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Applied Mathematics • Mittweida University of Applied Sciences • Mittweida ................................................. 2
Bachelor's degree

Applied Mathematics
Mittweida University of Applied Sciences • Mittweida

Overview

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<tr>
<th>Degree</th>
<th>Bachelor of Science</th>
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<tr>
<td>Course location</td>
<td>Mittweida</td>
</tr>
<tr>
<td>Teaching language</td>
<td>English</td>
</tr>
<tr>
<td>Languages</td>
<td>All courses are offered in English. Participants can choose to write their Bachelor's theses and take oral exams in English or German.</td>
</tr>
<tr>
<td>Programme duration</td>
<td>6 semesters</td>
</tr>
<tr>
<td>Beginning</td>
<td>Winter semester</td>
</tr>
<tr>
<td>More information on beginning of studies</td>
<td>First week of October</td>
</tr>
<tr>
<td>Application deadline</td>
<td>15 May for the following winter semester</td>
</tr>
<tr>
<td>Tuition fees per semester in EUR</td>
<td>None</td>
</tr>
<tr>
<td>Joint degree / double degree programme</td>
<td>No</td>
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</table>

Description/content

The enormous technical progress during the last two decades have resulted in highly innovative products and services that are based on mathematical achievements more than ever before. Modern mathematics is at the heart of an increasing number of innovations in the field of digital communication, satellite navigation, e-commerce, medical technology, and consumer electronics. Without modern mathematics, there would be no navigation system, no mobile phone, no secure payment on the Internet, no digital TV, and no MP3 players. Additionally, there would be no efficient web search, no Blu-ray discs, and no digital rights management (DRM). Modelling and simulation of computer and communication networks as well as social network analysis are also based on profound mathematical knowledge and methods. Current and previous developments in these highly innovative fields have led to a new understanding of mathematics. Modern mathematics is not only an auxiliary science for other sciences to solve technical and economic problems; it is considered as an independent, genuine technology nowadays. Its main characteristics are its algorithmic and technology-driven approach, combined with industrial relevance and innovation. The goal of this Bachelor's degree programme in Applied Mathematics is...
to persuade young people to participate in these ongoing developments in a most competent and comprehensive way and to give them a promising perspective for a professional career in the field of mathematics and its applications.

The focus is on the training of mathematicians who are working at the interface to computer science and information technology and are capable of solving difficult and complex mathematical problems using computers quickly and efficiently. The course promotes the development of independent and creative ways of working and provides the ability to engage in lifelong learning, teamwork, and interdisciplinarity.

A key feature of the study programme is the focus on technologically relevant subject fields of mathematics without neglecting the broad foundations of a solid mathematical education.

## Course Details

### Course organisation

Mathematical compulsory modules:
- Propaedeutic
- Analysis I
- Analysis II
- Analysis III
- Linear Algebra I
- Linear Algebra II
- Algebra and Number Theory
- Computer Algebra and LaTeX
- Graphs and Networks
- Numerical Mathematics
- Probability and Statistics
- Computational Statistics
- Machine Learning/Pattern Recognition
- Mathematical Seminar
- Internship
- Bachelor’s Project

Further compulsory modules:
- Introduction to Programming (with Python)
- Theoretical Computer Science
- Studium Generale I (Academic Skills and English, Basic German)

Selection modules:
- Selected Topics in Pure Mathematics
- Selected Topics in Applied Mathematics
- Selected Topics in Computer Science
- Selected Topics in Engineering Sciences
- Mathematical Project
- Studium Generale II
- Interdisciplinary Module

All courses are offered in English.

### Types of assessment

Written or oral exams, projects

### A Diploma supplement will be issued

Yes

### International elements

- International guest lecturers
- Language training provided

### Integrated internships

There is an integrated internship of three months in the sixth semester. The student can complete the internship inside or outside the university. They can even do this internship abroad.

### Course-specific, integrated German language courses

Yes

### Course-specific, integrated English language courses

Yes

### The course of study can be taken entirely online

No
| Digital learning and teaching modules | • Video learning  
• Chats with lecturers  
• Mobile learning apps |
|--------------------------------------|------------------------------------------------------------------|
| **Description of e-learning elements** | There are three e-learning online platforms in use at Mittweida University of Applied Sciences: Opal, Moodle, and EVA - European Virtual Academy. Teachers communicate with their students by e-mail and instant messaging services like Telegram.  

We offer a free online computer algebra system for unlimited use on our own servers. We use free academic software and textbooks that are available online whenever possible. |
| Participation in the e-learning course elements is compulsory | No |
| Can ECTS points be acquired by taking the online programmes? | Yes |
| Can the e-learning elements be taken without signing up for the course of study? | No |

## Costs / Funding

<table>
<thead>
<tr>
<th>Tuition fees per semester in EUR</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester contribution</td>
<td>84 EUR per semester</td>
</tr>
<tr>
<td>Costs of living</td>
<td>616 EUR per month</td>
</tr>
<tr>
<td>Funding opportunities within the university</td>
<td>No</td>
</tr>
</tbody>
</table>

## Requirements / Registration

**Academic Admission Requirements**

German "Fachhochschulreife" or equivalent. More details are provided by the uni-assist portal.

**Language requirements**

English language proficiency is required at minimum level B2 of the Common European Framework of Reference (CEFR). We accept the following examinations (among others):

• TOEFL Internet-based (iBT) at least 79 points, computer-based (CBT) at least 213 points  
• IELTS (International English Language Testing System) at least Band 6.0  
• Cambridge Certificate: First Certificate in English (FCE)  
• Cambridge English (ESOL)

German language skills are not required, but they are very useful for daily life outside the university. We offer German language courses outside the programme at no extra cost.
<table>
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<td><strong>Possibility of finding part-time employment</strong></td>
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<td><strong>Accommodation</strong></td>
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<tr>
<td><strong>Career advisory service</strong></td>
</tr>
</tbody>
</table>
| **Specific specialist or non-specialist support for international students and doctoral candidates** | • Welcome event  
  • Tutors |
| **Supervisor-student ratio**                 | 1:30 |

Mittweida University of Applied Sciences

Image video (in German)

» more:  
https://youtu.be/8CWMoJKc0_o
Hochschule Mittweida is a state university situated in Saxony, with about 7,000 students, many from abroad. All Bachelor’s and Master's programmes are accredited by German national institutions. HSMW continuously updates its educational programmes. A quality system sets norms for the use of the European Credit Transfer System (ECTS) for international academic recognition. The study programmes are characterised by a strong orientation towards practice. Students can immediately supplement their experiences with practical knowledge. HSMW offers lots of modern and well-equipped laboratories, seminar rooms and computer pools. HSMW cooperates with about 100 partner universities worldwide. It takes part in the European programme ERASMUS+ and is a partner in international projects. HSMW is a member of the National Code of Conduct, which sets quality standards for the study conditions of foreign students at the university. The university offers students a wide range of sports activities.

University Location

The town of Mittweida is more than 800 years old. Public transport is not necessary - everything can be reached on foot or by bicycle. There are supermarkets near the dormitories where you can shop at affordable prices. You can go to the cinema, to the open-air swimming pool, bowling lanes, or visit small pubs. Cultural highlights include classical and rock concerts or the theatre performances at the university. Students can live very well in Mittweida.
Contact

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