



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Master's degree



Earth System Data Science and Remote Sensing

Leipzig University • Leipzig

Overview

Degree	Master of Science
Teaching language	<ul style="list-style-type: none">English
Languages	Mandatory classes are held in English. The catalogue of elective modules contains classes held in German, with alternatives in English available.
Full-time / part-time	<ul style="list-style-type: none">full-timepart-time (study alongside work)
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	31 May for the following winter semester The application period starts approximately eight weeks before the deadline (uni-assist).
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	<p>Global environmental challenges are on the rise. These challenges include climate change and the increasing frequency of extreme events as well as rapid land transformations and the resulting biodiversity crisis. Global data streams, ongoing digitisation and novel methodological approaches offer unique opportunities to make a contribution in the search for solutions to these problems. One novel approach is data science, consisting of the combination of domain knowledge, coding skills, and quantitative methods. Another one is remote sensing, which provides Earth observation data (e.g. optical, Lidar, radar) at multiple observation scales suitable for monitoring a wide range of processes. Since Earth system sciences are a data-rich domain, such approaches become particularly powerful.</p> <p>Leipzig University is very strong in all relevant aspects. Domain knowledge is available in the areas of geoecology, biodiversity research, meteorology, eco-hydrology, and related fields. Remote sensing is covered through the Remote Sensing Centre for Earth System Research, and data science is very high on the agenda of various institutions. Leipzig University therefore offers perfect preconditions for bringing these aspects together in one dedicated study programme: the MSc “Earth System Data Science and Remote Sensing”.</p>

Our aim is to train the next generation of Earth system scientists that possess a unique set of skills balancing domain knowledge in Earth and environmental sciences, coding skills and quantitative methods with an emphasis on state of the art remote sensing technology. We combine an in-depth methodological education with the opportunity to specialise in a distinct domain of the Earth system. Our students will thus become the method experts in an individually chosen field of Earth and environmental sciences.

Overview of topics covered in the curriculum (total of 120 ECTS in two years):

- 20 ECTS remote sensing (multi- and hyperspectral remote sensing, radar, Lidar and reflectance spectroscopy, field techniques for ground truthing, data products)
- 20 ECTS data science (machine learning and artificial intelligence, spatio-temporal data analysis, geostatistics)
- 20 ECTS specialisation in a field of application (e.g. physical geography and geoecology, biodiversity research, meteorology and climate science, geology and others)
- 10 ECTS soft skills (scientific writing, research data management)
- 10 ECTS research internship (national or international)
- 10 ECTS basic introductions to remote sensing, data science and the Earth system
- 30 ECTS Master's thesis

Course Details

Course organisation	The course contents are taught in single, organisationally independent units (modules). Modules contain clearly defined areas of knowledge that have a factual or thematic relationship. Modules might contain various teaching units, e.g. lecture (L), seminar (S) or hands-on training (P) and are concluded by a final exam. Modules are rated by their teaching load in credit points (ECTS); one credit point corresponds to an average workload of 30 hours. Most modules in this MSc programme have a workload of 5 ECTS. Basic introductions are a mandatory elective module (WP, two out of three introductions must be selected). Method modules and soft skills are mandatory (P) and modules targeting fields of application are elective (W).
A Diploma supplement will be issued	Yes
International elements	<ul style="list-style-type: none"> • Courses are led with foreign partners
Integrated internships	A six-week research internship at a national or international institution is part of the curriculum.
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	None
Semester contribution	255.50 EUR

Requirements / Registration

Academic admission requirements

- BSc in a geo-, environmental or data science related science programme
- Minimum 35 ECTS from the areas geography, earth system and geosciences, environmental sciences, life science, data science, remote sensing or GIS
- Basic knowledge in statistics (minimum 5 ECTS)
- Basic skills in a scripting-language for scientific computing or a programming language (e.g. Python, R, Julia, etc.)
- English level B2 (also see "language requirements")

The study programme is admission restricted. The following documents are to be included in the application:

- curriculum vitae
- letter of motivation stating the applicant's specific interest in the programme and listing the study goals
- if applicable, proof of relevant vocational training, voluntary internships or similar activities related to the study programme
- a transcript of records of all achievements at the time of application (minimum 140 ECTS)

Language requirements

English language proficiency equivalent to the B2 level of the Common European Framework of Reference for Languages is required.

Applicants need to submit one of the following forms of proof/certificates:

- Certificate of European B2 Level in English Language
- TOEFL scores (minimum): PBT: 543, cBT: 207, iBT: 72
- IELTS score (minimum): 5.5
- Cambridge FCE (minimum): Grade B or C
- TOEIC (minimum): Listening and Reading: 785, Speaking: 160, Writing: 150, all four modules
- Pearson PTE Academic (minimum): 59

Certified knowledge of German is not required.

Application deadline

31 May for the following winter semester

The application period starts approximately eight weeks before the deadline (uni-assist).

Submit application to

The application is an online application via [uni-assist](#). Details are provided on the university webpage: [Application Procedure](#).

Applicants with a German BSc degree submit their application via [AlmaWeb](#).

Services

Accommodation

Student halls of residence run by the "Studentenwerk Leipzig" (<https://www.studentenwerk-leipzig.de/en/housing/our-student-halls-residence>), shared apartments, accommodation services and estate agencies

Career advisory service

<https://www.uni-leipzig.de/studium/beratungs-und-serviceangebote/career-service/>

Support for international students and doctoral candidates

- Welcome event

General services and support for international students and doctoral candidates

The guidance and support of our international students is provided centrally by our [International Centre](#)". This includes areas before the studies (application, enrolment, advice on study programmes and the start of studies) and during the studies (e.g. [study abroad](#)).

Our international students also receive comprehensive advice from the "[Studentenwerk Leipzig](#)", which covers not only the area of housing but also fields like psychosocial and social counselling and legal advice.

Contact

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🌐 Course website: <https://www.uni-leipzig.de/studium/vor-dem-studium/studienangebot/studiengang/course/show/earth-system-data-science-and-remote-sensing-m-sc>
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International Programmes in Germany - Database

www.daad.de/international-programmes
www.daad.de/sommerkurse

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Disclaimer

The data used for this database was collected and analysed in good faith and with due diligence. The DAAD and the Content5 AG accept no liability for the correctness of the data contained in the "International Programmes in Germany" and "Language and Short Courses in Germany".

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