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 prove 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 wwwcampo.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: Mo–Fr 8.30 a.m.–12.00 p.m.

6. More information online
[2] Detailed information on the MSc programme:
http://www.geographie.nat.uni-erlangen.de/studieren/studienangebote/msc-climate-environmental-sciences/
[3] Information on application for Master’s degree programmes: www.master.fau.de
http://berufenet.arbeitsagentur.de/berufe

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

<table>
<thead>
<tr>
<th>Module</th>
<th>Course</th>
<th>SWS</th>
<th>Total ECTS</th>
<th>Workload distribution per semester in ECTS</th>
<th>Specification graded/non-graded examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific Working I</td>
<td>Scientific Writing and Communication</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Scientific Working II</td>
<td>Graduate Seminar</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>RTC: Advanced Research Training Course</td>
<td>Advanced Research Training Course</td>
<td>4</td>
<td>20</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Inter-/Transdisciplinary Perspectives 2)</td>
<td>Elective Module Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>According to examination regulations of the elective modules</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>According to examination regulations of the elective modules</td>
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</tr>
<tr>
<td>Advanced Regional Geography I</td>
<td>Graduate Seminar</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Advanced Regional Geography II</td>
<td>Field Trip (min. 10 days)</td>
<td></td>
<td>10 days</td>
<td></td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>10</td>
<td>55</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Elective Modules 1) 3) 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Methods A</td>
<td>Depending on module</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Advanced Methods B</td>
<td>Depending on module</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Advanced Methods C</td>
<td>Depending on module</td>
<td>2</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>15</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

www.ibz.fau.de  Informations- und Beratungszentrum für Studiengestaltung & Career Service (IBZ)
## Consolidation Modules – Emphasis on Climate Research

| Advanced Methods: Advanced Climate Data Analysis | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Modeling Physical Systems in the Climate | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Scripting for Remote Sensing of the Environment | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Tree-Ring Analysis - Applied Dendroecology | 2 | 5 | 5 | Weekly Assignment or written paper |
| MT: Master Thesis | Master Thesis | 30 | | Master Thesis (ca. 80 pages), oral defence |

### Notes:
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.

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## Consolidation Modules – Emphasis on Geoinformatics

| Advanced Methods: Microwave Remote Sensing | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Scripting for GIS analysis | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Scripting for Remote Sensing of the Environment | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Remote Sensing: Spectroscopy and Analysis of Spectral Data | 2 | 5 | 5 | Weekly Assignment or written paper |
| MT: Master Thesis | Master Thesis | 30 | | Master Thesis (ca. 80 pages), oral defence |

### Notes:
1) The specified distribution constitutes a recommendation only.
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## Consolidation Modules – Emphasis on Environmental Analysis

| Advanced Methods: Soil Science | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Tree-Ring Analysis - Applied Dendroecology | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Stable Isotope Analysis | 2 | 5 | 5 | Weekly Assignment or written paper |
| Advanced Methods: Remote Sensing: Spectroscopy and Analysis of Spectral Data | 2 | 5 | 5 | Weekly Assignment or written paper |
| MT: Master Thesis | Master Thesis | 30 | | Master Thesis (ca. 80 pages), oral defence |

### Notes:
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