

Forest Ecosystem Ecology 2023-2024 (BI1369)

update 23-11-26

Course leaders: Maja Sundqvist and Maria Myrstener

Module 1: Introduction to Forest Ecosystem Ecology + Group project intro					
Date	Time	What	Topic	Who	Room
Tue 31 Oct	09:00-09:45	Introduction	Course introduction	MS + MM	Aspen
	10:00-10:45	Lecture	Introduction to boreal forest ecosystems	MS+MM	Aspen
	10:45-12:00	Group projects	Introduction to group projects + dividing students into groups	KV+ CS+JGL+RB +MM (MS)	Aspen
	13:00-14:30	Lecture	How to write papers that are precise and concise, and easy to grasp	MS	Aspen
	14:45-16:00	Group projects	Project group meeting / reading		Decide with supervisor
Wed 1 Nov	09:00-12:00	Group projects	Group meeting with supervisors: experimental design, etc.		Decide with supervisor
	13:00-16:00	Group projects	Field work / Experimental set-up		Decide with supervisor
Thu 2 Nov	All day	Group projects	Field work / Experimental set-up		Decide with project leader
Fri 3 Nov	09:00-12:00	Lecture	Introduction to data analyses	MM	Aspen
	13:00-16:00	Reading			

Module 2: Carbon					
Date	Time	What	Topic	Who	Room
Mon 6 Nov	09:00-10:00	Lecture	Principles of C-stores and C-fluxes: production, consumption and physical transport	MP	Aspen
	10:00-11:00	Lecture	Carbon allocation, carbon budgets of managed forests	MP	
	11:00-12:00	Lecture	Methods to estimate carbon stores and fluxes	AK	
	13:00-16:00	Reading			
Tue 7 Nov	09:00-10:00	Lecture	Carbon loss from the ecosystem to the atmosphere	JR	Aspen
	10:00-12:00	Lecture	Degradation of organic matter and soil organic matter accumulation in the boreal landscape	JR	
	13:00-16:00	Reading			
Wed 8 Nov	09:00-10:00	Lecture	Carbon fixation and individual plant growth, water-use efficiency, controls	NH	Aspen
	10:00-12:00	Exercise	Demonstration: measurements of C-fixation and water use efficiency Response curve analysis	NH	

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	13:00-16:00	Reading			
Thu 9 Nov	09:00-12:00	Exercise	Biosphere – Atmosphere CO ₂ exchange	JR, AK (MP)	Computer room 1A+1B
	13:00-16:00	Exercise	Biosphere – Atmosphere CO ₂ exchange	JR, AK (MP)	Computer room 1A+1B
Fri 10 Nov	9:00-16:00	Writing	Summary report writing from exercises. Deadline report: 17:00		Computer room 1A+1B

Module 3: Water					
Date	Time	What	Topic	Who	Room
Mon 13 Nov	All day	Group projects			
Tue 14 Nov	09:00-12:00	Lecture	Water cycle in boreal forests (including assignment instructions)	LK + MM	Aspen
	13.00-16.00	Reading	Reading for water week		
Wed 15 Nov	09:00-12:00	Lecture	Eco-hydrology of individual plants	NK	Aspen
	13:00-16:00	Assignment (individual)	Human influences on water - modelling		Computer room 1A+1B
Thu 16 Nov	09:00-11:00	Interactive lecture	Human influences on the water cycle	LK+NK	Aspen
	13.00-16.00	Assignment (individual)	Hydrological modelling assignment		Computer room 1A+1B
Fri 17 Nov	09:00-12:00	Assignment (individual)	Hydrological modelling assignment (deadline report and extra assignment 2: Friday 17:00)		
	13:00-16:00	Group projects			

Module 4: Cycling of nutrients, hydrogen ions and element biogeochemistry					
Date	Time	What	Topic	Who	Room
Mon 20 Nov	09.00-12.00	Reading	Reading for the biochemistry week		
	13.00-14.45	Lecture	Soil components, mineral weathering and acid-base reactions processes and cycling at different temporal and spatial scales	US	Aspen
	15:00-16:00	Lecture	Nitrogen cycling and plant uptake	TN	Aspen
Tue 21 Nov	09:00-11:00	Own work	Reading		
	12:00-14:00	Lecture	Hydrogen ion budgets – theory	US	Aspen
	14:00-16:00	Exercise	Individual work: Hydrogen ion budgets		Computer room 3A+3B
Wed 22 Nov	09:00-16:00	Exercise	Individual work: Hydrogen ion budgets		Computer room 1A+1B

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Thu 23 Nov	09:00-12:00	Exercise	Individual work: Hydrogen ion budgets	MÖ	Computer room 1A+1B
	13:00-15:00	Lecture	Microbial-soil redox processes in a landscape perspective		Aspen
Fri 24 Nov	09:00-12:00	Exercise	Individual work: Hydrogen ion budgets		Computer room 1A+1B
	13:00-16:00	Exercise	Individual work and symposium preparation in groups: Hydrogen ion budgets		Computer room 1A+1B
Mon 27 Nov	08:30-10:00	Exercise	Symposium preparation in groups: Hydrogen ion budgets	US + MÖ	Computer room 1A+1B
	10:30-12:00	Seminar	Oral group presentations: Hydrogen ion budgets		Vita Havet (am)
	13:00-14:30				Aspen (pm)
			Deadline written reports: 24:00		

Module 5: Microbes, soil fauna, and soil food webs

Date	Time	What	Topic	Who	Where
Tue 28 Nov	09:00-09:10		Introduction to individual assignment	MS	Zoom
	09:10-11:00	Lecture	Forest microbial ecology: An introduction	KC	Zoom
	13:00-16:00	Group projects			
Wed 29 Nov	09:00-11:00	Lecture	Mycorrhizal symbiosis	NH	Aspen
	12:00-16:00	Reading	Reading + Work on individual assignment		
Thu 30 Nov	09:00-11:00	Lecture	Microbial nitrogen fixation	SH + KV	Aspen
	13:00-15:00	Lab demo	Cyanobacteria, tardigrades, collembola, mites	KV + MG + PK	Forest Veg. Ecology lab
Fri 1 Dec	09:00-10:00	Lecture	Soil food web ecology	PK	Rönnen
	10:00-11:00	Lecture	Plant-soil biota interactions and feedbacks	PK	Rönnen
	13:00-16:00	Individual assignment	Deadline individual assignment: 17:00		

Module 6: The role of biodiversity in ecosystem functioning

Date	Time	What	Topic	Who	Room
Mon 4 Dec	09:00-09:15	Assignment	Introduction to assignment on <i>species and ecosystem functions (ignite talks)</i>	MS	Bokskogen
	09:15-11:30	Lecture	Plant functional ecology	MG	Bokskogen

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	13:00-16:00	Assignment	Own work on the assignment on <i>species and ecosystem functions</i>		
Tue 5 Dec	09:00-11:00	Catch-up	Catch up on individual assignments / work on extra assignments for higher grades Biodiversity under global change	MS	Bokskogen
	11:00-12:00	Lecture			
	13:00-16:00	Lecture	Aquatic-terrestrial links and biodiversity	MM	Aspen
Wed 6 Dec		Own work	Own work on the assignment on <i>species and ecosystem functions</i>		
Thu 7 Dec	09:00-12:00	Assignment	Ignite talks and discussions on <i>species and ecosystem functions</i>	MS + JGL	Rönnen
Fri 8 Dec	All day	Group projects			
Mon 11 Dec	09:00-10:30	Lecture	Simple guide to data analyses	LK	Björken
	13:00-16:00	Own work	Reading		
Tue 12 Dec	10:00-11:30	Lecture	Biodiversity-ecosystem functioning and ecosystem resilience	MG	Bokskogen
	11:30-11:45		Introduction to assignment: Design your boreal biosphere	MG+MM	
	12:00-16:00	Group work	“Design your boreal biosphere”		
Wed 13 Dec	09:00-10:30	Lecture	Multi-functionality of terrestrial ecosystems	MS	Rönnen
	11:00-12:00	Group work	“Design your boreal biosphere”		
	13:00-16:00	Group projects	Final harvest/data analyses		
Thu 14 Dec	09:00-11:00	Presentations	“Design your boreal biosphere”	MG+MM	Bokskogen
	11:00-16:00	Group projects	Final harvest/data analyses		
Fri 15 Dec	09:00-16:00	Group projects	Final harvest/data analyses		
Mon 18 Dec	All day	Group projects & R help	Analyses of group project data help	MK (+MM)	
Tues 19 Dec	All day	Own work	Extra assignments, group projects or individual assignments		
Wed 20 Dec	All day	Own work	Extra assignments, group projects or individual assignments		
Thu 21 Dec	All day	Own work	Extra assignments, group projects or individual assignments		

Fri 22 Dec	All day	Own work	Extra assignments, group projects or individual assignments		
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Christmas break

Mini module 7: Global change experiments					
Date	Time	What	Topic	Who	Room
Wed 3 Jan	9.00-11.00	Lecture	Global changes in forest ecosystem ecology – experiments & methods <i>Bring your computer</i>	MK	Rönnen + Zoom
	11:00-16:00	Own work			
Thu 4 Jan	09:00-16:00	Own work	Deadline Extra assignment 3 at 16:00.		
Fri 5 Jan	All day	Group projects	Data analyses and report writing		

Module 8: Group projects: data analysis, interpretation, writing, oral presentations + course wrap-up					
Date	Time	What	Topic	Who	Room
Mon 8 Jan	All day	Group projects	Data analyses and report writing	Group leaders	
Tue 9 Jan	All day	Group projects	Report writing	Group leaders	
Wed 10 Jan	All day	Group projects	Report writing + presentation preparation	Group leaders	
Thu 11 Jan	09:00-12:00	Group projects	Report writing + presentation preparation	Group leaders	Aspen
	13:00-16:00		Group presentations		
Fri 12 Jan	09:00-10:00	Wrap-up	Complete the course evaluation + fika	MM+MS	Computer room 1A+1B
	10:00-		Finish the Group Projects (written report) Deadline extra assignment 1 and 4		

AK = Alisa Krasnova
 CS = Clydecia Spitzer
 JGL = Jose Gutierrez Lopez
 JR = Joss Ratcliffe
 KC = Karina Clemmensen
 KV = Kishore Vishwanathan
 LK = Lenka Kuglerová
 MG = Michael Gundale
 MK = Marcus Klaus
 MM = Maria Myrstener

MP = Matthias Peichl
 MS = Maja Sundqvist
 MÖ = Mats Öquist
 NK = Nataliia Kozii
 NH = Nils Henriksson
 PK = Paul Kardol
 RBH = Ruben Baan Hofman
 SH = Stefan Hupperts
 TN = Torgny Näsholm
 US = Ulf Skyllberg