

SLUkurs

EnvEuro - European Master in Environmental Science

Version 1. Is valid between autumn 2011 and spring 2012

Programme code:

NM025

Scope:

120 ECTS

Level affiliation:

2 - Second cycle

Degree

Degree of Master of Science

Responsible faculty:

Faculty of Natural Resources and Agricultural Sciences

Appendices

- Appendix for students admitted in 2011 autumn term

1. Decision

The Vice chancellor of the Swedish University of Agricultural Sciences (SLU) decided on 1 July 2010 to establish EnvEuro – European Master of Environmental Science.

The programme syllabus was approved by the Faculty Board at the Faculty of Natural Resources and Agricultural Sciences in 20 October 2010, to be valid from the 2011/2012 academic year.

Students who have fulfilled all the requirements for a degree on the EnvEuro - European Master of Environmental Science' programme, corresponding to 120 credits, will be awarded a Master of Science (120 credits) with a major in Environmental Science. The programme has the following programme code: NM025.

2. Prior knowledge and other requirements

2.1 Previous studies

Admission to the Master's Programme EnvEuro - European master in Environmental Science requires a first-cycle qualification comprising 180 credits and specialised

studies in a natural science area such as biology, agriculture, forestry, soil, environmental science or other science.

Applicants with the corresponding qualifications obtained by means of a degree from another country, or with the corresponding knowledge obtained in some other way, may also be regarded as fulfilling the specific entry requirements.

The applicant must further have a level of English equivalent to upper secondary school English B. An applicant with a first-cycle qualification from SLU comprising 180 credits automatically fulfils this requirement. Special rules apply for applicants with qualifications from one of the Nordic countries and some English-speaking countries.

Specific requirements apply for admission to the various individual courses included in the programme. The programme at the Swedish University of Agricultural Sciences (when this is the home university) has three different tracks "Water Resources", "Soil Resources and Land Use" and "Ecosystems and Biodiversity", where the constituent courses have differing requirements for special qualifications. It is therefore not self-evident that students fulfil the requirements for previous knowledge for all tracks simply because they fulfil the requirements for special qualification to the programme itself. At the other universities within EnvEuro, where students study for year two, further tracks are offered.

To be admitted to EnvEuro - European Master in Environmental Science, the student has to apply for and be accepted into the program via both SLU application system, and through the Consortium for EnvEuro.

3. Intended learning outcomes

3.1 General learning outcomes

According to the Swedish Higher Education Act, Chapter 1, Section 9 (Högskolelagen 1 kap, 9 §)

"Second-cycle courses and study programmes shall be based fundamentally on the knowledge acquired by students during first-cycle courses and study programmes, or its equivalent.

Second-cycle courses and study programmes shall involve the acquisition of specialist knowledge, competence and skills in relation to first-cycle courses and study programmes, and in addition to the requirements for first-cycle courses and study programmes shall:

- further develop the ability of students to integrate and make autonomous use of

their knowledge

- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable autonomy, or for research and development work. Ordinance (2006:173)."

3.2 Specific learning outcomes for a Master of Science (120 credits)

The student must achieve the following learning outcomes, in accordance with the supplement to the Ordinance for Swedish University of Agricultural Sciences (SLU):

Knowledge and understanding

For a Master of Science (120 credits) students must

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge of certain areas of the field, as well as deeper insight into current research and development work; and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Master of Science (120 credits) students must

- demonstrate an ability to critically and systematically integrate knowledge and to analyse, assess and deal with complex phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan and, using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge, and to evaluate this work;
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups, orally and in writing, in both national and international contexts; and
- demonstrate the skills required to participate in research and development work or to work independently in other advanced contexts.

Judgement and approach

For a Master of Science (120 credits) students must

- demonstrate an ability to make assessments in their main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work;
- demonstrate insight into the potential and limitations of science, its role in society and people's responsibility for how it is used; and

- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

3.3 Detailed learning outcomes for EnvEuro – European Master in Environmental Science

Within the general objectives of a Master of Science (120 hp), SLU has specified the following learning outcomes for Master's Programme EnvEuro - European master in Environmental Science

Knowledge and understanding

For a Master of Science (120 credits) degree students must

- demonstrate understanding of and ability to analyse environmental science concepts, problems and connections in a European perspective,
- demonstrate insight into the chemical, physical and/or biological processes that impact on the material cycle in the ecosystems central to the specialisation chosen by the student,
- demonstrate ability and knowledge of handling and solving environmental problems in a European and global perspective,
- demonstrate understanding of the connections between natural resource use and water quality (Water Resources),
- demonstrate in-depth insight into the structure and function of natural and human-dominated ecosystems and into health and environmental effects that follow disruptions to the ecosystems (Ecosystems and Biodiversity),
- demonstrate understanding of the systemic and quantitative connections between land use and environmental quality, in particular in relation to water and land resources (Water Resources, Soil Resources and Land Use),
- demonstrate understanding of the fundamental principles for environmental conservation policy, environmental policy legislation and environmental policy measures in Europe

Competence and skills

For a Master of Science (120 credits) students must

- demonstrate ability to plan and carry out a research project at Master's level, where the material and methodology have been selected and adapted to the questions and formulated hypotheses,
- demonstrate ability to present the results of the research task in a scientific report,
- demonstrate ability to apply mathematical models describing biological, physical and chemical processes for forecasting purposes and in conjunction with planning and environmental conservation,
- demonstrate ability to develop environmentally adapted techniques and measures

for sustainable production systems,

- demonstrate understanding of and ability to apply the methods used in environmental monitoring and in processing, statistical analysis and presentation of environmental data,
- demonstrate ability to develop ideas and strategies for environmental conservation techniques aimed at reducing pollution in soil and water,
- demonstrate ability to use video conferencing and other web-based techniques to communicate effectively and cooperate at a distance,
- demonstrate ability to speak and write about environmental conservation issues in English.

Judgement and approach

For a Master of Science (120 credits) students must

- demonstrate knowledge of the historical development of resource and land use and environmental conservation issues in Europe and how the concept of sustainable development has emerged from this,
- demonstrate ability to communicate effectively and cooperate across cultural and national borders,
- discuss and analyse statements of opinion on environmental conservation issues in a European perspective.

4. Possibilities for further study

A student who has completed Master's Programme EnvEuro - European master in Environmental Science with a Master of Science (120 credits) meets the special entry requirements for admission to further studies at the third-cycle level at SLU.

Which third-cycle subject areas are available at the Faculty of Natural Resources and Agricultural Sciences is specified in a supplement to the programme syllabus approved by the study programme board.

5. Content and outline

5.1 Courses

Courses included in the Master's Programme EnvEuro - European master in Environmental Science are approved by the study programmes board. They are presented in a supplement to the programme syllabus which also contains descriptions of the programme's structure (framework timetable). The intended learning outcomes and course content are presented in the course syllabus for each course. For the independent project (degree project) there are special instructions, which are approved by the study programmes board.

5.2 Outline The aim of the Master's Programme EnvEuro is to make students, following completion of their studies, well prepared to work on environmental and natural resource issues linked to one or several of the areas soil, water and biodiversity, based on knowledge about European ecosystems and management of environmental issues in Europe. The programme offers various opportunities for specialisation, both to students interested in management and policy issues and students interested in deepening their knowledge in the direction of natural sciences.

The Master's Programme is offered in cooperation with four partner universities:
 LIFE - Faculty of Sciences, University of Copenhagen, Denmark
 UHOH - University of Hohenheim, Germany
 SLU - Swedish University of Agricultural Science, Sweden
 BOKU - University of Natural Resources and Applied Life Science Vienna, Austria

The programme is divided up into four semesters, each worth 30 credits, of which the first semester is designated as the basic block, or "basic semester package" (BSP). Semesters two and three are designated as advanced blocks, or "advanced semester packages" (ASP), and the final semester consists of an independent project ("thesis"). Under the programme, all students shall study at two of the partner universities. The first year is at the home university, which in this case is SLU, and the second year at one of the other universities, the so-called host university.

The introductory course Environmental Management in Europe (EME) and the summer course offered between semester two and three are to a great extent based on distance learning.

Basic semester package (BSP)

The purpose of the basic semester package is to provide the students with a common base for and background to the courses within the advanced semester package, and to introduce and practice concepts, theories and tools that recur later on in the programme. The introductory course (EME) consists of one week when students and teachers meet up, and is thereafter mainly carried out at a distance. The purpose of the introductory course is to introduce the students to European circumstances in relation to natural resources and environments, including environmental legislation, environmental monitoring and policy issues, among other subjects. The remainder of BSP consists of courses at SLU.

Advanced semester package (ASP)

Ahead of semester two and three, students select their ASP and specialisation. At

SLU, there is the opportunity to choose three different specialisations: Water Resources, Soil Resources and Land Use, Ecosystems and Biodiversity. On condition the student fulfils the entry criteria to individual courses, there is no limit to how a student can combine the two different ASPs. The student can choose two ASPs within the same specialisation, or within two different specialisations.

Independent project (degree project)

The studies conclude with an independent project (degree project), where the student can implement his/her knowledge, abilities and attitudes on a current issue within the subject area of the programme. The work shall be carried out at the host university, but with a supervisor also from SLU.

6. Examination

Each course includes one or several tests. The terms U, 3, 4 or 5 are used for grading the courses, unless there is an exemption decision. Grading criteria are described in a supplement to each syllabus.

Grades are determined by an examiner appointed by SLU. General rules and guidelines for assessment and grading can be found in the "Internal rules for grading and examination rights" and in "Regulations for education in first and second cycle at the Swedish University of Agricultural Sciences (SLU)".

Courses at the other universities are given grades according to the ECTS system.

7. Degree

7.1 Degree awarded after completion of the study programme (120 credits)

A Master of Science (120 credits) with environmental science as the main field, as described in the programme syllabus for EnvEuro - European master in Environmental Science, is awarded to students who complete the course requirements (pass courses) of 120 credits according to the following:

- at least 30 credits for courses with specialised study in the main field environmental science (A1N; A1F),
- at least 30 credits independent project (degree project / second cycle A2E) in environmental science
- maximum 15 credits may be for courses passed during the first cycle.

Course requirements further include:

- Environmental Management in Europe, distance course, 15 credits
- at least 30 credits elective courses according to approved study plan
- at least 30 credits courses at any of the other ELLS-universities
- independent project within environmental science according to approved study

plan and instructions for the programme

- In addition the student must have a Degree of Bachelor or professional qualification consisting of at least 180 credits.

A student that fulfils the requirements for a Master of Science (120 credits) will, upon request, receive a degree certificate. The degree certificate will state that the student has obtained a Master of Science (120 credits) with a major in Environmental Science.

A Master of Science (120 credits) with biology as the main field, as described in the programme syllabus for EnvEuro - European master in Environmental Science, is awarded to students who complete the course requirements (pass courses) of 120 credits according to the following:

- at least 30 credits for courses with specialised study in the main field biology (A1N; A1F),
- at least 30 credits independent project (degree project / second cycle A2E) in biology
- maximum 15 credits may be for courses passed during the first cycle.

Course requirements further include:

- Environmental Management in Europe, distance course, 15 credits
- at least 30 credits elective courses according to approved study plan
- at least 30 credits courses at any of the other ELLS-universities
- independent project within biology according to approved study plan and instructions for the programme

In addition the student must have a Degree of Bachelor or professional qualification consisting of at least 180 credits.

A student can only take a Master of Science (120 credits) with a major in biology at SLU. If a student want to take a double degree the degree must fulfill the requirements within the main field environmental science.

A student that fulfils the requirements for a Master of Science (120 credits) will, upon request, receive a degree certificate. The degree certificate will state that the student has obtained a Master of Science (120 credits) with a major in biology.

The degree certificate will also state that the requirements have been fulfilled

according to the programme syllabus for EnvEuro - European master in Environmental Science. Detailed course requirements are shown in the study plan, which is approved by the Education committee and is presented in an appendix to the programme syllabus.

7.2 Other degrees the student may be awarded after finishing the study programme

The courses included in Master's programme EnvEuro – European Master in Environmental Science also allow for the awarding of the following degrees on condition that SLU's demands for general qualifications are fulfilled:

- Master of Science (60 credits) with Environmental Science as the main field
- Master of Science (60 credits) with Biology as the main field
- Master of Science (120 credits) with Environmental Science as the main field (not linked to the programme)
- Master of Science (120 credits) with Biology as the main field (not linked to the programme).

8. Miscellaneous

8.1 Credit transfer

Credits for courses from another higher education institution, in Sweden or abroad, may be transferred and recognised in the degree. Credits may be deducted if there is significant overlap between the courses passed at SLU and the external courses the student wishes to include in the degree. Credit transfer cannot be done if there is a considerable difference between the courses.

Credit transfer requests are considered on an individual basis. Once transfer has been approved, equivalent knowledge and skills acquired professionally may also be recognised.

Possibility for further study

A student who has completed the Enveuro – European master in Environmental Science and been awarded the qualification fulfils the specific entry requirements for third-cycle studies at the Faculty of Natural Resources and Agricultural Sciences in any of the subjects

- Biology
- Environmental Science

The specific entry requirements are based on both first and second-cycle studies. Detailed requirements for each third-cycle subject area are shown in the respective study plan for the third cycle, see link

<https://internt.slu.se/en/research-education-ema/phd-education/responsible-committees-and-director-of-studies/postgraduate-subjects/postgraduate-subjects-at-the-nl-faculty/>

This appendix to the programme syllabus was approved by the study programmes board on 14 October 2010 och is valid as of the 2011/12 academic year (Reg. no. SLU.ua.Fe.2010.3.0-3112).

Study plan for EnvEuro – European Master in Environmental Science

Programme structure for students admitted in autumn 2011

Ecosystems and Biodiversity

Example for programme structure if SLU is home university

BSP		ASP-1			
Year	Period 1	Period 2	Period 3	Period 4	summer
1 2011/12	Environmental Management in Europe, 15 credits, starts with introduction one week in Köpenhamn (Compulsory distance course from University of Copenhagen)		BI1082 Applied population biology, 15 credits	BI1080 Landscape ecology, 15 credits BI1157 Fish and wildlife management, 15 credits Umeå	Environmental case studies in Europe, 7,5 credits
	BI1042 Cryptogams and Nature Conservation, 15 credits				
	BI1083 Ecological concepts, 10 credits BI1087 Introduction to master's study, 5 credits BI0872 Wildlife biology, 15 credits BI1090 Plants and fungi: species knowledge and nature conservation, 15 credits BI1041 Insect biology and diversity, 15 credits BI1044 Plant pathology, 15 credits BI0874 Ecology & management of diseases and pests of forest trees, 15 credits MS0037 Statistics for biologists I, 7,5 credits	BI1084 Ecological methods, 15 credits BI1055 Applied insect ecology, 15 credits BI1173 Conservation biology, 10 credits BI0869 Forest environment and conservation, 15 credits BI1103 Genetic diversity and plant breeding, 15 credits MS0038 Statistics for biologists II, 7,5 credits	(SG0028 Forest production for multipurpose use, 10 credits Kurstillfället inställt) BI1126 Human dimensions of fish and wildlife management, 15 credits (Umeå) MX0095 Ecotoxicology, 10 credits		

ASP-2

2 2012/13	Elective and/or compulsory courses at host university, 30 credits	Independent project in Biology – Master's thesis, 30 credits	
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Soil Resources and Land Use

Example for programme structure if SLU is home university

BSP		ASP-1			
Year	Period 1	Period 2	Period 3	Period 4	summer
1 2011/12	Environmental Management in Europe, 15 credits, starts with introduction one week in Köpenhamn (Compulsory distance course from University of Copenhagen) MV0187 Water and solute transport in the soil-plant system, 10 credits BI1087 Introduction to master's study, 5 credits BI1094 Contaminated soils – risk assessment and remediation, 5 credits MV0162 Soils of the world, 5 credits MV0174 Water management, soil conservation and land evaluation, 10 credits (BI1175 Global environmental problems, 10 credits cancelled)	BI0883 Soil biology, 5 credits MV0186 Soil and water chemistry, 10 credits MX0087 Risk assessment of pollutants in soils and waters, 5 credits BI0876 Safe nutrient recycling, 10 credits	MV0177 Watershed management with focus on eutrophication, 10 credits BI1095 Microbial ecology, 5 credits MX0095 Ecotoxicology, 10 credits	MX0096 Applied environmental assessment, 10 credits MV0172 Biogeochemistry – element cycles and climate change, 5 credits	Environmental case studies in Europe, 7,5 credits
ASP-2					
2 2012/13	Elective and/or compulsory courses at host university, 30 credits		Independent project in Environmental Science – Master's thesis, 30 credits		

Water Resources

Example for programme structure if SLU is home university

ASP-1					
Year	Period 1	Period 2	Period 3	Period 4	summer
1 2011/12	Environmental Management in Europe, 15 credits, starts with introduction one week in Köpenhamn (Compulsory distance course from University of Copenhagen)		MV0177 Watershed management with focus on eutrophication, 10 credits BI1095 Microbial ecology, 5 credits MX0095 Ecotoxicology, 10 credits TN0268 Systems analysis for sustainable development, 5 credits	MX0052 Applied environmental assessment, 10 credits MV0172 Biogeochemistry – element cycles and climate change, 5 credits MV0166 Project – soil and water management, 5 credits MX0049 Integrated water resource governance, 15 credits	Environmental case studies in Europe, 7,5 credits
	MV0187 Water and solute transport in the soil-plant system, 10 credits	BI0883 Soil biology, 5 credits			
	BI1087 Introduction to master’s study, 5 credits	MV0186 Soil and water chemistry, 10 credits			
	BI1094 Contaminated soils – risk assessment and remediation, 5 credits	MX0087 Risk assessment of pollutants in soil and water, 5 credits			
	MV0162 Soils of the world, 5 credits	BI0876 Safe nutrient recycling, 10 credits			
	MV0174 Water management, soil conservation and land evaluation, 10 credits				
	MX0105 Water resource dilemmas, uncertainty and complexity: the biophysical basis, 10 credits				
ASP-2					
2 2012/13	Elective and/or compulsory courses at host university, 30 credits		Independent project in Environmental Science – Master’s thesis, 30 credits		

In order for the degree certificate to state that the programme was completed according to the programme syllabus for the EnvEuro - European master in Environmental Science, the following requirements must be met:

For a degree of master (120 credits) in the main field Biology)

Approved compulsory course of 15 credits):

- Environmental Management in Europe, 15 credits (Compulsary distance course from University of Copenhagen)

Approved elective programme courses of 30 credits at SLU of the following courses:

- Applied population biology, 15 credits
- Applied insect ecology
- Conservation Biology, 10 credits
- Cryptogams and Nature Conservation, 15 credits
- Ecological concepts, 10 credits
- Ecological methods, 15 credits
- Ecology & management of diseases and pests of forest trees, 15 credits
- Exotoxicology, 10 credits
- Environmental case studies in Europe, 7,5 credits
- Fish and wildlife management, 15 credits
- Forest environment and conservation, 15 credits
- Forest production for multipurpose use, 10 credits
- Genetic diversity and plant breeding, 15 credits
- Human dimensions of fish and wildlife management, 15 credits
- Introduction to master's study, 5 credits
- Insect biology and diversity, 15 credits
- Landscape ecology, 15 credits
- Plants and fungi: species knowledge and nature conservation, 15 credits
- Plant pathology, 15 credits
- Wildlife biology, 15 credits

Eligible courses

- Statistics for biologists I, 7,5 credits
- Statistics for biologists II, 7,5 credits
- Sustainable natural resource management, 15 credits

At another university within EnvEuro:

Semester 3: Courses comprising 30 credits.

Approved independent project of at least 30 credits in Biology, according to instructions for the programme. The independent project is carried out at the host university.

For a degree of master (120 credits) in the main field Environmental science

Approved compulsory course of 15 credits:

- Environmental Management in Europe, 15 credits (Compulsary distance course from University of Copenhagen)

Approved elective programme courses of 30 credits at SLU of the following courses:

- Applied environmental assessment, 10 credits
- Biogeochemistry – element cycles and climate change, 5 credits
- Ecotoxicology, 10 credits
- Environmental case studies in Europe, 7,5 credits
- Global environmental problems, 10 credits
- Introduction to master's study, 5 credits
- Integrated water resource governance, 15 credits
- Project – soil and water management
- Risk assessment of pollutants in soil and water, 5 credits
- Safe nutrient recycling, 10 credits
- Soil and water chemistry, 10 credits
- Systems analysis for sustainable development, 5 credits
- Water and solute transport in the soil-plant system, 10 credits
- Watershed management with focus on eutrophication, 10 credits
- Water Resource Dilemmas, uncertainty and complexity, the biophysical basis, 10 credits

Eligible courses:

- Contaminated soils – risk assessment and remediation, 5 credits
- Microbial ecology, 5 credits
- Soil biology, 5 credits
- Soils of the world, 5 credits
- Statistics for biologists I, 7,5 credits
- Statistics for biologists II, 7,5 credits
- Sustainable natural resource management, 15 credits
- Water management, soil conservation and land evaluation, 10 credits

At another university within EnvEuro:

Semester 3: Courses of 30 credits.

Approved independent project of at least 30 credits in Environmental Science, according to instructions for the programme. The independent project is carried out at the host university.

This appendix to the programme syllabus was approved by the study programmes board on 16 February 2011 and is valid as of the 2011/12 academic year (Dnr SLU.ua.Fe.2010.3.2-3112).

Instructions for independent projects

All independent projects (degree projects) must follow the joint guidelines that apply for independent work at SLU (REB 2010-05-10, reg.no. SLU ua 30-1405/10). This means that they are to be managed under the same routines and remits as other higher education. Independent projects are tied to a syllabus and the guidelines state that for projects comprising 15 credits or more, the syllabus must specify that they are to be published in Epsilon and examined for plagiarism in Urkund. In exceptional cases publication may be delayed; if so this must be stated in the student's individual work plan. The individual work plan is to serve as a supplement to the curriculum and must specify how the independent project will fulfil the intended learning outcomes related to the degree. The supervisor and the examiner may not be the same person, and the same guidelines apply for independent project examiners as for examiners on other courses (REB 2010-05-10, reg.no. SLU.ua.Fe.2010.3.0-1440).

Agreements with external clients are handled in a separate contract between SLU and the client. In cases where students have an external supervisor there must also be a principal supervisor at SLU who is responsible for ensuring that the project is carried out in accordance with SLU's guidelines and the current syllabus.

In addition to the general instructions that apply for all programmes and to the instructions in the syllabus for independent project in biology (Independent project in Biology – Master's thesis) alternative independent project in environmental science (Independent project in Environmental Science – Master's thesis) an independent project on the EnvEuro must be related to the intended learning outcomes specified in the programme syllabus.

The independent project shall be carried out at the host university with a principal supervisor from the host university and an assistant supervisor from SLU. Further instructions on EnvEuro's home page <http://www.enveuro.eu/Master-programme/Masters-thesis.aspx>.

This appendix to the programme syllabus was approved by the study programmes board on 2 Mars 2011 and is valid as of the 2011/12 academic year (Reg. no. SLU.ua.Fe.2010.3.0-3112).