Natur und Umwelt

Neurosciences
Master

Universität Bremen
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Description of the Study Program
The neurosciences are among the most fascinating disciplines of the life sciences. They combine concepts and methods from biology, physics, chemistry, informatics, medicine and psychology in order to understand the function of the nervous system. Neuroscience research has a tremendous impact on our society, since it deals with the functioning and malfunctioning of the brain – the organ that governs our thinking, feeling and our behaviour.

At the University of Bremen, Neuroscience research is conducted by an interdisciplinary team of researchers from biology, physics, and psychology, providing in-depth education in all fundamental aspects of modern neuroscience – spanning the range from mathematical and neuro-computational concepts to hand-on experience in single- and multi-electrode recordings, optogenetics, neuropharmacology, and functional imaging.

Admission Criteria and Requirements
The admission regulations specify the admission requirements and selection criteria of the master’s program. The information provided below is an excerpt of the admission regulations from June 6, 2018 and refers to winter semester 2019/20. Please recheck the current requirements as they are subject to change: [www.uni-bremen.de/en/master](http://www.uni-bremen.de/en/master)

- To be considered applicants need to provide: A proof of a bachelor’s degree (or equivalent) in a nature scientific, psychological or mathematic study program with 180 Credit Points (CP/ECTS).
- In addition, 60 CP are required in one or several of the following disciplines: Biochemistry, biophysics, biopsychology, cell- and molecular biology, cognitive sciences, computer sciences, genetics, human biology, human medicine, (techno-)mathematics, methodology, neuropsychology, neuroscience, statistics, theoretical physics, veterinary medicine, zoology.
- English level C1 (according to Common European Framework of Reference for Languages CEF) or higher unless the last academic degree was obtained from a university, in which the primary language of instruction was English. Information on language certificates accepted as proof of C1-Level can be found at [www.fremdsprachenzentrum-bremen.de/EngZert](http://www.fremdsprachenzentrum-bremen.de/EngZert)
- An essay (letter of motivation) explaining why you choose this program and what your research interests are.

Information on the required application documents (official certification, translation, health insurance, language certificates etc.) can be found at: www.uni-bremen.de/en/master/faq/

The selection board will evaluate the applications according to the following criteria: Overall grade of the previous degree (max. 60 points), letter of motivation (max. 20 points), and experiences in the field of Neuro- and Cognitive Sciences (max. 20 points). If there are more applicants than vacant study places (20), applicants will be admitted according to their rank determined in the evaluation.

Expected Interests and Qualifications
- Basic knowledge and lab experience in biology, physics, medicine or psychology.
- High motivation in understanding complex systems

Occupational Fields and Career Opportunities
This interdisciplinary master’s program provides students with a broad background in the neurosciences as well as with the possibility to specialize in a favorite subject. Equipped with the basics of the life sciences, in combination with fundamental theoretical, methodological and practical knowledge in the various fields of the systems- and cognitive neurosciences. This will provide students with a high flexibility on the labor market.

We will educate students to become critically thinking scientists. They will receive extensive training and gather research experience to qualify them for PhD studies and an academic career. The scientific, technical and communication skills will open a broad spectrum of job opportunities in industry, e.g. pharmacology, medical technology, robotics, industrial engineering, biotechnology, information technology and data analysis.

Curriculum
The Master of Neurosciences program is divided into a curriculum of modular courses. Description of contents of the individual modules can be taken from the web page: www.uni-bremen.de/en/mscneuro/study-and-structure/
The compulsory modules in the first semester provide basic theoretical knowledge and practical skills (programming and laboratory animal sciences) which are essential for the practical modules in the second semester (Advanced Studies I). Here, the students choose three modules from a catalogue of eight advanced studies. However, every module is just offered once in the summer term. In the third semester, two seven-weeks lab rotations will follow, which may also be performed in other institutions in Germany or abroad. These courses aim at the consolidation and application of advanced theoretical and practical knowledge, and training of abilities in the area of experimental design and scientific communication. The studies end with the master's thesis (duration: six months). Courses are given in English.

**First Semester**
- Cellular and Molecular Neurosciences and Mentoring
- Systemic Neurosciences
- Theoretical Neurosciences
- Clinical Neurosciences
- Programming and Laboratory Animal Science

For each module 6 Credit Points (CP) can be obtained.

**Second Semester**
After an introductory week in the second semester, the basics acquired in the first semester are taken to an advanced level and applied in practical training (internships of 4 weeks duration each). Students choose three compulsory optional subjects. Detailed descriptions can be taken from the web page.

- Introductory Week
- Neuro- and Electrophysiology
- Neuropharmacology II
- Optogenetics and Neuroscience Methods
- Experimental Neuropsychology
- Cognitive Psychology and Electroencephalography
• Functional Neuroimaging
• Neurophysics
• Computational Neuroscience II (obligatory for all, part of module Theoretical Neurosciences taught in 1st semester)

In the second semester students decide according to individual preferences. "Advanced Studies I" emphasizes the development of scientific meta-skills more than former courses. The independent acquisition of information (professional literature), gleaning and critical handling of data, analytical strategies of problem solving, cooperativeness and teamwork skills and scientific communication capacity in speech and writing will be advanced and practiced. 9 credit points can be achieved in each module and 3 credit points are given for the introductory week.

Third Semester
In the third semester, emphasis is on subject-related qualifications and the development of meta-skills. Here students achieve more independence during two seven-week lab-rotations ("Advanced Studies II" with 15 CP each). Lab-rotations may also be performed in other institutions in Germany or abroad. These courses particularly aim at the consolidation and application of advanced theoretical and practical knowledge and training abilities in the field of experimental design and scientific communication.

Fourth Semester
At this point students are prepared to accomplish their master's thesis in the fourth semester (within six months) either in one of the departments of their choice or partly at other institutions in Germany or abroad.

Language of Instruction
English

Semester Abroad and (Research) Co-operations
There are co-operations with various institutes at the University of Bremen, e.g. the Faculties of Physics, Biology/Chemistry, and Human and Public Health Sciences, and the Center for Advanced Imaging (CAI).
Close collaboration with e.g. engineering and computer science institutes of the University of Bremen and our extensive exchange with partner universities all over the world contribute to the rich possibilities of specializing in cutting edge neurosciences.

**Start of the Study Program**
Courses of the M.Sc. program Neurosciences start in the winter semester (October) or in the summer semester (April, advanced students only) of each year.

Lecture period winter semester 2020/2021
October 19, 2020 – February 5, 2021
Christmas break: December 23, 2020 – January 5, 2021

Lecture period summer semester 2021:
April 12 - July 16, 2021

**Duration of Study**
The M.Sc. program includes 120 Credit Points ECTS (European Credit Transfer System) which is the equivalent of four semesters of full-time study.

**Degree**
Master of Science (M.Sc.) in Neurosciences

**Faculty**
This program is provided by the members of the Centre for Cognitive Sciences (Zentrum für Kognitionswissenschaften - ZKW). The following lecturers are involved (heads of the department are marked in bold typescript):

Institute for Brain Research I, Department of Neuropharmacology (faculty 2)
**Prof. Dr. Michael Koch**

Institute for Brain Research II, Institute for Synthetic Biology (faculty 2)
**Prof. Dr. Olivia Masseck**

Institute for Brain Research III, Department of Theoretical Neurobiology (faculty 2)
**Prof. Dr. Andreas Kreiter**, Dr. Detlef Wegener
Institute for Brain Research IV, Department of Neuropsychology and Behavioral Neurobiology (faculty 11)

Prof. Dr. Dr. Manfred Herrmann, PD Dr. Thorsten Fehr, Dr. Peter Erhard, Dr. Margarethe Korsch, Dr. Ekkehard Küstermann,

Institute for Theoretical Physics, Neurophysics (faculty 1)

Prof. Dr. Klaus Pawelzik, Dr. Udo Ernst, PD Dr. Christian Eurich

**Number of Students in the First Semester**

Limited to 20 students
Female: 14, male: 6 (winter term 2019/20)

**Fees and Accommodation**

The semester fee will be approximately 380 Euro per semester. It includes the use of public transportation in Bremen and the region around. For current information see www.uni-bremen.de/semester-contribution.

After fourteen semesters of study in an EU- or EEA- country or after reaching the age of 55, students have to pay an additional fee of 500 Euro. Information about the long-term tuition fees can be found at www.uni-bremen.de/tuition-fee.

General information about the city of Bremen and rental accommodation can be found at www.bremen.de and www.uni-bremen.de/accommodation.

Students moving to Bremen receive 150 Euro as a welcome gift.

For information on study finance and jobs see www.uni-bremen.de/student-finances.

**Information for international students concerning visa, health insurance and finances** can be found at www.uni-bremen.de/studentstatus.
Admission and Application
Application closing dates
April 30
January 15 (advanced students only)

It is possible to apply as an undergraduate student without having completed the bachelor's studies, if the applicant has earned at least 135 out of a total of 180 credit points by the application deadline (April 30). For preliminary admission, all other requirements with exception of the language proof have to be fulfilled. If the application is successful, applicants will have to provide evidence of having obtained their bachelor's degree and the required language certificates two weeks after the official start of the lecture period at the latest.

Applying as advanced student
An application as advanced master’s student is possible for applicants who have either already gained their bachelor's degree, or who can show by means of an official Transcript of Records that they only need 15 CPs before obtaining their bachelor's degree. In addition to this, applicants must have gained at least 10 CPs in advanced courses relevant to the Neurosciences master's program. An additional prerequisite for admission as an advanced student in the second semester is an official certificate which proves that the applicant can handle experimental animals in line with the German Animal Protection Act.

For restricted master's programs (Z) the required evidence must be submitted by the end of the application deadline.

Any additional deadlines or closing dates for submitting required documents will be notified together with confirmation of admission/registration.

Applications are to be submitted online at:
www.uni-bremen.de/en/master
Applications are to be submitted online via the Master Portal of the Admission Office under www.uni-bremen.de/en/master. The online application form is activated about 8 weeks before the application deadline. You will be notified of all required documents for enrollment together with the confirmation of admission/registration.
**Student Office**
Contact point for all formalities regarding admission and enrollment, re-registration, leave of absence, change of address.

Visiting address: Bibliothekstraße 1, Verwaltungsgebäude (VWG),
Ground floor

Postal address: Universität Bremen
Sekretariat für Studierende
Postfach 33 04 40
28334 Bremen

phone: +49 421 218-61002
master@uni-bremen.de
www.uni-bremen.de/en/master

Visiting hours: Mo, Tue & Thu 9–12 a.m., Wed 14–16 p.m.
(no advanced notification necessary)
Contact and Advisory Services
Internet address of the study program
www.uni-bremen.de/mscneuro/

Student Advisory Service
Coordinator of the M.Sc. Program Master of Neurosciences
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Sylvia Köhler
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University Services
www.uni-bremen.de/consultation

Service and Information for International Students
(Accommodation, jobs, finances, language learning)
www.uni-bremen.de/offers-international-students/

Information and Advice on Visa Matters and Social Security
www.inneremission-bremen.de/beratungen/internationale_studierende/
www.uni-bremen.de/bsu/ (see menu: Ausländerangelegenheiten)

Student Representatives for the Whole University

General Students’ Committee (AStA)
Services include: Advice on BAföG student grants, social counseling, and childcare
AStA-Etage, Studentenhaus (StH)
www.asta.uni-bremen.de/asta-services/
Central Student Advisory Service

Visiting address:
Bibliothekstr. 1, Verwaltungsgebäude
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zsb@uni-bremen.de
www.uni-bremen.de/zsb

Advisory hours (no advanced notification necessary):
Mo, Tue & Thur 9 –12 a.m.
Wed 14–16 p.m.
Additional appointments by agreement