

Climate & Environmental Sciences

Master of Science

Environmental processes and dynamics encompass many aspects of physical systems on global, regional and local scales. Accelerating climate change alters hydrological processes and biogeochemical turnover rates, affect landscape dynamics and ecological systems. These changes impose fundamental research challenges and, as a consequence, increase the volume of spatial data. These changes are studied by the Institute of Geography in Erlangen from different research perspectives.

1. Content of the programme

The MSc programme offers the opportunity to specialize in one major subject area of Physical Geography by designing an individually tailored Master's programme. This programme allows for a clear specialisation and qualification in an individual field of interest. In-depth modules and topics for the Master thesis mirror the three research pillars of the Physical Geography branch of the Institute of Geography in Erlangen, which include:

- Climate research
- Geoinformatics
- Environmental Analysis

Each of these pillars is studied within the institute in manifold facets, for example glaciology, physical climatology and paleoclimatology in climate research, soil science, biogeography and dendroecology in case of environmental studies, and hyperspectral remote sensing, radar remote sensing and modelling and simulation in case of geoinformatics, respectively. The theoretical seminars as well as the practical courses convey knowledge and skills to analyze and assess processes and effects of environmental changes in different environmental contexts, with special focus on environmentally sensitive regions like high mountain areas, polar regions and deserts, or tropical environments.

2. Structure of the degree programme

Climate & Environmental Sciences is a two-year (4 semesters) degree programme that is taught in English and comprises 120 ECTS credit points. All students start with a thorough education in scientific writing as well as with a graduate seminar on one of the three research topics. The first three semesters are dedicated to the individual specialisation, in particular due to state-of-the-art as well as novel methodological training. These modules are offered as "traditional" lab courses but also as hands-on courses in methods of geoinformatics and climate research (data modelling and analysis, programming). Students acquire further methodological knowledge by choosing elective modules. One (ungraded) elective module can be replaced by an internship of at least six weeks. They also attend courses in elective subjects that may be chosen freely from the offerings at the FAU but that should usefully supplement their knowledge in their field of specialisation. As such, students are free to shape their individual elective study programme in a highly flexible way. Students apply knowledge and skills gained in the course of study to date in the regional context of a field trip. Another essential part of the programme is an advanced training research course: due to their work in a mini-project (usually integrated in ongoing research activities of the institute), the students are actively involved in organisation and logistics of

research, data acquisition and analysis, knowledge generation and knowledge transfer. The fourth semester is dedicated to the Master's thesis, which focuses on one of the chosen major topics. Semesters abroad are not compulsory, but can be arranged (e.g. through the ERASMUS programme and partnerships with universities).

Compulsory modules:

Scientific Working + seminar - 10 ECTS
Advanced Research Training Course - 20 ECTS
Modules in elective subjects - 10 ECTS
Field Trip + seminar -15 ECTS

Consolidation modules:

4 methodological modules à 5 ECTS - 20 ECTS
Master Thesis + defense - 30 ECTS

Elective modules:

3 methodological modules à 5 ECTS - 15 ECTS

3. Admission requirements

Applicants are required to have a Bachelor's degree (or equivalent qualification) in Physical Geography or an adjacent scientific discipline (e.g. bio and environmental sciences, climate sciences, meteorology, geoinformatics, landscape ecology, ecosystem research and ecosystem management, agricultural sciences, and forestry), which was awarded with "good" or "very good".

Applicants have to proof intermediate knowledge of the English language (level B2) according to the Common European Framework of Reference for Languages or an equivalent score in an internationally recognised test. The proficiency of a basic knowledge of German (A1) has to be proven within the first academic year.

Applications for the MSc Climate & Environmental Sciences shall be submitted online via www.campo.fau.de. All documents required for the application must be sent by post to the Master's Office (Masterbüro) [3]. The application deadlines are 31 January for the following summer term (starting in April) and 15 July for the following winter term (starting in October).

4. Career prospects

The Master's programme has a clear research focus and qualifies participants for a PhD at a University or for scientific work in research institutions or governmental agencies. Graduates also qualify for a large variety of exciting and challenging positions in consulting, management, or public services.

5. Adresses

Institute of Geography

Wetterkreuz 15, 91058 Erlangen

www.geographie.fau.de

Secretary: Room 2.057, Phone +49 9131 85-22633,

Fax: +49 9131 85-22013,

E-Mail: common@geographie.uni-erlangen.de

Study guidance

Dr. Birgit Schwabe

Dr. Thorsten Peters

Student Service Center Geography

Wetterkreuz 15, 91058 Erlangen

Phone: +49 9131 85-25791 or 85-22635

E-Mail: geographie-studienberatung@fau.de

General advice

Student Advice and Career Service (IBZ)

Schlossplatz 3, 91054 Erlangen, Information desk: room 0.021

Phone: +49 9131 8523333 or +49 9131 8524444

Office hours: Mon–Wed 8.00 a.m.–4.00 p.m.

Thu 8.00 a.m.–6.00 p.m.; Fri 8.00 a.m.–2.00 p.m.

E-mail: ibz@fau.de

Examinations representative

Petra Schmitt

Halbmondstraße 6, room 1.035

Phone: +49 9131 85-24063;

E-Mail: petra.ps.schmitt@fau.de

Office hours: Mon–Fri 8.30 a.m.–12.00 p.m.

6. More information online

[1] Homepage of FAU: www.fau.de

[2] Detailed information on the MSc programme:

<http://www.geographie.nat.uni-erlangen.de/studieren/studiengaenge/msc-climate-environmental-sciences/>

[3] Information on application for Master's degree programmes: www.master.fau.de

[4] BERUFEnet (Information on job profiles):

<http://berufenet.arbeitsagentur.de/berufe>

[5] FAU course catalogue: www.vorlesungsverzeichnis.fau.de

[6] Examination regulations: www.fau.de/studium/im-studium/pruefungen-studienordnungen/

Appendix 1: Structure and recommended study plan of the Climate & Environmental Sciences Master's degree programme

Module	Course	SWS				Total ECTS	Workload distribution per semester in ECTS ¹⁾				Specification graded/non-graded examination	
		L	E	P	S		1. Sem.	2. Sem.	3. Sem.	4. Sem.		
Compulsory Modules												
Scientific Working I	Scientific Writing and Communication				2	5	5					Weekly assignment
Scientific Working II	Graduate Seminar				2	5		5				Written paper, oral presentation
RTC: Advanced Research Training Course	Advanced Research Training Course				4	20		10	10			Research report, oral presentation
Inter-/Transdisciplinary Perspectives ²⁾	Elective Module Courses	According to examination regulations of the elective modules				10	5					According to examination regulations of the elective modules
	Elective Module Courses	According to examination regulations of the elective modules					5					
Advanced Regional Geography I	Graduate Seminar				2	5		5				Written paper, oral presentation
Advanced Regional Geography II	Field Trip (min. 10 days)				10 days	10			10			Report (10-15 pages)
					10	55	15	20	20	0		
Elective Modules^{1) 3) 4)}												
Advanced Methods A	Depending on module				2	5		5				Depending on module
Advanced Methods B	Depending on module				2	5			5			Depending on module
Advanced Methods C	Depending on module				2	5			5			Depending on module
					6	15	0	5	10	0		

Consolidation Modules – Emphasis on Climate Research ¹⁾											
Advanced Methods: Advanced Climate Data Analysis	Advanced Climate Data Analysis				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Modeling Physical Systems in the Climate	Modeling Physical Systems in the Climate				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Scripting for Remote Sensing of the Environment	Scripting for Remote Sensing of the Environment				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Tree-Ring Analysis - Applied Dendroecology	Tree-Ring Analysis – Applied Dendroecology				2	5		5			Weekly Assignment or written paper ⁵⁾
MT: Master Thesis	Master Thesis					30				25	Master Thesis (ca. 80 pages), oral defence
	Master Thesis Defence										
					8	50	15	5	0	30	

Consolidation Modules – Emphasis on Geoinformatics ¹⁾											
Advanced Methods: Microwave Remote Sensing	Microwave Remote Sensing				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Scripting for GIS analysis	Scripting for GIS Analysis				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Scripting for Remote Sensing of the Environment	Scripting for Remote Sensing of the Environment				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Remote Sensing: Spectroscopy and Analysis of Spectral Data	Remote Sensing: Spectroscopy and Analysis of Spectral Data				2	5		5			Weekly Assignment or written paper ⁵⁾
MT: Master Thesis	Master Thesis					30				25	Master Thesis (ca. 80 pages), oral defence
	Master Thesis Defence										
					8	50	15	5	0	30	

Consolidation Modules – Emphasis on Environmental Analysis ¹⁾											
Advanced Methods: Soil Science	Soil Science				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Tree-Ring Analysis - Applied Dendroecology	Tree-Ring Analysis – Applied Dendroecology				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Stable Isotope Analysis	Stable Isotope Analysis				2	5	5				Weekly Assignment or written paper ⁵⁾
Advanced Methods: Remote Sensing: Spectroscopy and Analysis of Spectral Data	Remote Sensing: Spectroscopy and Analysis of Spectral Data				2	5		5			Weekly Assignment or written paper ⁵⁾
MT: Master Thesis	Master Thesis					30				25	Master Thesis (ca. 80 pages), oral defence
	Master Thesis Defence										
					8	50	15	5	0	30	
Total					24	120	30	30	30	30	

1) The specified distribution constitutes a recommendation only.

2) Selection from among the range of modules offered by the Faculty of Sciences and the Faculty of Engineering.

3) Selection from among modules that are not part of the chosen area of specialisation (consolidation modules).

4) The ungraded module can be replaced by an internship of at least six weeks.

5) The specific nature of examination depends on the particular nature of the course held in the particular semester. The specific nature of examination will be announced in the module handbook at the beginning of each semester.

Last updated: 05/2017 Va, AT