

# MSc in Cyber Security

Thursday, 30 October 2025

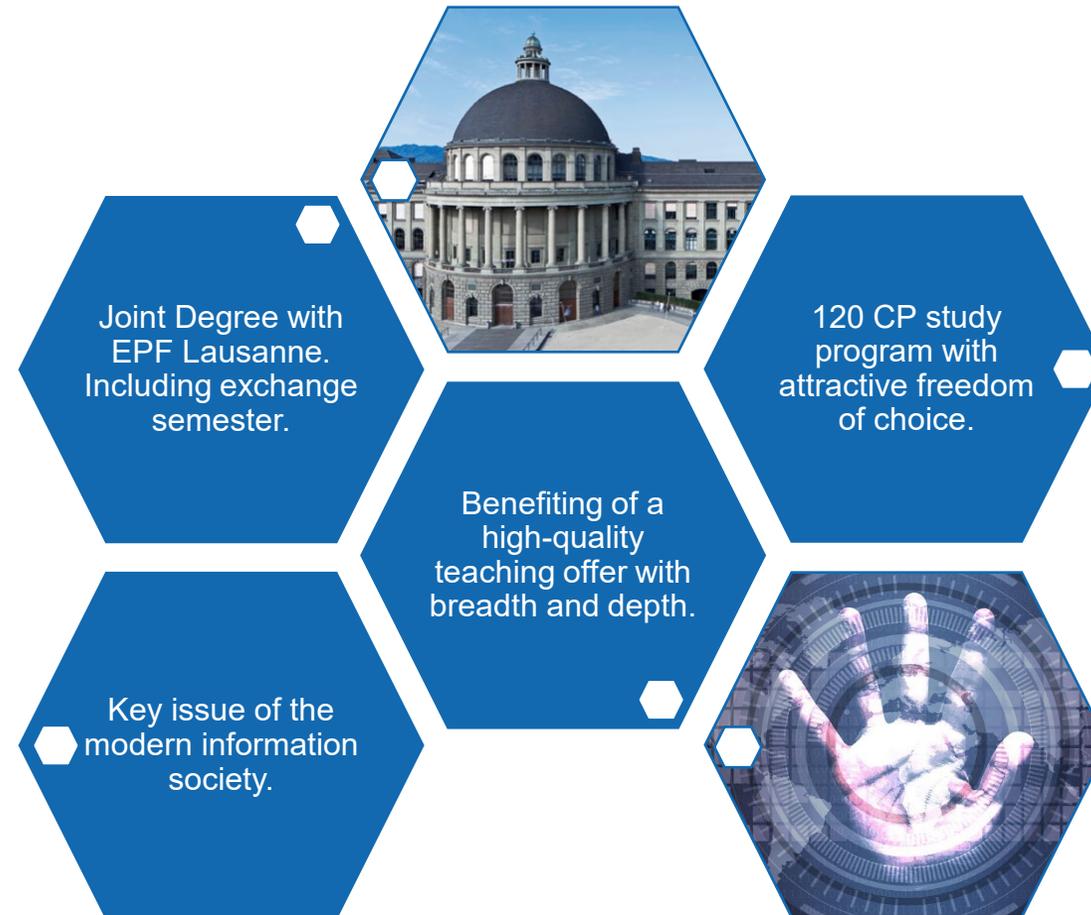
Online, 13:30



Information:  
Joint Degree Master's programme  
Cyber Security ETH Zurich / EPFL

Thursday, 30 October 2025  
Online, 13:30

# Why Cyber Security



[www.inf.ethz.ch/master-cybsec](http://www.inf.ethz.ch/master-cybsec)

# Agenda

- Design Principles
- Structure Master's Programme Cyber Security
- Course Catalogue
- Semester in Lausanne
- Eligibility

# Design Principles

- Solid and sound knowledge in
  - Information Security
  - System Security
  - Network Security
  - Cryptography
- Knowledge of the theories and the formal methods
- Competence of applying knowledge and skills in practical projects
- Analytical thinking, self-organization, scientific working

# Agenda

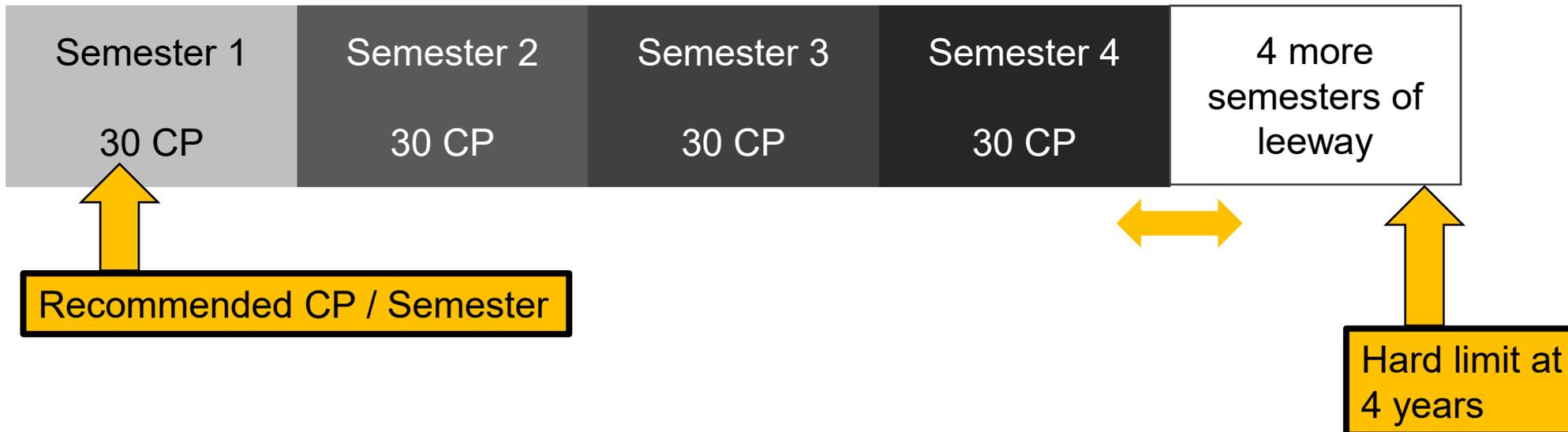
- Design Principles
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# Programme

Master ETHZ – EPFL in Computer Science Major in Cyber Security	120
Core Courses and Electives in Cyber Security	28
Core Courses	16
Core Electives	
Seminar	2
Core Courses and Electives in a Minor	18
Core Courses	8
Core Electives	
Inter Focus Courses	16
Semester Project	12
Free Electives	
Science in Perspective	2
Master's Thesis	30

# 120 Credit Points

The Master's programme is designed to be completed within 4 semesters. The overall study duration must not exceed 8 semesters. The last semester focuses completely on the Master's thesis.



# Programme Structure

Master ETHZ – EPFL in Computer Science Major in Cyber Security 120

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Core Courses and Electives in Cyber Security 28

Minimum required  
credit points

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# Core Courses and Electives in Cyber Security

Core Courses and Electives in Cyber Security	28
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Seminar	2



- High level of competence
- Provide essential knowledge in Cyber Security

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Core Electives

Seminar 2

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Core Electives

# Minor

Core Courses and Electives in a Minor

18

Core Courses  
Core Electives

8



The Minor is mandatory and has to be chosen from one of the following specialization tracks:

- Data Management Systems
- Machine Intelligence
- Visual and Interactive Computing
- Theoretical Computer Science

See <https://inf.ethz.ch/studies/master/master-cs-2020.html>

for each of above (not allowed to pick Secure and Reliable Systems)

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# Inter Focus Courses

Inter Focus Courses

16



- Cover all topics in computer science
- Teach algorithmic reasoning
- Methods of advanced system design

# Interfocus Courses

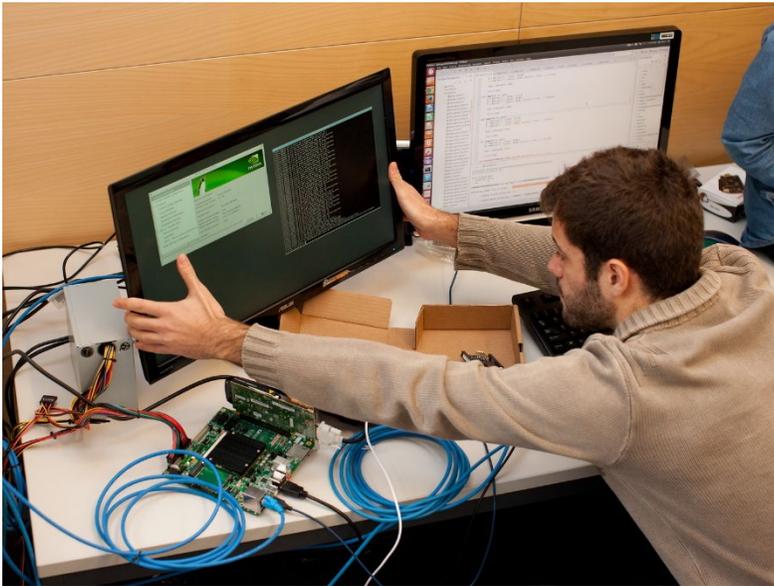
Two out of four have to be taken:

- Algorithms Lab, AS
- Information Security Lab, AS
- Advanced Systems Lab, SS
- Computational Intelligence Lab, SS

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# Semester Project



- Apply acquired knowledge and skills
- Solve independently a technical-scientific problem

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# Free Electives

## Free Electives



- Courses offered by ETH, UZH, EPFL
- Master's level
- In the area of computer science or a closely related field

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Science in Perspective	2

# Science in Perspective

Science in Perspective

2



- Courses offered in the programme Science in Perspective (mostly by the department D-GESS)
- 851-xxxx-xx language courses ( $\leq 3$  credits including ETH BSc)

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Does not sum up:  
freedom

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- **Course Catalogue**
- Semester in Lausanne
- Eligibility

# Core Courses and Electives Cyber Security

## Tentative Course List

<b>CORE COURSES</b>				
252-0463-00L	Security Engineering		autumn	7
252-1414-00L	System Security		autumn	7
263-4640-00L	Network Security		autumn	8
263-4658-00L	Privacy Enhancing Technologies		autumn	7
263-4660-00L	Applied Cryptography		spring	8
<b>CORE ELECTIVES</b>				
227-0575-00L	Advanced Topics in Communication Networks		autumn	6
227-0579-00L	Hardware Security		autumn	8
252-0811-00L	Applied Security Laboratory		autumn	8
252-1411-00L	Security of Wireless Networks		autumn	6
263-4665-00L	Zero-Knowledge Proofs		autumn	5
252-0408-00L	Cryptographic Protocols		spring	6
263-4600-00L	Formal Methods for Information Security		spring	5
263-4656-00L	Digital Signatures		spring	5

# The Professorial Team



- 6 faculty members, 2 associated members (Dennis Hofheinz, Kaveh Razavi). Other faculty members working in S&P: M. Vechev, L. Vanbever, O. Mutlu, ...
- 70+ PhD/postdoctoral researchers
- ETH global ranking #4 in Computer Science (THE World University Rankings 2025)
- ZISC: Zurich Information Security Center
- **We pursue big challenges with the goal to positively affect the world.**

# Previous Thesis Topics

- Adaptive Online Monitoring
- A System for Increasing Awareness of Price Discrimination
- Proximity Verification for Intel SGX using USB 3
- Privacy Mechanisms for Distributed Fingerprint-based Authentication
- Formal Verification of DoS-Resilient Protocols
- Design and Implementation of SCION's End-Entity PKI
- Constant-Time Implementation of NTS-KEM
- Contributions to the Theory of Probabilistic Discrete Systems
- ...

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# Semester in Lausanne

<https://www.epfl.ch/schools/ic/>

## School of Computer and Communication Sciences

Our School is one of the main European centers for education and research in the field of computing.



# Semester in Lausanne

During the course of the programme, one semester has to be spent at EPF Lausanne.

- Students enrolled at ETHZ must start the Master's programme at ETHZ.
- Students must earn minimum 20 CP, maximum 35 CP at EPFL.
- Inter Focus Courses must be done at ETHZ.
- Master's thesis may be conducted externally (counts as ETHZ credits) – with a Cyber Security MSc faculty member's agreement.
- Students starting their studies fall 2026 (HS 26) or before receive a scholarship for their exchange semester of 2'500.- CHF.
- Spring semester: support in searching accommodation by EPFL
- Eligible courses are published on the MSc Cyber Security website
- Study plan for the semester in Lausanne has to be approved by the Studies Administration
- During the exchange semester, students are enrolled at ETHZ **and** EPFL – but pay tuition fee only at ETHZ.

# Semester in Lausanne

Study plan (= course list) and regulation (only in French) at EPFL:

<https://www.epfl.ch/education/studies/en/rules-and-procedures/>

<https://edu.epfl.ch/studyplan/en/master/computer-science-cybersecurity/>

## Computer Science - Cybersecurity 2025-26

COURSES	LANGUAGE	MASTER 1	MASTER 2	SPECIALISATIONS/ORIENTATIONS	EXAM	CREDITS / COEFFICIENT
<p><b><u>Advanced computer architecture</u></b> CS-470 / Section IN lenne</p>	EN	-	<ul style="list-style-type: none"> <li>■ Courses: 3h</li> <li>■ Lab: 2h</li> </ul>		<p><b>Summer session</b> Written</p>	8
<p><b><u>Advanced networks</u></b> COM-407 / Section SC Nikolopoulos</p>	EN	<ul style="list-style-type: none"> <li>■ Courses: 2h</li> <li>■ Exercises: 2h</li> <li>■ Lab: 2h</li> </ul>	-		<p><b>Winter session</b> Written</p>	8
<p><b><u>Advanced topics on privacy enhancing technologies</u></b> <i>(This course is a "depth" for Cyber Security master program and Cyber Security minor.)</i> CS-523 / Section IN Vacat</p>	EN	-	<ul style="list-style-type: none"> <li>■ Courses: 3h</li> <li>■ Exercises: 1h</li> <li>■ Course based project: 2h</li> </ul>	<ul style="list-style-type: none"> <li>■ Depth requirement</li> </ul>	<p><b>Summer session</b> Written</p>	8
<p><b><u>Algorithms II</u></b> CS-450 / Section IN Kapralov</p>	EN	<ul style="list-style-type: none"> <li>■ Courses: 4h</li> <li>■ Exercises: 3h</li> </ul>	-		<p><b>Winter session</b> Written</p>	8

# Semester in Lausanne

Find information on the exchange semester at EPF Lausanne here:

[https://inf.ethz.ch/studies/master/master-cybsec/semester\\_epfl.html](https://inf.ethz.ch/studies/master/master-cybsec/semester_epfl.html)

In particular, make sure you read the course transfer list with EPFL courses, showing the corresponding course category at ETH Zurich.

Group 1

Code	Course	Semester	CP	Exam	Category ETHZ	Core/Core Elective	Overlap / cannot be combined
CS-470	<a href="#">Advanced computer architecture</a>	spring	8	written	DMS	Core Elective	
COM-407	<a href="#">Advanced networks</a>	autumn	8	written	no transfer		
CS-523	<a href="#">Advanced topics on privacy enhancing technologies</a>	spring	8	written	CybSec	Core Elective	263-4658 Privacy Enhancing Technologies
CS-450	<a href="#">Algorithms II</a>	autumn	8	written	TI	Core	263-4500 Advanced Algorithms
COM-401	<a href="#">Cryptography and security</a>	autumn	8	written	CybSec	Core Elective	
CS-438	<a href="#">Decentralized systems engineering</a>	autumn	8	written	DMS	Core Elective	
CS-451	<a href="#">Distributed algorithms</a>	autumn	8	written	DMS	Core	
CS-451	<a href="#">Distributed algorithms</a>	autumn	8	written	TI	Core Elective	
COM-402	<a href="#">Information security and privacy (last offered in fall 25)</a>	autumn	8	written	CybSec	Core Elective	
CS-428	<a href="#">Interactive theorem proving</a>	spring	8	during the semester	Free Elective		263-2520 Formal Foundations of Programming Languages

# Eligibility

## Consecutive

- Bachelor in Computer Science / Communication Systems from a Swiss university and as one-subject degree involving at least 180 credits

## Qualifying degrees (eligible)

- Bachelor in Electrical Engineering and Information Technology
- Bachelor in Mechanical Engineering
- Bachelor in Mathematics
- Bachelor in Physics

# Admission Principles

## **With Bachelor's degree from ETH: Admission without any additional requirements**

The better the profile requirements are covered, the better the chances are to be admitted.

Gaps in the profile requirements are expected to be filled in self-study.

 Excellent track record

# Information

Master in Cyber Security: [www.inf.ethz.ch/master-cybsec](http://www.inf.ethz.ch/master-cybsec)

Forms and Documents: <https://inf.ethz.ch/studies/forms-and-documents.html>

- Study guide
- Tentative course list
- Regulations of studies (in German)
- ....

Admissions Office: <https://ethz.ch/en/studies/master/application.html>

# Information

Studies administration:

Brigitte Marti

CAB H 36.1

[master@inf.ethz.ch](mailto:master@inf.ethz.ch)

Program coordination:

Dr. Ralf Sasse

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Program director:

Prof. Dr. David Basin

[basin@inf.ethz.ch](mailto:basin@inf.ethz.ch)

# Thank you