

A group of four students (three women and one man) are gathered around a table, looking at a laptop and a robotic platform. The man is pointing at the laptop screen. The robotic platform is a yellow circular base with a blue and white sensor or camera mounted on top. The background is a blurred indoor setting.

# COGNITIVE SYSTEMS: LANGUAGE, LEARNING AND REASONING

Master of Science



## Program Content

The Master's program "Cognitive Systems: Language, Learning and Reasoning" is a unique, interdisciplinary degree program taught in English that brings together computational linguistics and computer science. The program's goal is the study and advancement of artificial intelligence. It is exceptional in its strong focus on teaching the scientific fundamentals as well as in its emphasis on practice and research.

You will learn to apply state-of-the-art research in computational linguistics ("language"), machine learning ("learning"), and knowledge representation and reasoning ("reasoning"). These three areas come together through a cooperation between the Department of Computer Science and the Department of Linguistics at the University of Potsdam, Germany.

In this program, you will acquire advanced knowledge in the newest methods in all three areas. In the first semester, the focus is on bringing you up to speed in the foundations that your previous degree did not cover (linguistics, mathematics, computer science). The program then covers the basics in lectures, and familiarizes you with current research topics in seminars. Over the course of your studies, the focus will gradually shift towards independent work and research as you team up with other students to define your own research or programming project, or set up and carry out your own experiments.

## Program Objective and Future Career Options

With a degree in “Cognitive Systems: Language, Learning and Reasoning” you will be well prepared for embarking on a research career or for leadership positions in industry. The digital processing of language and knowledge as well as learning from large sets of data are tremendously active industrial growth areas – in large companies such as Google, Amazon or Apple, just as much as in the many small and medium-sized companies that are currently being started up in Berlin and Brandenburg. You will also be in an excellent position to pursue a doctoral degree (in Potsdam or elsewhere).

The University of Potsdam is a leading research center in the field of cognitive sciences. Students will benefit from the close research collaborations between the departments of computer science, linguistics, psychology, and others.

## Program Structure and Curriculum

You will complete a total of 120 credit points during the four semesters of your studies. Besides lectures, there will also be other teaching formats such as seminars and group work on projects. The structure of the program is shown on the right.

The program assumes that you come with background knowledge in one of the fields of mathematics, computer science, or linguistics, and that you have solid programming skills. You will receive a basic education in the other fields through Foundational Modules in your first semester, which then replace one or two of the Advanced Modules.



Modules	Credit Points
<b>Mandatory Modules</b>	<b>27 CP</b>
Advanced Natural Language Processing	9 CP
Machine Learning and Data Analysis	9 CP
Advanced Problem Solving Techniques	9 CP
<b>Advanced Modules</b> You must successfully complete 24 credits of Advanced Modules, which you can select freely from the following modules.	<b>24 CP</b>
Current Topics in Computational Linguistics 1	6 CP
Current Topics in Computational Linguistics 2	6 CP
Current Topics in Machine Learning 1	6 CP
Current Topics in Machine Learning 2	6 CP
Current Topics in Computational Intelligence 1	6 CP
Current Topics in Computational Intelligence 2	6 CP
<b>Project Modules</b> You must successfully complete 24 credits of project modules.	<b>24 CP</b>
Project in Computational Linguistics	12 CP
Project in Machine Learning	12 CP
Project in Computational Intelligence	12 CP
<b>Individual Research Module</b>	<b>15 CP</b>
<b>Master's Thesis</b>	<b>30 CP</b>



## Entry Requirements

- Qualified Bachelor degree in computer science, linguistics, or a related field
- University-level knowledge in one of the following fields: mathematics (calculus and linear algebra), computer science (algorithms and data structures, formal languages and automata theory), or linguistics (syntax, semantics, morphology)
- Programming skills
- Proof of sufficient command of English: C1 level (Common European Framework of Reference)

## Application and Enrollment

Have you decided to do the Master's program Cognitive Systems: Language, Learning and Reasoning at the University of Potsdam? Please check the application pages to find out more about current application and enrollment procedures:

[www.uni-potsdam.de/en/studium/application-enrollment/application-master](http://www.uni-potsdam.de/en/studium/application-enrollment/application-master)

## Further Information

[www.ling.uni-potsdam.de/cogsys](http://www.ling.uni-potsdam.de/cogsys)



## Consultation & Contact

### Departmental Student Advisor

The Departmental Student Advisor is there for you. You can find our current contact information here:

[www.uni-potsdam.de/en/studium/  
advising-and-services/index-a-z/linguistik](http://www.uni-potsdam.de/en/studium/advising-and-services/index-a-z/linguistik)



### Central Student Advisory Service

Division of Student Affairs

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[www.uni-potsdam.de/en/studium/  
advising-and-services/zsb](http://www.uni-potsdam.de/en/studium/advising-and-services/zsb)



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