



Faculty of Science

**NANEV, Master Programme in Physical Geography and
Ecosystem Science, 120 credits**
*Masterprogram i naturgeografi och ekosystemvetenskap, 120
högskolepoäng*

**Second cycle degree programme requiring previous university study / Program
med akademiska förkunskapskrav och med slutlig examen på avancerad nivå**

Decision

The syllabus was approved by The Board of Faculty of Science on 08-02-2017 (U 2017/42) and was last revised on 17-12-2025 by The Education Board of Faculty of Science (STYR 2025/936). The revised syllabus comes into effect 19-01-2026 and is valid from the spring semester 2026.

Specialisations

Code	Swedish name	English name	Credits
ECHL	Miljöförändringar vid högre latituder	Environmental Changes at Higher Latitudes	120 credits
INES	Allmän inriktning	General	120 credits

Programme description

The programme for a degree of Master of Science specialising in Physical Geography and Ecosystem Science comprises 120 credits and leads to a degree of Master of Science (120 credits) with a major in Physical Geography and Ecosystem Science. The specialisation Environmental Changes at Higher Latitudes is given in cooperation with Agricultural University Iceland and University of Helsinki, Finland.

The programme is based on scholarship and is closely linked to research conducted at the Lund University Faculty of Science. The operations at the faculty uphold academic credibility and good research practice and are arranged to ensure that high standards

are attained in courses and study programmes. Furthermore, the operations promote sustainable development, equality between women and men and understanding of other countries and international circumstances. These aspects are integrated in the degree outcomes of the programme.

Second-cycle courses and study programmes in the main field of Physical Geography and Ecosystem Science are fundamentally based on the knowledge acquired by students during first-cycle courses and study programmes.

Second-cycle courses and study programmes in the main field of Physical Geography and Ecosystem Science involve the acquisition of specialist knowledge, competence and skills in relation to first-cycle courses and study programmes, and in addition to the requirements for first-cycle courses and study programmes shall:

- further develop the ability of students to integrate and make autonomous use of their knowledge,
- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable autonomy, or for research and development work.

The programme applies a learning perspective, in which students take an active role in the learning process, and consciously and continuously reflect on their learning and development towards the degree outcomes.

Goals

Knowledge and understanding

For a Degree of Master (120 credits) the student shall:

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Degree of Master (120 credits) the student shall:

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrate the ability in speech and writing both nationally and internationally to clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master (120 credits) the student shall:

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Independent project (degree project)

A requirement for the award of a degree of Master (120 credits) is completion by the student of an independent project (degree project) for at least 30 credits in the main field of study. The degree project may comprise less than 30 credits, however no less than 15 credits, if the student has already completed an independent project in the second cycle for at least 15 credits in the main field of study or the equivalent from a programme of study outside Sweden.

Course information

The programme comprises 2 years for a degree of Master (120 credits). The appendix *Programme Structure and course requirements for Master Programme in Physical Geography and Ecosystem Science* at the Faculty of Science describes the courses included.

A Degree of Master (120 credits) is awarded after the student has completed the courses required. In addition, the prior award of a Degree of Bachelor of at least 180 credits or a corresponding qualification from abroad is required. To acquire the fundamentally based advanced knowledge and understanding, competence and skills as well as judgement and approach required to meet the learning outcomes for a degree of Master of Science (120 credits) with a major in Physical Geography and Ecosystem Science, new knowledge building upon the underlying Bachelor's degree is necessary.

Additional information in appendix 1 Programme Structure and course requirements for Master Programme in Physical Geography and Ecosystem Science, 120 credits.

Degree

Degree titles

Degree of Master of Science (120 credits)

Major: Physical Geography and Ecosystem Science

Major: Physical Geography and Ecosystem Science with specialization in Environmental Changes at Higher Latitudes

Naturvetenskaplig masterexamen

Huvudområde: Naturgeografi och ekosystemvetenskap

Huvudområde: Naturgeografi och ekosystemvetenskap med fördjupning i miljöförändringar vid högre latituder

Requirements and Selection method

Requirements

General:

Degree of Bachelor of Science of at least 180 credits in physical geography, geology, geoscience, biology/ecology, physics, agronomy, forest science, environmental science or the equivalent.

Proficiency in English equivalent to English 6/B from Swedish upper-secondary school.

Environmental Changes at Higher Latitudes:

Degree of Bachelor of Science or Engineering within a specialisation of relevance.

Proficiency in English equivalent to English 6/B from Swedish upper-secondary school.

Selection method

Based on grades awarded for previous academic courses, as well as a statement of purpose for the application and professional qualifications and/or other practical experience of relevance to the study programme (from the applicant's "Summary sheet").

Transition rules

The Faculty Board may decide on the discontinuation of a programme or main field and may also decide, in association with this, on transitional provisions for students who have started these programmes.

Other information

Rules for grades and assessment are included in the course syllabi approved by the Faculty Board.



FACULTY OF SCIENCE

Appendix 1 for programme syllabus,
NANEV Master Programme in GIS
and Remote Sensing, 120 credits

Reg. No.
STYR 2024/322

Date 2024-05-23

Department of Physical Geography
and Ecosystem Science

Programme Structure and course requirements for Master Programme in Physical Geography and Ecosystem Science, 120 credits

The programme comprises two years of full-time studies (120 credits) and leads to a Degree of Master of Science with major in Physical Geography and Ecosystem Science or a degree of Master of Science with major in Physical Geography and Ecosystem Science with specialization in Environmental Changes at Higher Latitudes. The specialisation Environmental Changes at Higher Latitudes is given in cooperation with Agricultural University Iceland and University of Helsinki, Finland

Specialisations

- General
- Environmental Changes at Higher Latitudes

General

Mandatory courses

Mandatory courses of 30 credits.

NGEN14 Physical Geography: Greenhouse Gases and Biogeochemical Cycles, 15 credits

NGEN01 Physical Geography: Climate Change and its Impacts on the Environment, 15 credits

Elective courses

Elective Courses of 15 credits.

NGEA31 Introduction to GIS, 15 credits
 NGEA52 Internship, 15 credits
 NGEN17 Physical Geography: Global Ecosystem Dynamics, 15 credits
 NGEN20 Geomatics: Programming for Applications in GIS and Remote Sensing, 15 credits
 NGEN21 Geomatics: Applied GIS, 15 credits
 NGEN22 Physical Geography: Geographical Databases, 7.5 credits
 NGEN23 Physical Geography: Spatial Analysis, 7.5 credits
 NGEN24 Physical Geography: Satellite Remote Sensing, 15 credits
 NGEN25 Physical Geography: Algorithms and Data Structures in GIS, 7.5 credits
 NGEN26 Geomatics: Web GIS, 7.5 credits
 NGEN27 Physical Geography: Geospatial Artificial Intelligence, 7.5 credits
 NGEN28 Physical Geography: Collection and Analysis of Geospatial 3D Data, 7.5 credits
 NGEN42 Physical Geography: Ecosystem Modeling, 15 credits

Note that some of the courses NGEN20-NGEN28 may require 15 credits GIS.

Optional courses

Optional courses of 0 to 45 credits. Courses can also be chosen from the list of elective courses.

Degree Project

Degree project of 30 credits.

NGEM01, Physical Geography and Ecosystem Analysis: Master's Degree Project, 30 credits

Environmental Changes at Higher Latitudes

Mandatory courses of 30 credits at Lund university (for students starting their studies in Lund)

NGEN14 Physical Geography: Greenhouse Gases and Biogeochemical Cycles, 15 credits

NGEN18 Physical Geography and Ecosystem Science: Statistical Tools for Climate and Atmospheric Science, 5 credits

NGEN19 Physical Geography and Ecosystem Science: Climate Change in the Arctic, 5 credits

NGEN46 Physical Geography and Ecosystem Sciences: Climate Now, 5 credits

Mandatory courses of 30 credits at the Agricultural University of Iceland (for students starting their studies on Iceland)

Note that these courses are included in the main field of study Physical Geography and Ecosystem Science.

05.93.03 IN&E issues at the Arctic edge - Nature of Iceland, Autumn, 5hp
 05.94.01 IN&E issues at the Arctic edge - Nature of Iceland, field excursion, Autumn, 2 cr
 07.38.02 Arctic Climate Change, Autumn, 5 cr
 07.39.02 Climate Change Now, Autumn, 5 cr
 07.37.02 Statistical tools for climate and atmospheric science, Autumn, 5 cr
 07.85.03 Ecosystem Ecology and Sustainable Management, Autumn, 6 cr
 07.36.01 ARCTIC CIRCLE, Autumn, 2 cr

Mandatory courses of 30 credits at the Agricultural University of Iceland

Note that these courses are included in the main field of study Physical Geography and Ecosystem Science.

08.XX.03 Arctic Forum 5 cr
 08.XX.XX EnCHiL Forum, 1 cr
 08.34.03 Subarctic soil biology and lateral transports, 6 cr
 05.85.02 Communication, Knowledge and Extension, 4 hp
 UAU201F Environmental Governance, 6 cr
 08.XX.01 Arctic Planning and Environmental Changes, 2 cr
 08.35.02 Greenhouse gases and climate effects in the Arctic for EnCHiL 5 cr
 07.12.01 Graduate thesis presentation seminars, 1 cr

Optional, but recommended courses of 30 credits at Lund university (note that some courses may have special prerequisites)

NGEA31 Physical Geography: Geographical Information Systems - Basic Course, 15 credits

NGEA32 Physical Geography: Geographical Information Systems - Advanced Course, 15 credits

NGEA52 Physical Geography: Practical Work, 15 credits, Autumn/Spring

NGEN01 Physical Geography: Climate Change and its Impacts on the Environment, 15 credits, Autumn

NGEN42 Physical Geography: Ecosystem Modeling, 15 credits, Spring

NGEN22 Physical Geography: Geographical Databases, 7.5 credits, Spring

NGEN23 Physical Geography: Spatial Analysis, 7.5 credits, Spring

NGEN24 Physical Geography: Satellite Remote Sensing, 15 credits, Spring

NGEN25 Physical Geography: Algorithms and Data Structures in GIS, 7.5 credits, Autumn

NGEN26 Geomatics: Web GIS, 7.5 credits

NGEN27 Physical Geography: Geospatial Artificial Intelligence, 7.5 credits, Autumn

NGEN28 Physical Geography: Collection and Analysis of Geospatial 3D Data, 7.5 credits, Autumn

NGEN42 Physical Geography: Ecosystem Modeling, 15 credits, Spring

NGEN20 Geomatics: Programming for Applications in GIS and Remote Sensing, 15 credits, Autumn

NGEN21 Geomatics: Applied GIS, 15 credits, Autumn

NGEN17 Physical Geography: Global Ecosystem Dynamics, 15 credits, Autumn

Other options are available from a total of around 50 courses offered within the framework of the Nordic co-operation but can also be chosen from the elective courses.

Degree Project of 30 credits

NGEM01, Physical Geography and Ecosystem Analysis: Master's Degree Project, 30 credits