



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PNS0075 Soil systems: Integrating the chemical, biophysical interface in soils, 3.0 credits

Syllabus approved

2010-10-26

Subjects

Soil Science

Education cycle

Third cycle

Grading scale

Pass / Failed

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

This course is primarily intended for PhD students participating in the Focus on Soils & Water graduate school, but is also open to other PhD students working in related research areas. Researchers are also very welcome to participate in lectures and discussions, if places available.

Objective, including learning outcomes

The aim of this course is to (i) provide an introduction to soil system sciences, (ii) give an overview of emerging micro-analytical techniques and their application to environmental samples; (iii) present examples of soil system sciences to study ecosystem services and (iv) to discuss challenges and the future of this research discipline.

Content

Soils are one of the most complex systems on earth in terms of their physical structure, chemical constitution and biodiversity. Until recently, soil science has been mainly operated on the basis of rather separate disciplines of physics, chemistry and biology. However, there is now an increasing awareness of the need to integrate these disciplines into a soil system view, i.e. looking at biogeochemical and biophysical interactions in soils. More specifically, soils are integrated complex adaptive system where macroscopic properties depend on interactions at smaller spatial scales. Recent technological advances are now available to discover interactions in the natural soil habitat, i.e. at nano- and micro-scales. Exploring this minute universe and the interactions therein may have profound implications for our understanding of soil functions at field, catchment and regional scales.

Requirements for examination

- Read the literature provided and attendance to literature group meetings
- Last literature group meeting: Oral (10-15 minutes) or poster presentation on own research assessing if and how a soil system view is critical to their scientific work
- Active participation in group meetings and workshop discussions

Additional information

The course consists of two parts:

- 1) Literature group meetings will take place between January 26 and February 16, 2010: Selected research and review papers will be discussed as well as student oral or poster presentations (three meetings prior and one meeting after the workshop).
- 2) A workshop at Ultuna will be held between February 7-11, 2010 with international leading scientists in the research area.

Responsible department

Department of Aquatic Sciences and Assessment