



DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

BIO426 Evolutionary ecology, 15 higher education credits

Evolutionär ekologi, 15 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Biological and Environmental Sciences on 2015-08-11 and was last revised on 2017-07-09 to be valid from 2017-07-09, autumn semester of 2017.

Field of education: Science 100%

Department: Department of Biological and Environmental Sciences

Position in the educational system

This is a course in biology at an advanced level which aims to broaden and deepen knowledge in evolutionary ecology, including evolutionary theory and modelling. It is the first course of the profile area Evolutionary Biology within the Biology Master's Programme, and lays the fundament for future courses in this field. The course can also be chosen as part of the other profile areas within the Biology Master's Programme. In addition, it can be included in the Master's Programmes in Marine Sciences, Environmental Sciences (with focus on Natural Science) or Biology and Learning, and can be read as a freestanding course.

Main field of studies

Marine Sciences

Environmental Science

Biology

Specialization

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

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Entry requirements

To be accepted on the course the following education (or equivalent) is required:

Alternative 1: Approved basic courses BIO900 Cell Biology (15 hec), BIO905 Molecular Genetics (15 hec), BIO910 Biological Form and Function (15 hec), BIO915 Ecology and Evolution (15 hec), and BIO920 Biodiversity and Systematics (15 hec).

Alternative 2: Approved courses ES1201 Environmental Sciences: Natural Science (15 hec), ES1300 Natural Resources Management (15 hec), ES1305 Pollutants effects and dispersal on Biological Systems (15 hec), BIO915 Ecology and Evolution (15 hec), and at least one approved course of the following options: BIO900 Cell Biology (15 hec), BIO905 Molecular Genetics (15 hec), BIO910 Biological Form and Function (15 hec), or BIO920 Biodiversity and Systematics (15 hec).

Alternative 3: Approved courses totalling at least 90 hec within the two first years of the Marine Sciences Bachelor's Programme, University of Gothenburg.

In addition to any of the 3 alternatives above, at least one approved course (15 hec) in Biology at the Bachelor level, in a relevant subject, is required. For example: BIO214 Dynamics in Natural Populations, BIO209 Behavioural Biology, BIO217 Evolutionary Biology, or equivalent.

Learning outcomes

After completing the course, the student is expected to be able to:

Knowledge and understanding

- Define central concepts and hypotheses in evolutionary ecology
- Describe the evolutionary origin and drivers of biological variation and diversity, including the importance of genetic variation, natural selection, and genetic drift
- Compare evolutionary processes behind reproductive and ecological adaptations
- Interpret basic mathematical models in population genetics, quantitative genetics, and life-history theory.

Skills and abilities

- Use evolutionary hypotheses and predictions
- Use simpler mathematical and genetic models
- Demonstrate basic principles for phylogenetic and comparative reconstruction

Judgement and approach

- Evaluate facts from different sources, and interpret strengths and weaknesses in scientific hypotheses

Course content

Micro- and macroevolution, including genetic variation, adaptive evolution, neutrality, life histories, speciation, and comparative methods.

Basic mathematical models in life history theory, population genetics and quantitative genetics.

Form of teaching

Teaching methods include lectures, seminars (research presentations), digital media, exercises and group discussions.

Language of instruction: English

Assessment

Examination involves a written exam towards the end of the course, as well as a written and oral presentation of a review exercise ('TREE Opinion Piece'). The approved written and oral review exercise (including active participation in the latter) warrants 3 hec, and a passed written exam warrants 12 hec.

Opportunity to compensate for a missed obligatory course component may be offered when logistics allow, alternatively the next time the course is held.

If a student failed twice on the same examined course component and wishes to be examined by an alternative examiner, this should be requested in writing to the department giving the course. An opportunity will then be offered if no strong reasons counter to this are present (HF6, § 22).

If the course at this occasion is no longer given or has undergone major changes, the student should be offered three examination opportunities (including the first regular examination) during at least one year, with the same focus as the initial course.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

A Pass on the written examination requires at least 60% of the allocated exam points, whereas Pass with Distinction warrants 85% or more. In addition, an approved written review exercise and oral presentation of the latter is required. Assessment criteria for the written and the oral presentation of the review work will be stated during the course; only grades Pass and Fail apply for this part of the examination.

As per decision by the Faculty of Science (2015-02-26, diarienummer: 2015/177), the above grading scales should be used by all courses given at this faculty.

Course evaluation

A written, anonymous course evaluation is conducted at the end of the course using GUL, the electronic teaching platform at Gothenburg University. The results will be published on GUL and sent to study administration to be made freely available on request. In addition, the results of the course evaluation will be distributed to all teachers on the course and should be considered when planning for the next course. A summary of the evaluation and any changes in response to it will be presented to next-year students during the course introduction.

Additional information

This course replaces the course BIO425 (Advanced Course in Ecology). Courses BIO426 and BIO425 can therefore not be part of the same degree.