

Degree: Bachelor of Science (B.Sc.)

Computer Science & Digital Technologies



Digital technologies are transforming industries and everyday life. The Bachelor's programme "Computer Science & Digital Technologies" at FOM University of Applied Sciences responds to this demand by combining fundamental computer science with practical applications in modern IT environments.

You gain expertise in programming, database management, cybersecurity, AI, and agile project management. In this programme, you also work with industry-relevant tools such as SAP, Python, and SciKit Learn to develop practical problem-solving skills.

The Bachelor's programme "Computer Science & Digital Technologies" is taught entirely in English and will be completed with the academic degree Bachelor of Science (B.Sc.).

Support for all issues relating to your study

Phone: +49 201 81004 864 **WhatsApp:** +49 171 3338539

Monday to Friday from 9:00 a.m. to 4:00 p.m. German time

E-Mail: Send us an email to: incomings@fom.de

More information
on the degree programme



Locations

Essen

Duration

6 semester

Credit Points

180 ECTS

Accreditation

The FOM University of Applied Sciences is accredited by the German Council of Science and Humanities and was the first private university in Germany to be system-accredited by FIBAA in 2012. This means that all FOM degree programmes are state and internationally recognised.

Total costs

25,830 euro including registration fee, tuition fee and examination fee.

Your career prospects

You can take on the following jobs:

- Software Developer
- IT Project Manager
- IT Consultant
- Cybersecurity Analyst
- AI Engineer
- Data Scientist
- IT Infrastructure Manager

1st semester**Time & Self-Management & Resilience (6 CP)**

- Basic principles of time management
- Methods for self-optimisation (e.g. Pareto principle, ABC analysis)
- Resilience and stress management
- Study and workplace methods

International Business Management (6 CP)

- Basics of business administration
- Entrepreneurship and Economics in a global context
- Product / business lifecycle

Mathematics for Computer Science (7 CP)

- Fundamentals of mathematics
- Logic and linear algebra
- Statistics and probability theory

Programming (7 CP)

- Fundamentals of programming
- Control structures and program structure
- Object-oriented programming
- Advanced data structures and input/output

Project Management (6 CP)

- Project management process
- AI in project management
- Agile project management

2nd semester**Business Communication Skills (6 CP)**

- Basic business communications
- Written communications
- Conducting negotiations
- Presentation skills

Academic Writing & Research Skills – Business Information Systems (6 CP)

- Formal requirements for academic work at FOM
- Principles of research ethics and academic writing
- Methods in business information systems and computer science
- Structuring and developing arguments in academic papers

Calculus & Numerical Methods (7 CP)

- Fundamental concepts of analysis
- Mathematical problem-solving in computer science
- Numerical methods for approximation and solutions
- Software tools for numerical computations

IT Infrastructure (7 CP)

- Infrastructure components and their interactions
- Problem analysis and solution development
- Decision-making for IT infrastructure equipment and operation
- Factors affecting IT service availability, performance, and scalability

Innovation & Entrepreneurship (6 CP)

- Entrepreneurship & company formation
- Future technologies (e.g. AI) and their impact on markets and business models
- Developing a business idea

3rd semester**Business Psychology (6 CP)**

- Psychological models on the fundamentals of individual and group behaviour
- Psychological background on job satisfaction and motivation
- Psychological correlations regarding the impact of marketing and purchasing decisions

Cyber Security & Data Protection (6 CP)

- Cyber security
- Information security and IT security
- Data protection and EU GDPR

Operating Systems (7 CP)

- Modern storage systems
- Human-machine-interface
- Virtualisation

Database Management (7 CP)

- Data modelling
- NoSQL databases
- Database practice with SQL

Quantitative Project: Data Literacy (6 CP)

- PPDAC cycle
- Data analysis project
- Modelling
- Statistical software

4th semester**Applied Knowledge & Information Management (6 CP)**

- Fundamentals of knowledge and information management
- Searching and handling data, information, and knowledge
- Application of AI-based technologies with prompt engineering

Data Structures & Algorithms (6 CP)

- Data Structures
- Algorithmic basics (automata, algorithmic analysis)

Networks (7 CP)

- Networking technology concepts and network architectures
- Essential networking protocols and the TCP/IP model
- Configuring, analysing, and optimising network scenarios
- Network security and threat identification

Web Technologies (7 CP)

- Technical and user-oriented analysis of web application tasks
- Planning full-stack web application development and process models
- Usability and interaction design for effective user interfaces
- Client and server-side development and integration of web applications

Sustainable Transformation & Change (6 CP)

- UN's sustainable development goals
- Impact of climate change on businesses and societies
- Socio-economic aspects of sustainability
- Corporate social responsibility strategies

5th semester**Intercultural Competence (6 CP)**

- Intercultural management in a globalised world
- The power of culture and different cultural dimensions
- Corporate cultures and management styles

Crisis Management (6 CP)

- Approaches to crisis detection, assessment and management
- Core elements, concepts, and measures of turnaround management
- Analysis and interpretation of current cases from the international business context

Theoretical Computer Science (7 CP)

- Fundamental concepts: computability theory, formal languages, and compiler design
- Axiomatic models and formal calculus for system behaviour
- Complexity analysis of problems and algorithms
- Basics of compiler functionality and interpretation of formal languages

AI (7 CP)

- AI fundamentals and applications
- Human behaviour and learning processes in relation to AI
- Knowledge-based systems and expert systems evaluation

Bachelor Thesis – Methods & Tools (6 CP)

- Formal, substantive, and methodological requirements for academic work
- Approaches to topic selection
- Academic arguments strategies

6th semester**Career Coaching (6 CP)**

- Refining one's personal competency profile
- Professional prospects and identity
- Career counselling and job application strategies
- Use of innovative AI tools in the application process

Bachelor's Thesis and Colloquium/Defence (14CP)

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