

Syllabus

BI1178.1 The forest ecosystem , 28.0 credits

Skogsekosystemet

Version 1 in Slukurs. Corresponds to version 1 in Ladok

Syllabus approved

1 December 2010

The version applies to students admitted from autumn 2011

The version is not a module version

Subjects

Biology/Soil science

Education cycle

First cycle

Modules

Title	Code	Credits
Biology and characteristics of the tree	0102	11.0
Soil Science and Climatology	0103	8.0
Ecology	0104	6.0
Forest and Forestry	0105	3.0

Advanced study in the main field

First cycle, has only upper-secondary level entry requirements (G1N)

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

Swedish

Prior knowledge

Admitted to the MSc in Forestry Programme

Objectives

On completion of the course, the student should be able to:

1. Use basic forestry terminology and forestry units and be able to account at a general level for forest condition, forest resources and forestry methods in boreal forests
2. Account for the different values that the forest delivers and give example how they can be described and managed
3. Account for global and Swedish climate conditions and be familiar with basic meteorological concepts, processes and climatological procedures
4. Account for the soil main components including important organism groups and be able to identify common soil textures and soil types, minerals and rocks
5. Account for the soil role in the renewal of water and mineral nutrition including important physical, chemical and biological processes of the ecosystem connected to this
6. Describe the life processes, growth and production of the tree based on internal, physiological, and external, physico-chemical, factors
7. Account for wood structure, function and properties
8. Account for the background of the genetic variation and its use for breeding purposes
9. Explain basic ecological concepts and be able to interpret scientific presentations where these are included
10. Describe how competition, migration and predation govern the distribution and density of populations
11. Account for diversity, disturbances and succession in plant and animal communities
12. Identify common tree species and wood and be able to account at a general level for the ecology of the tree species and the wood properties of the woods

Content

Content

The course contents is divided into four modules that from an applied forestry perspective should give basic understanding of the forest ecosystem structure and function. Modules

Forest and forestry 3 credits,
 Tree biology and properties 11 credits
 Soil science and climatology 8 credits,
 Ecology 6 credits,

The content included in the modules is listed below under separate headings.

Forest and forestry

- Preconditions for Swedish forestry, orientation in ownership structures, forest conditions and the different forest values with outlooks towards international conditions and forestry history
- The properties of managed forests, stand structures, wood resources and site productivity variation.
- Silvicultural systems; application and purpose of common silvicultural measures.

Tree biology and properties

- Basics of tree life processes: Synthesis and use of carbohydrates, uptake and use of water and mineral nutrition, development and defence
- The life processes localisation in cells, tissues and organs
- Growth and production in relation to internal, physiological, and external, physico-chemical, factors including differences between species
- The formation, structure, function and properties of wood
- Classical and molecular genetics including forest tree breeding applications.

Soil science and climatology

- Energy and material flow in soil/the plant system, described from a systems ecology starting point
- Biogeochemical cycles - both global and the internal cycles of the ecosystem
- Bedrock - and quarternary geology
- Climatology, the general circulation, global and Swedish climate and climate classification
- Soil physics and hydrology, primarily water holding and transport properties.
- Soil chemistry, central soil chemical processes and occurrence and availability of mineral nutrients
- Soil biology, central soil biological processes and the organic materials of the soil

Ecology

- The basics of ecology: basic theory about the biome, evolutionary processes and the ecological niche
- Population ecology: demographic processes and factors that limit population densities including biological clocks and the seasonal population patterns

- Community ecology: how the social structure in different organism groups is influenced by abiotic factors, interaction between biotic factors and specifically ecological disturbances and their role for the biological diversity variation in time and space
- Species knowledge and ecology of Swedish tree species and a selection of introduced tree species. Relationships between climate and the dynamics and diversity of forests, both today and after the ice age
- Wood characteristics: the appearance, properties and use of the Swedish woods

Implementation

Scheduled activities

Lectures

approx. 160 Hours

Exercises

approx. 30 Hours

Compulsory

Study visit

approx. 10 Hours

Compulsory

Seminars

approx. 35 Hours

Compulsory

Examination and evaluation

approx. 20 Hours

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approx. 65 Hours

Group activities, not scheduled

case studies

approx. 40 Hours

Individual studies, not scheduled

Written exercises

approx. 30 Hours

Literature studies
approx. 360 Hours

Total
approx. 750 Hours

Formats and requirements for examination

Theoretical and practical tests. Written and oral presentation of project. Review of other student's work. Participation in compulsory parts.

- 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

Generical skills covered by the modules include study technique, information competence, group assignments, critical thinking and problem-solving and oral presentation.

- 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 Forest Ecology and Management

Cooperating departments:

Department of Wildlife, Fish, and Environmental Studies

Department of Forest Genetics and Plant Physiology

Supplementary Information

Finalized by: Vice dekan S-fak

Biology Area: Ecology

Replacement course: SH0032 MV0169 BI0984