



GÖTEBORGS UNIVERSITET

NATURVETENSKAPLIGA FAKULTETSNÄMNDEN

ES2615, Fundamentals of Ecotoxicology, 7,5 högskolepoäng Grundläggande Ekotoxikologi, 7.5 higher education credits

Avancerad nivå/Second Cycle

1. Fastställande

Kursplanen är fastställd av Naturvetenskapliga fakultetsnämnden 2012-06-28 och senast reviderad 2012-06-28. Den reviderade kursplanen gäller från och med 2012-07-01.

Utbildningsområde: Naturvetenskapligt 100 %

Ansvarig institution: Institutionen för biologi och miljövetenskap

2. Inplacering

The course is at Second cycle level in Environmental Science and Biology. The course is the first course in the master programme Ecotoxicology at the Faculty of Science, University of Gothenburg, but the course can also be chosen as a freestanding course.

The course is recommended for students with a Bachelor of Science, including at least 15 hec in environmental science, chemistry or biology.

Huvudområde

Miljövetenskap

Fördjupning

A1N, Avancerad nivå, har endast kurs/er på grundnivå som förkunskapskrav

3. Förkunskapskrav

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. English B level or English proficiency equivalent to IELTS 6.0 no part under 5.0 or TOEFL 550 p, TWE score 4 is also required.

4. Innehåll

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. Finally, the course will highlight and discuss the role of ecotoxicology within the wider context of neighboring scientific disciplines (e.g. human toxicology, environmental law).

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

The course consists of four subparts:

- 1) Lectures, which are not compulsory, but whose content will provide the basis for the following quizzes, seminars, exercises and the final exam (4 HEC).
- 2) Compulsory elements, in the form of e.g. quizzes, computer exercises, literature seminars including presentations and other similar moments as outlined in the course schedule. Students that do not take part in compulsory elements of the course are required to submit written summaries of the content of these moments to pass the course (4 HEC).
- 3) A written report and oral presentation (group task) on a specific topic, which will be distributed at the beginning of the course (4 HEC)
- 4) Final individual exam on the content of 1) and 2), in written form (hall exam, 3 HEC)

The course is given at daytime, fulltime.

5. Mål

5.1 Knowledge and understanding

After successful completion of the course the participants will

- 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 typical types of pollution sources and their environmental impact
- know the different classification schemes for environmental pollutants
- be aware of the different protection goals in ecotoxicology
- have an overview of up- and coming areas in ecotoxicology
- have a first overview of regulatory ecotoxicology

5.2 Skills and abilities

After successful completion of the course, the participants will

- understand the basic principles of toxicology and will 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 will 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

5.3 Judgement and approach

After successful completion of the course the participants will be able

- to critically evaluate and comparatively assess the quality of experimental designs, data analysis strategies and the resulting experimental data
- to identify biases in the presentation and dissemination of ecotoxicological data (normative science)
- to critically evaluate the role of ecotoxicology as a scientific discipline in relation to the different stakeholders (society, regulation, industry).
- to identify goal conflicts and conflicts of interests within ecotoxicology
- to assess the differences and commonalities between ecotoxicology and human toxicology.

6. Litteratur

A separate documentation of the course literature is available at the responsible department for the course.

7. Former för bedömning

In order to pass the course, the student must receive at least “Pass” for the participation in the quizzes, literature seminars, computer exercises, student presentations and the group task (parts 2)-4) as described above).

A student who has failed a test twice has the right to change examiners, if it is possible. A corresponding written application has to be sent to the Department of Biological and Environmental Sciences.

The number of examinations is limited to five occasions.

If the course is discontinued or major changes have been made, the student is guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given in the original form.

Student har rätt till byte av examinator, om det är praktiskt möjligt, efter att ha underkänts två gånger på samma examination. En sådan begäran ställs till institutionen och skall vara skriftlig.

8. Betyg

Betygsskalan omfattar betygsgraderna Underkänd (U), Godkänd (G), Väl godkänd (VG).

In order to be awarded Pass for the whole course of 15 HEC, Pass is required on subparts 2) – 4) as described above. For Pass with Distinction on the course, Pass with Distinction is required on subparts 3) and 4). Fail (U) and Pass (G) are the only grades given for subpart 2).

9. Kursvärdering

The course will be evaluated upon completion using both written and oral evaluation. The results of the evaluation will be communicated to the students and will function as a guide for the further development of the course.

10. Övrigt

Undervisningsspråk: engelska.