

Information Technology — Master of Science at mdh

Program Name

Information Technology (M.Sc.)

The Information Technology Master's program at mdh University of Applied Sciences is a **Master of Science** degree program. It is designed for students who want to build advanced skills in modern IT, artificial intelligence, data analytics, cybersecurity, software systems, cloud technologies, and front-end development.

Degree Awarded

Master of Science (M.Sc.)

Duration

3 semesters

ECTS Points

90 ECTS

Language of Instruction

English

Study Format

On campus

Study Locations

The Information Technology M.Sc. program is offered at:

- **Berlin Campus**
- **Düsseldorf Campus**

Available Specialisations

mdh offers the Information Technology M.Sc. with three specialisations:

1. **Information Technology - Cybersecurity (M.Sc.)**
 2. **Information Technology - Artificial Intelligence and Data Analytics (M.Sc.)**
 3. **Information Technology - Front-end Development and Usability (M.Sc.)**
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1. Information Technology - Cybersecurity (M.Sc.)

Overview

The Cybersecurity specialisation prepares students for the growing challenges of digital security. Students learn how to protect complex IT systems, analyse security vulnerabilities, defend against cyberattacks, and protect sensitive data.

The program focuses on both theory and practical application. Students work with modern cybersecurity methods and learn how to develop security concepts for companies, organisations, and public-sector institutions.

Main Study Areas

The Cybersecurity specialisation includes the following areas:

Foundations and Advanced IT

- Software Development and Programming
- Databases and Information Systems
- IT Project Management
- Distributed Systems and Cloud Computing
- Artificial Intelligence and Machine Learning

Cybersecurity Specialisation

- Web Security
- Cloud Security
- Mobile Security
- Data Security and Privacy

Practical Application

- Semester projects with industry partners
- Elective modules for individual specialisation
- Practice-oriented Master's thesis
- Study abroad semester in New Zealand

Skills Students Develop

Students develop skills in:

- Network security

- Cryptography
- Penetration testing
- Threat analysis
- Security architecture
- Cyberattack prevention
- Incident response
- Data protection
- Security risk management

Career Opportunities

Graduates can work in roles such as:

- IT Security Consultant
 - Penetration Tester
 - Security Architect
 - Incident Response Specialist
 - Chief Information Security Officer
 - Forensic Analyst
 - Security Operations Center Manager
 - IT Security Compliance Officer
 - Security Software Developer
 - Lecturer or Researcher in Cybersecurity
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2. Information Technology - Artificial Intelligence and Data Analytics (M.Sc.)

Overview

The Artificial Intelligence and Data Analytics specialisation focuses on advanced data science, machine learning, big data systems, and AI-driven applications. Students deepen their understanding of data-driven systems and learn how to design intelligent solutions for business, industry, and public-sector challenges.

The program is research-oriented and practice-oriented. It combines advanced technical learning with practical projects and prepares students for specialist and leadership roles.

Main Study Areas

The AI and Data Analytics specialisation includes the following areas:

Fundamentals and IT Specialisation

- Advanced Programming Concepts
- IT Security and Network Technologies
- Cloud Computing and Distributed Systems
- Software Engineering and Architecture

Data Science Specialisation

- Advanced Machine Learning and AI Technologies
- Data Engineering and Big Data Systems
- Data Visualization and Data Analysis
- AI Ethics and Societal Implications

Practical Application

- Industry cooperation projects
- Research seminars
- Practical case studies
- Master's thesis with practical relevance

Skills Students Develop

Students develop skills in:

- Machine learning
- Data analytics
- Big data architecture
- Data engineering
- Data visualization
- Software architecture
- Cloud computing
- AI ethics
- Strategic data-driven decision-making
- Leadership in technology teams

Career Opportunities

Graduates can work in roles such as:

- Data Scientist
 - Machine Learning Engineer
 - Big Data Architect
 - AI Developer
 - Business Intelligence Analyst
 - Data Analytics Specialist
 - Technology Team Lead
 - AI or Data Strategy Specialist
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3. Information Technology - Front-end Development and Usability (M.Sc.)

Overview

The Front-end Development and Usability specialisation focuses on the connection between humans and technology. Students learn how to design and develop high-performance, user-friendly, cross-platform front-end applications.

The program combines modern web technologies with usability engineering. It prepares students to build digital products that are technically strong, accessible, responsive, and easy to use.

Main Study Areas

The Front-end Development and Usability specialisation is based on five main pillars:

1. General Education and Scientific Work

- Scientific Research Methods
- Technology Management
- Entrepreneurship

2. Fundamental IT Skills

- Machine Learning and Intelligent Systems
- Advanced Programming

3. Front-end Development and Usability Specialisation

- Web Front-End Development
- Usability Engineering
- Mobile Front-End Development

4. Practice-Oriented IT Projects

Students apply their knowledge in real IT projects with increasing complexity.

5. Final Thesis

Students complete a scientific Master's thesis and colloquium.

Skills Students Develop

Students develop skills in:

- Front-end application development
- Web application architecture
- Mobile front-end development
- React, Angular, Vue.js, and modern web frameworks
- Usability engineering
- User research
- Usability testing
- Accessibility
- Performance optimisation
- User-centred interface design

Career Opportunities

Graduates can work in roles such as:

- Front-end Developer
- UX/UI Engineer
- Interaction Designer
- Usability Consultant
- Mobile App Developer
- Full-Stack Engineer with focus on front-end
- Software Engineer
- Digital Product Developer

Admission Requirements

According to mdh, applicants generally need:

- A relevant Bachelor's degree or equivalent university qualification
- Relevant certificates

- CV with photo
- Proof of English language ability

mdh states that students may apply before completing their Bachelor's degree, and the Bachelor's certificate can be submitted later.

Accepted English proof includes:

- CEFR B2
 - PTE 52
 - TOEFL IPT 543
 - TOEFL iBT 60
 - IELTS 6.0
 - Duolingo 105
 - MOI / English Proficiency
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Tuition Fees

For the English-speaking Information Technology M.Sc. programs at Berlin and Düsseldorf, mdh lists the following tuition fees:

- **EU students:** 650 € per month
- **Non-EU students:** 1,050 € per month

mdh also lists:

- One-time registration fee: 490 €
- One-time examination fee: 1,050 €

For non-EU students, mdh states that the one-time examination fee is included in the tuition fee.

Main Academic Focus

The main academic focus of the Information Technology M.Sc. at mdh is advanced digital technology. Depending on the chosen specialisation, students focus on cybersecurity, artificial intelligence, data analytics, front-end development, usability, cloud computing, distributed systems, programming, software engineering, and practical IT projects.

The program is suitable for students who want to work in advanced IT roles, technical leadership roles, software engineering, AI and data science, cybersecurity, or digital product development.

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