

Evolution of Primates and Paleo-anthropology (C004082)

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

Credits 3.0 **Study time 75 h**

Course offerings and teaching methods in academic year 2023-2024

null

Lecturers in academic year 2023-2024

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Offered in the following programmes in 2023-2024

null **crdts** **offering**

Teaching languages

English

Keywords

Evolution of Primates, prosimians, Old World monkeys, New World monkeys, great apes, human evolution, paleo-anthropology, cultural evolution, stone tools, important sites, fossil evidence, phylogeny, brain evolution, locomotion, speciation, ...

Position of the course

The goal of this course is to provide an overview of the current knowledge on the origin, biodiversity and anatomy of primates and how man evolved within them. The morphological evolution and biodiversity of both primate ancestors and primate taxa are discussed, based on an extensive overview of data from literature. The currently ruling hypotheses, that try to explain the origin of man and its ancestors are critically compared. The importance of a shift from morphological evolution to cultural evolution during human evolution is discussed, thus allowing students to put the current culture and behaviour of modern humans in perspective.

Contents

Lectures: In a first introductory part, the origin of mammals is discussed, followed by an overview of the most important primate characteristics, including tooth morphology, cusp terminology and some general adaptations to climbing. A concise but still broad overview is given of the biodiversity of recent Primates (e.g. makis, loris and bush babies, *Tarsius*, howler monkeys, capucins, baboons, macacs, colobus monkeys, gibbons, orang outans; chimpanzees, gorillas) as well as of some important fossil groups (e.g. Plesiadapiformes, Omomyoidea, Adapoidea, *Sivapithecus*, *Proconsul*, ...). The origin of the primate body plan and the radiations within the group are discussed, where ruling hypotheses are mentioned, to understand the onset of human evolution. An extensive overview is given of the current knowledge of the fossil record of human ancestors and man (starting about 8 million years ago), with attention paid to their typical characteristics and phylogenetic relationships. Genera that are discussed are *Sahelanthropus*, *Orrorin*, *Ardipithecus*, *Australopithecus*, *Kenyanthropus*, *Paranthropus* and *Homo*. Some theories that provide an explanation for the origin of man are critically dealt with (e.g. savannah theory, aquatic ape theory, theories on the hypertrophy of the brain, ...). An overview is given of the stone tools technology within the genus *Homo*, as well as the origin of language.

Excursion: Students organise themselves a visit to the Royal Belgian Institute for Natural Sciences (Brussels), to consult the material presented at the exhibition on human evolution.

Initial competences

The anatomical basis to understand the evolution in primates and man partially relies on the knowledge on vertebrate morphology, obtained from the course "Vertebrates: histology and comparative anatomy" (Bachelor 2 Biology). Even though the a priori knowledge of morphological aspects is an advantage, it is not required for this course as sufficient time is

spent to clarify morphological traits and features of vertebrate morphology. Depending on the student's bachelor education, an introductory class will be given on mammalian morphology.

Final competences

- 1 Students are well familiar with the overall trends that characterize the evolution of primates and man.
- 2 Students can identify anatomical traits that characterise primates and human evolution, and put them within an evolutionary context.
- 3 Students have an overview of the biodiversity and relationships of primate taxa, as well as of the fossil record that reflects human evolution, based on recent literature.
- 4 Students have a good insight in the relation between morphological evolution, biogeography, and cultural evolution that typifies humans and their ancestors, and can interpret and critically evaluate the current hypotheses on human evolutionary relationships.
- 5 Students can communicate the most important aspects of human evolution towards a broader audience, both within a scientific and societal context.

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

Extra information on the teaching methods

- **Lectures** Overview of primate biodiversity, morphology, phylogeny, evolutionary transformations in anatomical traits, species-specific traits, evolutionary trends, speciation, migration, etc.
- **Excursion:** performing observations, framing observations in the broader evolutionary context, identifying of species specific traits on skeletal material.

Learning materials and price

The PowerPoint slides are available (published by Academia Press) (cost estimated €24).
A train ticket to Brussels has to be purchased for the excursion to the Royal Belgian Institute for Natural Sciences (max. €20).
Access to the museum costs €6.
Total cost: €50.

References

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Course content-related study coaching

During the course, students can ask questions at the end of each class or after making an appointment. At the end of the course, special sessions for answering questions can be organised.

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

Extra information on the examination methods

Evaluation where the students are tested for their insight in the evolutionary trends that characterise the evolution of primates, hominids and modern humans, fossil evidence, etc. The exam comprises several statements, of which the correctness needs to be argued.

Calculation of the examination mark

Evaluation based on the lectures (100%).

