



LUND
UNIVERSITY

Faculty of Science

BIOR55, Biology: Chemical Ecology, 15 credits

Biologi: Kemisk ekologi, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-06-14 and was last revised on 2015-04-09. The revised syllabus applies from 2015-07-01, autumn semester 2015.

General Information

The course is an optional second-cycle course for a degree of Bachelor or Master of Science in Biology.

Language of instruction: English and Swedish
The course is given in English.

Main field of studies

Biology

Depth of study relative to the degree requirements

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

Learning outcomes

Knowledge and understanding

On completion of the course the student shall be able to:

- account for the naturally occurring diversity of interactions between organisms mediated by chemical substances
- explain the function and importance of such interactions in different biological systems, from organism to ecosystem level
- describe the evolutionary processes that have resulted in various types of chemical ecological interactions
- account for the biosynthetic origin of different classes of biologically active molecules

- give examples of how chemical ecological knowledge can be applied, e.g. in environmental monitoring and control of insect pests.

Competence and skills

On completion of the course the student shall be able to:

- master selected working methods in chemical ecology
- assimilate scientific literature in the subject
- present research results orally and in writing.

Judgement and approach

On completion of the course the student shall be able to:

- critically evaluate research results within the subject

Course content

The course focuses on the mechanisms, evolution, and ecological importance of a number of different chemical ecological interactions:

- competition and allelopathy
- predation, herbivory, and parasitism how an organism finds suitable food
- mutualism e.g. mycorrhiza
- chemical defence in plants and animals
- the importance of chemical communication in social interactions, including mate finding and territory maintenance

The examples are selected from different organismal groups, such as plants, fungi, vertebrates, and insects, in both terrestrial and aquatic environments. The course also includes chemical compounds, which mediate chemical ecological interactions, their origin and biosynthesis.

Furthermore, methods for identification of active substances are included:

- different ways to enrich active substances including extraction and airborne collection
- methods for separation of substances e.g. chromatography
- identification of substances through mass spectrometry
- bioassays, e.g. behavioural studies and electrophysiology, for identification and verification of the responses of the organism to a chemical substance

Applications of chemical ecology in e.g. environmental monitoring, inventory, and pest control will also be discussed.

Course design

The teaching consists of lectures, laboratory sessions, exercises, seminars, and project. Participation in laboratory sessions, exercises, seminars, and project, is compulsory.

Assessment

Examination takes place in the form of a written examination at the end of the course, written and oral presentations of the own project, and approved compulsory parts. For students who have not passed the regular examination, an additional examination in close connection to this is offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

To pass the entire course, approved examination, approved project report, and approved compulsory parts, are required.

The final grade is decided through a weighing of the results of the parts that are included in the examination.

Entry requirements

For admission to the course, 90 credits of scientific studies including 15 credits of chemistry and knowledge corresponding to BIOC02 Ecology 15 credits, and English 6/English B, are required.

Further information

The course may not be included in a degree together with BIO619 Chemical Ecology and Ecotoxicology 15 credits.

Subcourses in BIOR55, Biology: Chemical Ecology

Applies from V08

0701 Chemical Ecology, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction