



DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

ES2615 Fundamentals of Ecotoxicology, 7.5 credits

Grundläggande Ekotoxikologi, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Faculty of Science on 2012-06-28 and was last revised on 2024-03-13 by Department of Biological and Environmental Sciences to be valid from 2024-03-13, spring semester of 2024.

Field of education: Science 100%

Department: Department of Biological and Environmental Sciences

Position in the educational system

This course is mandatory for the master program in ecotoxicology, N2TOX. It can also be taken as a free-standing course and be included as an elective course in other programs.

The course can be part of the following programme: 1) Ecotoxicology, Master's Programme (N2TOX)

Main field of studies

Environmental Science

Specialization

A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

120 HEC out of which at least 60 HEC have to be completed in environmental science, chemistry or biology. Students with equivalent education can be allowed to enter the course. Applicants must prove their knowledge of English corresponding to English 6/English B from Swedish upper secondary school. For more information, see English language requirements on Universityadmissions.se.

Learning outcomes

On successful completion of the course the student is expected to:

Knowledge and understanding

- Have an overview of typical pollution sources and their environmental impact
- Have an in-depth understanding of the different types of ecotoxicological bioassays (including standardized and non-standardized assays), their design and underlying scientific rationalization
- Have an overview of up- and coming areas in ecotoxicology
- Have a first overview of regulatory ecotoxicology

Competence and skills

- Understand the basic principles of toxicology and be able to apply them to biological systems of different complexity (individuals, populations, communities)
- Have an overview of the fundamental statistical methods for data analysis and be able to conduct appropriate statistical analyses of ecotoxicological data, including the determination the critical thresholds (e.g. NOECs), power analyses and concentration-response analyses
- Be able to design meaningful ecotoxicological studies

Judgement and approach

- To critically evaluate and compare the quality of experimental designs, data analysis strategies, and the resulting experimental data
- To identify biases in the presentation and dissemination of ecotoxicological data
- To critically evaluate the role of ecotoxicology as a scientific discipline in relation to the different stakeholders (society, regulatory bodies, industry)
- To identify goal conflicts and conflicts of interests within ecotoxicology

The course is sustainability-focused, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria. The content also constitutes the course's main focus.

Course content

Ecotoxicology studies the effects of chemicals on non-human organisms within an ecosystem. The course teaches the fundamentals of ecotoxicology as a scientific discipline, providing knowledge concerning environmental chemicals, methods to study the nature and extent of environmental pollution, and the fundamental techniques necessary to quantify toxic effects on biological systems of various levels of complexity (individuals, populations and ecological communities).

Ecotoxicology also provides the fundamental scientific basis for ecological risk assessments and the course will therefore also connect to the corresponding regulatory

frameworks.

The course will make extensive use of problem-based and project-based learning approaches, including independent research, discussion and presentations of specific subjects, data analyses/discussions and group project work.

Sub-courses

1. Theoretical part (*Teoretisk del*), 4 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

Concepts and theory of environmental assessments.

2. Practical part (*Praktisk del*), 3.5 credits

Grading scale: Pass (G) and Fail (U)

Laboratory practice, computer exercise, seminars, and oral presentations.

Form of teaching

The course is given in the form of lectures, laboratory practice, computer exercises, and group work with subsequent seminar discussions.

Language of instruction: English

Assessment

The mandatory components of the course include laboratory work, computer exercises, oral presentations and other practical activities as specified in the course schedule, as well as a written examination at the end of the course.

The course is divided into two sub-courses, which are assessed in the following ways:

1. Theoretical part (4 ECT): Written exam
2. Practical part (3,5 ECT): Laboratory practice, computer exercise, seminars, and oral presentations

If a student who has twice received a failing grade for the same examination component wishes to change examiner ahead of the next examination session, such a request should be made to the department in writing and should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the Higher Education Ordinance).

If a student has received a recommendation from the University of Gothenburg for study support for students with disabilities, the examiner may, where it is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be

guaranteed at least three examination sessions (including the ordinary examination session) over a period of at least one year, but no more than two years after the course has ceased/been changed. The same applies to internships and professional placements (VFU), although this is restricted to just one additional examination session.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U). In order to pass the course, the student must get at a pass (G) in sub-courses 1 and 2. In order to get a pass with distinction (VG), the student must, besides getting a pass (G) on sub-course 2, also get a pass with distinction (VG) on sub-course 1.

Course evaluation

An oral course evaluation will be held at the final course conference. An anonymous written course evaluation will be conducted electronically after the course. The evaluation is of great value in our quality work. A summary of the course evaluation will be presented on the course Canvas page along with a summary of the course evaluation and information about any changes made for the next year.