

Northern ecosystems in a changing climate (5 ECTS)

How are the Arctic ecosystems affected by the climate change? Do these changes affect human and animal health? How can we mitigate the climate change in the North? - We have tailored a course addressing these scientifically and politically burning questions.

The course will be provided in collaboration between University of Eastern Finland (UEF) and University of Oulu and will be held at the Oulanka research station.

The course includes:

- (I) Pre-course assignments (studying online materials, preparing presentations for group work in Oulanka)
- (II) The field course in Oulanka research station 3-7 September 2018
- (III) Home work, the learning diary

Contents of the field course

- Importance of the field research stations and field research in the monitoring of climate change
- Climate change and human health (northern environment)
- Diseases of the wild animals (northern environment)
- Changes in the terrestrial and aquatic ecosystems in the North
- The importance of the plants, fungi, animals (insects in particular) in the function of the ecosystems
- Biogeochemical processes in a changing climate; carbon and nitrogen fluxes in the ecosystems

Expected Learning outcomes

Knowledge and understanding

- The student will gain up-to-date knowledge about ongoing changes in the northern and Arctic ecosystems and biogeochemical changes, with the impacts on human and animal health
- The student will understand the vulnerability of the northern ecosystems, and the challenges in the climate change mitigation

Competence and skills

- The student will be introduced with novel methodologies and approaches to monitoring the climate change in the field
- The student will improve his/her communication skills, relating to own research topic, Arctic issues, and scientific questions

Modes of study

Pre-tasks, online materials (new articles, selected course materials from the core curriculum of the UArctic Circumpolar studies, <https://members.uarctic.org/participate/circumpolar-studies/course-materials/>, lectures (ca. 20 h), field excursions, demonstrations of field experimentation, group work, independent learning, learning diary (the learning diary will be written on a given template, and will cover all parts I-III).

Availability of the course and costs

The course is primarily targeted for MSc and PhD students in biology, environmental science, forestry, and related fields.

Fees

The course is free of charge, but the students must pay their own travel costs to Oulanka research station, and the costs for accommodation during the field course (5-6 days) according to Oulanka station fees:

<http://www oulu fi/oulankaresearchstation/node/15875>

- Full accommodation fee 47,00 €/day (full accommodation includes breakfast, lunch, dinner and overnighting, no bed linen included)
- Note: For the basic degree students of Oulu University the full accommodation fee is 20,47 €/day (tax-free price 16,80 €)

The applicants are encouraged to look for funding opportunities regarding the travels e.g. from their doctoral/master's programmes, Nordplus networks and north2north programme

<https://education.uarctic.org/mobility/about-north2north/>

Prerequisites

Basic knowledge about ecology.

Exams and assessment

- Successful completion of the pre-course assignments
- Level of the engagement and participation during the course-week
- Successful submission of the learning diary (including the homework)
- Grading: Passed/failed

Teachers

Riku Paavola, University of Oulu

Birgitta Evengård, Umeå University

Panu Välimäki, University of Oulu

Annu Ruotsalainen, University of Oulu

Antti Oksanen, Evira

Raine Kortet, University of Eastern Finland

Jouni Sorvari, University of Eastern Finland

Christina Biasi, University of Eastern Finland

Elina Oksanen, University of Eastern Finland

Practical information

The field course is organized in Oulanka research station in situated in the Oulanka river valley within the [Oulanka National Park](#) (66°22'N, 29°19'E).

<http://www oulu fi/oulankaresearchstation/>



Distances:

- Oulu 275 km
- Joensuu 431 km
- Kuusamo 55 km
- Salla 85 km
- Rovaniemi 207 km
- Kajaani 305 km
- Arctic circle 25 km
- Russian border 13 km

Driving instructions can be found in the Oulanka research station website.

Further information

The lectures are given in English. The course includes elements of sustainable development (i.e. biological diversity, environmental protection, ecological principles/ecosystem thinking, management of natural resources, climate change, health, environmental health, ethics)

Insurance

The organizers of the course cannot accept liability for personal accident or loss or damage to private property of attending students, which may occur either during or arise from the course. Participants are therefore advised to arrange their own appropriate insurance coverage.

Registration/Application

Registration through Weboodi (students from UEF and Oulu University) by 31 May 2018 or by sending e-mail to address oulanka2018@uef.fi (students from the other universities) by 31 May 2018.

Study materials will be available in Moodle in mid August, 2018.

The minimum number of students: 15 (maximum number 35)

Preliminary timetable

	Mon 3 Sept	Tue 4 Sept	Wed 5 Sept	Thu 6 Sept	Fri 7 Sept
8-9	Breakfast				
9-10	Welcoming words, introductions of the participants	Insect life-histories, changes in moth communities in alpine areas, Panu Välimäki	All-day visit to Riisitunturi, forest fire sites/restored forest, excercises, Annu Ruotsalainen Panu Välimäki, Jouni Sorvari	Aquatic ecosystems, Raine Kortet	Greenhouse gas dynamics from permafrost soils, carbon and nutrient cycling, plant responses, microbial feedbacks from thawing permafrost, Christina Biasi & group
10-12	Introduction of the Oulanka station, research and nature, Riku Paavola			Social insects, Jouni Sorvari	
12-13	Lunch				
13-15	Climate change and human health, Birgitta Evengård	Plant ecology and fungi, Annu Ruotsalainen		Field trip to river Oulankajoki/peatlands/insect demonstrations (Raine, Jouni, Christina)	Discussions, homework and closing
15-17	Diseases of wild animals, Antti Oksanen				
17-18	Dinner				
	Group work/Social	Group work/Social/ UEF teachers arrive		Group work/Social	

Note, that you should arrive on Sunday 2 September.

We encourage you to extend your stay at Oulanka, and visit the great national park.

See You in Oulanka!