

# MSc Biomedical Engineering

**Orientation Day**

Christian Frei, Coordinator MSc BME  
September 19, 2022





# MSc Biomedical Engineering (BME): Who We Are

## Administrative part

Christian Frei

Coordinator MSc BME



Reto Kreuzer

Coordinator of studies, D-ITET\*



\*Other ETH-departments involved: D-HEST, D-MAVT and D-PHYS

# MSc Biomedical Engineering (BME): Who We Are (Track Advisors)

- Bioelectronics
  - Taekwang Jang
  - Janos Vörös
  - Hua Wang
  - Mehmet Fatih Yanik



- Biomechanics
  - Ralph Müller



- Representative D-MAVT
  - Brad Nelson



- Bioimaging
  - Klaas Prüssmann



- Medical Physics
  - Tony Lomax
  - Marco Stampanoni



- Mol. Bioengineering
  - Mark Tibbitt
  - Marcy Zenobi



# BEEZ and AMIV

- BEEZ: Biomedical Engineering Student Association
  - Anne zur Horst



- AMIV: Student's Association of D-ITET and D-MAVT



# Incoming Class HS22

- 70 students
  - Belgium (1), China (7), France (1), Germany (1), Greece (1), Hungary (1), Italy (4), Lebanon (1), Spain (6), Switzerland (43) and USA (4)



ETH Bachelors (37)  
Males (32), females (38)

# Your Studies are Subject to Regulations

- Study regulations
  - [www.rechtssammlung.ethz.ch](http://www.rechtssammlung.ethz.ch)
  - [www.master-biomed.ethz.ch](http://www.master-biomed.ethz.ch)

**ETH** RSETHZ 324.1.0350.53  
Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

**Programme Regulations 2020  
of the Master's degree programme in  
Biomedical Engineering**

**Departments of  
Information Technology and Electrical Engineering<sup>(1)</sup> (D-ITET)  
Mechanical and Process Engineering (D-MAVT)  
Health Sciences and Technology (D-HEST)  
Physics (D-PHYS)**

29 October 2019

*This English translation is for information purpose only.  
The original German version is the legally binding document.*

		<b>Article</b>
Chapter 1:	General regulations	1 – 9
Chapter 2:	Content, structure and scope of the Master's degree programme	10 – 22
Chapter 3:	Admission to the Master's degree programme	23 – 24
Chapter 4:	Performance assessments	25 – 35
Chapter 5:	Issuing of the Master's degree	36 – 40
Chapter 6:	Final clauses	41 – 44
Appendix 1	Admission	
Appendix 2	Qualification profil	

Version: **29.10.2019 – 0**

<sup>1</sup> Leading department, pursuant to Art. 33, Para. 1 of the ETH Zurich Organisational Ordinance (*Organisationsverordnung ETH Zürich*) of 16.12.2003 (RSETHZ 201.021).

1



# Reminder: Student Online Portal

- Your administrative duties on [www.mystudies.ethz.ch](http://www.mystudies.ethz.ch)
- Enrollment to courses and exams:
  - Register for each semester until the end of the second week
  - Register for courses (early in the semester; you need to be registered for a course to enroll for an exam)
  - Submit a study plan/learning agreement (until the end of the 4th week)
  - Enroll for exams – please enroll during the 3<sup>rd</sup> and 4<sup>th</sup> week of the semester (withdrawal possible until very late)
- Notify us of your address changes
- **Read your e-mails!**



## Login

**You must select the language before logging in.  
Die Sprachauswahl kann nur vor dem Login erfolgen.**

Use your ETH Zurich account (nethz).

Start

# How to Choose / Enroll for Lectures?

- Consult your track advisor!
- Overview of lectures to choose from:
  - <http://www.master-biomed.ethz.ch/education>
- Course catalogue:
  - [www.vvz.ethz.ch](http://www.vvz.ethz.ch)
  - Level: Master's Degree Programme > Department: ITET > Programme: Biomedical Engineering Master

MSc Biomedical Engineering Track Bioelectronics Spring Semester 2022 (FS22) last update: Dec. 16, 2021

Core Course
  Recommended Elective Course
  Biology Course

Monday					
08:00					
09:00				Neural Systems	Elements of Microscopy
10:00		Soft and Biohybrid Robotics			
11:00					
12:00					
13:00					
14:00		Finite Element Analysis in Biomedical Engineering			
15:00					
16:00	Microsystems II: Devices and Applications		Introduction to Robotics and Mechatronics	Orthopaedic Biomechanics	Advanced Topics in Control (Spring 2022)
17:00					
18:00					

Tuesday					
08:00	Rehabilitation Engineering I: Motor Functions				Physiology and Anatomy for Biomedical Engineers II
09:00		Translational Neuro modeling	Nanorobotics	Optics and Photonics	Machine Learning for Health Care
10:00					Biomedical Photonics *
11:00					
12:00					
13:00					Machine Learning for Health Care
14:00	Neuromorphic Engineering II				Introduction to Machine Learning
15:00			Lasers in Medicine		
16:00		MaP Distinguished Lecture Series on Soft Robotics *			Large-Scale Convex Optimization
17:00					
18:00					

Wednesday					
08:00					
09:00	Applications of Thermal Modeling: From Hot Atoms to Heated Tissues				
10:00					
11:00					
12:00					
13:00					
14:00		Introduction to Machine Learning	Recursive Estimation		
15:00					
16:00					
17:00					
18:00					

Thursday					
08:00					
09:00					
10:00		Measuring on the Nanometer Scale		Quantitative Big Imaging: From Images to Statistics	Development Strategies for Medical Implants
11:00					
12:00					Development Strategies for Medical Implants
13:00	Microsystems II: Devices and Applications				Cell and Molecular Biology for Engineers II
14:00					
15:00					
16:00			Nanorobotics		
17:00					
18:00					

Friday					
08:00	Rehabilitation Engineering I: Motor Functions	Principles in Tissue Engineering			Chemistry of Devices and Technologies
09:00					Large-Scale Convex Optimization
10:00	Advanced Topics in Control (Spring 2022)				
11:00			Biomechanics	Physics Against Cancer: The Physics of Imaging and Treating Cancer	
12:00					
13:00					
14:00	Advanced Signal Analysis: Modeling, and Machine Learning	Translational Neuro modeling	Physics in Medical Research: From Humans to Cells	Computer Simulations of Sensory Systems *	Introduction to Machine Learning
15:00					
16:00					
17:00					
18:00					

June 2022: Biological Methods for Engineers (Advanced Lab)      Venice dates: Computational Psychiatry & Computational Psychosomatics \*

\*: not offered in FS22

Note: This is an informal help for students. The official courses can be seen on the Course Catalogue of ETH ([www.vvz.ethz.ch](http://www.vvz.ethz.ch))



# 120 Credits ECTS to Fulfill the MSc BME

• Track Courses *	52 to 76 CP	] Part of the learning agreement (next slide)
– Track Core Courses, at least 12 CP		
– Recommended Elective Courses		
– Biology Courses		
• Semester Project *	12 CP	] These projects will change (for FS23)
• - Option: 2nd Semester Project	12 CP	
• - Option: Internship at Industry	12 CP	
• - Option: Research Project	24 CP	
• - Option: D-HEST Research Projects	5 to 15 CP	
• Master Project *	30 CP	
• Humanities (GESS/SiP) *	2 CP	
• Total	120 CP	

\*: mandatory

# Learning Agreement / Individual Study Plan

- Select tutor
- Discuss your choice with the track advisor, edit and submit the list in *myStudies* by the end of the fourth week of the semester
- Contains all core courses, recommended elective courses and biology courses
- Track advisors can allow courses not pre-defined for a particular track
- Only these courses can be accounted for the final degree



The screenshot shows the 'myStudies' interface for a student. The header includes the ETH logo and 'myStudies' branding. The main content area is titled 'Matriculation' and displays the following information:

- Electrical Engin. + Information Technology MSc**
- Current semester:** Spring Semester 2016, enrolled
- Deadlines: latest possible date**
- Master degree:** End of Spring Semester 2016
- Tutor:** (This field is highlighted with a red box and a yellow background, with a 'Select Tutor' button next to it)

Below this information, there is a list of navigation buttons for various student services:

- Back
- Course registration
- Projects/papers/theses
- Examinations
- Transcript of records
- Learning Agreement
- Studies overview
- Degree request

At the bottom, there is a 'Contact' section with the following text:

**Contact**  
For administrative questions, please contact the Registrar's Office, Tel. 044 632 30 00  
For programme specific questions, please contact your Study Administration Office.  
» <https://www.ethz.ch/students/en.html>

# 120 Credits ECTS to Fulfill the MSc BME

- Track Courses \* 52 to 76 CP
  - Track Core Courses, at least 12 CP
  - Recommended Elective Courses
  - Biology Courses
- Semester Project \* 12 CP
- - Option: 2nd Semester Project 12 CP
- - Option: Internship at Industry 12 CP
- - Option: Research Project 24 CP
- - Option: D-HEST Research Projects 5 to 15 CP
- Master Project \* 30 CP
- Humanities (GESS/SiP) \* 2 CP

---

- Total 120 CP

Semester Project: 14 weeks 50% or 7 weeks 100%

Master Project: 6 months 100%

Register with myStudies

Projects must be supervised by a professor affiliated with one of the 4 participating departments: D-ITET, D-HEST, D-MAVT or D-PHYS (*this will change for FS23*)

\*: mandatory

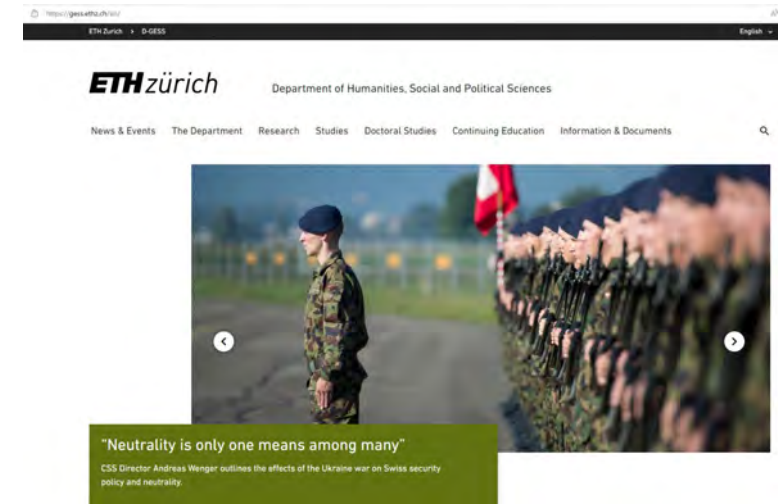


# 120 Credits ECTS to Fulfill the MSc BME

- Track Courses \* 52 to 76 CP
  - Track Core Courses, at least 12 CP
  - Recommended Elective Courses
  - Biology Courses
- Semester Project \* 12 CP
  - - Option: 2nd Semester Project 12 CP
  - - Option: Internship at Industry 12 CP
  - - Option: Research Project 24 CP
  - - Option: D-HEST Research Projects 5 to 15 CP
- Master Project \* 30 CP
- **Humanities (GESS/SiP) \*** 2 CP

---

- Total 120 CP



The GESS/SiP courses are mandatory for all students at ETH

GESS courses are selected and offered by the Department of Humanities, Social and Political Sciences (D-GESS)

Contact: Study admin D-GESS, Malte Bachem, [malte.bachem@gess.ethz.ch](mailto:malte.bachem@gess.ethz.ch)

[www.gess.ethz.ch](http://www.gess.ethz.ch)

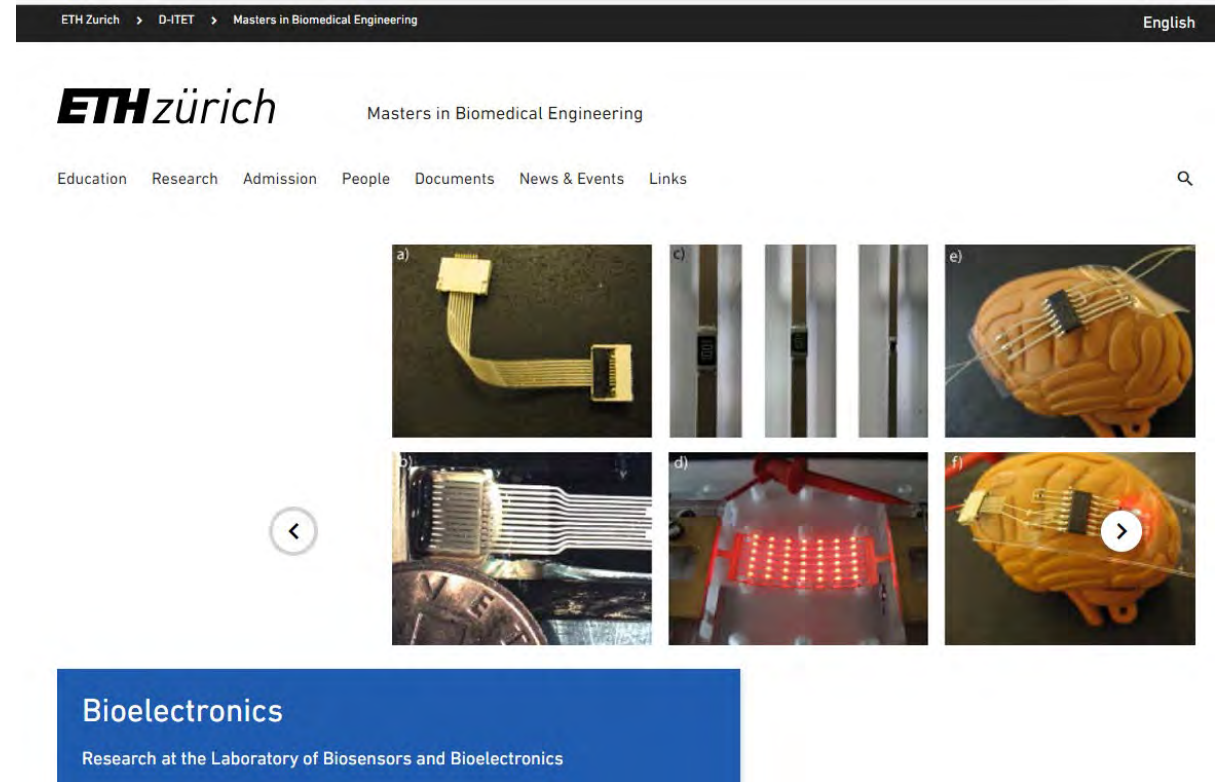
\*: mandatory

# Questions?

- Come to us
- This presentation can be downloaded from our website:
  - <http://www.master-biomed.ethz.ch/>

**ETH** zürich

**BIOMEDICAL  
ENGINEERING**



**ETH** zürich

Dr. Christian Frei  
Coordinator MSc Biomedical Engineering  
[frei@biomed.ee.ethz.ch](mailto:frei@biomed.ee.ethz.ch)

ETH Zürich  
D-ITET  
Gloriastrasse 35, ETZ F 83  
8092 Zürich



# Contacts / Information for Students of the MSc Biomedical Engineering

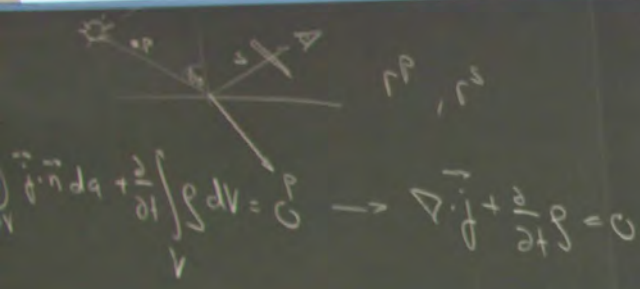
September 19, 2022

Reto Kreuzer, Coordinator of Studies / Student Advisor, D-ITET

# Agenda

1. The D-ITET: Your new host department
2. Finding the right contact
3. Courses, exams and credits
4. Useful information

$$\int_{\partial V} (\mathbf{E} \times \mathbf{H}) \cdot \mathbf{n} \, da + \frac{\partial}{\partial t} \int_V \mathbf{E} \cdot \mathbf{D} \, dV = \int_V \mathbf{j} \cdot \mathbf{E} \, dV - \frac{1}{2} \int_V \left[ \mathbf{E} \cdot \frac{\partial \mathbf{P}}{\partial t} - \mathbf{P} \cdot \frac{\partial \mathbf{E}}{\partial t} \right] dV - \frac{\mu_0}{2} \int_V \left[ \mathbf{H} \cdot \frac{\partial \mathbf{M}}{\partial t} - \mathbf{M} \cdot \frac{\partial \mathbf{H}}{\partial t} \right] dV$$

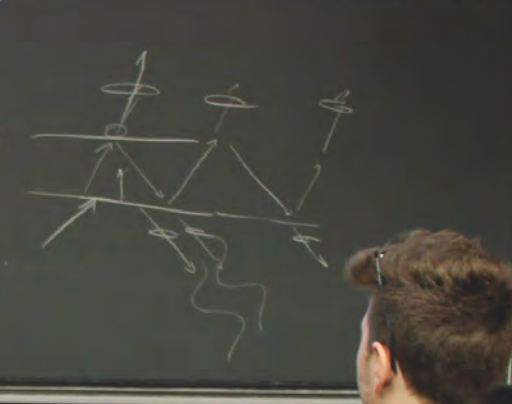


$$\vec{D} = \epsilon_0 \vec{E} + \vec{P}$$

$$\vec{J} = \epsilon_0 \frac{\partial \vec{E}}{\partial t} + \vec{J}_f$$

$$\vec{D} = \epsilon_0 \vec{E} + \vec{P}$$

$$\vec{J} = \epsilon_0 \frac{\partial \vec{E}}{\partial t} + \vec{J}_f$$



The D-ITET: Optimal support for over 2000 students

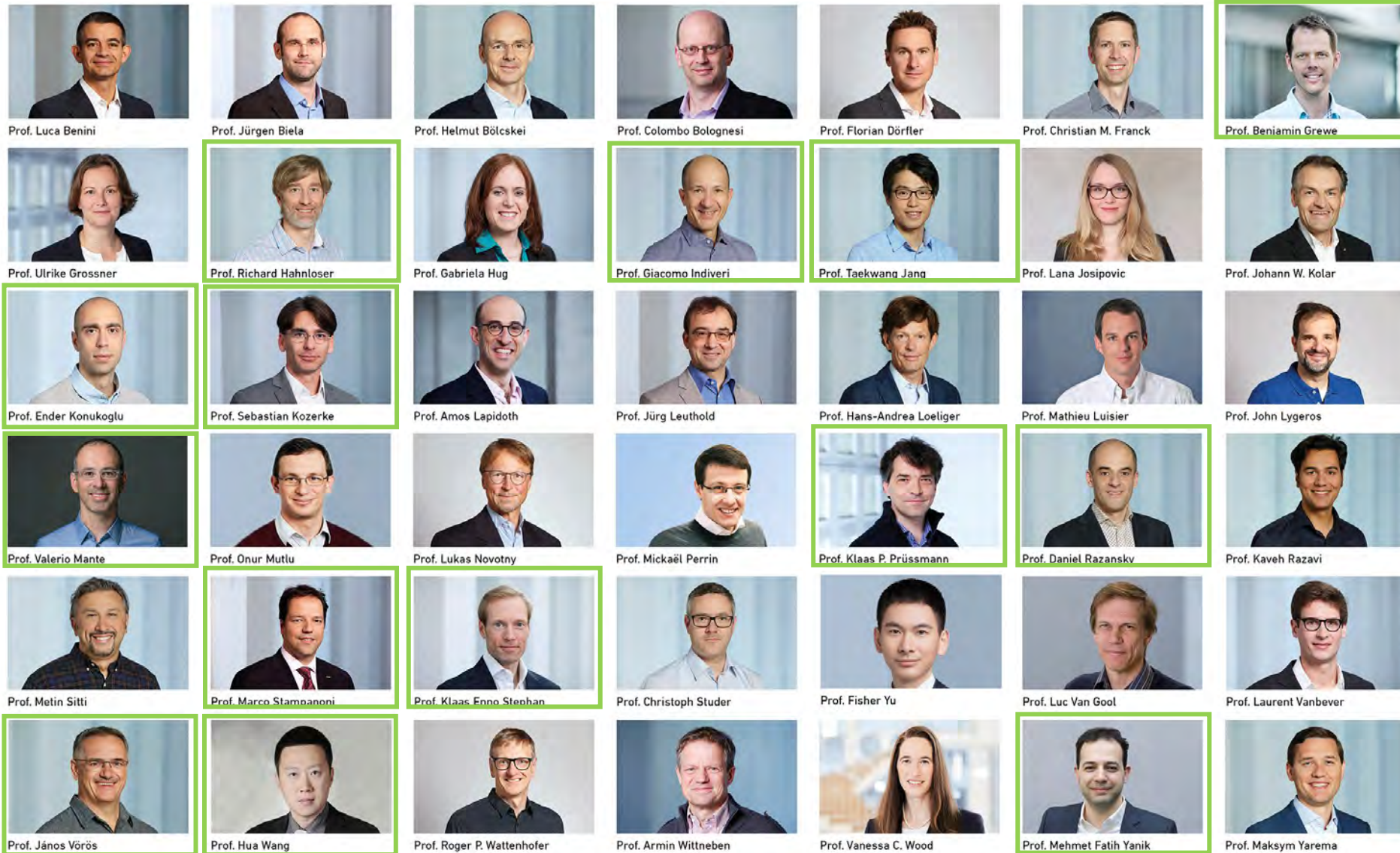




# Numbers

<b>BSc</b>	ETH D-ITET	10'642 820	<ul style="list-style-type: none"> <li>• 2000 students</li> <li>• 42 professors</li> <li>• 50+ other lecturers</li> <li>• 450+ PhD students</li> <li>• Study administration</li> <li>• AMIV</li> <li>• IT support</li> </ul>
<b>MSc</b>	ETH D-ITET Electrical Engineering MSc <b>Biomedical Engineering MSc</b> Energy Science & Technology MSc Quantum Engineering MSc <i>Neural Systems &amp; Comp. MSc (UZH)</i>	8'299 <b>955</b> 547 162 100 101 45	
<b>Exchange</b>	ETH D-ITET	458 59	

# Professors







↑  
ETA-Scherrer-  
Hörsaal F 5  
Hörsäle  
E 8 / E 9  
Sitzungsraum  
E 81

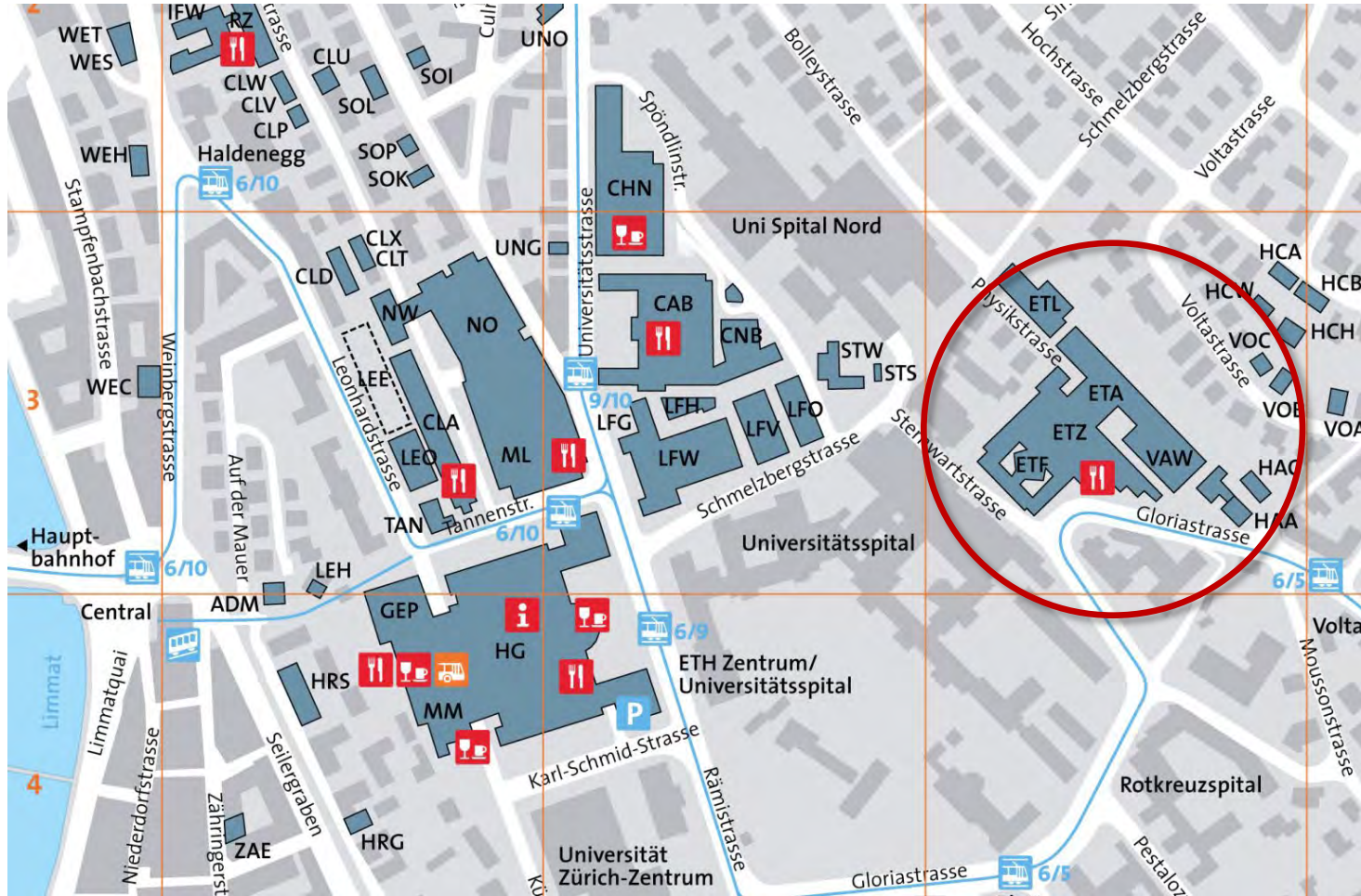
→  
Hörsäle  
E 6 / E 7  
Haupttreppe /  
Lifte

←  
ETF-Gebäude  
Hörsäle  
C 1 / E 1

# Finding your contacts



# Map of ETH and D-ITET



# Where do I find information on the web?

- **General Information on studies at ETH**

ETH students' website: [www.ethz.ch/students](http://www.ethz.ch/students)

- **Information on the Master in Biomedical Engineering**

D-ITET website: [www.master-biomed.ethz.ch](http://www.master-biomed.ethz.ch)

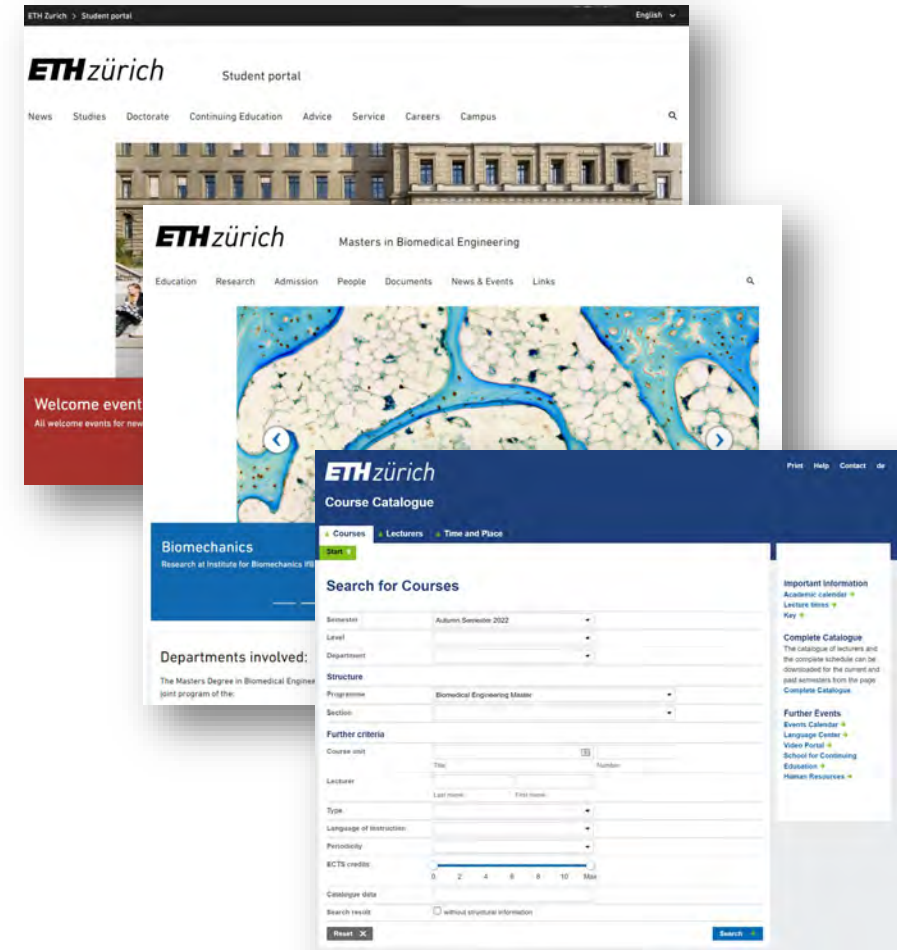
- **Course catalogue**

Online: [www.vvz.ethz.ch](http://www.vvz.ethz.ch) > Programme > Biomedical Engineering (...) Master

- **Messages from ETH and the Department**

Email on your ETH-Address ([username@student.ethz.ch](mailto:username@student.ethz.ch))

→ **check your mailbox regularly and read the messages carefully!**



# Your most important contacts at ETH and the D-ITET

## ETH / Rectorate

Registrar's Office (HG F 19)

**General administrative questions**  
e.g. matriculation, address changes,  
residence etc.

## Students' association

**AMIV (CAB E 37)**

Social contacts,  
networking

## D-ITET / central services

**Student Admin (ETZ H 85)**

**Study specific admin. questions**  
e.g. grades/transcripts, waivers, counselling

**Tutors / Lecturers / TA**

Course specific questions, study plan





# Your contacts at the D-ITET



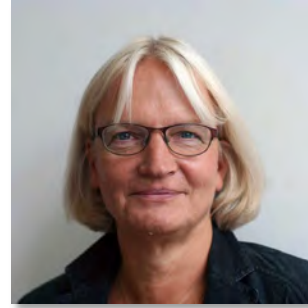
Prof. Sebastian Kozerke  
Director of studies D-ITET

ETZ F 94  
+41 44 632 53 25  
kozerke@biomed.ee.ethz.ch



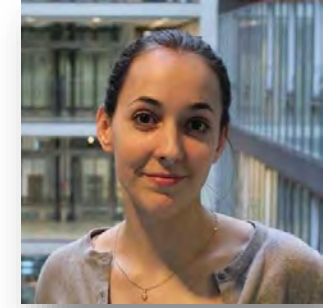
Reto Kreuzer  
Head of Student  
Administration /  
Student advisor

ETZ H 83  
+41 44 632 08 15  
info@ee.ethz.ch



Andrea Salow / Tali Scheiner  
Student Administration

ETZ H 85  
+41 44 632 50 03  
info@ee.ethz.ch



Audrey Djouadi  
Course scheduling /  
Student exchange advisor

ETZ H 87  
+41 44 632 89 57  
info@ee.ethz.ch





# Administrative matters

Handwritten text on a document, including a line graph titled "Last Year Earnings". The text is mirrored and difficult to read, but appears to contain financial or administrative data.



# myStudies – do not forget to...

## ...register for courses and exams

- Register for each semester until the end of the second week
- Register for **courses** early in the semester; you need to be registered for a course to enroll for an exam
- Submit the **tutor agreement** – until the **end of the 4<sup>th</sup> week** of the semester
- Enroll for **exams** – enroll during the **3<sup>rd</sup> and 4<sup>th</sup> week** of the semester, withdrawal possible until very late

## ... notify us of your address changes

## And read your E-Mails!

More info can be found in the videos on *MyStudies: Semester Enrolment & Course Registration* published at [www.ethz.ch/how-to-eth](http://www.ethz.ch/how-to-eth)

# Enrolling for courses

- All courses you wish to **count** towards your Master **Diploma** must be **enrolled** for (both the course and the exam);
- Only **courses agreed upon** by your **track advisor** will count for the degree, other courses go on a separate sheet, attached to the final transcript.
- In particular, do not forget to enroll for the **Semester Projects** and the **Master Thesis** (special section in myStudies "Projects/Papers/Theses).


# Performance Assessments

- Three types of performance assessments:
  - **Session examination** (Winter session: January/February – Summer session: August), **Attention to registration/deregistration deadlines**
  - **End-of-semester examination (2 weeks before end of lectures until 2 weeks after end of lectures)**, **Attention to registration/deregistration deadlines**
  - Graded/ungraded **semester performance** (e.g. semester project or internship in industry (performance during semester), **Attention minimum/maximum allowed time/deadlines**
- Passed exams **cannot be re-taken**, failed exams can be re-taken once!
- Special rules may apply regarding **allowed (written) aids**:
  - Course catalogue > see "Performance assessment"
  - Personal exam schedule in myStudies (for session examinations)
  - Lecturer/examiner



# Your studies are subject to regulation

- **Study regulations** (mostly available in German only)  
[www.rechtssammlung.ethz.ch](http://www.rechtssammlung.ethz.ch) (complete collection, German)  
[www.ee.ethz.ch](http://www.ee.ethz.ch) > Studies > Forms and Documents (MSc EEIT regulations in English)
- **Rector's Directives** (some available in German only)  
[www.ethz.ch/students](http://www.ethz.ch/students) > Studies > Legal basis > Directives Collection
- **Questions?**  
International students, please contact the [international student support](#) or the [D-ITET study administration](#) for help on regulations.



*Information*

Useful information

*Ctrl*

# Counselling at ETH and the D-ITET

- Course selection ? → your track advisor
- Studies at D-ITET, i.e., deadlines, failures at examinations etc. ? → the coordinator of studies
- General questions regarding your arrival at ETH ? → [international student support](#)
- Time management / motivation ? → [student coaching](#)
- Difficult phases / personal problems ? → [psychological counselling service](#) (free of charge and confidential)

# Computer infrastructure at ETHZ / D-ITET

- All public ETH-computers, e.g., Main Building HG D 11, or ET-Building ETZ D 61.1, require your **n.ethz** password, same as used for myStudies
- Only ITET students can access the computer infrastructure in the ET-building area, should you encounter a problem, contact [support@ee.ethz.ch](mailto:support@ee.ethz.ch), IT support office ETF D 106
- **Project Neptune** – during a short period (until October 3), laptops and tablet computers may be purchased through ETH at interesting prices
- **IDES** – ETH also offers software at very low cost, some products even for free.  
Remember: the use of non-licensed software is forbidden and subject to prosecution!

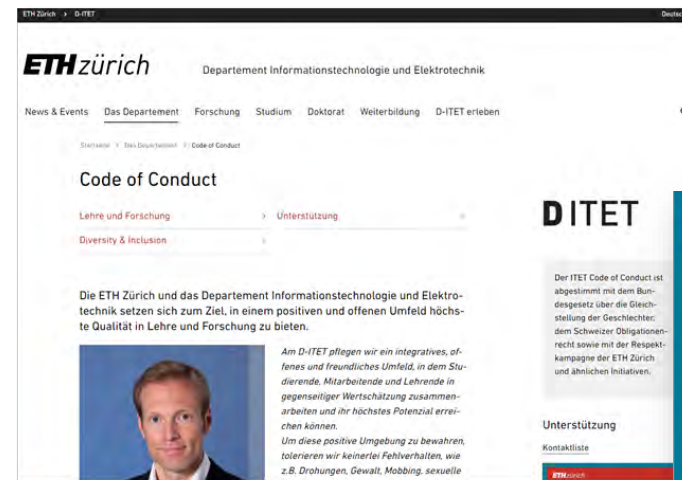
# Code of conduct

« At D-ITET, we maintain an inclusive, open and friendly environment, where our students, employees and faculty can thrive and achieve their highest potential, based on mutual respect. To preserve this cordial environment, we do not tolerate misbehavior of any kind, including threats, violence, bullying, sexual harassment, discrimination, or dishonesty in study and in research. »

Prof. Klaas Enno Stephan, Head of Department

## Further information on the Web:

- Our principles
- What is “inappropriate behavior”?
- How to react?
- Contacts / support





# More details?

- **My Office**

Reto Kreuzer, Study Coordinator D-ITET, ETZ H 83

Please send an E-mail to fix an appointment ([info@ee.ethz.ch](mailto:info@ee.ethz.ch))

- **This presentation**

Available tomorrow morning on [www.ee.ethz.ch](http://www.ee.ethz.ch) > Studies > Forms and Documents

# Enjoy your studies at ETH!





Zürich, September 19<sup>th</sup> 2022

# amwv

Welcome Day

An aerial photograph of a large, classical building with a prominent central dome and multiple wings. The building is surrounded by a courtyard and a street. The image is overlaid with large, orange, stylized letters spelling 'amwv' and the text 'Welcome Day' in white.





High School Politics



Events

**What we do**



Study Documents







High School Politics

# Representation of students' interests

Questions or complaints to  
[hopo-itet@amiv.ethz.ch](mailto:hopo-itet@amiv.ethz.ch)

- **Theater**
- **Poker- / Jass tournament**
- **Sushi-Night**
- **Absolventenparty**
- **Strongmanrun**
- **Skiweekend**
- **Lasertag**
- **Beachvolleyball tournament**

## Events



Quick Filter

Select department and semester

Department

Semester

D-ITET	1	2	3	4	5+
D-MAVT	1	2	3	4	5+
other	1	2	3	4	5+

RESET



Study Documents

[amiv.ethz.ch](https://amiv.ethz.ch)

More than 1000 summaries,  
old exams, etc.



# Written recollections of oral exams

extremely useful when preparing for an exam

Oral exams?

Find protocols on the amiv website!

Submit one yourself and get a cash reward. More information on [amiv.ethz.ch](http://amiv.ethz.ch)



 **amiv**  **vsoeth** Fachverein Verband der Studierenden an der ETH



# Lounge



- Coffee machine
- Beer vending machine
- Table football
- Billiard table

- Couches
- TV with game console
- microwaves



# AMIV committees



*blitz*

die Fachzeitschrift des amiv an der  
ETH



# AMIV Kontakt.22: The Job Fair for Engineers! CLA & LEE Buildings 11. & 12.10.2022, 11:00–17:00



57 companies  
2 days  
Free CV-checks  
Free photo shoots  
Presentations &  
Workshops





## **AMIV Kontakt.22:** **Presentations and Workshops** **with free Apéros!**

**Quereinstieg ins Software Engineering**  
**Tuesday, 27.09.2022, 18:00, HG E 1.2**

**Job Search Strategies**  
**Thursday, 29.09.2021, 18:15, HG E 5**

**Lohnverhandlungen und Saläre**  
**Tuesday, 04.10.2021, 18:15, HG E 3**

**Register on [amiv.ethz.ch/events](https://amiv.ethz.ch/events)**





# Wie kannst du mitmachen?

**veth**  
member

Teams

Board member

## Voluntary contributions for the Autumn Semester 2019

Note: If membership is selected, the personal and address data required for member administration and other club activities will be forwarded to the respective club.

	Yes	No
<a href="#">Solidarity fund</a> for foreign students (CHF 5.-)	<input checked="" type="radio"/>	<input type="radio"/>
<a href="#">SOSETH</a> membership (CHF 5.-)	<input checked="" type="radio"/>	<input type="radio"/>
<a href="#">VSETH</a> membership (CHF 10.-; for doctoral students CHF 35.-)	<input checked="" type="radio"/>	<input type="radio"/>

Save

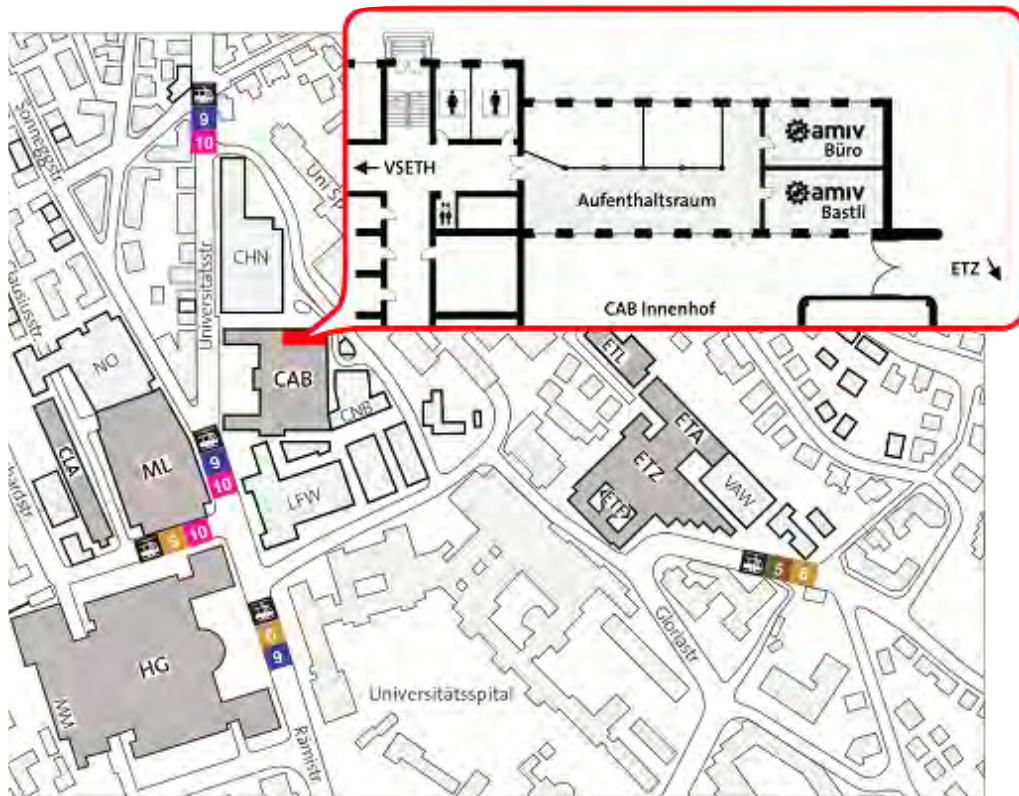
# Questions?





CAB EST

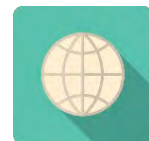
Universitätstrasse 6  
8092 Zürich



@amiv\_eth



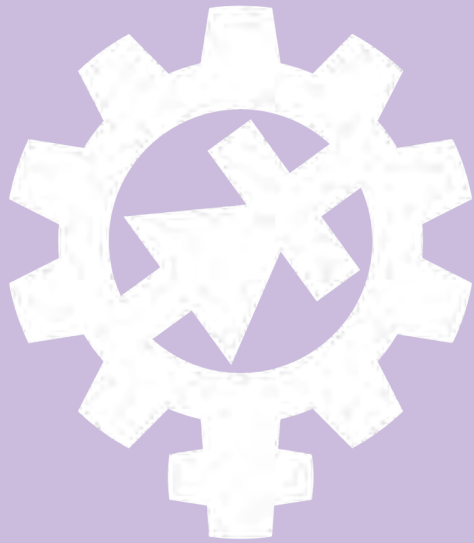
facebook.com/AMIV.ETHZ



www.amiv.ch



info@amiv.ethz.ch



# LIMES

Ladies In Mechanical and Electrical Studies



# UNSERE ZIELE:

- mit Kommilitoninnen\* verbinden
- mit Industriepartner:innen verbinden
- jüngere Schülerinnen\* inspirieren



# UNSERE EVENTS:

- Erstsemestrigenapéro
- Schülertag
- Frauenabend
- Exkursionen
- Stammtisch
- LIMES Talks

... vieles mehr





[limes.eth](#)



[limes.ethz.ch](#)