Department of Physical Geography

Stockholm University

Syllabus

for course at advanced level

Applied Environmental Modelling
Tillämpad modellering för miljöanalys

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	GE7022
Valid from:	Autumn 2007
Date of approval:	2006-09-27
Department	Department of Physical Geography
Subject	Environmental Science
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 2006-09-27.

Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to at least 90 ECTS credits in Earth sciences, geography, biology-earth sciences, biology, environmental sciences, or equivalent science or civil engineering competence 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	Quantitative methods for environmental analysis and planning	7.5
MOM2	Systems analysis, modelling and scenario technique	7.5

Course content

a. The course covers problem solution using conceptual modelling, data collection and quantitative methods like remote sensing, GIS analysis, error and risk analysis.

b. The course includes the following elements:
1. Quantitative Methods for Environmental Analysis, Management and Planning 7.5 HEC
The component covers data aquisition, data handling and analysis, with a focus on environmental resource monitoring, based on field data, aerial photographs, remote sensing and geographical information systems (GIS)
2. Systems Analysis, Modelling and Scenario Technique 7.5 HEC
The component covers systems analysis, conceptual modelling aggregated and distributed modelling scenario techniques, the handling of facts and values in practical exercises

The course is suited for students in geosciences, biogeosciences, biology, environmental science, planners, as well as for professionals working with environmental issues.

Learning outcomes

It is expected that the student after taking the course will be able to:
• choose an appropriate data collection method for the task at hand and to quantitatively analyse the results
• choose an experimental design for natural resource analysis

• apply conceptual modelling on practical examples
• use aggregated and distributed modelling
• give an account for and apply scenario techniques and to analyse and evaluate scenario assumptions and results
• analyse uncertainty, knowledge and values when assessing risks

Education

The education consists of lectures, seminars, exercises, project work, and field work.
Participation in the seminars, exercises, project work, field work and education associated with this is compulsory. An examiner may rule that a student is not obliged to participate in certain compulsory education if there are special grounds for this after consultation with the relevant teacher.

Forms of examination

a. Examination for the course is in the following manner:
Measurement of knowledge for element 1 and 2 takes place through:
• Written or oral examination
• Written and/or oral presentations of group work, exercises or practical laboratory work

b. Grading is carried out according to a 7-point scale related to learning objectives:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Fail
F = Fail

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade of E is required to pass the course, together with:
• pass of element 1 and 2
• completion of all practical laboratory work and all other compulsory education, followed by its presentation and award of a ”Sufficient” grade
• participation in all compulsory education

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term “examination” here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Misc

The course may include teaching in the field, which may entail additional cost for the student. The course is part of the Master programmes in Environmental Management and Physical Planning, Environmental Analysis and Management and Environment Health and Protection, but can also be taken as independent course.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.