

**SYLLABUS**

# **Snow and Ice 7.5 credits**

## **G0008B**

**Snö och is**

**Course syllabus admitted: Spring 2020 Sp 3 - Autumn 2022 Sp 2**

**DECISION DATE**  
**2019-11-05**

# Snow and Ice 7.5 credits G0008B

## Snö och is

### First cycle, G0008B

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Geoteknik	Civil Engineering

## 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 Good knowledge in English, equivalent to English 6

## Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

## Examiner

Nina Lintzén

## Course Aim

The aim with the course is based on knowledge of snow, ice and cold to study the opportunities and constraints it has on society.

Specific goals:

After the course the student should be able to:

Describe:

- The basics in snow and ice mechanics
- How human beings are affected by cold temperatures
- Methods for classifying snow and ice
- Techniques where snow and ice are used for constructions

Account for:

- Avalanches, assumptions and risk assessment locally and regionally
- Contamination problems with urban snow
- How society adapts itself more to cold climate in the form of infrastructure and the costs involved

Explain:

- How snow and ice are formed and their change and metamorphism
- The difference between natural and artificial snow
- Snow accumulation and melting – water content in a snowpack

Apply:

- Work in a cold climate
- Work in groups

## Contents

Snow, ice and cold climate have a major impact on society and on individual level. Winter-related phenomena affect the way we build and plan our society and our daily lives. Snow, ice and cold temperatures causes great social costs, but also great recreational opportunities and life quality for individuals and economic potential to for example the tourism industry.

Snow and ice are complex materials that can be used in beneficial ways in cold climates. The course "Snow and ice" handles basics of snow- and ice mechanics, formation of snow, classification methods for snow, avalanche awareness, techniques for using snow and ice and to work in cold climates. This knowledge is translated into a societal and individual perspective.

You will after the course have useful knowledge that can be applied in the tourism industry, construction and the society-related areas. Depending on your previous knowledge, you can immerse yourself in specific areas such as ice mechanics, frozen ground, tourism, leadership, etc.

This course is aimed at those who have general eligibility for higher education and is provided at a basic level. The course requires no special prerequisites but the major part of the literature is in English and some basic calculation operations are included. Teaching includes lectures, group work, study visits and a field exercise.

## 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 consists of lectures, laboratory work, project work and an obligatory field trip. The field trip is associated with a fee which includes travel costs, accommodation and all meals. In the course the main learning activities are organized in the project groups and supervised by the teachers. The lectures, laboratory work and field trips supports the learning activities in the project groups.

## 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. All parts of the course will be evaluated and serve as background for your grade.

## Overlap

The course G0008B is equal to F0067T, G0017B, ABG120

## Literature. Valid from Spring 2014 Sp 3

[1] CREEL: Snow Mechanics, CREEL report 97-3, US Army Corps of Engineers

[2] Fransson, L: Ice handbook for engineers, Luleå University of Technology

[3] McClung, D. and Schaerer, P: The avalanche handbook, ISBN 0-89886-364-3

## Course offered by

Department of Civil, Environmental and Natural Resources Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0012	Project work	G U 3 4 5	4	Mandatory	A14	
0013	Assignment report, individual specialization	U G#	1	Mandatory	A14	
0014	Written exam	G U 3 4 5	2.5	Mandatory	S18	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2019-11-05

## Syllabus established

The plan is established by the Department of Civil and Environmental Engineering 2007-01-31 H07.