

Course Specifications

From the academic year 2016-2017 up to and including the

Course size (nominal values; actual values may depend on programme)
Credits 5.0 Study time 130 h Contact hrs 40.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	lecture	30.0 h
		seminar: coached	7.5 h
		exercises	

Lecturers in academic year 2018-2019

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

Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Biology	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

Excursion, lecture, practicum, seminar: coached exercises

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.

Evaluation methods

end-of-term evaluation

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

Written examination with open questions, oral examination

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

Written examination with open questions, oral examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Calculation of the examination mark

Theory: 100%