

Evolution (C003222)

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time 130 h**

Course offerings and teaching methods in academic year 2023-2024

| | | | |
|----------------|---------|------|--------------------|
| A (semester 1) | English | Gent | lecture seminar |
|----------------|---------|------|--------------------|

Lecturers in academic year 2023-2024

| | | |
|--------------------|------|--------------------|
| De Clerck, Olivier | WE11 | lecturer-in-charge |
| Bonte, Dries | WE11 | co-lecturer |
| Shawkey, Matthew | WE11 | co-lecturer |

Offered in the following programmes in 2023-2024

| | crdts | offering |
|---|--------------|-----------------|
| Bachelor of Science in Biology | 5 | A |
| Course List for Preparatory Courses for International Students (foreign students) | 5 | A |
| Exchange programme Faculty of Sciences (bachelor's level) | 5 | A |
| Preparatory Course Master of Science in Biology | 5 | A |

Teaching languages

English

Keywords

Evolution, adaptation, natural selection, strategy, life-history, phylogeny, speciation

Position of the course

Students gain insight into patterns and underlying processes of phenotypic and genotypic variation, and how adaptation and natural selection operate and may lead to speciation. The student is also familiarized with the theory and practical application of phylogenetic reconstruction. Students learn to apply this evolutionary approach to reconstruct evolutionary phylogenies and study life history traits and behavioural aspects.

Contents

Subsequent chapters highlight both theoretical and practical aspects of evolutionary theory.

The following chapters are covered:

- 1 Introduction to the evolutionary concept
- 2 Tree of Life: classification and phylogeny
- 3 Patterns of evolution
- 4 Sources of genetic variation
- 5 Random evolutionary processes
- 6 Natural selection and adaptation
- 7 Genetic theory of natural selection
- 8 Evolution of phenotypic traits
- 9 Conflicts and cooperation
- 10 Species and speciation
- 11 Life-history evolution
- 12 Co-evolution: interactions between species
- 13 Macro-evolution

Initial competences

The course builds on evolutionary, ecological and biogeographic concepts taught during Bachelor 1 and 2.

Final competences

The student knows the main conceptual developments in evolutionary theory, has a thorough insight into processes of evolution and selection, and is able to apply these insights to the study of evolutionary questions and the reconstruction of evolutionary phylogenies.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Learning materials and price

Futuyma, D.J. 2005. Evolution. Sinauer. (Price 60€);
a syllabus containing all powerpoint slides.

References

Futuyma, DJ 1998. Evolutionary Biology. Sinauer Associates, Inc., Sunderland,
Hall B.G. 2004. Phylogenetic trees made easy. Sinauer Associates.
Ridley, M. 1996. Evolution. Blackwell Science, Inc., Cambridge, Massachusetts.
Roff DA, 1992. The Evolution of Life Histories. Chapman & Hall, New York
Roff DA, 2002. Life History Evolution. Sinauer Associates, Sunderland, MA.
Stearns, SC 1992. The Evolution of Life Histories. Oxford University Press, Oxford.
Stearns, SC & Hoekstra RF. 2000. Evolution: an Introduction. Oxford University,
Oxford.

Course content-related study coaching

During practical classes, evolutionary and phylogenetic concepts and models are illustrated through practical applications (problem solving). During these classes, students can pose general questions on the course content.

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment with open-ended questions

Examination methods in case of periodic assessment during the second examination period

Written assessment with open-ended questions

Examination methods in case of permanent assessment**Possibilities of retake in case of permanent assessment**

not applicable

Calculation of the examination mark

Theory: 100%