

Syllabus

for course at advanced level

Land-Water Risk Assessment and Management Methods

15.0 Higher Education

Risbedömnings- och förvaltningsmetoder för mark- och vattenresurser

Credits

15.0 ECTS credits

| | |
|--------------------------|---|
| Course code: | GE8009 |
| Valid from: | Autumn 2010 |
| Date of approval: | 2008-04-22 |
| Changed: | 2010-05-17 |
| Department | Department of Physical Geography |
| Main field: | Physical Geography and Quaternary Geology |
| Specialisation: | A1N - Second cycle, has only first-cycle course/s as entry requirements |

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University on 27 September 2006 and revised 22 April 2008 and 17 May 2010.

Prerequisites and special admittance requirements

Competence equivalent to at least 90 ECTS credits in Earth sciences, biology-earth sciences, geography, environmental sciences or equivalent science or civil engineering competence is required. In addition competence equivalent to one of the courses Hydrology and hydrogeology, 15 ECTS credits (GE5004/GE5022), Local to Global Water Vulnerability and Resilience, 15 ECTS credits (GE7025) or Information and Modeling Systems for Land and Water Resources 15, ECTS credits (GE7006) is required. Also required is knowledge equivalent to Swedish upper secondary school course English B/English 6.

Course structure

| Examination code | Name | Higher Education Credits |
|-------------------------|--|---------------------------------|
| MOM1 | Pollutant Spreading and Environmental Management | 4.5 |
| MOM2 | Exercise 1 | 3 |
| MOM3 | Economics, Uncertainty and Risk | 4.5 |
| MOM4 | Exercise 2 | 3 |

Course content

a. The course includes

- needs and methods for integrated, sustainable and efficient resource and environmental management of water and pollutant mass flows between natural land-water systems and human technological and socio-economic systems
- national and international environmental regulation for land and water resource management
- environmental and ecological economics and its application to land and water resource management
- needs and methods for quantification and handling of uncertainty, probability and risk in sustainable and efficient resource and environmental management of land-water systems

b. The course comprises the following elements:

1. Pollutant Spreading and Environmental Management, 4.5 ECTS credits
2. Exercise 1, 3 ECTS credits

Computation exercise based on recent research articles on modelling of pollutant transport and mass balance in catchments

3. Economics, Uncertainty and Risk, 4.5 ECTS credits

4. Exercise 2, 3 ECTS credits

Computation exercise based on recent research articles on modelling of efficient mitigation-abatement of water pollution in catchments

Learning outcomes

After the course, students are expected to:

- identify and compile in relevant models the water, solute and pollutant flows that link natural land-water and human technological and socio-economic systems, and explain and classify main methods and constraints for the quantification and control of these flows
- identify and explain main natural and engineering science constraints for environmental policy and management of land-water resource systems
- explain the needs for and distinguish and compare different methods for quantifying and handling uncertainty, randomness and risk in environmental policy, regulation and management of land-water resource systems

Education

The education consists of lectures, seminars, exercises, project work and presentations.

Participation in seminars, project work and exercises, and any associated integrated instruction is compulsory. In the event of special circumstances, the examiner may, after consultation with the teacher concerned, grant a student exemption from the obligation to participate in certain compulsory instruction.

Forms of examination

a. Examination for the course is in the following manner:

Measurement of knowledge for elements 1 and 3 takes place through written and/or oral examination and presentations of project work.

b. Grades are assigned according to a seven-point goal-related grading scale:

A = Excellent

B = Very good

C = Good

D = Satisfactory

E = Sufficient

Fx = Fail (more work required before credit can be awarded)

F = Total fail

c. The grading criteria will be distributed at the beginning of the course.

d. To be awarded a pass, the minimum grade E is required and:

- pass of elements 2 and 4
- participation in all compulsory education.

e. Students who fail an ordinary examination are entitled to sit additional examinations as long as the course is offered. There is no restriction on the number of examinations. Examinations also include other obligatory elements of the course. Students who have passed an examination may not resit it in order to achieve a higher grade. Students who have failed on two occasions are entitled to request the appointment of a different examiner for the next examination. Any such request must be made to the departmental board.

Interim

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two year period after course instruction has ended. Requests must be made to the departmental board. The provision also applies in the case of revisions to the course plan.

Limitations

The course may not be included in examinations in combination with courses Integrated Land-Water Systems (NK3280), or equivalent.

Misc

The course is part of the Master's Programme in Hydrology, Hydrogeology and Water Resources but can also be read as a separate course.

Required reading

Course literature is decided by the departmental board and described thereafter in an appendix to the course plan.