



Course Specifications

Valid as from the academic year 2013-2014

Ecological Archaeology (A001232)

Course size (nominal values; actual values may depend on programme)
Credits 5.0 **Study time** 135.0 h **Contact hrs** 45.0 h

Course offerings and teaching methods in academic year 2013-2014

A (semester 2)	lecture	20.0 h
	self-reliant study activities	10.0 h
	practicum	15.0 h

Lecturers in academic year 2013-2014

Verschuren, Dirk	WE11	lecturer-in-charge
Gelorini, Vanessa	WE13	co-lecturer
Verleyen, Elie	WE11	co-lecturer

Offered in the following programmes in 2013-2014

	crdts	offering
Bachelor of Arts in Archaeology	5	A
Abridged Bachelor's Programme in Archaeology for Bachelors	5	A
Preparatory Course Master of Arts in Archaeology	5	A

Teaching languages

Dutch

Keywords

paleoecology, Quaternary, Holocene, landscape evolution, climate history, anthropogenic climate change, interaction climate-humans-nature

Level

advanced

Position of the course

The course 'Ecological Archeology' is taught to all Ba2 students in Archeology, and as optional course to students in other majors. It treats the relationship between climate and ecological history at all time scales, and the influence of both on the evolution of modern humans and the rise and fall of (classic) civilisations. This historical perspective feeds into an introductory discussion of the issue of anthropogenic climate change and the present-day interaction between climate, humans and nature. The principal aim of this course is to provide students with insight in the long-term dynamics of ecosystems and the earth's environment in which human history has played out, and in the importance of time scale and historical factors in the causes and magnitude of climate variability and historical interactions between humans and nature.

Contents

- 1) The long-term perspective: pre-Quaternary paleoecology and climate history, with long-term evolution of the biosphere and geosphere-biosphere interactions over the past 4 billion years, origin and evolution of the oxygen-rich atmosphere.
- 2) Quaternary climate history and paleoecology of organisms and ecosystems as background studies on ecological processes operating at time scales beyond direct observation, e.g. succession, community assembly, long-term ecosystem stability and its consequences for biodiversity.
- 3) Climate variability at short timescales (El Niño, volcanoes) and their impact on the biosphere.
- 4) Interactions between climate, humans and nature at both long and shorter time scales: evolution of human ancestors, Out of Africa II, demise of the Neanderthals and Pleistocene megafauna, Holocene desiccation of the Sahara, impact of climatic drought on demise of the Akkadian Empire, the Classic Maya, cultural history of East Africa, impact of the Medieval Warm Period and Little Ice Age on the Norse in Greenland, etc.

- 5) Scientific basis and history of anthropogenic climate change.
- 6) Methodology of paleoecological research: i) uniformitarian basis of paleoecological reconstruction; ii) paleoecological archives; iii) principal techniques of paleoenvironmental reconstruction: palynology, analysis of charcoal, aquatic biota, and stable isotopes, radiometric dating; iv) data processing in quantitative paleoecology: chronological models, custom multivariate statistical methods and clustering analyses, time series analysis.

Initial competences

Having successfully completed the introductory Biology course Ba1 Ecology, or having acquired the relevant knowledge through self study or other means. Remediation is possible by attending select lectures of Ba1 Ecology as addendum to the course programme, and study of the relevant sections of the textbook.

Final competences

Demonstrate adequate knowledge of the causes and time scales of Quaternary and recent (natural and anthropogenic) climate change in relation to long-term biosphere history. Demonstrate insight in the relationship between climate variations and the dynamic behaviour of natural ecosystems at all time scales beyond direct observation, and of historical interactions between humans and nature in the context of world cultural and political history. Demonstrate basic knowledge of the potential and limitations of important natural archives and techniques in paleoecological reconstruction. Display a science-based critical attitude towards new data, interpretations, theories and models of anthropogenic climate change and the historical interaction between humans, climate and nature. Demonstrate ability to process, combine, evaluate, and synthesize complex information from the primary scientific literature of multiple relevant sub-disciplines.

Conditions for credit contract

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

Conditions for exam contract

Access to this course unit via an exam contract is determined after successful competences assessment

Teaching methods

Lecture, practicum, self-reliant study activities

Extra information on the teaching methods

Lectures: PowerPoint presentations with figures and notes, available beforehand on Minerva.

Practica: Guided exercises in paleoecological techniques

Independent personal assignment: literature study with written report

Learning materials and price

Powerpoint-presentations, made available from the Minerva learning platform, are to be brought to class as hard-copy, to supplement with personal notes. Cost of printing: 10 EUR

References

IPCC (2007). 4th Assessment Report on Climate Change: summary for policymakers.

Neil Roberts (1998). The Holocene: an environmental history, 2nd Ed. Blackwell (ISBN 0-631-18638-7).

Course content-related study coaching

Moderation/supervision of practicals in paleoecological methods and data processing. Advice for personal assignment (literature review, synthesis and written report) on the historical interaction between humans and climate in the context of a specific (ancient) culture. Personal contact with the instructors on appointment.

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

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

Written examination with open questions

Examination methods in case of permanent evaluation

Report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Questions testing both knowledge of material presented in lectures; questions testing understanding of the role of paleoecological archives and methods in paleoecological data interpretation

Calculation of the examination mark

Periodic evaluation: theoretical closed-book written exam 75%; reports practica 10%; individual work (literature study and report): 15%

Facilities for Working Students

1. Possible exemption from educational activities requiring student attendance
 2. Possible rescheduling of the examination to a different time in the same academic year
 3. Alternative time for feedback is possible
- For more information concerning flexible learning: contact the monitoring service of the faculty of Arts and philosophy