



Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



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# Master's degree

## Overview

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Degree	MSc
Teaching language	<ul style="list-style-type: none"><li>English</li></ul>
Languages	Courses are held in English (100%).
Full-time / part-time	<ul style="list-style-type: none"><li>full-time</li></ul>
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	15 July
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	<p>Artificial Intelligence (AI) and Data Science are the driving forces behind the fast-paced advances in digitalisation and automatisisation that will change our everyday life. This two-year Master's programme focuses on the theoretical foundations of Artificial Intelligence and Data Science and their applications to real-world problems. Specialised lectures guide you towards specific research areas, such as natural language processing, computer vision, and analysis of biological/medical data. Central to this programme are machine learning methods and their applications, with a strong focus on deep learning.</p> <p>Choosing from a range of elective courses you can tailor the programme to your personal interests. As a graduate of the Artificial Intelligence and Data Science programme, you will have a solid understanding of the mathematical and statistical foundations of AI-related research. You will also have a good overview over state-of-the-art algorithms and an in-depth understanding of how to apply these algorithms to specific research problems. In addition, you will get the skills to carry out research in academic or R&amp;D environments and to identify how techniques of Artificial Intelligence and Data Science can provide solutions to data-based IT problems in industry.</p> <p>There are no studying fees, except for a semester contribution of approx. 300 EUR.</p>

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# Course Details

<b>Course organisation</b>	<p>Every student in the programme takes the following four courses:</p> <ul style="list-style-type: none"><li>• Advanced Programming and Algorithms (10 CP)</li><li>• Machine Learning (10 CP)</li><li>• Mathematical and Statistical Foundations of Data Science (10 CP)</li><li>• Deep Learning (5 CP)</li></ul> <p>Additionally, students have to complete the following:</p> <ul style="list-style-type: none"><li>• Lab rotation I (10 CP)</li><li>• Lab rotation II (10 CP)</li><li>• Master's thesis (26 CP)</li><li>• Master's thesis seminar (4 CP)</li></ul> <p>Each student can select courses worth 35 CP (i.e., typically six to seven courses) from a broad range of electives. For these electives see our <a href="#">module handbook</a>.</p> <p><a href="#">» PDF Download</a></p>
<b>A Diploma supplement will be issued</b>	Yes
<b>International elements</b>	<ul style="list-style-type: none"><li>• Language training provided</li><li>• International guest lecturers</li><li>• Projects with partners in Germany and abroad</li></ul>
<b>Integrated internships</b>	<p>The programme includes two Lab Rotations (of six weeks each), during which students carry out practical work with research groups inside or outside HHU or in R&amp;D environments at companies. The six weeks workload (10 ECTS) for a lab rotation need not to be taken in one block. The time a student needs to be physically present at the lab can be negotiated with the supervisor. Lab rotations are offered by all lecturers that give courses within the Master's programme and selected groups at the Jülich Research Centre (e.g., the Jülich Supercomputing Centre). Students must get in contact with research groups or R&amp;D departments well ahead of time before the lab rotation starts. The supervisors of the lab rotation select among applicants based on their suitability for the project. Outside HHU, the two lab rotations can be combined into a three-month internship.</p>
<b>Course-specific, integrated German language courses</b>	No
<b>Course-specific, integrated English language courses</b>	No

## Costs / Funding

<b>Tuition fees per semester in EUR</b>	None
<b>Semester contribution</b>	<p>A semester fee of approx. 320 EUR is required upon registration/enrolment as a student or doctoral researcher. This fee covers transport by bus, tram, and regional trains within North Rhine-Westphalia for the entire semester as well as the use of student facilities.</p>

**Costs of living** Students or doctoral researchers should calculate monthly expenses amounting to at least 1,000 EUR in order to live in a modest way, including costs for housing, food, health insurance, semester fees, study materials, etc.

**Funding opportunities within the university** No

## Requirements / Registration

**Academic admission requirements** The course has restricted admission. A prerequisite for starting studies is a first university degree, with the required necessary background education as determined in the exam regulations. In brief, you need a Bachelor's degree in Mathematics, Computer Science, Physics, Electrical Engineering or a related area, whose curricula include the modules Analysis I + II, Linear Algebra I, and either Stochastics I or Numerics I, that together comprise 30 ECTS and were taught at a level that corresponds to the level for computer scientists at HHU. The exam board determines whether you fulfil the entrance requirements.

The final grade of your Bachelor's degree must not be below 2.5 with respect to the German grading system. You can convert grades to the German system by using the "Bavarian Formula".

**Language requirements** For a degree course that is completely in English, student applicants who have not obtained their academic qualification at an "English-language institution", who do not hold a Bachelor's degree/Master's degree that was completely taught in English, or who are not English native speakers must prove sufficient fluency in English. The following language certificates are accepted:

1. Test of English as Foreign Language (TOEFL), Paper-based (min 500 points), Computer-based (min 200 points), or Internet-based Test (IBT, min 80 points)
2. IELTS test with a score of at least 6.0.
3. Cambridge B2 First Certificate, formerly known as Cambridge English: First (FCE)
4. German Abitur certificate, showing that English has been constantly taken as a subject and passed with the grade of "sufficient" up to the end of the qualification level 1 (grade 11 at G8-Abitur, otherwise grade 12).

We accept "English-language institutions" from the following countries: Australia, the United Kingdom, Ireland, Canada, New Zealand, the United States of America. Language certificates must be submitted during enrolment.

**Application deadline** 15 July

**Submit application to** <https://www.heicad.hhu.de/lehre/masters-programme-ai-and-data-science/application>

## Services

**Possibility of finding part-time employment** A limited number of campus jobs are available. Students from non-EU countries are permitted to work 240 half days or 120 full days per calendar year without a work permit.

**Accommodation** On-campus student accommodation is available, as is private accommodation near campus. For further information, please check <http://www.stw-d.de> or send an e-mail to [info@stw-d.de](mailto:info@stw-d.de). Doctoral students can contact the tutor service of the Junior Scientist & International Researcher Centre (JUNO) for information and support concerning accommodation in Düsseldorf

([www.juno.hhu.de/en/tutorservice](http://www.juno.hhu.de/en/tutorservice)).

Depending on the type of accommodation, the monthly rent in Düsseldorf usually ranges from around 500 to 600 EUR for a basic apartment or a room in a shared apartment ("Wohngemeinschaft").

**Support for international students and doctoral candidates**

- Accompanying programme

**Supervisor-student ratio**

1:5

## Contact

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🌐 Course website: <https://www.heicad.hhu.de/lehre/masters-programme-ai-and-data-science>

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# International Programmes in Germany - Database

[www.daad.de/international-programmes](http://www.daad.de/international-programmes)

[www.daad.de/sommerkurse](http://www.daad.de/sommerkurse)

## Editor

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German Academic Exchange Service

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## GATE-Germany

Consortium for International Higher Education Marketing

[www.gate-germany.de](http://www.gate-germany.de)

## 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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