ETH zürich

Department of
Computer Science

Welcome to the Department of Computer Science

Professor Zhendong Su
Director of Studies

18 September 2023

D INFK

Core Faculty Data Science













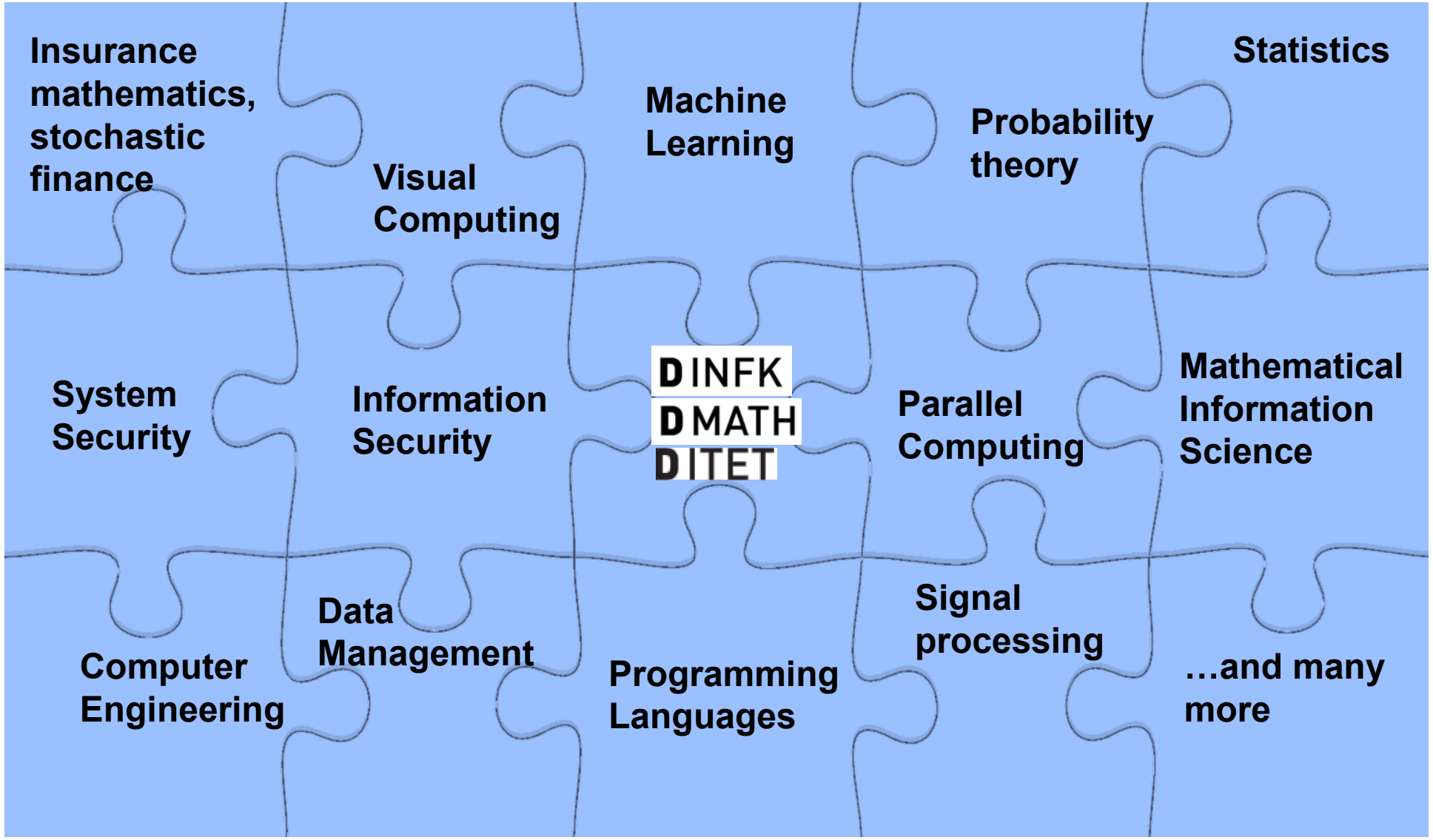








Broad Spectrum of Topics in Research and Education



Worldwide Top-Ranked CS Department

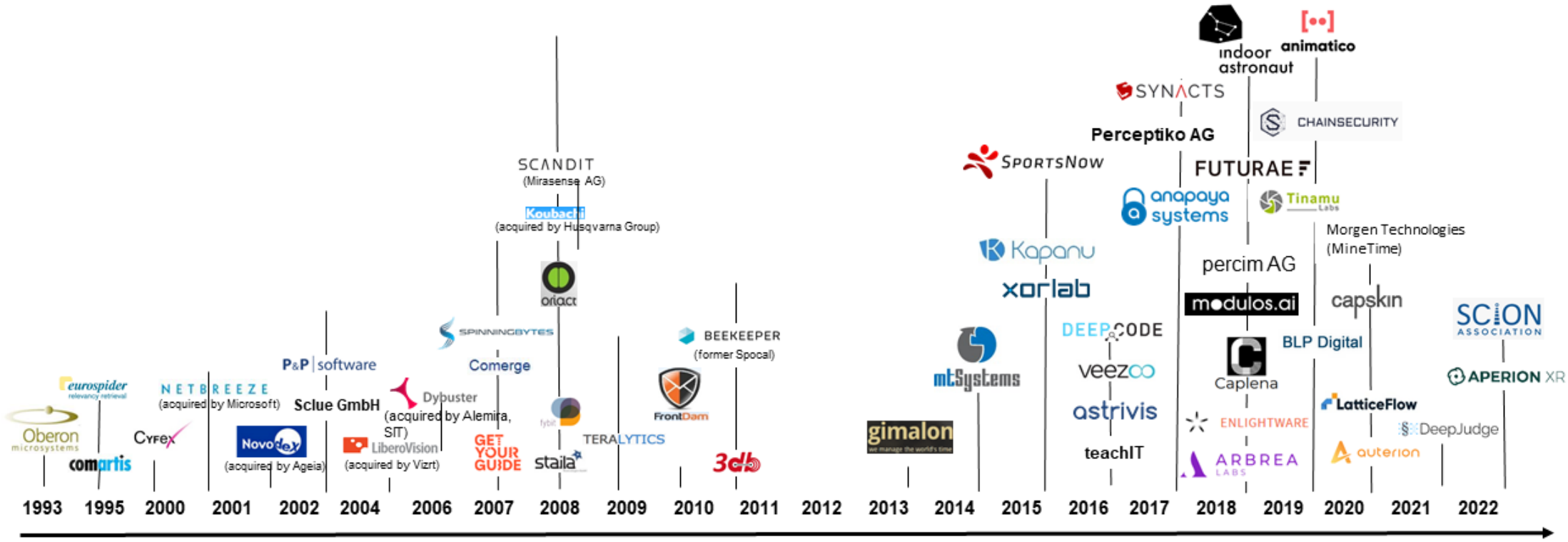
THE WORLD UNIVERSITY RANKINGS

Rank 2023	Institution	Country
1	University of Oxford	United Kingdom
2	Massachusetts Institute of Technology	United States
3	Stanford University	United States
4	**ETH Zurich**	**Switzerland**
5	Carnegie Mellon University	United States

Start Your Own Company

53 D-INFK Spin-offs founded since 1993

Establishment of Academic ETH Spin-offs



D-INFK Master Programmes

MSc Data Science

75 new students

MSc Computer Science

287 new students

MSc Cyber Security

37 new students

Some Advice

- Take advantage of the unique opportunity of studying at ETH
- Attend classes, interact with TAs and faculty
- Work hard, practice self-reflection, seek help when needed
- Make this not only a degree, but a major step in your life and career
- Stay positive and have fun!

ETH zürich

Department of
Computer Science

Getting started

Master's Programme in Data Science

Dr. Ghislain Fourny

D INFK

A joint programme across three departments

D INFK — Computer Science

D MATH — Mathematics

D ITET — Electrical Engineering

Master's programme in *Data Science*

ETH has 16 departments, identified with four letters (D-AAAA)

Who’s who

Prof. Kenny Paterson

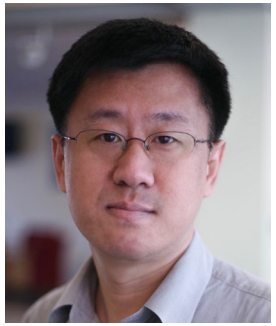
Head of the Computer Science Department

Dr. Ghislain Fourny

Study Coordinator

Questions on planning your studies and course catalog

ghislain.fourny@inf.ethz.ch



Prof. Zhendong Su

Director of Studies

Examination regulations

Validation of examination results

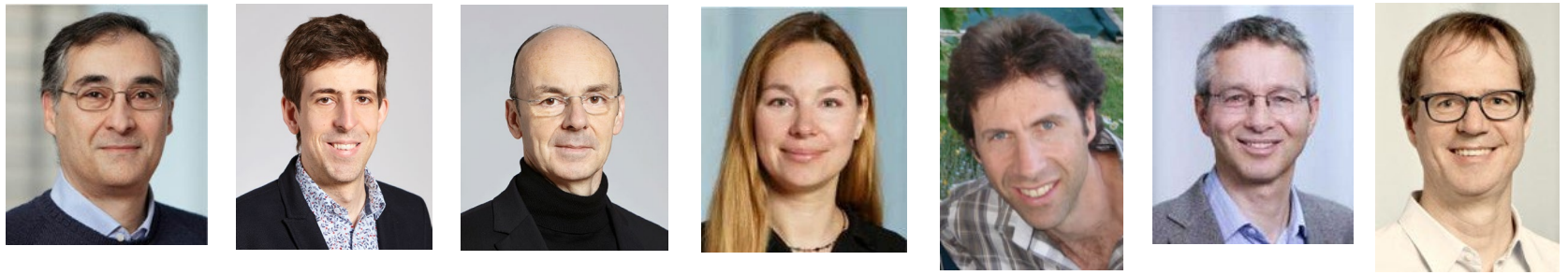
Bernadette Gianesi

Studies Administration

Main point of contact

bernadette.gianesi@inf.ethz.ch

Mentors (Core Data Science Faculty)



Appointed at the start of the studies

Discuss and approve your *learning agreement*

...and many more Professors who can supervise Master's theses.

The Master's Programme

Study Guide

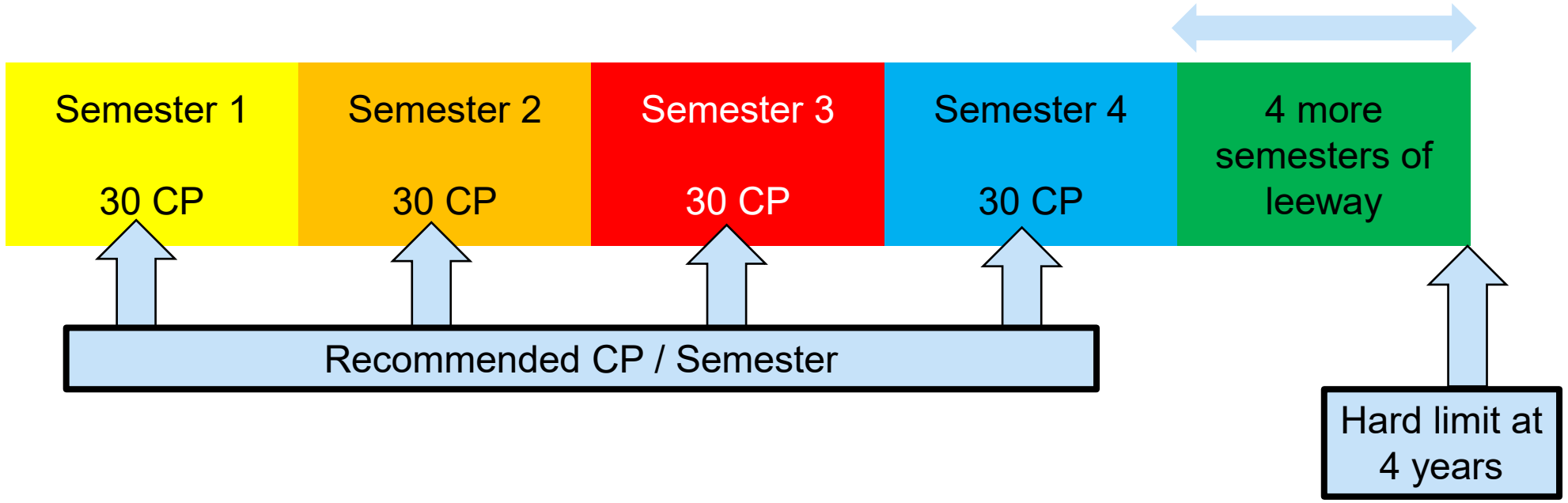
Read it!

European Credit Transfer System (ECTS)

Course completed successfully

→ **full amount** of ECTS credits is awarded

120 Credit Points



The last semester focuses completely on the Master's thesis.

Grading System

6	Excellent
5.75	Excellent
5.5	Very good
5.25	Very good
5	Good
4.75	Good
4.5	Satisfactory
4.25	Satisfactory
4	Pass
3	Poor
2	Extremely poor
1	Not measurable

Pass: grade **≥ 4**

Fail: grade **< 4**

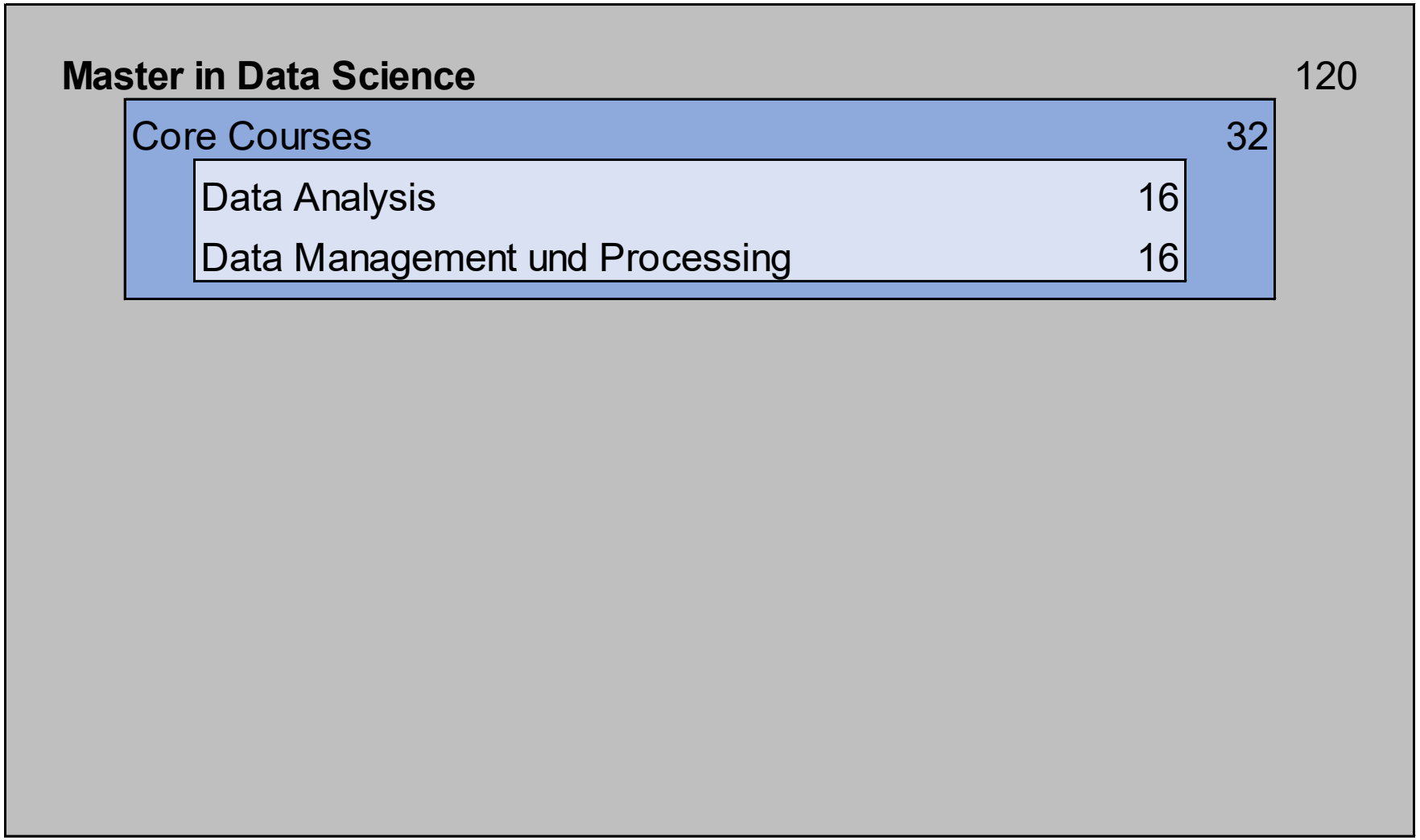
Every failed examination or project can be **repeated once**.

Programme Structure

Master in Data Science		120
Core Courses		32
	Data Analysis 16	
	Data Management und Processing 16	
Electives		28
	Subject-specific Electives 20	
	Interdisciplinary Electives 8	
	Additional Electives 0	
Data Science Lab		10
Seminar		2
Science in Perspective		2
Master's Thesis		30

Programme Structure

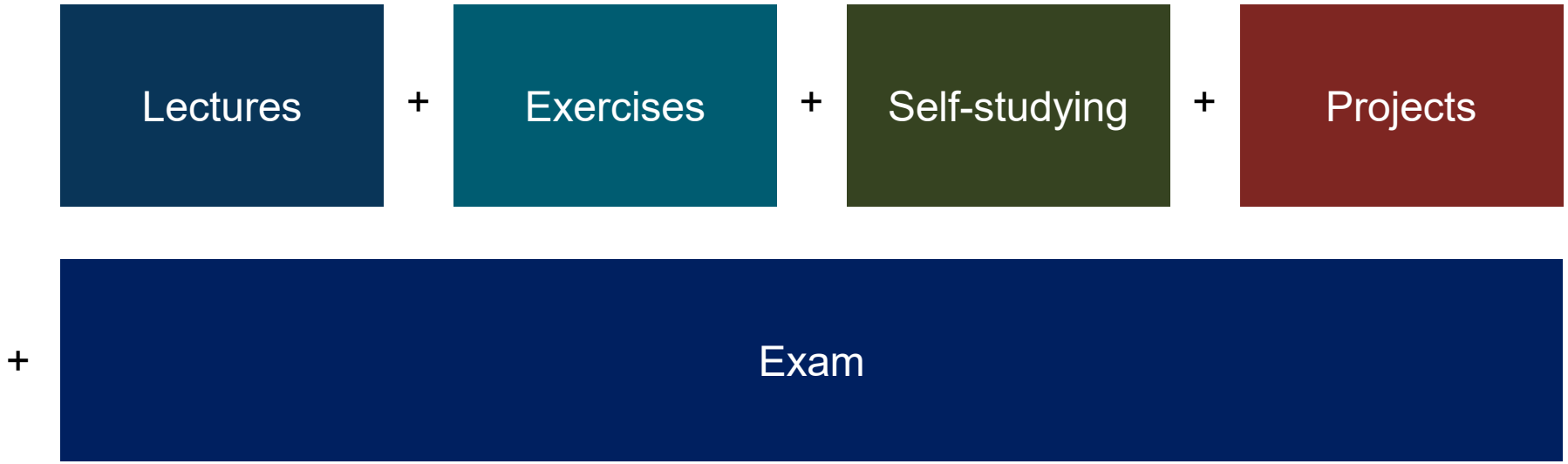
Programme Structure



Core courses

High level of competence in Data Science

Solid and sound knowledge basis.



Core courses

Roughly:

At least *two* here

Data Analysis

- Advanced Machine Learning (10)
- Probabilistic Artificial Intelligence (8)
- Mathematics of Information (8)
- Mathematics of Data Science (8)
- Computational Statistics (8)

At least *two* here

Data Management and Processing

- Big Data (10)
- Data Management Systems (8)
- Optimization for Data Science (10)
- Algorithmic Foundations of Data Science (10)
- Advanced Algorithms (9)

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Electives – Subject Specific Electives

The electives provide a broader education with a higher level of customizability

Data Science Master

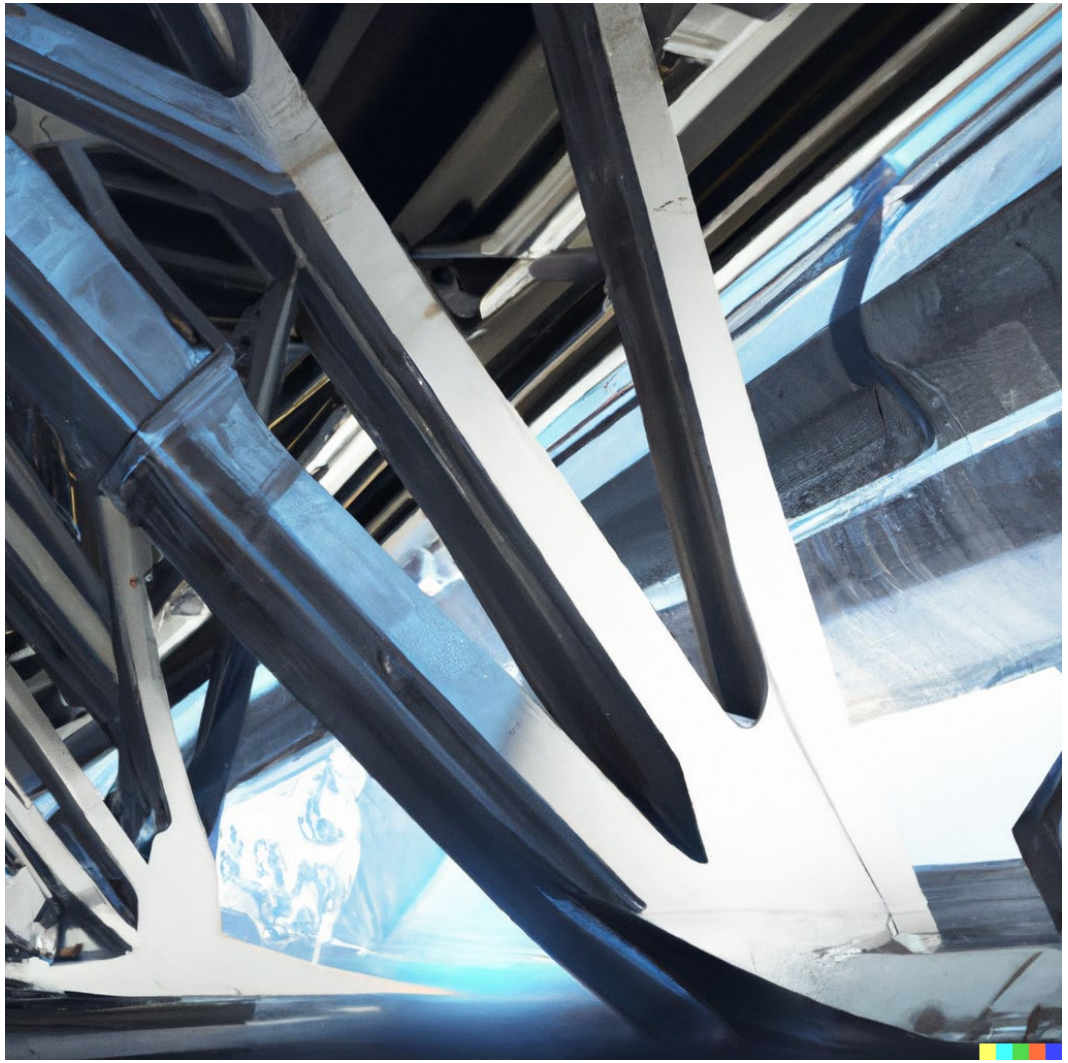
▸ Master Studies (Programme Regulations 2023)

▸ ▸ Electives

▸ ▸ ▸ Subject-Specific Electives

Number	Title	Type	ECTS	Hours	Lecturers
261-5130-00L	Research in Data Science	W	6 credits	13A	Professors
252-3005-00L	Natural Language Processing	W	7 credits	3V + 3U + 1A	R. Cotterell
263-2400-00L	Reliable and Trustworthy Artificial Intelligence	W	6 credits	2V + 2U + 1A	M. Vechev
263-3210-00L	Deep Learning	W	8 credits	3V + 2U + 2A	T. Hofmann, N. Perraudin
263-5005-00L	Artificial Intelligence in Education Does not take place this semester.	W	3 credits	1V + 0.5U	M. Sachan
263-5056-00L	Applications of Deep Learning on Graphs	W	4 credits	2G + 1A	M. Kuznetsova, G. Rätsch
263-5902-00L	Computer Vision	W	8 credits	3V + 1U + 3A	M. Pollefeys, S. Tang, F. Yu
227-0155-00L	Machine Learning on Microcontrollers Registration in this class requires the permission of the instructors. Preference is given to students in the MSc EEIT.	W	6 credits	4G	M. Magno, L. Benini
227-0417-00L	Information Theory I	W	6 credits	4G	A. Lapidoth

Electives - Interdisciplinary Electives



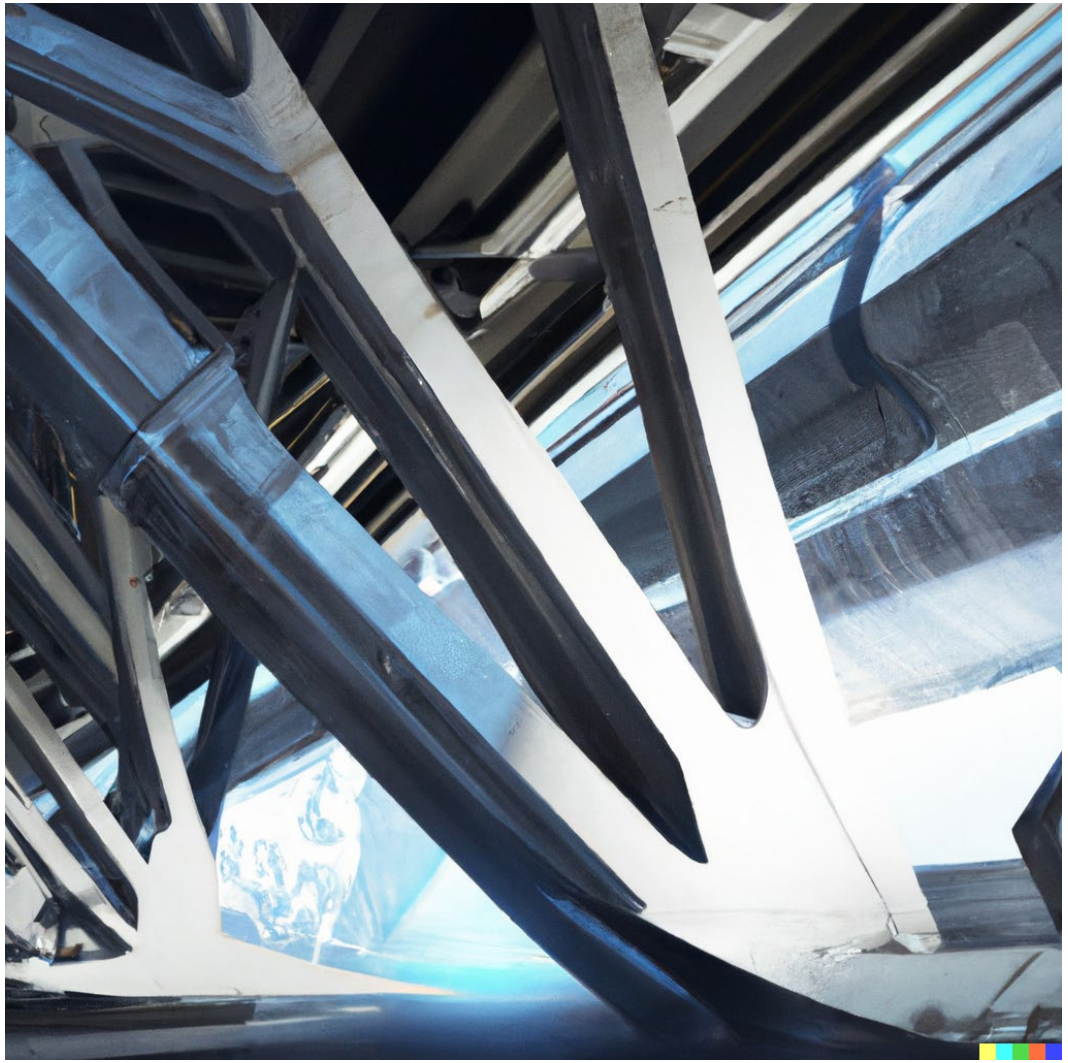
Bridge the *gap* with other **disciplines**
cultures
mindsets

8-12 credits

Data Science would not exist without

Data

Electives - Interdisciplinary Electives



Course compilations

- Computational Biology, Bioinformatics, and Biomedicine
- Computer Networks
- Finance & Insurance
- Geographic Information Systems
- Law, Policy, and Innovation
- Neural Information Processing
- Social Networks
- Transport Planning and Systems
- Weather and Climate Systems

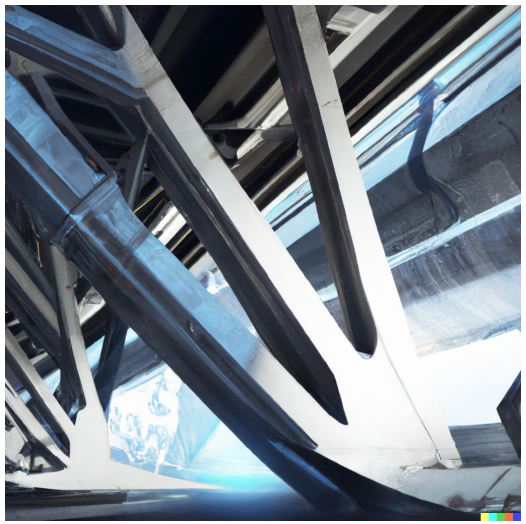
Electives – Additional Electives

D INFK

D MATH

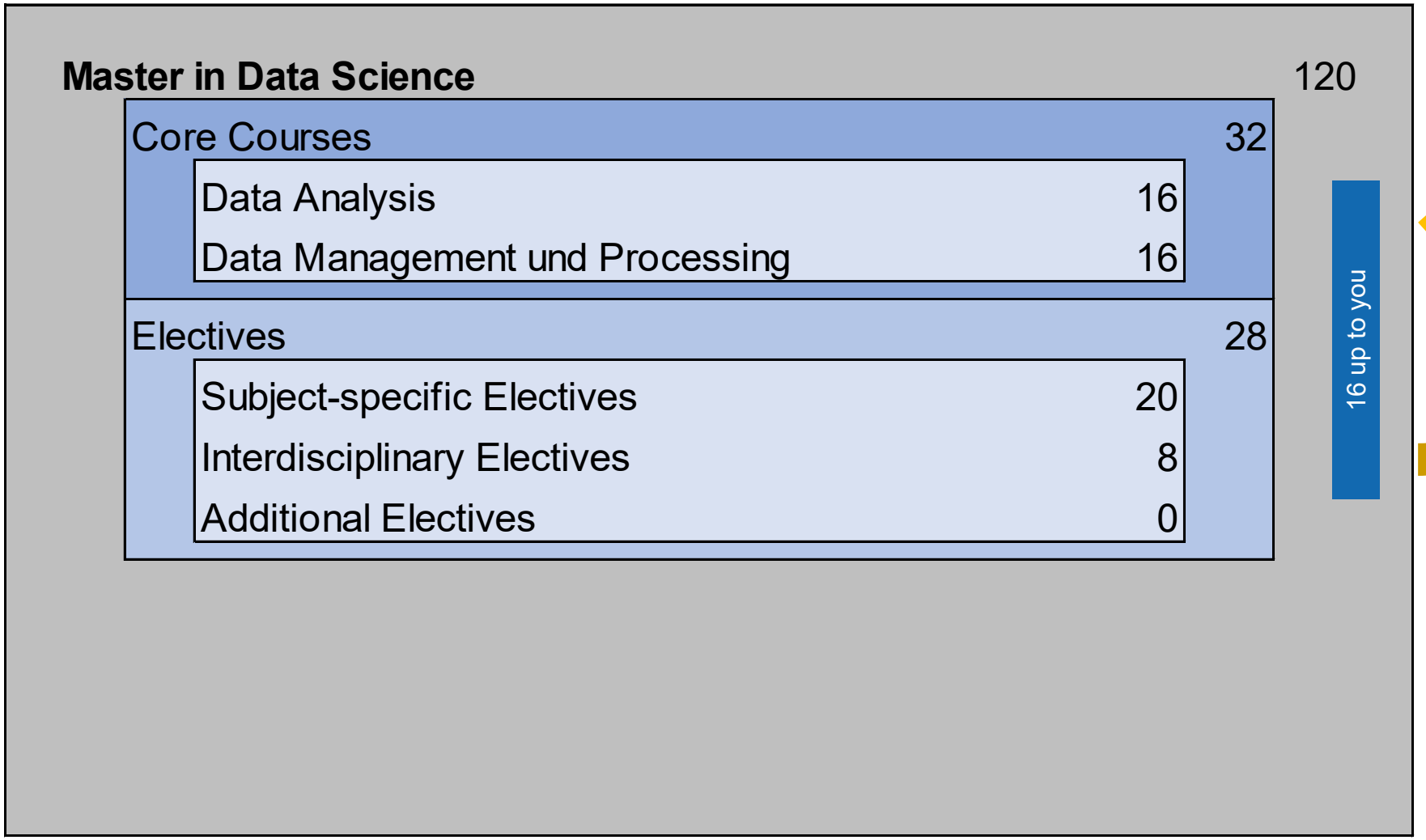
D ITET

Any Master's level course offered by the three departments!



Any interdisciplinary elective (from any category)

Programme Structure



Does not sum up:
freedom

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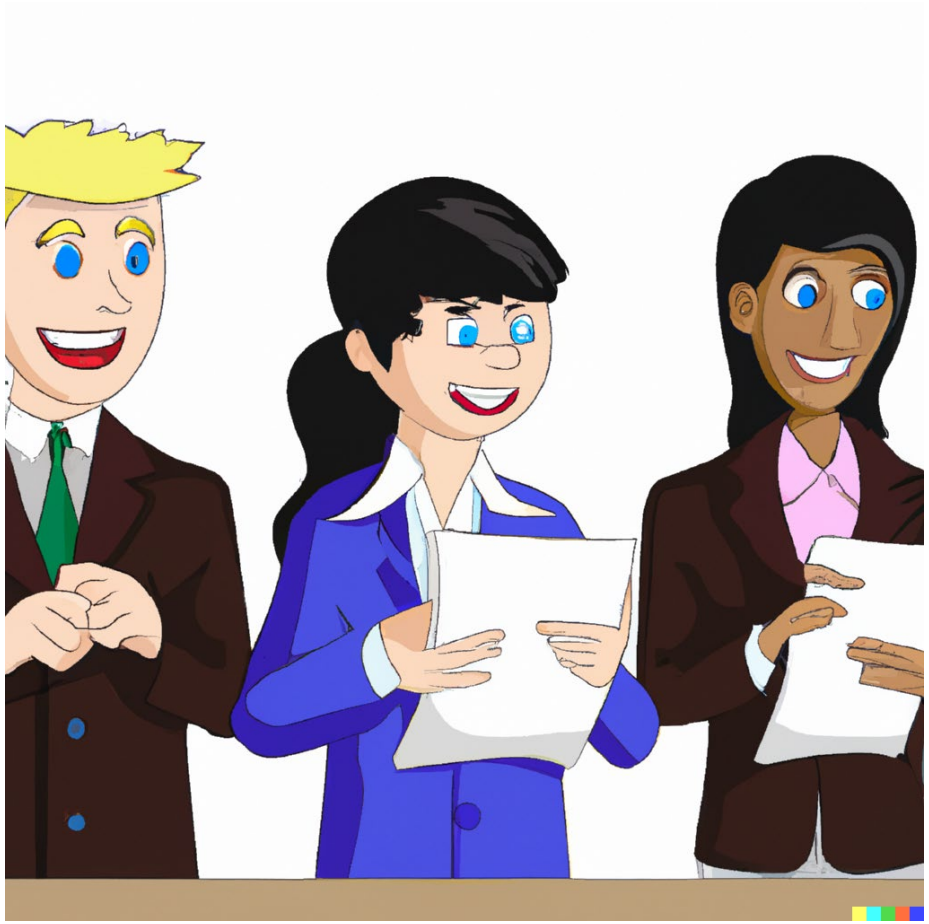
Data Science Lab



Apply your knowledge and skills to

Interdisciplinary projects

Groups of three students
+
Presentation

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	Additional Electives	0
Data Science Lab		10
Seminar		2

Seminar

Read and *understand* publications

Present a research paper

Get involved in *discussions*

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Data Science Lab		10
Seminar		2
Science in Perspective		2

Science in Perspective

Humanities and *Social Sciences*

Language courses 851-xxxx-xx
(≤ 3 credits including ETH BSc)

Coordinator's pick:
Big Data, Law, and Policy

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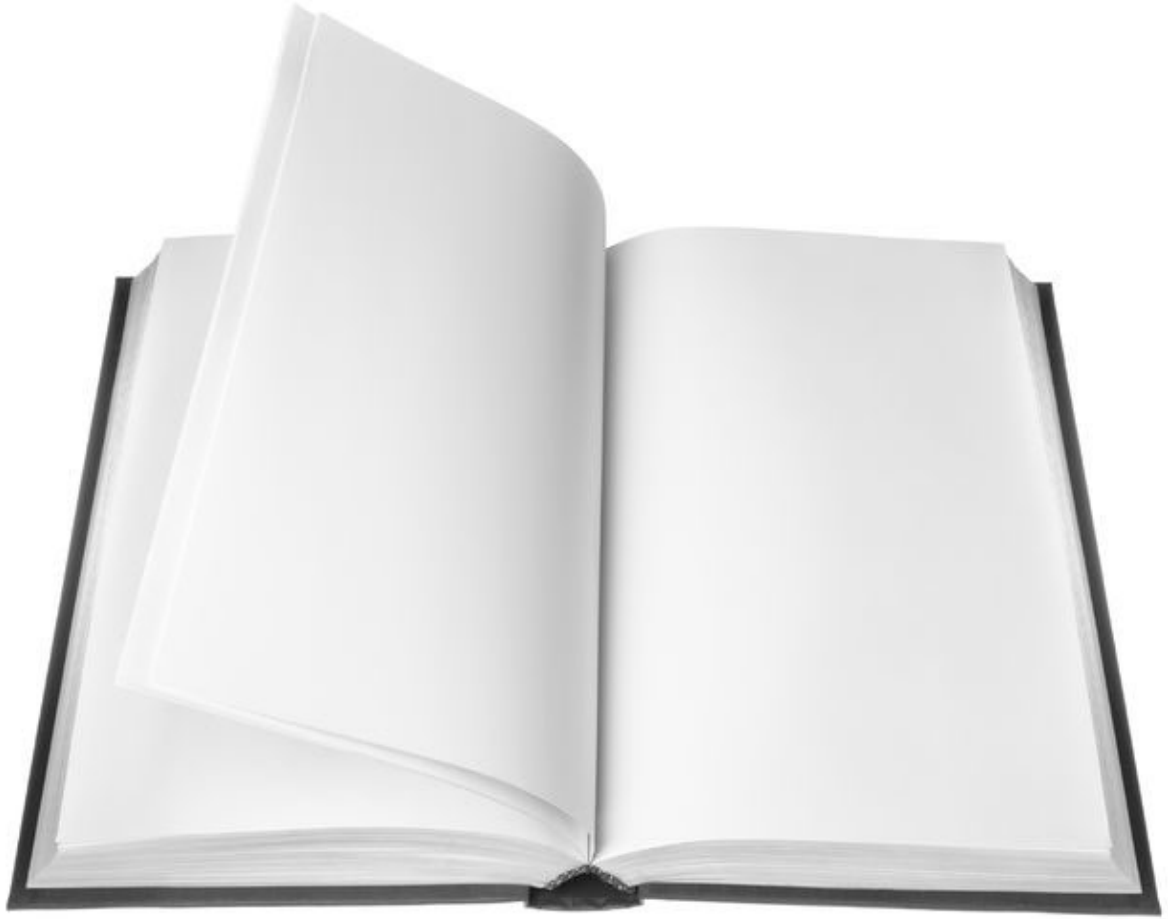
Master's Thesis		30

Master's Thesis



This is the *final step*!

6 months of *research* and *complex problem solving*

(And think about your future... maybe a doctorate?)

General recommendations

- Stick to *30 credits* per semester (don't overload)
- Start with the *core courses*
- *Data Science Lab* after interdisciplinary courses, ideally in the same field

At least 8 CP must habe been obtained under Data Analysis and 8 CP under Data Management.

Interdisciplinary courses do not need to have been taken prior to the Data Science Lab

Exchange programs

Prof. Dr. **Bernd Gärtner**

Brigitte Marti

- Only for students with a ETH bachelor degree
- Not in the first semester
- Recommended: exchange in the second semester

(No credits for "core core" courses and Data Science Lab)

Plan your studies

Learning Agreement

www.mystudies.ethz.ch/Functions

Programme

Confirmation of matriculation for Autumn Semester 2023 valid until 3 March 2024

Standard ◉ Extended (e.g. for Immigration Office) ○ **Download PDF**

To check the digital seal, the saved file must be opened with the free Adobe Acrobat Reader. 

Save the matriculation certificate in a safe place for multiple use.

Tutor **Prof. Dr. A. Bandeira**

Compose your individual learning agreement in accordance with your tutor **Learning Agreement** →

Create your learning agreement

Course	○ Not registered ○ Registered ○ Passed ○ Repetition failed ○ No more available ○ Failed
Sem	Semester **A**: Autumn Semester **S**: Spring Semester
Completion of mandatory courses	Declare how mandatory courses will be or have been completed: **Yes**: In this programme **Bachelor**: In the Bachelor or another ETH programme **Other university**: At another university **No**: Not planned in this programme
Not regular	Category assignment differs from that in the Course Catalogue.
Changes	**New**: Newly added, **Moved**: Moved to another category, **Modified**: Text modified, for external course units only.

Category Number	Course	Title	Sem	ECTS credits Planned	Needed	Missing	Completion of mandatory course	Not regular	Changes
Core Courses and Electives				0	76	76			
Core Courses				0	32	32			
Data Analysis				0	16	16			
Data Management				0	16	16			
Electives				0	28	28			
Subject-Specific Electives				0	20	20			
Interdisciplinary Electives				0	8	8			
Additional Electives				0	0				

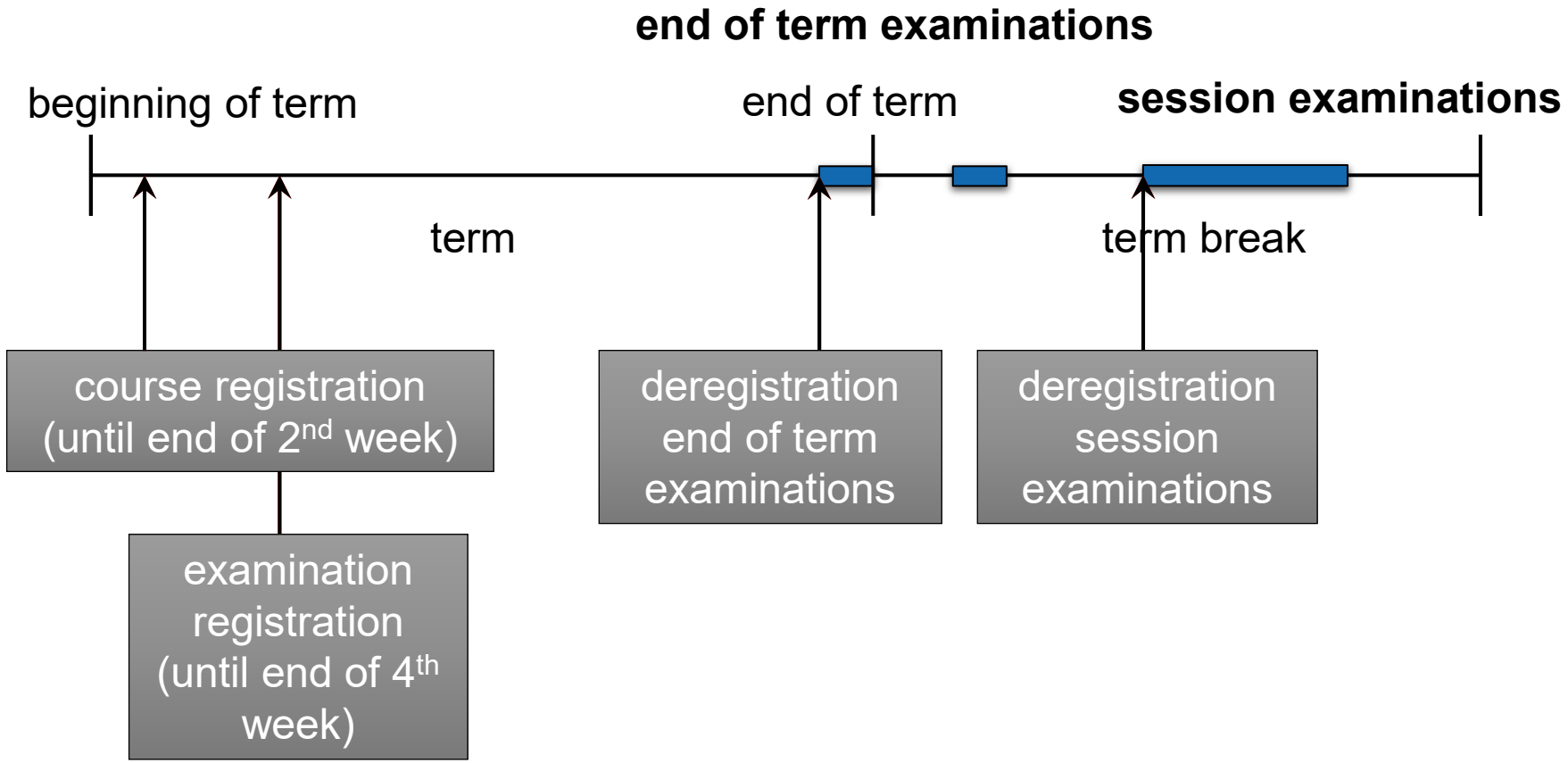
- Data Science Lab, Seminar, Science in Perspective, Master's Thesis are **not** part of the learning agreement
- Interdisciplinary Electives must be chosen from one compilation only – minimum 8 credits, minimum 2 courses

Learning Agreement

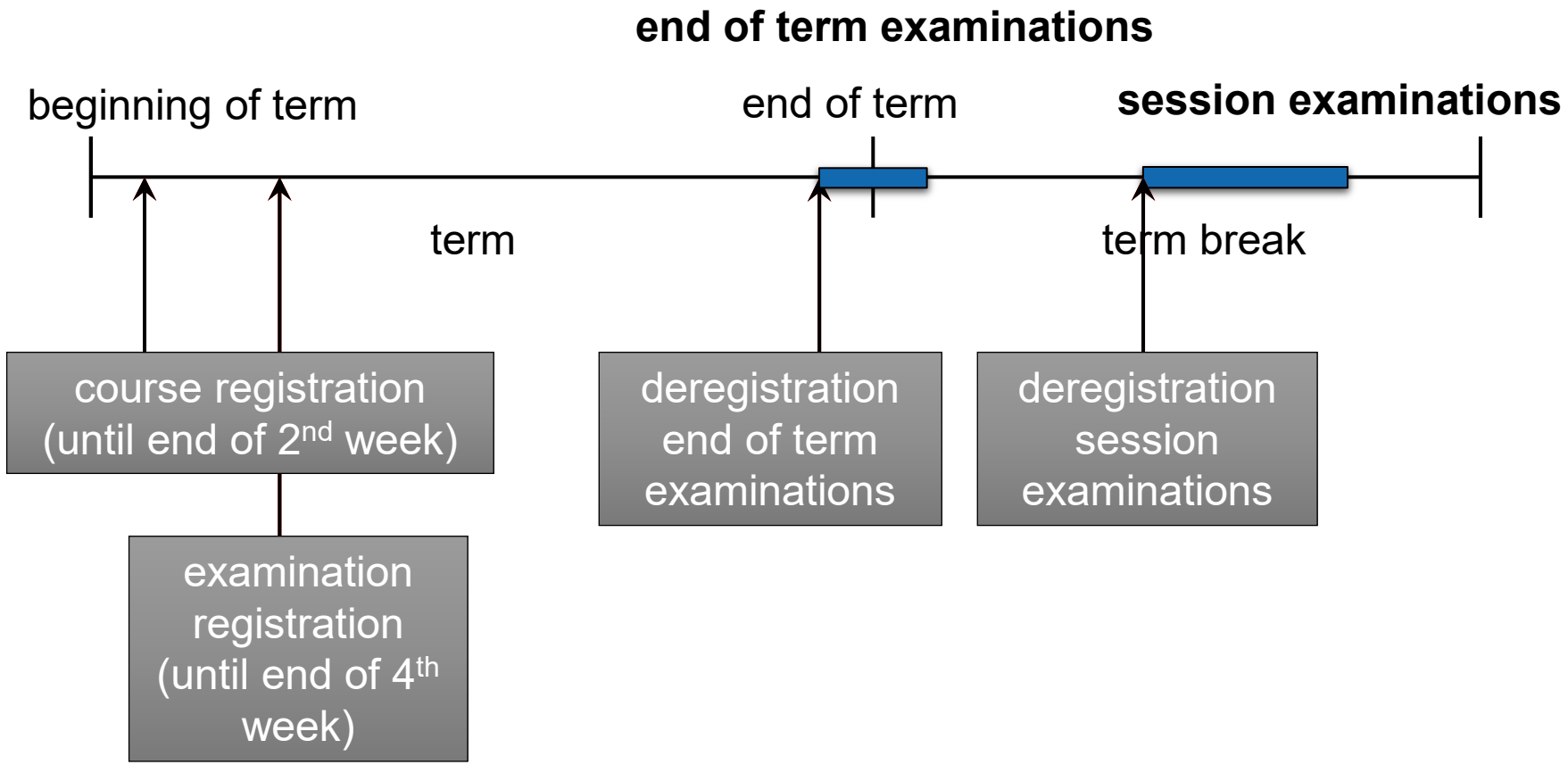
- Submit your learning agreement *after* discussing with your tutor.
- The first version of the learning agreement must be submitted and approved within four weeks after the first semester has started.
- The final version must be submitted before registering for the master’s thesis.

Academic Year

Autumn Semester



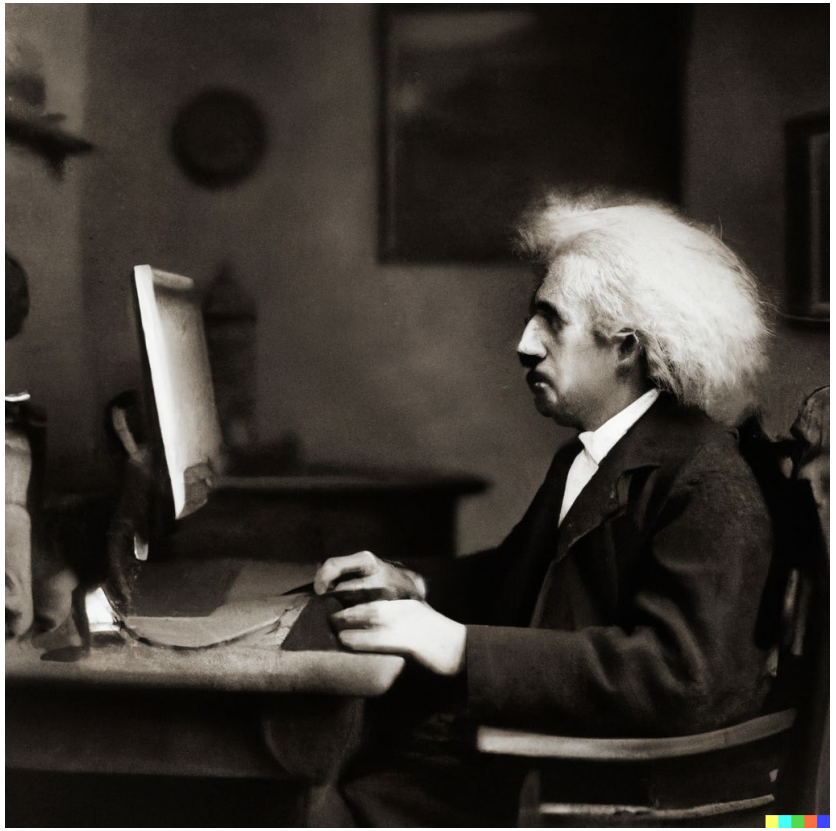
Spring Semester



Deadlines

Important deadlines (course registrations, exam registration and deregistration, etc.) are always announced ahead of time via *e-mail*
albert.einstein@student.ethz.ch

Make sure you read your e-mails!



Preparing Examinations

- Solve the *exercises* during the semester
- Solve *old examinations* (available from the student body, i.e. VIS)
- *Oral examinations*: Get minutes of former examinations from VIS
- If you have *questions*, ask your fellow students or the assistants

highly, highly, highly recommended

to attend all lectures and exercise sessions

Course times

3 pm – 4 pm

actually means

3:15 pm – 4:00 pm

- **At ETH Zentrum (here)**: Classes start a **quarter past** the indicated hour.
- **On Hönggerberg Campus**: depends on exact building course is in! see https://ethz.ch/students/en/studies/academic-support/course-catalogue/lectures-times.html
- Also check https://ethz.ch/students/en/studies/academic-support.html for general information – including lecture recording links, etc

Exam times

This does *not* apply to exams, meetings, etc.

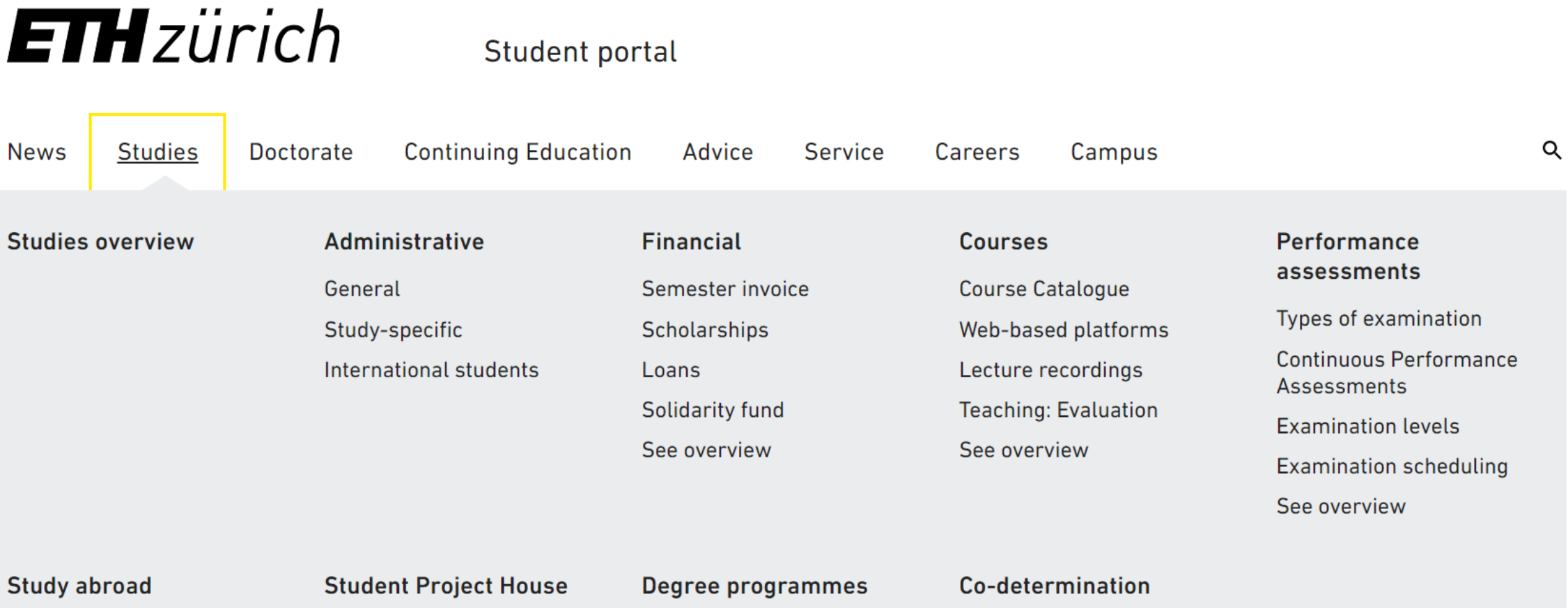
3 pm – 4 pm

really means

3pm – 4pm

Student Portal

https://ethz.ch/students/en.html



Rock your Master's event

7 November 2023
16.00–19.00

ETH Library
InfoCenter
Rämistrasse 101, HG

- Get prepared to stay on time with your studies and your Master's thesis
- **Know where to find help** before the workload peaks
- Meet your peers, expand your **network**
- Enjoy **impro theatre** and a **free drink**

More information at:
library.ethz.ch/rock-your-masters

ETH zürich ETH Library

All the best for your studies