

Course Specifications

Valid as from the academic year 2020-2021

Paleobiology (C003314)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)
Credits 5.0 Study time 150 h Contact hrs 62.5 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent		
			lecture	22.5 h
			microteaching	3.75 h
			practicum	36.25 h
			online seminar	0.0 h

Lecturers in academic year 2020-2021

Vandenbroucke, Thijs	WE13	lecturer-in-charge
Louwe, Stephen	WE13	co-lecturer

Offered in the following programmes in 2020-2021

	crdts	offering
Master of Science in Teaching in Science and Technology (main subject Biology)	5	A
Master of Science in Biology	5	A
Exchange Programme in Biology (master's level)	5	A

Teaching languages

English

Keywords

Paleobiology, plants animals, biosphere evolution, paleoecology, body plans, extinctions, radiations.

Position of the course

Knowledge of the origin and oldest traces of life during the Precambrian. General insights in the paleobiology, taphonomy, paleoecology and the evolution of the most important fossil groups: single-celled organisms, invertebrates, vertebrates, spore plants, seed plants. Interactions between the biosphere and geosphere during the Phanerozoicum, a.o. extinctions and radiations.

Contents

The palaeobiology of brachiopods, molluscs, arthropods, graptolites and echinoderms, the origin of tetrapods and birds. With each of the groups, aspects are highlighted about the earliest life in the Archean and Proterozoic, the origin of the different bodyplans of the Metazoans and the importance of the Ediacara fauna, extinctions and radiations in the Phanerozoic, taphonomy and fossilization processes or other interactions between Geosphere and Biosphere in relation to evolution. Effects of autotrophic assimilation by procaryotes and marine eukaryotic algae. The paleobiology of multicellular algae and mosses. Enigmatic Paleozoic plants. Morphology and diversification of the early land plants during the lower Paleozoic. Increasing diversity during the Devonian: trimerophytes, lycopsids, horse tails and Paleozoic ferns. Environmental changes and paleobiogeography during the Paleozoic and Mesozoic. Morphological changes and evolution of higher plants: facts and hypotheses. Progymnosperms, origin and evolution of the first seeds, Paleozoic gymnosperms. Diversification among the gymnosperms.

Initial competences

This builds on the learning outcomes of Ba-level basic classes in: geology, invertebrate and vertebrate biology, mycology, protistology, land plants, seed plants.

Final competences

- 1 To recognise the key fossil groups and their identification criteria.
- 2 To summarize the most important morphological and anatomical evolution of invertebrates, vertebrates, protists, spore plants and seed plants through geological time.
- 3 To use fossils to reconstruct simple paleoenvironmental conditions and to establish geological age.
- 4 To assess and critically approach aspects of the interactions between geosphere and biosphere: origin of life, radiations, extinctions and their causes.
- 5 To be aware of the strength of the fossil record while critically dealing with its incompleteness.

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

Lecture, microteaching, practicum, seminar, online seminar

Extra information on the teaching methods

Lecture: introduction to concepts and principals of paleobiology

Practical (paleobotany): in group and individually study of the morphology of selected fossils (macro and micro). A group of fossils is studied in small groups (2 to 4 students) and presented.

Seminars (invertebrate paleobiology): The students independantly update their active knowledge of invertebrate biology and apply this to the fossil record, based on an introduction and the study of a selection of fossil specimens.

Microteaching: the student instruduces one of the practical sessions to his/her peers and/or develops and presents a palaeontological case to the group, based on a controversial paper, an online conference keynote, podcast or (museum) specimen. Due to COVID19 adjusted work forms can be rolled out if so required.

Learning materials and price

Syllabus and illustrations. Estimated cost: circa 12 euros.

Benton, Michael J & Harper, David AT. 2020. Introduction to Paleobiology and the Fossil Record. SECOND EDITION. Wiley - Blackwell. ISBN: 978-1-119-27288-5. Estimated cost: circa 50 EUR

References

- Benton, M. (2000). Vertebrate Paleontology. Blackwell Science.
Clarkson, E.N.K. (1998). Invertebrate palaeontology and evolution. Blackwell Science.
Milsom, C. & Rigby, S. (2004). Fossils at a glance. 155 p. Blackwell Science Ltd. ISBN 0- 632-06047-6 (pbk).
Stewart, W.N. & Rothwell, G.W. (1993). Paleobotany and the evolution of plants. Cambridge University Press.
Willis, K.J. & McElwain, J.C. (2014). The evolution of plants. Oxford University Press.
Taylor, T.N. et al. (2009). Paleobotany. The biology and evolution of fossil plants. Academic Press

Course content-related study coaching

Possibility for questions relating to lectures and microteaching assignment via email or during practical exercises. Coaching during practicals by the lecturers and assistants.

Evaluation methods

end-of-term evaluation and continuous assessment

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

Assignment

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

The periodical evaluation consists of a theoretical written part and a practical oral part.

The aim is to assess whether the student masters the final objectives. The permanent evaluation consists of the evaluation of the drawings and sketches made during the practical exercises, and the evaluation of the microteaching assignment. Examination methods are discussed at the end of the course.

Calculation of the examination mark

Periodical evaluation (90%) + permanent evaluation (10%). The score for the permanent evaluations are transferred to the second examination period, but not to the following year.