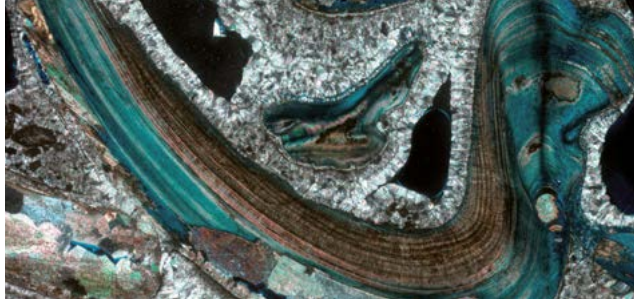
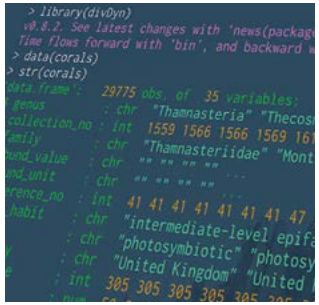




Goals of the program

The acute theme of global climate change and its impact on organisms and ecosystems requires a new generation of scientists. In the **International Master in Geosciences at FAU**, students will study two pillars integral to this topic: (1) **Paleobiology major**, which contains courses on theoretical concepts of macroecology and macroevolution, as well as statistical techniques and scientific programming, and (2) **Climate and Earth Systems minor**, which focuses on the practical aspects of conducting paleoecological, paleoenvironmental and phylogenetic research.

Our goal is to allow students to become internationally competitive in paleobiology and related quantitative fields. The Master program consists of two years of four semesters, which each amount to 30 credit points (ECTS). In addition to regular courses (e.g. lectures and practical exercises), students can choose supplementary courses, including field excursions and the acquisition of transferable skills through various projects and even internships. The final (fourth) semester is dedicated to the Master thesis.

About the University (FAU) and Erlangen

Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) is located in Bavaria in southern Germany. FAU has enrolled over 28,000 students each year across 5 faculties, and has an excellent reputation both within Germany and internationally. The International Master in Geosciences (Paleobiology – Climate and Earth Systems) does not have tuition fees. Students pay only a semester fee (€72 per semester in 2024). There are multiple competitive scholarship options (e.g. DAAD, BAYHOST) for students to support themselves during their stay in Germany. Part-time jobs both as a student research assistant and outside of the University provide excellent opportunities for additional income.
All courses on this Master program are taught in English, with some supplementary courses available in German. Erlangen is a very international city where English can be used often in daily life. Learning German can improve the experience of living in Germany, and the FAU offers free German courses for its students.

More information
paleobiology.de
fau.eu/education/international/from-abroad/

For enquiries please contact
Master admissions
Friedrich-Alexander-Universität
Erlangen-Nürnberg
Loewenichstr. 28, 91054 Erlangen
pal-master@fau.de

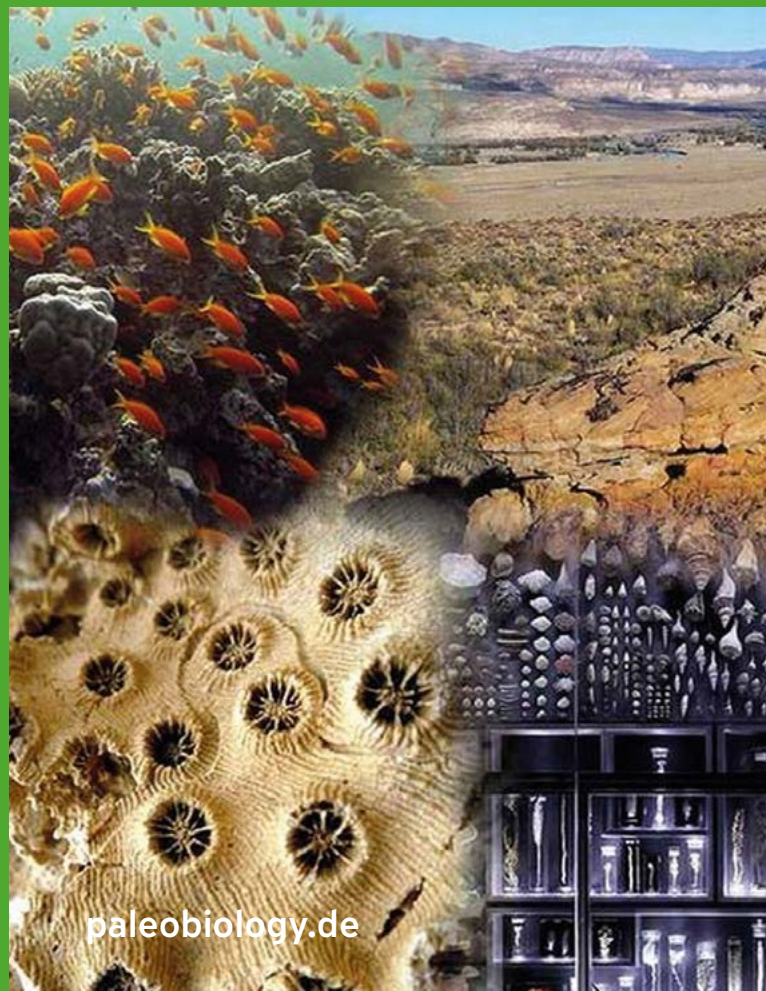
Content and Photos: W. Kiessling, A. Kocsis, A. Munnecke, A. G. Pöhlein, C. Schulbert, S. Teichert; Design: FAU Brand Office

FAU

Friedrich-Alexander-Universität
Faculty of Sciences

Paleobiology – Climate and Earth Systems

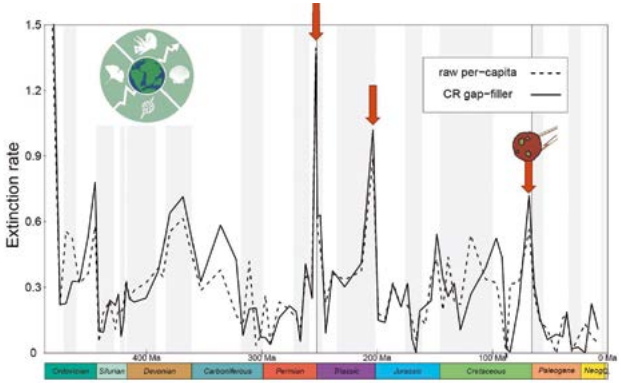
International Master in Geosciences



Research highlights

Students will learn from world-leading experts, with interests across a wide range of topics:

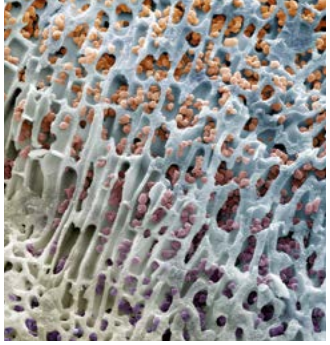
- Impacts of climate change on past biodiversity and evolution
- Phylogenetic methods to understand the evolution of life on Earth
- Biodiversity dynamics and the impacts of fossil record sampling
- Marine ecosystems with an emphasis on coral reefs and coralline algae
- Carbonate rocks as archives of paleoenvironmental and paleoclimate change
- Integration of processes at multiple time scales: from deep-time to recent



Scientific methods and approaches

Our emphasis on quantitative paleobiological research allows students to develop valuable mathematical and statistical skills on a wide variety of scientific topics, as well as the transferable skills to be competitive in the current job market:

- Procedural analyses with paleontological and phylogenetic software (primarily in the R programming environment)



- Spatiotemporal biodiversity research involving fossil occurrence databases such as the Paleobiology Database and the PaleoReefs Database (curated at FAU)
- Bespoke collection of carbonate thin sections, fossil preparation and thin section laboratory, complete with a wide range of microscope imaging facilities
- Phylogenetic inference for the analysis of genomic and morphological data
- Micro-computed tomography for 3D and non-invasive analysis of specimens, sclerochronology for paleoclimate and biomineralization studies (MicroMill)
- Internationally renowned stable isotope laboratory with focus on paleoclimate and paleoenvironmental reconstructions
- Intensive geological and paleontological field-based training (in Sweden, Italy, Poland)

Career perspectives

Graduates have a wide variety of career paths available to them. Throughout the program, students are encouraged to develop both their research skills in paleobiology and related topics, as well as transferable skills that can be applied to a range of exciting careers:

- Academic research at universities and research institutions
- Data science and analytics in the private and public sectors
- Research funding, policy and administration at universities and private institutions
- Research support and development at universities and research institutions
- Natural history museums and geoparks
- Charities, NGOs, and environmental protection agencies
- Editors and commissioners at scientific publishing houses
- Science communication, outreach, and media

Semester	ECTS	Major: Paleobiology-Paleoenvironments				Minor: Climate and Earth Systems				SC	
1	30	Morphology, systematics and ecology of invertebrates		Systematics, ecology and biostratigraphy of microfossils	Biofacies and paleoecology	Literature seminar	Geochemical proxies in paleoenvironmental analysis			Computers in geosciences*	
				Methods of biostratigraphy	Oceanography	Consolidation of R programming skills					
2	30	Macroevolution	Vertebrate paleobiology	Hypothesis testing in paleobiology	Analytical paleobiology	Research project implementation	Introduction to statistical modelling	Phylogenetics		SC to choose	
				Laboratory methods in paleontology		Climate and Earth system data					
3	30	Proxies in paleoenvironmental reconstructions	Macroecology	Geobiology of reefs	Microfacies analysis and diagenesis of carbonate rocks	Research project design	Science communication			SC to choose	
				Programming and statistics in paleobiology							
4	30	Master thesis									

SC: Supplementary Courses; **Elective, but highly recommended.*