

SYLLABUS

Arctic Winter School 3 credits R0007E

Arktisk vinterskola

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2021-10-19**

Arctic Winter School 3 credits R0007E

Arktisk vinterskola

First cycle, R0007E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Rymdteknik	Space Technology

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and ,exemption for Swedish A and B / Swedish 1-3. University studies of at least 7,5 hp.

Selection

The selection is based on 1-165 credits.

Course Aim

Knowledge and understanding

The student shall acquire knowledge about the Earth polar atmosphere, optical phenomena, snow and ices in different perspectives, climate change and its significance for the Arctic region. The student shall be able to explain polar atmospheric phenomena and processes, qualitative and quantitative evaluate them, as well as to determine their significance from the holistic perspective.

Competence and skills

The student shall show capability to critically and independently formulate the problems as well as perform calculations for the physical processes within the given timeframe. This is done via problem solving and work during the interactive sessions. The student shall be able to motivate, plan and perform scientific experiments during the practical work. The student shall be able to critically select and evaluate relevant scientific and technical information within the subject via the literature survey. Presentation skills for international scientific events are trained via mini conference. The student shall demonstrate social skills and be able to work effectively in a group during the interactive sessions and practicals.

Judgement and approach

The student shall have insight about polar atmosphere significance for sustainable development. This is done via evaluation of the relevant technological and ethic aspects with a focus on sustainable development and the Swedish national/EU equality goals.

Work during the interactive sessions shall support the student in identification of further knowledge needs and taking responsibility for self- knowledge progress.

Contents

- Environment and society in the changing Arctic. The Arctic Five collaboration.
- Polar atmosphere and its significance for solar-terrestrial interactions, space weather.
- Auroral physics and observations.
- Optical phenomena in the polar regions.
- Snow and ice in different perspectives.
- Arctic climate systems and climate change.
- Nano satellites, rockets and balloons for polar research.
- Survival in the cold Environment.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The course includes teaching and learning activities, that give correct interpretation of the physical phenomena as well as training in experimental techniques, report writing, oral presentation, team work.

- Lectures.
- Study visits to SSC- Esrange Space Center, scientific facilities at the Division of Space Technology (LTU) and the Swedish Institute of Space Physics (IRF), LKAB iron ore mine, Abisko Research Station.
- Projects and interactive sessions.
- Practicals including field observations and exercises, data analysis and hands-on exercises.
- Survival exercises in Abisko

English is the main language with inclusive parts in French, German, Polish, Swedish.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

The school is assessed through assignments, practical and project work. In order to pass the course it is required that all compulsory tasks are completed satisfactory with a grade "Pass". The final grade for the course reflects the results obtained for all compulsory tasks and is given after all compulsory tasks are approved. The grading scale for the course is 3, 4, 5.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Assignment reports	G U 3 4 5	3	Mandatory	S22	

Last revised

by Jonny Johansson, HUL SRT 2021-10-19

Syllabus established

by Jonny Johansson, HUL SRT 2021-10-19