



Faculty of Science

BIOR89, Biology: Evolutionary Biology - Patterns and Processes, 15 credits

Biologi: Evolutionsbiologi - mönster och processer, 15 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2021-09-09. The syllabus comes into effect 2021-09-09 and is valid from the autumn semester 2022.

General information

The course is an elective second cycle component of a Master of Science degree in Biology and a compulsory second cycle component of a Master of Science degree in Biology specialising in Evolutionary Biology.

Language of instruction: English

Main field of study *Specialisation*

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

Learning outcomes

The general aim of the course is to enable students to understand the aims, theories, models and methodologies of contemporary evolutionary biology, and how these are applied to different biological systems.

Knowledge and understanding

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

- Outline the aims, scope, and methodology of problem agendas in evolutionary biology, using examples for illustration and interpretation
- Explain how evolutionary patterns and processes can be inferred using sequence data, the biology of extant organisms, and fossils

- Explain core features of evolutionary theory and their applications to biological systems

Competence and skills

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

- Identify problems within the field of evolutionary biology, and discuss relevant theory and research that addresses such problems
- Critically apply concepts, models and methods to study the origin, maintenance and diversification of biological systems
- Formulate hypothesis and predictions and design ways to tests them
- Integrate knowledge from different biological disciplines to analyse and discuss evolutionary patterns and processes

Judgement and approach

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

- Identify and evaluate strengths and weaknesses of different approaches to study evolution
- Critically review and analyse research in evolutionary biology
- Identify gaps in personal knowledge about evolution, and devise a plan to close those gaps through further learning activities

Course content

The course will enable students to acquire extensive knowledge and understanding of fundamental topics in evolutionary biology.

The course will explain how the history of life can be unravelled through studies of genes and genomes, developmental biology, and the features of extant organisms and fossils. The course will also provide a deep understanding of the evolutionary process. It will explain why evolution by natural selection gives rise to adaptation, what are the causes of diversification and novelty, and how the evolutionary process itself can evolve. The course makes use of a wide range of examples to illustrate how different biological systems, models, methods, and types of data can reveal how evolution works. Ultimately, it examines how an evolutionary perspective can be applied to phenomena at all levels of biological organisation, from molecules to ecosystems.

Course design

Teaching consists of lectures, group seminars, practical exercises, video tutorials, and a field excursion. Compulsory participation is required in seminars, practical exercises, the field excursion, and associated elements.

Assessment

The assessment is based on the written performance of students in an written exam at the end of the course and through participation in compulsory components.

Students who do not pass an assessment will be offered another opportunity for assessment soon thereafter.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction

For a grade of Pass on the whole course, the student must have passed the written examination as well as all compulsory components. The grading scale for the written examination is Fail, Pass, Pass with distinction and for the exercises and assignments the grading scale is Fail, Pass.

The final grade is decided through the result of the written examination.

Entry requirements

To be admitted to the course, students must have 90 credits in Natural Science studies, including 5 credits in statistics and 60 credits including genetics, cell biology, ecology and zoology/botany. A degree of Bachelor of Science. English 6/English B.