# Online Catalogue

## Curricula and module descriptions

← | Curricula

Module description available

Module description not available

## BSc Computer Science

VERSION04 - Version 04

Module group A (min. 64, max. 72 ECTS Credits)

**Computer Science and Math. for Computer Science**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BTI1021 - Computer Science Basics | 4 | Compulsory module | ⬇ | | | | |
| BTI1101 - Interaction Design | 2 | Compulsory module | | ⬇ | | | |
| BTI1111 - Requirements Engineering | 2 | Compulsory module | ⬇ | | | | |
| BTI1121 - Software Engineering | 4 | Compulsory module | | | ⬇ | | |
| BTI1201 - IT-Controlling | 4 | Compulsory module | | | | | ⬇ |
| BTI1211 - Information Technology Law | 2 | Compulsory module | | | | | |
| BTI1301 - Web Programming | 4 | Compulsory module | | | ⬇ | | |
| BTI1311 - Databases | 4 | Compulsory module | | ⬇ | | | |
| BTI1321 - Introduction to IT-Security | 2 | Compulsory module | | | | | ⬇ |
| BTI1331 - Computer Networks | 4 | Compulsory module | | | | ⬇ | |
| BTI1341 - Operating Systems | 4 | Compulsory module | | | | ⬇ | |
| BTI1401 - Algorithms and Datastructures | 4 | Compulsory module | | ⬇ | | | |

| | ECTS | Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI1411 - Automata and Formal Languages | 2 | Compulsory module | | | | | | ⬇ |
| BTI1421 - Computability and Complexity | 2 | Compulsory module | | | | | | |
| BZG1155 - Discrete Mathematics 1 | 4 | Compulsory module | ⬇ | | | | | |
| BZG1156 - Discrete Mathematics 2 | 4 | Compulsory module | | | ⬇ | | | |
| BZG1157 - Linear Algebra | 4 | Compulsory module | | ⬇ | | | | |
| BZG1158 - Analysis | 4 | Compulsory module | | | | ⬇ | | |
| BZG1159 - Probability and Statistics | 4 | Compulsory module | | | | | | ⬇ |

**Programming 1**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI1001 - Programming 1 with Java | 4 | Elective module | ⬇ | | | | | |
| BTI1002 - Programming 1 with Kotlin | 4 | Elective module | ⬇ | | | | | |

**Programming 2**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI1011 - Programming 2 with Java | 4 | Elective module | | ⬇ | | | | |
| BTI1012 - Programming 2 with Kotlin | 4 | Elective module | | ⬇ | | | | |

Module group B (min. 26, max. 32 ECTS Credits)

**Project and Training 1 (BTI3001 or BTI3002+BTI3401)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI3001 - Project and Training 1 | 6 | Compulsory module | ⬇ | | | | | |
| BTI3002 - Project and Training 1BB | 4 | Compulsory module | ⬇ | | | | | |
| BTI3401 - Transfer Module 1 | 2 | Compulsory module | ⬇ | | | | | |

**Project and Training 2 (BTI3011 or BTI3012+BTI3403)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI3011 - Project and Training 2 | 6 | Compulsory module | | | ⬇ | | | |

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BTI3012 - Project and Training 2BB | 4 | Compulsory module | | | ⬇ | | |
| BTI3403 - Transfer Module 3 | 2 | Compulsory module | | | ⬇ | | |

**Project and Training 3 (BTI3021 or BTI3022+BTI3404)**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BTI3021 - Project and Training 3 | 6 | Compulsory module | | | | ⬇ | |
| BTI3022 - Project and Training 3BB | 4 | Compulsory module | | | | ⬇ | |
| BTI3404 - Transfer Module 4 | 2 | Compulsory module | | | | ⬇ | |

**Project 1**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BTI3031 - Project 1 | 6 | Compulsory module | | | | | |

**Communication (D or F or I)**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BZG3110 - Communication 1 German for informatics | 2 | Elective module | ⬇ | | | | |
| BZG3111 - Communication 2 German for informatics | 2 | Elective module | | ⬇ | | | |
| BZG3107 - Communication 1 German for foreigners | 2 | Elective module | ⬇ | | | | |
| BZG3108 - Communication 2 German for foreigners | 2 | Elective module | | ⬇ | | | |

**Englisch 1 (Modul BZG3401 oder BZG3411)**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BZG3401 - English 1 Upper Intermediate | 2 | Elective module | | | ⬇ | | |

**Englisch 2 (Modul BZG3402 oder BZG3412)**

| Module | ECTS | Type | | | | | |
|---|---|---|---|---|---|---|---|
| BZG3402 - English 2 Upper Intermediate | 2 | Elective module | | | | ⬇ | |

Module group C (min. 38, max. 42 ECTS Credits)

**Project and Thesis**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI3041 - Project 2 | 6 | Compulsory module | | | | | | |
| BTI3051 - Bachelor Thesis | 12 | Compulsory module | | | | | | |

**Specialization (choice of one of the 5 specializations with 6 modules à 4 ECTS)**

**Specialization Distributed Systems and IoT**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI4101 - Smart Device Programming | 4 | Compulsory module | | | | | | |
| BTI4102 - Distributed Sensor and Actuator Networks | 4 | Compulsory module | | | | | | |
| BTI4103 - Security in Distributed Sensor and Actuator Networks | 4 | Compulsory module | | | | | | |
| BTI4104 - DSIOT Networking | 4 | Compulsory module | | | | | | |
| BTI4105 - DSIOT Systems | 4 | Compulsory module | | | | | | |
| BTI4106 - DSIOT Applications and Business | 4 | Compulsory module | | | | | | |

**Specialization IT-Security**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BTI4201 - Applied Cryptography 1 | 4 | Compulsory module | | | | | | |
| BTI4202 - Applied Cryptography 2 | 4 | Compulsory module | | | | | | |
| BTI4203 - Network and Web Security 1 | 4 | Compulsory module | | | | | | |
| BTI4204 - Network and Web Security 2 | 4 | Compulsory module | | | | | | |
| BTI4205 - Forensics and Code Security 1 | 4 | Compulsory module | | | | | | |
| BTI4206 - Forensics and Code Security 2 | 4 | Compulsory module | | | | | | |

**Specialization Digital Business Systems**

| Module | ECTS | Module type | | | | |
|---|---|---|---|---|---|---|
| BTI4301 - Modern Enterprise Applications with Spring | 4 | Compulsory module | | | | |
| BTI4302 - Enterprise IT Infrastructure and Business Process Management | 4 | Compulsory module | | | | |
| BTI4303 - E-Business Concepts and Technologies | 4 | Compulsory module | | | | |
| BTI4304 - Modern Web Technologies with .NET and Angular | 4 | Compulsory module | | | | |
| BTI4305 - Customer Driven IT and Business Innovation | 4 | Compulsory module | | | | |
| BTI4306 - IT Strategies and General Management | 4 | Compulsory module | | | | |

**Specialization Computer Perception and Virtual Reality**

| Module | ECTS | Module type | | | | |
|---|---|---|---|---|---|---|
| BTI4401 - Introduction to Computer Graphics and Virtual Reality | 4 | Compulsory module | | | | |
| BTI4402 - Introduction to Image Processing and Artificial Intelligence | 4 | Compulsory module | | | | |
| BTI4403 - Advanced Computer Graphics and Virtual Reality | 4 | Compulsory module | | | | |
| BTI4404 - Advanced Image Processing and Artificial Intelligence | ECTS 4 | Compulsory module | ○ 20-21 1HS | ○ 20-21 2FS | ○ 20-21 3HS | ○ 20-21 4FS | ○ 20-21 5HS |
| BTI4405 - Special Topics in Computer Graphics and Virtual Reality | ECTS 4 | Module type Compulsory module | ○ 20-21 1HS | ○ 20-21 2FS | ○ 20-21 3HS | ○ 20-21 4FS | ○ 20-21 5HS |
| BTI4406 - Special Topics in Image Processing and Artificial Intelligence | 4 | Compulsory module | | | | |

○ Show all semesters

**Specialization Data Engineering**

| Module | ECTS | Module type | | | | |
|---|---|---|---|---|---|---|
| BTI4501 - Data Engineering Lifecycle | 4 | Compulsory module | | | | |
| BTI4502 - Machine Learning | 4 | Compulsory module | | | | |

| Module | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTI4503 - Interactive Data Intelligence | 4 | Compulsory module | | | | | |
| BTI4504 - Advanced Machine Learning | 4 | Compulsory module | | | | | |
| BTI4505 - Smart Services | 4 | Compulsory module | | | | | |
| BTI4506 - Smart Applications | 4 | Compulsory module | | | | | |

**Module group D (max. 50 ECTS Credits)**

**D1 Electives - Computer Science, Mathematics (min. 14 ECTS)**

| Module | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTE5446 - Embedded Linux | 2 | Elective module | | | ↓ | | ↓ |
| BTE5484 - Embedded Android | 2 | Elective module | | | | ↓ | |
| BTM3830 - Mobile Robots | 2 | Elective module | | | | | ↓ |
| BTI2010 - C++ for Java/Kotlin Programmers | 2 | Elective module | | | | ↓ | |
| BTI2011 - Advanced Algorithms and Datastructures | 2 | Elective module | | | | ↓ | |
| BTI2012 - Principles of Machine Learning | 2 | Elective module | | | | ↓ | |
| BTI2014 - Practical Cryptocurrencies | 2 | Elective module | | | | ↓ | |

○ Show all semesters

**D2 Electives and Block Weeks (min 8 ECTS)**

| Module | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTI3402 - Transfer Module 2 | 2 | Optional module (countable) | | ↓ | | | |
| BTI5201 - Block Week 1 | 2 | Compulsory module | ↓ | | | | |
| BZG3103 - German 1 | 2 | Elective module | ↓ | | | | |
| BTI3405 - Transfer Module 5 | 2 | Optional module (countable) | | | | | ↓ |
| BTI3406 - Transfer Module 6 | 2 | Optional module (countable) | | | | | |

| Show all semesters | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTI3407 - Transfer Module 7 | 2 | Optional module (countable) | | | | | |
| BTI3408 - Transfer Module 8 | 2 | Optional module (countable) | | | | | |
| BTI5202 - Block Week 2 | 2 | Compulsory module | | | ⬇ | | |
| BZG3104 - German 2 | 2 | Elective module | | ⬇ | | | |
| BZG3421 - First Certificate Exam in English | 2 | Elective module | | ⬇ | ⬇ | ⬇ | ⬇ |
| BZG3422 - Cambridge Advanced Certificate in English | 2 | Elective module | | ⬇ | | ⬇ | |
| BTI5203 - Block Week 3 | 2 | Compulsory module | | | | | ⬇ |
| BZG3105 - German 1 Basic Course | 2 | Elective module | ⬇ | | | | |
| BZG3106 - German 2 Basic Course | 2 | Elective module | | ⬇ | | | |
| BZG3203 - French 1 | 2 | Elective module | | | | | |
| BZG3501 - Spanish 1 | 2 | Erreur, plusieurs valeurs trouvées | | | ⬇ | | ⬇ |
| BZG1305 - Public-Key Cryptography | 2 | Elective module | | | | ⬇ | |
| BZG3204 - French 2 | 2 | Elective module | | ⬇ | | | |
| BZG3205 - French 1 Basic Course | 2 | Elective module | ⬇ | | | | |
| BZG3206 - French 2 Basic Course | 2 | Elective module | | ⬇ | | | |
| BZG3207 - French 1 advanced | 2 | Elective module | ⬇ | | | | |
| BZG3208 - French 2 advanced | 2 | Elective module | | ⬇ | | | |
| BZG2302 - Image Acquisition | 2 | Elective module | | | ⬇ | | ⬇ |

| | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BZG3502 - Spanish 2 | 2 | Elective module | | | | ⬇ | |
| BZG1303 - Machine Vision and Image Processing | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG4204 - Human Resources: Teamwork and Leadership | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG4205 - Strategy Management | 2 | Erreur, plusieurs valeurs trouvées | | | | ⬇ | |
| BZG4206 - Technology and Innovation Management | 2 | Elective module | | | | ⬇ | |
| BZG5001 - Practical Training Abroad | 2 | Elective module | | | ⬇ | ⬇ | ⬇ |
| BZG5002 - Summer School - Cross-cultural Communication | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG4203 - Marketing | 2 | Erreur, plusieurs valeurs trouvées | | | | ⬇ | |

⚪ Show all semesters

| | ECTS | Module type | ⚪ 20-21 1HS | ⚪ 20-21 2FS | ⚪ 20-21 3HS | ⚪ 20-21 4FS | ⚪ 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BZG1312 - Mathematics of GPS Positioning | 2 | Elective module | | | | ⬇ | |
| BTX8502 - JournalClub - Scientific approach in Informatics & Medical Informatics | 2 | Elective module | | | | ⬇ | ⬇ |
| BZG2312 - Astronomy | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG3306 - Italian 2 | 2 | Elective module | | | | ⬇ | |
| BZG3305 - Italian 1 | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG5005 - YEEP Young Entrepreneur Exchange Project | 3 | Elective module | | | ⬇ | | ⬇ |
| BZG5006 - Inter- and transculturalism within the professional context | 2 | Elective module | | | | ⬇ | |
| BZG2307 - Modern Physics | 2 | Elective module | | | | ⬇ | |

| | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTW9003 - Kickstart your idea | 2 | Elective module | | | | ⬇ | |
| BZG5007 - Swiss-Chinese Summer School in Technology | 4 | Elective module | | | ⬇ | | ⬇ |
| BZG3212 - French 3 | 2 | Elective module | | | | ⬇ | |
| BZG1314 - Clustering of Timeseries data | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG1315 - Randomized algorithms | 2 | Elective module | | | ⬇ | | ⬇ |
| BZG1316 - Vector Calculus | 2 | Elective module | | | ⬇ | | ⬇ |

**Transdisciplinary Modules**

| | ECTS | Module type | 20-21 1HS | 20-21 2FS | 20-21 3HS | 20-21 4FS | 20-21 5HS |
|---|---|---|---|---|---|---|---|
| BTE5474 - Navigation Systems | 2 | Elective module | | | ⬇ | | ⬇ |
| BTE5475 - Security in Communication Systems | 2 | Elective module | | ⬇ | | ⬇ | |
| BTW2403 - IoT Design and Embedded Systems | 4 | Elective module | | | | ⬇ | |
| BTX8504 - Application Support for the living lab | 2 | Elective module | | | | | |
| ○ Show all semesters | ECTS | Module type | ○ 20-21 1HS | ○ 20-21 2FS | ○ 20-21 3HS | ○ 20-21 4FS | ○ 20-21 5HS |
| BTX8505 - Introduction to Bioinformatics | 2 | Elective module | | | ⬇ | | ⬇ |
| BTX8506 - Business Intelligence for Hospitals | 2 | Elective module | | ⬇ | | ⬇ | |
| BTX8509 - Philosophy | 2 | Elective module | | ⬇ | | ⬇ | |
| BTW5404 - Excel in your Career | 2 | Elective module | | | | ⬇ | ⬇ |

Modules additionals