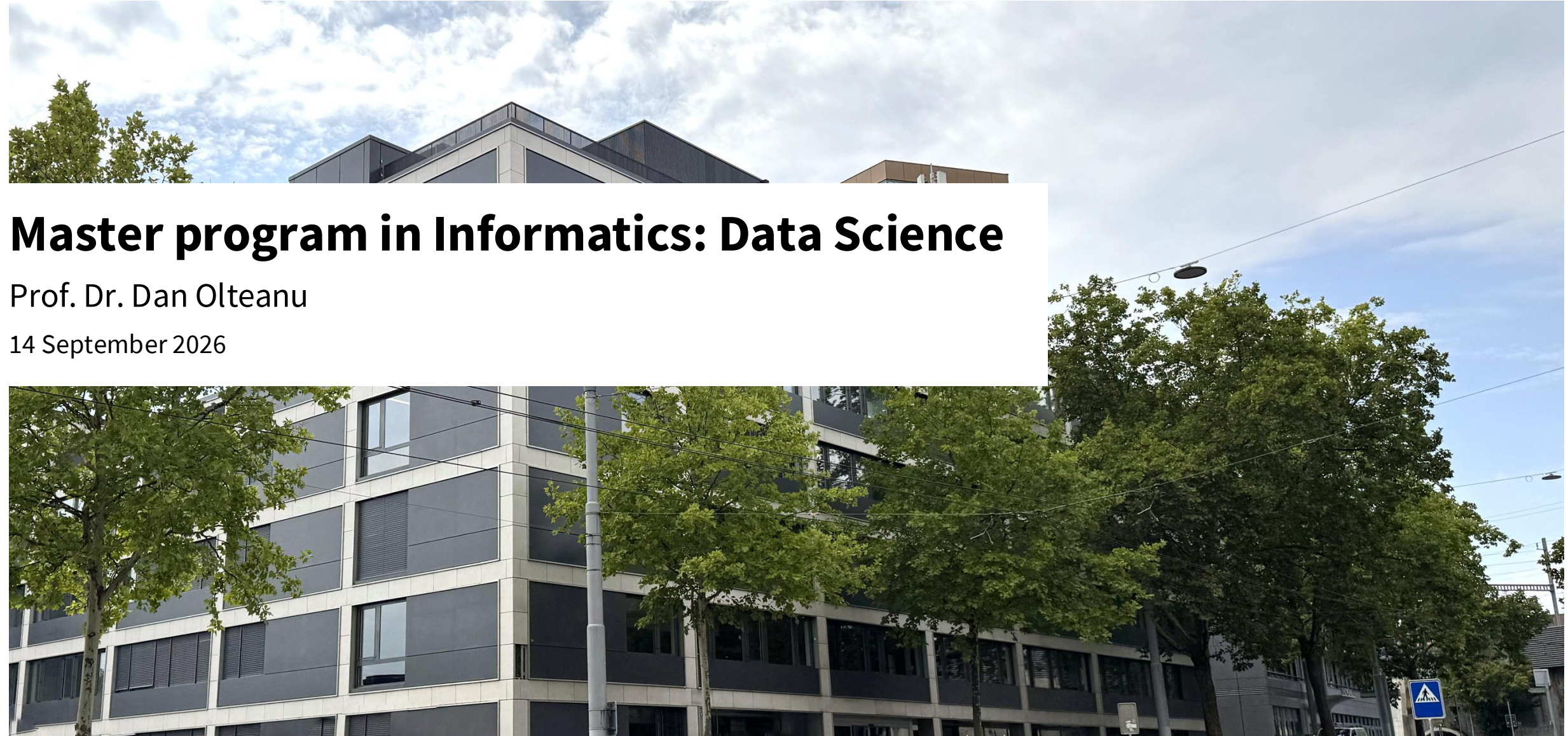




Universität  
Zürich<sup>UZH</sup>

Department of Informatics



# Master program in Informatics: Data Science

Prof. Dr. Dan Olteanu

14 September 2026

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# IfI: The Department of Informatics

- Founded in 1970 (IfI = Institut für Informatik)
- Part of the Faculty of Business, Economics and Informatics
- 21 Professors, 130 PhD students and Post-Docs
- 550 Bachelor's students
- 650 Master's students
- Campus Oerlikon

 **You!**



# IfI Professors

|                                                                                  |                                                                                 |                                                                                   |                                                                          |                                                                                   |                                                                                        |                                                                                     |                                                                               |                                                                                     |                                                               |                                                                                     |                                                                                                         |                                                                                     |                                                                                                   |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|  | <b>Alberto Bacchelli</b><br>Zurich<br>Empirical<br>Software Engineering<br>Team |  | <b>Jürgen Bernard</b><br>Interactive<br>Visual<br>Data<br>Analysis Group |  | <b>Abraham Bernstein</b><br>Dynamic and<br>Distributed<br>Information<br>Systems Group |  | <b>Eva Bittner</b><br>Human-centered<br>Information<br>Systems<br>Engineering |  | <b>Michael Böhlen</b><br>Data-<br>Base<br>Technology<br>Group |  | <b>Ivan De Oliveira Nunes</b><br>Security and<br>Privacy of<br>Information,<br>Networks, and<br>Systems |  | <b>Thomas Fritz</b><br>Human<br>Aspects of<br>Software<br>Engineering                             |
|  | <b>Harald Gall</b><br>Software<br>Evolution and<br>Architecture<br>Lab          |  | <b>Anikó Hannák</b><br>Social<br>Computing<br>Group                      |  | <b>Elaine Huang</b><br>Zurich<br>People<br>and<br>Computing Lab                        |  | <b>Lena A. Jäger</b><br>Digital<br>Linguistics                                |  | <b>Dan Olteanu</b><br>Data<br>Systems and<br>Theory Group     |  | <b>Renato Pajarola</b><br>Visualization and<br>Multi-<br>Media<br>Lab                                   |  | <b>Giorgia Ramponi</b><br>Autonomous Sequential<br>Learning and<br>Predictive<br>Intelligence Lab |
|  | <b>Jana Rehse</b><br>Information<br>Systems<br>in<br>Organizations              |  | <b>Theodoros Rekatsinas</b><br>Large-<br>Scale<br>Systems                |  | <b>Davide Scaramuzza</b><br>Robotics and<br>Perception<br>Group                        |  | <b>Gerhard Schwabe</b><br>Information<br>Management<br>Research<br>Group      |  | <b>Rico Sennrich</b><br>Text<br>Technology                    |  | <b>Burkhard Stiller</b><br>Communication<br>Systems<br>Group                                            |  | <b>Claudio Tessone</b><br>Blockchain and<br>Distributed<br>Ledger<br>Technologies                 |

# General Information Online

Dean's Office: <https://www.oec.uzh.ch/en/studies.html>

➤ Study Regulations, Admission, Enrollment, Changing Programs, Course Booking, Important Dates, Petitions/Appeals, ...

IfI: <https://www.ifi.uzh.ch/en/studies/msc-info.html>

➤ Specific to Informatics: Fact Sheets (legally binding!), Topics/Professors, Tutors, also these slides for later reference

**Please read the regulations and fact sheets!**

The presentations held at the **Faculty's Master Welcome Day** are available from:

<https://www.oec.uzh.ch/en/studies/events/mwd.html>



# Structure of the MSc Programs

All programs comprise...

- a compulsory module
- a Master's Project (group work!)
- modules from core/elective areas
- a Master's Thesis at the end

More on these components on the next slides...

You find these slides at:

[www.ifi.uzh.ch](http://www.ifi.uzh.ch) > Academic Programs >  
Master in Informatics

| Five Major MSc study programs |                               |                                 |                               | 90 ECTS credits               |
|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|
| Information Systems<br>IS     | Software Systems<br>SOSY      | Human-Centered Computing<br>HCC | Artificial Intelligence<br>AI | Data Science<br>DS            |
| Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS     | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   |
| Master's project<br>15 ECTS   |                               |                                 |                               |                               |
| Core elective area<br>18 ECTS | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS   | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS |
| INF elective area<br>15 ECTS  |                               |                                 |                               |                               |
| Free elective area<br>6 ECTS  |                               |                                 |                               |                               |
| Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS      | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    |

# Compulsory Module

The compulsory module is specific to your study program.

For Data Science: Foundations of Data Science

- Covers introductory topics to machine learning
- Focus on the mathematical underpinning of why and how
- Practical component requiring programming

Prerequisites

- Programming: Prior exposure to any programming language is useful and necessary
- Mathematics: Linear algebra, Multivariate calculus, Probability theory

# Master's Project

The Master's Project...

- is a **group project** (= at least 2 IfI students)
- is an **intensive and demanding** project worth 15 ECTS credits
- best time: During semester break
- max. 12 months to complete
- must be supervised by an IfI professor

➤ **Check the fact sheet!**

IfI organizes a **Master's Project Market** each semester

➤ Some open projects are presented and you can find peers

| Five Major MSc study programs |                               |                                 |                               |                               | 90 ECTS credits |
|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|-----------------|
| Information Systems<br>IS     | Software Systems<br>SOSY      | Human-Centered Computing<br>HCC | Artificial Intelligence<br>AI | Data Science<br>DS            |                 |
| Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS     | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   |                 |
| Master's project<br>15 ECTS   |                               |                                 |                               |                               |                 |
| Core elective area<br>18 ECTS | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS   | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS |                 |
| INF elective area<br>15 ECTS  |                               |                                 |                               |                               |                 |
| Free elective area<br>6 ECTS  |                               |                                 |                               |                               |                 |
| Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS      | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    |                 |

# Elective Areas

## Core elective area

Specific to your Major study program (IS, SOSY, HCC, AI, or DS).

## INF elective area

All modules offered by IfI on the Master's level (definition in the Study Regulations, p. 31)

## Free elective area

All modules offered on the Master's level (definition in the Study Regulations, p. 31)

| Five Major MSc study programs |                    |                          |                         |                    | 90 ECTS credits |
|-------------------------------|--------------------|--------------------------|-------------------------|--------------------|-----------------|
| Information Systems           | Software Systems   | Human-Centered Computing | Artificial Intelligence | Data Science       |                 |
| IS                            | SOSY               | HCC                      | AI                      | DS                 |                 |
| Compulsory module             | Compulsory module  | Compulsory module        | Compulsory module       | Compulsory module  |                 |
| 6 ECTS                        | 6 ECTS             | 6 ECTS                   | 6 ECTS                  | 6 ECTS             |                 |
| Master's project              |                    |                          |                         |                    | 15 ECTS         |
| Core elective area            | Core elective area | Core elective area       | Core elective area      | Core elective area |                 |
| 18 ECTS                       | 18 ECTS            | 18 ECTS                  | 18 ECTS                 | 18 ECTS            |                 |
| INF elective area             |                    |                          |                         |                    | 15 ECTS         |
| Free elective area            |                    |                          |                         |                    | 6 ECTS          |
| Master's thesis               | Master's thesis    | Master's thesis          | Master's thesis         | Master's thesis    |                 |
| 30 ECTS                       | 30 ECTS            | 30 ECTS                  | 30 ECTS                 | 30 ECTS            |                 |

# Core Elective Area: Data Science (1/2)

## Data Management

- Systems for Data Science
- **New Spring 2027 course to come on systems**

## Algorithms

- Combinatorial Algorithms
- Randomized Algorithms
- Efficient Algorithms for Frequently Asked Questions

## Machine Learning

- **Foundations of Data Science (compulsory)**
- Reinforcement Learning
- Advanced Machine Learning

Overview only for your convenience.  
Only the online course catalogue  
contains binding information!

| Five Major MSc study programs |                               |                                 |                               |                               | 90 ECTS credits |
|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|-----------------|
| Information Systems<br>IS     | Software Systems<br>SOSY      | Human-Centered Computing<br>HCC | Artificial Intelligence<br>AI | Data Science<br>DS            |                 |
| Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS     | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   |                 |
| Master's project<br>15 ECTS   |                               |                                 |                               |                               |                 |
| Core elective area<br>18 ECTS | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS   | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS |                 |
| INF elective area<br>15 ECTS  |                               |                                 |                               |                               |                 |
| Free elective area<br>6 ECTS  |                               |                                 |                               |                               |                 |
| Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS      | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    |                 |

# Core Elective Area: Data Science (2/2)

Overview only for your convenience.  
Only the online course catalogue  
contains binding information!

## Mathematics for Data Science and Finance

- Mathematics for AI and Data Science (**1<sup>st</sup> time taught this semester**)
- Real Analysis I
- Statistical Foundations for Finance  
(Mathematical and Computational Statistics  
with a View Towards Finance and Risk Management)

## Applied Data Science

- Network Science

| Five Major MSc study programs |                    |                          |                         |                    | 90 ECTS credits |
|-------------------------------|--------------------|--------------------------|-------------------------|--------------------|-----------------|
| Information Systems           | Software Systems   | Human-Centered Computing | Artificial Intelligence | Data Science       |                 |
| IS                            | SOSY               | HCC                      | AI                      | DS                 |                 |
| Compulsory module             | Compulsory module  | Compulsory module        | Compulsory module       | Compulsory module  |                 |
| 6 ECTS                        | 6 ECTS             | 6 ECTS                   | 6 ECTS                  | 6 ECTS             |                 |
| Master's project              |                    |                          |                         |                    |                 |
| 15 ECTS                       |                    |                          |                         |                    |                 |
| Core elective area            | Core elective area | Core elective area       | Core elective area      | Core elective area |                 |
| 18 ECTS                       | 18 ECTS            | 18 ECTS                  | 18 ECTS                 | 18 ECTS            |                 |
| INF elective area             |                    |                          |                         |                    |                 |
| 15 ECTS                       |                    |                          |                         |                    |                 |
| Free elective area            |                    |                          |                         |                    |                 |
| 6 ECTS                        |                    |                          |                         |                    |                 |
| Master's thesis               | Master's thesis    | Master's thesis          | Master's thesis         | Master's thesis    |                 |
| 30 ECTS                       | 30 ECTS            | 30 ECTS                  | 30 ECTS                 | 30 ECTS            |                 |

# Master's Thesis

The Master's Thesis...

- is a **full-time endeavor** worth 30 ECTS credits (i.e., no significant side jobs or other study activities possible)
- max. six months to complete
- can only be started once the Master's Project has been successfully completed
- must be supervised by an IfI professor

➤ **Check the fact sheet!**

- Find topics on the IfI website (check the individual group pages) or contact the groups directly.

| Five Major MSc study programs |                               |                                 |                               |                               | 90 ECTS credits |
|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|-----------------|
| Information Systems<br>IS     | Software Systems<br>SOSY      | Human-Centered Computing<br>HCC | Artificial Intelligence<br>AI | Data Science<br>DS            |                 |
| Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS     | Compulsory module<br>6 ECTS   | Compulsory module<br>6 ECTS   |                 |
| Master's project<br>15 ECTS   |                               |                                 |                               |                               |                 |
| Core elective area<br>18 ECTS | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS   | Core elective area<br>18 ECTS | Core elective area<br>18 ECTS |                 |
| INF elective area<br>15 ECTS  |                               |                                 |                               |                               |                 |
| Free elective area<br>6 ECTS  |                               |                                 |                               |                               |                 |
| Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS      | Master's thesis<br>30 ECTS    | Master's thesis<br>30 ECTS    |                 |

# Further Modules

## Seminar

- one IFl seminar is mandatory
- recommended from 2nd semester
- check the Course Catalogue early and register for the seminar within the seminar's application deadline

➤ **Note: this deadline is shorter than the regular module booking deadline!**

## Independent Study

- Optional module

➤ **Check the fact sheet!**

**Please consult the Framework Ordinance and the Program Regulations; they are the only complete and legally-binding documents**

## External Modules

- ETH: <https://www.oec.uzh.ch/en/studies/credits/external-eth.html>
- Mobility within Switzerland: <https://www.uzh.ch/cmsssl/en/studies/application/chmobilityout.html>
- International exchange: <https://www.int.uzh.ch/en/out.html>
- Partner universities: <https://www.oec.uzh.ch/en/international/engagement.html>

# New: UNA Europa Data Science and AI Module Exchange

- WWF-INF students have the option to take **virtual** modules from universities in the UNA Europa network
  - University of Helsinki offers the course “AI in Society” (2-3 ECTS)
  - University of Bologna offers the course “Modern Statistics and Big Data Analytics” (6 ECTS)
  - University of Bologna offers the course “Matrix Tensor Techniques for Data Science” (6 ECTS)
- All above modules are available in the INF elective area

# Data Science

## Note on External Courses

A course from another university may be counted against the Data Science core elective stint only if:

- It is directly relevant to Data Science, and
- It is of a good scientific standing, teaching principles as opposed to a hands-on tutorial on using Data Science tools.

## Data Science on the IfI web page:

<https://www.oec.uzh.ch/en/studies/master/it/ds.html>

It is possible to change the Major under certain conditions: <https://www.oec.uzh.ch/en/studies/enrollment/change.html>

# Minor

**Available Minor programs are listed in the Course Catalogue:**

<https://studentservices.uzh.ch/uzh/anonym/vvz/index.html>

➤ Master of Science UZH in Informatics (RVO22) > Minor 30

**Note: Modules in the *Minor area Informatics (INF)* are offered only in the Fall semester. There are no modules in the *Minor area Informatics* in the Spring semester. Take this into account when planning your next few semesters.**

You can change your Minor under certain conditions:

<https://www.oec.uzh.ch/en/studies/enrollment/change.html>

## Study programs (22)

> Major 90

▼ Minor 30 - Faculty of Business, Economics and Informatics

Artificial Intelligence

Banking and Finance

Business Administration

Data Science

Economics

Finance

Informatics

Information Systems

▼ Minor 30 - Other Faculties

Computational Linguistics and Language Technology

Bioinformatics

Biology

Chemistry

Geography

# Hints (1/3)

- **Focus on the compulsory modules** in your Major and Minor programs
- **Make a study plan**
- Check course schedule of previous years for planning. Courses often stay in the same slot. Suggested order:



- **Read the fact sheets** well before starting the respective module or thesis
- All legally binding information regarding modules, incl. exam dates, are in the UZH Course Catalogue. Most modules additionally have a website or OLAT course, but **the Course Catalogue is binding**

## Hints (2/3)

- **Check the study websites** of the Faculty and the Department:
  - <https://www.oec.uzh.ch/en/studies.html>
  - <https://www.ifi.uzh.ch/en/studies/msc-info.html>
- Note that **booking/cancellation deadlines** may vary between faculties.
- Working at IfI: Some modules/courses seek **Tutors**.
- Check out <https://www.ifi.uzh.ch/en/studies/msc-info.html> and the individual group pages.
- Mentoring, social events, representatives: Informatics **student association ICU**: <https://icuzh.ch>

## Hints (3/3)

- **Consider the policies on plagiarism and scientific integrity.** You find the fact sheet on plagiarism on this website:
  - <https://www.ifi.uzh.ch/en/studies/msc-info.html>
  - The Swiss Academies of Arts and Sciences issued a Code of conduct for scientific integrity:  
<https://swiss-academies.ch/publications/kodex-fur-wissenschaftliche-integritat>
- UZH provides a number of **advice and support services** for topics such as Gender Equality and Diversity, Disability, or Psychological Counseling:
  - <https://www.students.uzh.ch/en/advice.html>
- **Practise passive and active English without tools** (in exams, no translation tools are permitted)
  - UZH offers English courses: <https://www.sprachenzentrum.uzh.ch/en/Sprachkurse/Englisch.html>

# Questions/Whom to Contact

**If you have questions, please follow these steps:**

1. Read the Study Regulations: <https://www.oec.uzh.ch/en/studies/regulations.html>
2. Read the Ifl's study information and fact sheets: <https://www.ifi.uzh.ch/en/studies/msc-info.html>
3. Check information in the Course Catalogue: <https://studentservices.uzh.ch/uzh/anonym/vvz/index.html>
4. Send e-mail to the respective person:

For questions about

- Master's Project
- Independent Studies
- Master's Thesis
- Informatics studies in general

Contact the Ifl's Study Coordinator,  
Daniela Bärtschi: [studies@ifi.uzh.ch](mailto:studies@ifi.uzh.ch)

For questions specific to a course: Contact the instructor.

For everything else, contact the Dean's Office:  
<https://www.oec.uzh.ch/en/staff/team.html> (Study Affairs)

And of course you can ask your fellow students, for example by joining the student association ICU: <https://icuzh.ch>

# Did you know?

**The Informatics Library is part of the UB Sciences on the Irchel campus!**

Books can be delivered to Oerlikon free of charge:

<https://t.uzh.ch/1mr>

or <https://www.ub.uzh.ch/en>





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