenland, Iceland, Arctic Canada, Alaska, Northern Russia, Siberia and Scandinavia. The role of the Arctic basin for environmental changes will be addressed implying the Arctic Ocean and palaeoclimatic proxies. A day-excursion will be made to Quaternary sections in the surrounding of Longyearbyen.

Course details:

Credits: 10 ETCS

Evaluation: Written 4 hours exam on 01 October 2007. Graded.

Lecturing scientists (preliminary list):

Dr. Anne Hormes (UNIS, course coordinator). Phone : +47 7902 6453 ; anne.hormes@unis.no

Dr. Jason Briner (State University of New York Buffalo, USA; jbriner@buffalo.edu)

Dr. Steven Forman (University of Illinois, Chicago; slf@uic.edu)

Dr. Svend Funder (Geological Museum, Copenhagen, Denmark; svf@savik.geomus.ku.dk)

Dr. Ólafur Ingólfsson (University of Iceland, Department of Geology and Geography, Askja, office 232, 101 Reykjavik, Iceland. oi@hi.is; web page: www.hi.is/~oi)

Dr. Maria Jensen (Norsk Geologisk Undersøgelse, Trondheim);

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