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Master of Science in Bioinformatics • Freie Universität Berlin • Berlin ......................................................... 2
# Master's degree

**Master of Science in Bioinformatics**

Freie Universität Berlin • Berlin

## Overview

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<th><strong>Degree</strong></th>
<th>Master of Science in Bioinformatics</th>
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<td><strong>Course location</strong></td>
<td>Berlin</td>
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| **In cooperation with** | Charité - Universitätsmedizin Berlin  
Leibniz-Institut für Gewässerökologie und Binnenfischerei (IGB)  
Max-Planck-Institut für molekulare Genetik (MPIMG)  
Zuse-Institut Berlin (ZIB)  
Max-Delbrück-Centrum für molekulare Medizin (MDC) |
| **Teaching language** | English                           |
| **Languages** | Courses are held in English.       |
| **Programme duration** | 4 semesters                        |
| **Beginning** | Winter semester                    |
| **More information on beginning of studies** | October                            |
| **Application deadline** | 31 May for the following winter semester |
| **Tuition fees per semester in EUR** | None                              |
| **Combined Master’s degree / PhD programme** | No                                |
| **Joint degree / double degree programme** | No                                |

## Description/content

Bioinformatics research in medicine and the life sciences is increasingly based on analysis and interpretation of biological mass data. The use of computers, combined with accurate mathematical models and efficient algorithms, is indispensable in this process. Building on the knowledge gained in a Bachelor’s degree programme in bioinformatics, this programme offers advanced education in the corresponding subfields of mathematics, computer science, biology, and translational bioinformatics. The programme is jointly conducted by the Department of Mathematics and Computer Science, the Department of Biology, Chemistry and Pharmacy and the Charité Medical School. It offers both in-depth theoretical courses and applied training in bioinformatics. This gives students the necessary knowledge and skills to identify relevant biological issues, develop appropriate mathematical or computational solutions to approach them, and interpret the results correctly in a biological or biomedical context.
The research areas include biodiversity, medical bioinformatics, network analysis, physiology, sequence analysis, and structural bioinformatics.

Course Details

Course organisation

The Master's course of study in bioinformatics consists of a general part with required modules (each with lecture and exercises). This phase covers one semester and serves to deepen and broaden the students' knowledge of bioinformatics and related disciplines. During a second coursework phase (two semesters), the students learn to work independently in a specialised field of bioinformatics. This includes a research internship, core modules (each with lectures, exercises and seminar), practical modules (practical courses) and a research module. The last semester is dedicated to research on a relevant bioinformatics topic and to publishing the results in the form of a Master's thesis.

Required Area (40 credits)

Required Modules: (students must complete all modules)

- Algorithms (6 credits)
- Genomics (6 credits)
- Numerical Mathematics (6 credits)
- Optimisation (6 credits)
- Statistics (6 credits)
- Research Internship (10 credits)

Required Elective Area (50 credits)

Core Modules: (students must complete two of these)

- Biodiversity and Evolution (10 credits)
- Medical Bioinformatics (10 credits)
- Network Analysis (10 credits)
- Physiology (10 credits)
- Sequence Analysis (10 credits)
- Structural Bioinformatics (10 credits)

Practical Modules: (students must complete two of these)

- Current Issues in Cell Physiology (5 credits)
- Applied Sequence Analysis (5 credits)
- Measurement and Analysis of Physiological Processes (5 credits)
- Computational System Biology (5 credits)
- Environmental Metagenomics (5 credits)
- Current Issues in Medical Genomics (5 credits)
- Current Issues in Structural Bioinformatics (5 credits)

Research Modules: (students must complete one of these)

Research modules consist of research-oriented courses. Students must choose from among the applicable offerings.

- Research Module A (two lectures with exercises, one seminar, project paper, 20 credits)
- Research Module B (one lecture with exercises, two seminars, project paper, 20 credits)

Master's Thesis with Oral Presentation (30 credits)

Please note: A revision of the module structure/study regulations is in the works and will possibly come into force in the next application period. However, the content of the programme remains largely unchanged. Current information can be found on the course website.

Types of assessment

Module exams are written or oral exams/presentations. Seminar presentation, reports on practical courses as well as writing, presentation and defence of Master's thesis are further forms of assessment.
### Costs / Funding

<table>
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<tr>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Tuition fees per semester in EUR</td>
<td>None</td>
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<tr>
<td>Semester contribution</td>
<td>In total, the semester contribution amounts to 311.99 EUR. It includes a fee of 198.80 EUR for the transportation ticket contribution. This allows you to use public transportation in Berlin for free. Other costs covered by the semester contribution are a 50 EUR enrolment fee, a 54.09 EUR semester contribution to the student support service (&quot;studierendenWERK Berlin&quot;), a 7.90 EUR contribution to the student union and 1.20 EUR contribution to the Semester Ticket Office.</td>
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### Requirements / Registration

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<td>Academic admission requirements</td>
<td>Applicants are required to have a Bachelor's degree in bioinformatics with components in mathematics, computer science, chemistry/biochemistry, biology, and bioinformatics that correspond to the Bachelor's degree programme in bioinformatics at Freie Universität Berlin, or an equivalent degree. An equivalent degree might be a degree in a related field (e.g., biomathematics or computational biology) which contains components similar to our Bachelor's degree programme. As a rule, in order to be eligible for the programme, one third of your undergraduate studies need to be in mathematics and statistics, one third in computer science and bioinformatics, and one third in biology/chemistry/biochemistry. If you are an applicant who has not received your university degree in Germany, you should apply to Freie Universität Berlin via uni-assist. Uni-assist will check your documents and forward them to the respective university. Before you apply, please read our homepage concerning application procedures, admission requirements and fees. See: <a href="http://www.fu-berlin.de/en/studium/bewerbung/master/index.html">http://www.fu-berlin.de/en/studium/bewerbung/master/index.html</a> and <a href="http://www.fu-berlin.de/en/studium/international/studium_fu/index.html">http://www.fu-berlin.de/en/studium/international/studium_fu/index.html</a> For all inquiries about the application process, admission, enrolment, orientation at FU etc.: please contact the Student Services Centre: <a href="mailto:Info-Service@fu-berlin.de">Info-Service@fu-berlin.de</a></td>
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Language requirements
Proof of English language skills (level B2 CEFR or equivalent) is required. English as a school subject for six years is equivalent to level B2.

Application deadline
31 May for the following winter semester

Submit application to
Freie Universität Berlin
c/o uni-assist e.V.
11507 Berlin
Germany

Services

Possibility of finding part-time employment
There are many ways of earning money while you study. For example, you can work as a waiter, academic assistant or private tutor. Knowledge of German will improve your chances of finding a part-time job. Please be aware of the legal regulations.

Student services at the universities and the local representative of the "Bundesagentur für Arbeit" (Federal Employment Agency) can provide information about jobs for students. When searching, look at online job boards, ads in local newspapers and notice boards on campus.

Accommodation
You have the option to stay in a public/private student dormitory or in a private (shared) apartment. Student dormitories are not administrated by the university itself, so Freie Universität Berlin does not have any on-campus housing. However, it works together with "studierendenWERK Berlin" regarding student accommodation. If you do not wish to stay in a student dormitory, you can try to find a room or an apartment on the private housing market. Many students in Berlin live in shared apartments ("WGs"). You can find these offers online (e.g., studenten-wg.de or wg-gesucht.de), in various Berlin magazines, or on notice boards. Rooms/apartments around the university are rare. Therefore, students mostly commute from other parts of the city. The duration of the commute on public transport typically ranges from 30 minutes to one hour.
International Programmes in Germany - Database

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

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Disclaimer
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