Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Syllabus

BI1322.1 Soil biology and biogeochemical cycles, 15.0 credits

Markens biologi och biogeokemiska kretslopp

The course is given Agriculture Programme - Soil/Plant, EnvEuro - European Master in Environmental Science, Soil, Water and Environment – Master´s Programme, Agriculture Programme - Soil/Plant (270hec) and Soil and Water Management - Master´s Programme

Version 1 in Slukurs. Corresponds to version 2 in Ladok

Syllabus approved

15 November 2017

The version applies to students admitted from autumn 2018

The version is not a module version

Subjects

Biology/Soil science

Education cycle

Second cycle

Modules

Title	Code	Credits
Lectures, literature and seminars	0102	7.5
Laboratory exercises	0103	3.0
Project	0104	4.5

Advanced study in the main field

Second cycle, only first-cycle courses as entry requirements (A1N)

Grading scale

5:Pass with Distinction, 4:Pass with Credit, 3:Pass, U:Fail
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

Knowledge equivalent to:
• 150 ECTS first-cycle courses, including
• 60 ECTS in a scientific subject such as Biology, Agricultural Science, Soil Science, Earth Sciences, Environmental Science or Technology,
• 15 ECTS Chemistry,
• 15 ECTS Soil Science, Earth Sciences or Biology
and
• a level of English equivalent to upper-seconday-school English (Engelska 6).

Objectives

The overall aim of this course is to acquire an advanced understanding of soil biology and biogeochemical cycles, to enable active discussion on the role of soil biota in ecosystems and production systems, and their interplay with global environmental change.

On completion of the course, the student will be able to:
• describe major groups of soil organisms, their interactions and responses to environmental conditions,
• describe biogeochemical processes and their interplay with organisms across scales,
• apply different methods for qualitative and quantitative analyses of soil organisms, biochemistry and major elemental cycles,
• analyze, evaluate and communicate soil biological and biogeochemical data,
• discuss impacts of human practices and potential feedbacks between soils and biogeochemical cycles, with emphasis on land use and global change.

Content

The below topics will be covered by course literature, lectures, assignments, literature discussions, field excursions, laboratory practical and project work.
• global biogeochemical cycles: carbon, nitrogen, sulfur and phosphorus cycling and underlying processes,
• methods for assessment of biogeochemical cycling: isotopes, organic matter quality and elemental fluxes,
• soil organisms and their involvement in processes: metabolism, decomposition, nutrient cycling, weathering and soil structuring,
• ecology: theory, strategies, community dynamics, interactions, and trophic cascading,
• the carbon cycle: organic matter quality, turnover and stability,
• the nitrogen cycle: transformations and soil fertility,
• basic laboratory techniques in soil biology and biogeochemistry,
• human impacts: forestry, agriculture, sustainable intensification, organic farming, ecotoxicology, global change, ecosystem services and conservation,
• the scientific process: experimental design, data analyses, peer review and presentation.

Formats and requirements for examination

Participation is obligatory for all course elements except lectures. The following is required for a pass mark on the course:
• passed written final examination of theoretical course content based on lectures and literature,
• approved participation in laboratory exercises, literature discussions, and excursions,
• approved participation in project work including oral and written presentation.

- If the student fails a test, the examiner may give the student a supplementary assignment, provided this is possible and there is reason to do so.
- If the student has been granted special educational support because of a disability, the examiner has the right to offer the student an adapted test, or provide an alternative assessment.
- If changes are made to this course syllabus, or if the course is closed, SLU shall decide on transitional rules for examination of students admitted under this syllabus but who have not yet passed the course.
- For the examination of a degree project (independent project), the examiner may also allow the student to add supplemental information after the deadline.

For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Additional information

- The right to take part in teaching and/or supervision only applies to the course date to which the student has been admitted and registered on.
- If there are special reasons, the student may take part in course components that require compulsory attendance at a later date. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Responsible department

Department of Soil and Environment
Cooperating departments:
Department of Forest Mycology and Plant Pathology

Supplementary Information

Finalized by: Programnämnden för utbildning inom naturresurser och jordbruk (PN - NJ)
Biology Area: Ecology
Replacement course: BI1225, MV0172