



IxersTreesTrees

Transition to Master's in Computer Science

Dr. Felix Friedrich, Lecturer & Study Coordinator D-INFK **Denise Spicher, Tony Joller** Studies Administration Office D-INFK



Agenda

- Transition Requirements
- Master's Programme in Computer Science
- FAQ Session



Studies Administration

- Study-related administrative issues
- Issues concerning examinations
- Transcripts, degrees, ...
- Issues concerning military service (Swiss only)

Contact: studiensekretariat@inf.ethz.ch





Who is Who





Prof. Kenneth Paterson Department Head

Prof. Zhendong Su Director of Studies



Denise Spicher Studies Administration



Transition Requirements

152 ECTS from the Bachelor Programme have been obtained, of which credits **must** come from:

First-year examinations (BP1 and BP2) 56 cre Basic and Core Courses 84 cre Seminar 2 cre Bachelor Thesis (grade must have been received!) 10 cre 152 cre **Important:** No more than 20 ECTS can be transferred to the Master's Programme. Interfocus courses cannot be taken with a Bachelor's enrolment.

It is exclusively reserved for master's students.

edits		
edits		
edits		
edits		
	Bachelor-Studiengang in Informatik	180
edits	Fächer des Basisjahres	56
	Hauptfächer	96
	Grundlagenfächer und Kernfächer	🗸 mind. 84
	Grundlagenfächer	mind. 45
	Kernfächer	mind. 32
	Wahlfächer	_
	Seminar	√ 2
	Ergänzung	5
	Wissenschaft im Kontext	6
D	Bachelor-Arbeit	10

Transition in myStudies

- When all of the before-mentioned mentioned requirements have been met, the option to enrol for the Master's Programme will appear in myStudies → click the button «Master-Studium».
- You can enrol until the second week of the semester via myStudies. Students may choose between MSc in Computer Science and MSc in Cyber Security.
- Consecutive enrolment is possible every semester.
- Specialized Master's Programmes, such as Data Science and Robotics, require a regular MSc application at the admission office. The start is only possible in the autumn semester.

Master's Programme in Computer Science





Take a look inside!



Credit System

- ECTS credits (European Credit Transfer System)
- Course completed successfully
 then the total amount of credits are awarded (none otherwise)
- 30 credits per semester
- ETH's master's programme in CS has 120 credits
 - Expected duration: 4 semesters
 - Max. duration: 8 semesters (including Master's thesis)



Grading System



- 3 Insufficient
- 2 Poor





- **Pass**: grade ≥ 4.0
- **Fail**: grade < 4.0
- Grading scale: 0.25

Repetition of exams: Every examination can be repeated *once*

Master's Programme Structure

Master ETH Zurich in Computer Science		120
Major	2	26
Core Courses Core Electives	16	
Minor	-	18
Inter Focus Courses	-	16
Seminar		2
Practical Work		8
Free Elective Courses		
Science in Perspective		2
Master's Thesis	3	30

Choose one of five majors:

- Data Management Systems
- Machine Intelligence
- Secure & Reliable Systems
- Visual & Interactive Computing
- Theoretical Computer Science

Courses per major: see "<u>Tentative Majors</u>" PDF on the Master's programme's website

Ę

Master's Programme Structure

Master ETH Zurich in Computer Science	120	
Major Core Courses Core Electives	26	Core Courses Minimum (16) plus 10 credits from Core Courses or Core Electives
Minor	18	
Inter Focus Courses	16	
Seminar	2	
Practical Work	8	
Free Elective Courses		
Science in Perspective	2	
Master's Thesis	30	

Master's Programme Structure



Majors



- Must choose major within first four semester weeks
- Major may be changed **once** (no study duration extension)
- Choice is made via mystudies.ethz.ch



Permitted Combinations of Majors & Minors

	Computer Graphics	Computer Vision	Data Management	Information Security	Machine Learning	Networking	Programmeming Languages and Software Engineering	Systems Software	Theoretical Computer Science
Data Management Systems	✓	✓	×	✓	✓	\checkmark	✓	×	✓
Machine Intelligence	\checkmark	×	\checkmark	\checkmark	×	\checkmark	\checkmark	\checkmark	\checkmark
Secure and Reliable Systems	✓	\checkmark	✓	×	✓	\checkmark	×	✓	✓
Visual and Interactive Computing	×	×	✓	~	\checkmark	√	\checkmark	~	✓
Theoretical Computer Science	✓	✓	✓	√	\checkmark	√	\checkmark	~	×

Minors

- Courses count for specific minors
- At end of MSc, chosen courses must sum up to a suitable minor
- Thus:
 - Minor can be "changed" any time
 - Your responsibility to ensure choice yields suitable minor

252-0535-00L Advanced Machine Learning

Catalogue data	Performance assessment	Learning materials	Courses	Groups	Restrictions	Offered in		
Programme Section								
CAS in Computer	CAS in Computer Science Focus Courses and Electives							
Computational Biology and Bioinformatics Master Data Science								
Computer Science Master Minor in Data Management								
Computer Science	Mino	Minor in Machine Learning						
Computer Science		Minc	Minor in Theoretical Computer Science					

► ► ► Minor in Compute	r Vision
Number	Title
263-3210-00L	Deep Learning () !! Number of participants limited to 320.
263-5902-00L	Computer Vision 👔

Inter Focus Courses - "The Labs"

- You need \geq 16 ECTS from labs
- Four labs offered, each worth 8 credits \rightarrow two labs
 - Autumn semester: Algorithms Lab, Information Security Lab
 - Spring semester: Computational Intelligence Lab, Advanced Systems Lab
- Repetition *can* require re-enrolling
 repetition only possible a year later
- At most four attempts in total
 i failing more than two attempts means dropping out
- · Labs are difficult and mean a lot of work during the semester
- Failed labs are the main reason for drop-outs
- Advice: Take *one* lab *each* semester (and allocate enough time)
- Strong recommendation: Pass *at least* one lab within one year

🎾 data analytics lab

ETH zürich

Computational Intelligence Lab 2021

The goal of the Computational Intelligence Lab is to enable master level students to connect their mathematical background in linear algebra, analysis, probability, and optimization with their basic knowledge in machine learning and their general skill set in Computer Science to gain a deeper understanding of models and tools of great practical impact.

CIL is hence a lab in to regards: (1) it teaches "hands-on" use of mathematical methods and (2) it provides "handson" training in programming through practical projects. In contrast to other classes in machine learning and data science, the emphasis is not on comprehensive coverage of topics and content. Rather the course works with a compilation of relevant, weakly interconnected topics, which are exemplary in nature. The goal is to enable students to independently apply the learned skills to models and topics not covered.

We will not provide a systematic introduction to the mathematics needed. One can consuit excellent undergraduate textbooks or machine-inspired textbooks such as Mathematics for Machine Learning. As far as programming goes, we will make use of Python, its scientific computing library NumPy and some more specialized libraries such as PyTorch when it comes to neural network models.

Useful Links

• Final Version of the Lecture Notes

Course Catalogue Info

Zoom Lecture Link, Friday 10-12

Zoom Tutorial Link, Friday 16-18

Practical Work

- Individual semester project of 8 ECTS or a lab course (not "The Labs"), ECTS according to the course catalogue
- Supervised by a professor from D-INFK
- Graded as pass/fail
- Find potential projects by
 - Talking to professors and their research groups
 - Checking department's/institutes'/ professors' websites

Further information can be found in the PDF Memo Practical Work.

Computer Science Mast	ter 🕕
Master Studies (Prog	ramme Regulations 2020)
Practical Work	
Number	Title
252-0811-00L	Applied Security Laboratory This only applies to Study Regulation Programme max. 10 credits can be a top of the Interfocus Courses. Additic on the Addendum.
252-0817-00L	Distributed Systems Laboratory This only applies to Study Regulation Programme max.10 credits can be ac of the Interfocus Courses. These Lab the Master Programme. Additional La Addendum.

Game Programming Laboratory 2021



The goal of this course is the in-depth understanding of the technology and programming underlying computer games. Students gradually design and develop a computer game in small groups and get acquainted with the art of game programming.

Free Elective Courses

- "Free" as in "see the fine print."
 - All Master's level courses in the area of computer science or a closely related field (e.g. D-MATH, D-ITET) offered by ETH Zurich, EPFL, or the University of Zurich.
- Exception: **at most one** *core course* ("Kernfächer") from our Bachelor's curriculum
 - no elective courses from our Bachelor's curriculum
- A research project in computer science may be conducted (5 ECTS). There are specific prerequisites for this registration, see PDF <u>Memo Research in Computer Science</u>.

Master ETH Zurich in Computer Science		
Major	26	
Core Courses Core Electives	16	
Minor	18	
Inter Focus Courses	16	
Seminars	2	
Practical Work	8	
Free Elective Courses		
Science in Perspective	2	
Master's Thesis	30	



Science in Perspective

- Must obtain two ECTS at D-GESS (Department of Humanities, Social and Political Sciences)
- Course catalogue: see VVZ, programme "Science in Perspective"
- No more than six credits can be accredited in this category
- Language courses offered by the language centre that are explicitly accredited by D-GESS have an 851-XXXX-XX course number
- ETH Bachelors: at most three credits through language courses, **including** those obtained in your Bachelor's.

Master ETH Zurich in Computer Science			
Major	26		
Core Courses Core Electives	16		
Minor	18		
Inter Focus Courses	16		
Seminars	2		
Practical Work	8		
Free Elective Courses			
Science in Perspective	2		
Master's Thesis	30		

TH zürich								
Course Catalogue								
↓ Courses	↓ Lecturers ↓ ↓ Time and PI	ace			-			
Course units	Catalogue data Courses							
Number	Title	Туре	ECTS	Hours	Lecturers			
853-0725-00L	History Part One: Europe (The Cradle of Modernity, Britain, 1789-1914) 1	w	3 credits	2V	H. Fischer-Tiné			
851-0105-00L	Background Knowledge Arabic World	w	2 credits	2V	U. Gösken			
052-0801-00L	Global History of Urban Design I	w	2 credits	2G	T. Avermaete			
851-0157-28L	Life and Death Particularly suitable für students of D- D-CHAB, D-USYS	W BIOL,	3 credits D-HEST,	2V	M. Hagner			
851-0426-00L	Paul Feyerabend's Anarchistic	w	3 credits	2S	M. Hagner , M. Han			

FAQ Session

