Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Natural Sciences

2BI002 Våtmarker och rinnande vatten, 15 högskolepoäng
Wetlands and streams, 15 credits

Main field of study
Biology, Environmental Science

Subject Group
Biology

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by the Board of the School of Natural Sciences 2009-06-09

Revised 2011-02-15

The course syllabus is valid from spring semester 2012

Prerequisites
60 ECTS within Biology/Environmental science

Objectives

After completing the course, the student should be able to:

- give an account of ecological structures and functions of wetlands and streams, especially organisms and processes of importance for the achievement of environmental quality objectives
- propose and justify the design of constructed wetlands for treatment of storm- and sewage water, biomanipulation of shallow lakes, measures for restoration of degraded streams and riparian areas, for management of vegetation and biomanipulation of lake habitats
- briefly describe and calculate hydrological budgets, hydroperiods, characteristic water-levels and streamflows, and area-specific mass transport in catchment areas
- analsze area, perimeter and distance with an image analysis software, formulate and analyse wetland models with spreadsheet- and simulation software
- use data- and literature sources in different types of publications within the field of applied wetland ecology, formulate search algorithms and manage different search engines for problem oriented information requirements, and review published results relevant for the objectives

Content

The course includes three sub-courses

Module 1 Theory and applications 6 credits

The theory covers four main topics:

- Wetland and streams as habitats
- Management of habitat functions
- Biogeochemical processes
- Design and management of constructed and restored wetlands

Module 2 Excursions, laboratory- and modelling assignments 6 credits

Excursion themes:

- Constructed wetlands for water pollution control
- Adaptive management of constructed and restored wetlands
- Wetland birds
- Shallow lakes, zonations and successions
- Streams and riparian areas

Lab- and modelling assignments:

- Concentrations and flow - transport calculations
- Hydrology and littoral zonations in lake Tåkern
- Measuring area- and length using Image software
- Management of streams and riparian areas
- Dispersal, growth and hibernation of macrophytes
- Wetlands for nitrogen removal
- Designing wetlands for stormwater and wastewater treatment
- Management of streams and riparian areas

Module 3 Project 3 credits

Planning, performance and presentation of results from an investigation of an applied problem. Individual or group work.

Type of Instruction

Teaching includes lectures, seminars, excursions and lab-exercises. Presentation seminars and meetings with excursions and practical assignments are compulsory.

Lectures aims at presenting a structure in the knowledge, as well as to emphasize important messages. They appear as audiosupported slide-presentations, streaming video or podcasts.
LSEM Litterature seminar groups gather in virtual meeting rooms to discuss the litterature, solve questions or find more in-depth explanations together.
Excursions aim at demonstrating patterns and principles in the field and to illustrate the theoretical reasoning in the literature.
LAB Computer or laboratory exercises to
train practical skills and application of theory. Further, the results should be analyzed and discussed using the course literature, and are presented in a written report.
Projects train the ability to plan, perform, and present a project work. The project can be done in groups and is estimated to take 2 weeks per student. Project reports are written and are also presented orally in the end of the course.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
Theory (sub-course 1)will usually be assessed in one or more written examinations. A first reexamination should be offered within 6 semester weeks. Number of examinations is limited to 5.The grades are Fail (U), Pass (G) or Pass with Distinction (VG).

Learning outcomes of sub-course 2 and 3 will be assessed by lab-assignments, and by seminar presentations and written reports. The grades in sub-course 2 and 3 are Fail (U) or Pass (G).

The grades of the course are Fail (U), Pass (G) or Pass with Distinction (VG). For a G, all learning outcomes have to be achieved.

Course Evaluation

Upon completion, the course will be evaluated by filling out the evaluation form. The result of the individual evaluations are turned into a summary report that will be kept in the department administrational archives. The outcome of the evaluation of the previous year, as well as possible measures taken, will be discussed with the head of department, as well as with incoming students at the start of the next course.

Required Reading and Additional Study Material

Obligatory

van der Valk, A. 2006. The Biology of Freshwater Wetlands. Oxford University Press. ISBN 0-19-852540-0

Handledningar och vetenskapliga artiklar vilka laddas ner via internet eller kursens hemsida

Reference

Tonderski, K., Weisner, S., Landin, J., Oscarsson, H. (red.) 2002.
Våtmarksboken. Skapande och nyttjande av värdefulla våtmarker. Vastra rapport 3.
ISBN 91-631-2737-7

Giller, P. & Malmqvist, B. 1998. The biology of Streams and Rivers.
Oxford University Press.
ISBN 0-19-854977-6