majors

The five specializations of the bachelor's degree in computer science in detail. You can find more information about the curriculum, time models and specializations in our study guide .

– software engineering

In this major, you will learn how to develop software for complex, distributed application systems. The focus is on "back-end engineering": How can you develop and optimize applications in order to operate them efficiently, scalably and maintainably? We cover topics such as databases, data integration and data mining as well as server-side support for development processes such as automated application testing. You will acquire in-depth knowledge of programming languages and parallel programming.

- **Software Engineering curriculum – full-time and part-time**

Modules:

- Advanced Patterns and Frameworks
- application architecture
- operating systems 2
- C++
- Distributed Systems
- .NET Technologies
- parallel programming
- secure software

+ Front end engineering

In this major, you specialize in the conception and development of user interfaces for interactive applications. You will learn how to design desktop, web and mobile applications so that they are easy to use. You will acquire knowledge of software development with object-oriented programming using Java and C#. We make you fit in software engineering and project management as well as in the underlying technologies of user interface frameworks and mobile systems. You work with software architectures including cloud computing, operating systems and databases.

- **Frontend Engineering curriculum – full-time and part-time**

modules

- AI applications
- application architecture
- Cloud solutions
- computer graphics
- Human Computer Interaction Design
- Mobile and GUI Engineering
- Web Engineering 1-3

+ cybersecurity

In the Cybersecurity major, we teach you how software and infrastructures can be designed securely and protected from attacks. Building on the general security fundamentals, you will delve into disciplines such as Network/IoT Security, Secure Software, Cyber Defense, Platform Security and Incident Response. In our «hacking lab», which is unique in Switzerland and is also used to train cyber recruits for the Swiss army, you can practice hacker attacks and defensive measures yourself. They grow into sought-after experts for large companies, telecommunications providers and government organizations.

- **Cybersecurity Curriculum – Full-time and Part-time**

Modules:

- Incident Response
- Network and IoT Security
- platform security
- secure software
- Web Engineering 1-2

+ Network and Cloud Infrastructure

In this specialization, we teach you how efficient and secure data centers (cloud infrastructures) and telecommunications networks are designed and operated. You will work on the conception and development of highly scalable cloud environments, which form the basis of today's IT environments in small and large companies. You delve into the technologies of virtualized networks, servers and storage (storage). They ensure secure and highly automated operation for companies in the banking/insurance, industry and telecommunications sectors.

- **Network and Cloud Infrastructure curriculum – full-time and part-time**

Modules:

- Computer Networks 1-2
- cloud infrastructure
- Cloud Operations
- network automation
- Network and IoT Security
- Service Development (ITIL)
- Software Defined Networks
- Wireless and IoT

+ Data Engineering and Machine Intelligence

In diesem Studienschwerpunkt beschäftigen Sie sich mit Datenmanagement, Datenanalyse und maschinellem Lernen. Viele Geräte und Systeme sammeln heute Daten, ob Smartphones, Produktionsstrassen in Industriebetrieben, Sensornetzwerke oder Kameras. Sie lernen, diese Datenberge auszuwerten und daraus nützliche Erkenntnisse abzuleiten. Die Einsatzfelder sind vielfältig. Die Studierenden bearbeiteten beispielsweise folgende Fragestellungen: Wie extrahiert man aus Luftbildern die Standorte von gesicherten Fussgängerübergängen? Was braucht es, um einen selbstlernenden Autopiloten zu programmieren? Wie bringt man ein Jass-Programm dazu, selbst zu lernen? An der OST vermitteln wir Ihnen das nötige Know-how aus der Informatik und Mathematik. Wir bilden Sie in den Bereichen Statistical Machine Learning, Deep Learning, Parallelrechnen, Data Engineering und Data Analytics aus.

- **Data Engineering and Machine Intelligence curriculum – full-time and part-time**

Modules:

- AI applications
- Blockchain
- Cloud solutions
- Data Analytics
- data engineering
- deep learning
- Mathematical Foundations for Machine Learning
- Statistical Machine Learning

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Contact

Prof. Mirko Stocker
Deputy Head of Computer Science

mirko.stocker @ ost.ch

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Contact Rapperswil

Contact St.Gallen

OST
Eastern Swiss University of Applied Sciences

Oberseestrasse 10
8640 Rapperswil

+41 58 257 41 11
info @ ost.ch