Swiss International
Institute Lausanne

BACHELOR OF SCIENCE
IN INFORMATION SYSTEMS AND TECHNOLOGY

The programme allows the student to acquire solid knowledge of information technologies as well as relevant practical skills. Graduates of the programme can begin their careers in a field of their specialisation and choose from numerous positions at different levels or pursue their academic path with further Master programme which provides a wider range of fundamental methodologies and practical experience.

The programme combines numerous disciplines in mathematics, information technology, programming, data management and others, which gives students opportunities to work in various fields in the roles of programmer, system administrator, IT project manager.

Language of instruction/examination: English

Official duration: 8 semesters (4 years): 7 semesters + Bachelor thesis

ECTS: 240 ECTS

Degree awarded: Bachelor of Science in Information Systems and Technology

COURSES

Courses for Bachelor of Science in Information Systems and Technology programme are divided into 3 main categories: **Core courses (167 ECTS)** and **Elective modules (37 ECTS)** which are introduced during the 2nd and 3rd year of the programme, **and Workshops (6 ECTS)**. At the end of the studies the student is obliged to prepare a **Bachelor thesis (30 ECTS)**. Throughout the programme, students also complete online edX courses, giving them the opportunity to earn up to 12 internationally recognized professional certificates from top institutions.

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AIMS OF THE PROGRAM

Provide students with strong skills in software development and information systems management to meet the growing demands of the global technology industry. Develop students' expertise in data analysis and cybersecurity, enabling them to support decision-making based on data and protect digital assets within organizations. Teach students to design and develop user-friendly applications and platforms, focusing on user experience and accessibility, to improve interaction with technology for various user groups.

LEARNING OUTCOMES

Building a foundation in fundamental mathematics and statistics for data science:

This outcome focuses on equipping students with the mathematical apparatus necessary for understanding and applying core concepts in information systems and technologies

Develop Software Using Modern Programming Languages and Tools, Adapting to the Evolving Technology Landscape:

This outcome focuses on students' ability to design and develop software solutions using contemporary programming languages, frameworks, and tools. Students will learn to keep pace with technological advancements, enhancing their adaptability and problem-solving skills in response to the dynamic IT landscape.

Design, Implement, and Maintain Information Systems and Communication Networks, Ensuring Scalability and Reliability:

Students will acquire the skills to build, deploy, and maintain robust information systems and networks that can scale with organizational needs. This includes planning network infrastructure, ensuring consistent performance, and addressing challenges related to system reliability and user demand.

Create and Implement Technologies for Data Collection, Processing, and Analysis to Support Informed Decision-Making:

This learning outcome equips students with the skills to develop tools and techniques for gathering, processing, and analyzing data. They will focus on producing actionable

insights that inform business decisions, using data analytics, machine learning, and visualization to extract meaningful information from complex datasets.

Develop Intuitive and User-Friendly Applications and Platforms with a Focus on User Experience and Accessibility Across Devices:

Students will learn to create applications and platforms that prioritize user experience, usability, and accessibility. Emphasis is placed on designing interfaces that are intuitive and adaptable to various devices, ensuring that end-users have a seamless and engaging experience across all platforms.

Ensure Information Security and Data Protection Using Industry-Standard Protocols and Practices:

This outcome emphasizes the importance of safeguarding data and systems against cyber threats. Students will be trained in industry-standard security practices and protocols, focusing on protecting information integrity, confidentiality, and availability to meet regulatory and ethical standards.

Demonstrate Effective Communication, Teamwork, and Leadership Skills in Diverse and Cross-Cultural Environments:

This outcome prepares students to work collaboratively in multicultural teams, fostering an environment of mutual respect and understanding. They will developstrong communication and leadership skills, essential for coordinating withstakeholders and contributing positively to global, cross-functional projects.

Career Launch and Advancement Through Professional Certifications

Students earn a total of 12 globally recognized professional certificates throughout the program, with 4 already earned after the first year—enabling them to secure entry-level tech jobs while pursuing a flexible, fully online degree. Certifications from institutions like Harvard and IBM in Python, web development, databases, and IT support open early career opportunities. Each subsequent year adds advanced credentials—from Stanford, TU Delft, UCX, and others—in data science, cybersecurity, quantum computing, and professional communication. This structured pathway enhances job readiness from year one and supports continuous career growth in the digital job market.

CURRICULUM OVERVIEW

	Course	ECTS	Assessment
	SEMESTER 1	**30**	
MATH101	Mathematical Analysis I	6	Oral exam
MATH102	Analytical Geometry	6	Written exam
MATH103	Linear Algebra I	6	Oral exam
COMP101	EdX Course CS50: Introduction to Computer Science	6	EDX exam
ITSP101	**EdX Course Block:** 1. Technical Support Basics for Everyone EDX 2. Software, Programming, and Database Basics EDX	3	EDX exam
ENG101	EdX Course Upper-Intermediate English or **EdX Course Block:** 1. English for Tech Professionals EDX 2. Soft Skills for Tech Professionals EDX	3	EDX exam

	Course	ECTS	Assessment
	SEMESTER 2	**30**	
MATH111	Mathematical Analysis II	6	Oral exam
MATH113	Linear Algebra II	6	Written exam
COMP111	EdX Course CS50's Introduction to Programming with Python	3	EDX exam
COMP112	EdX Course CS50's Web Programming with Python and JavaScript	4	EDX exam
COMP113	EdX Course CS50's Introduction to Databases with SQL	3	EDX exam
ITSP111	**EdX course block:** 1. Hardware and Operating Systems 2. Networking and Storage Essentials 3. Beginners Guide to Cybersecurity 4. Introduction to Cloud Computing 5. IT Support Case Studies	5	EDX exam
SPOR111 or MANG111	Sport and Physical Education I or **EdX course block:** 1. Introduction to Project Management 2. Risk Management for Projects 3. Product Management Fundamentals 4. Achieving Product-Market Fit 5. Product Design, Prototyping, and Testing 6. Data Science and Agile Systems for Product Management	3	Practical coursework or EDX exam

	Course	ECTS	Assessment
	SEMESTER 3	**30**	
MATH201	Statistics and Probability Theory I	6	Oral exam
DATA201	EdX Course CS50's Introduction to Programming with R	3	EDX exam
DATA202	EdX Course Statistical Learning with R	2	EDX exam
SPOR201 or DATA203	Sport and Physical Education or EdX Course Introduction to Bayesian Statistics Using R	2	Practical coursework or EDX exam
COMP201	EdX Course CS50's Introduction to Cybersecurity	1	EDX exam
HIST201	History of Computers	4	Practical coursework
PROG201	The Basics of Programming in C++	6	Written exam
COMP202	Hardware of Computer Systems I	6	Oral exam

	Course	ECTS	Assessment
	SEMESTER 4	**30**	
MATH211	Statistics and Probability Theory II	6	Oral exam
PROG211	Programming in C++	6	Written exam
SPOR211 or DATA213	Sport and Physical Education or EdX Course Advanced Bayesian Statistics Using R	2	Practical coursework or EDX exam
COMP212	Hardware of Computer Systems II	6	Practical coursework
COMP213	EdX Course Mathematical Methods for Data Analysis	3	EDX exam
COMP214	EdX Course High-Dimensional Data Analysis	1	EDX exam
HIST211	Modern History of Computers	4	Practical coursework
PENG211	EdX Course Job Interview Preparation For Tech Professionals	2	EDX exam

Professional Certificates earned at the end of the 2nd year of studies (Semester 3 and 4):

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	Course	ECTS	Assessment
	SEMESTER 5	**30**	
CYBE301	**EdX course block:** 1. Cybersecurity Basics: Tools and Cyberattacks 2. Operating Systems and Security 3. Cybersecurity Compliance and Framework 4. Database Basics and Security	3	EDX exam
COMP302	EdX Course Data Mining and Knowledge Discovery	3	EDX exam
COMP303	Raster Graphics	6	Practical coursework
COMP304	Vector Graphics or **EdX course block:** 1. How Virtual Reality Works 2. Creating Virtual Reality (VR) Apps 3. Computer Graphics	6	Practical coursework or EDX exam
COMP305	EdX Course Blockchain: Understanding Its Uses and Implications	2	EDX exam
QUAN301	Quantum Algorithm Implementations for Beginners	6	Oral exam
QUAN302	**EdX course block:** 1. The Hardware of a Quantum Computer 2. Architecture, Algorithms, and Protocols of a Quantum Computer and Quantum Internet	4	EDX exam

	Course	ECTS	Assessment
	SEMESTER 6	**30**	
COMP307	Modern and Future Computer Systems	6	Oral exam
GAME311 or MANG311	**EdX course block:** 1. The What and How of Esports Management! 2. A Complete Guide to Game Design 3. From Code to Creation: Mastering Game Programming or **EdX course block:** 1. Persuasion and Presence for Program and Project Managers 2. Managing Conflicts on Projects with Cultural and Emotional Intelligence 3. Designing Project Information Hubs for Program and Project Performance	3	EDX exam
COMP313	Development of Interactive Applications for Websites	6	Practical coursework
DATA311	**EdX course block:** 1. Online Advertising & Social Media 2. Introduction to Data Science with Python 3. Machine Learning and AI with Python	3	EDX exam
PROG311	Java Programming	6	Practical coursework
COMP315	Introduction to Backend Frameworks	6	Practical coursework

	SEMESTER 7	**6**	
WORK401	Practical Workshop	6	Practical coursework
COMP401 or COMP402	3D Graphics or Development of an Electronic Portal	6	Practical coursework
COMP402 or COMP403	Development of an Electronic Portal or Project Management	6	Oral exam
COMP404	Functional Programming	6	Oral exam
COMP405 or COMP406	Development of Mobile Applications or Video Editing	6	Oral exam
	SEMESTER 8	**30**	
Bachelor Thesis in AI or Machine Learning topic			

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