Master your Master!

Find out more about your favourite Master's programme in engineering and technology at ETH Zurich
What you can learn from *Master your Master!*

- This is your opportunity to **know more about the details** of all specialized Master's Degree Programmes (MSc) in engineering as well as the MSc in Management, Technology, and Economics.

- By presenting these programmes **side by side**, you will be able to compare, making it easier for you to pick the programme that is most suited to your needs.
Consecutive or specialized MSc programme?

ETH offers at least one consecutive MSc programme to every of its bachelor programs.

- No additional hurdles or requirements for entering the master's programme (after BSc is finished), moving into the MSc programme simply by clicking a checkbox in myStudies.
- The *normal* continuation of the BSc programme: statistics show that most students at ETH stay with that choice.

ETH also offers specialized MSc programmes.

- They **require an application** ahead of the start of the study programme.
- **Selection** of students based curricula and grades. ETH students cannot simply move into these programmes but must undergo a rigorous selection process driven by admission committees, composed of professors and staff of the departments that offer those programmes.

Students from other universities must always apply: to consecutive and specialized programmes.
What are specialized or interdisciplinary MSc programmes?

- While consecutive MSc programmes cover **all aspects of one field** of studies (e.g. mechanical engineering), specialized master programmes are **themed** (e.g. Energy) and collect **all relevant aspects** of that theme **from all participating fields of studies** (electrical, mechanical and environmental engineering as well as economics in the **MSc Energy Science and Technology**).

- Therefore, specialized master programmes are a **collaboration of several departments** with **one department in the lead** – by enrolling to a specialized MSc programme you will be enrolled to that department, e.g. the **MSc Data Science** is a collaboration of D-INFK (lead), D-ITET and D-MAVT, students enrolled in this MSc programme will be enrolled at D-INFK.
Differences?

What separates the specialized master programmes from consecutive programmes are a few essential things.

- There are **other professors** than in your home department involved too;
- **other courses** may be offered than those available in your consecutive programme;
- (with very few exceptions) specialized programmes have a **higher ratio of students without a bachelor from ETH** than in consecutive master programmes;
- (with some exceptions) the **number of students** in a specialized programme are **smaller** than in most consecutive programmes;
- and of course, students who do not know a **tutor system** at their home department will get introduced to this in many of the MSc programmes presented during *Master your Master!*
How to apply?

• **Online Application** – [https://ethz.ch/en/studies/master/application.html](https://ethz.ch/en/studies/master/application.html)

• **Application period** – For a start in fall 2021: March 1 to March 31, 2021

• **Selection process** – An *admission committee*, composed of faculty members and staff from participating departments will evaluate all applications, and select the best and most suitable students.

• **When will you know?** – Most *decisions* will be communicated in *May*.

• **Questions** regarding the application process – [master@ethz.ch](mailto:master@ethz.ch)
MSc in Robotics, Systems and Control

Friday, 5 March 2021
Online Presentation 12.00-12.30
To join: https://ethz.zoom.us/j/94758247670
Robotics, Systems and Control | at the interface of all engineering disciplines

• A Specialized Master
  – At the interface of all engineering disciplines
  – Tutor-based → you define with the help of your tutor your individual program

• Topics

• Solving Today's most Pressing Challenges
  – Mobility, logistics, sustainability, autonomous transportation, VR/AR, automated construction, smart farming, health care, search and rescue, …
  – Many startups
Robotics, Systems and Control | world-leading faculty @ ETH

Artificial Intelligence
- Marco Hutter: Robotic Systems
- Joachim Buhmann: Machine Learning
- Raffaello D’Andrea: Dynamic Systems and Control
- Brad Nelson: Multi-Scale Robotics
- Melanie Zeilinger: Intelligent Control Systems
- Margarita Chli: Vision for Robotics Lab
- Robert Katzschmann: Soft Robotics
- Raffaello D’Andrea: Dynamic Systems and Control
- Stelio Mintchev: Environmental Robotics
- Emilio Frazzoli: Information and Decision Systems

Autonomous Robots
- Roland Siegwart: Autonomous Systems
- Luc van Gool: Computer Vision
- Margarita Chli: Vision for Robotics Lab
- Christian Holz: Intelligent Interactive Systems
- Robert Riener: Sensor Motor Systems
- Salvador Pane: Multi-Scale Robotics
- Otmar Hilliges: Advanced Interactive Technologies
- Daniel Ahmed: Acoustic Robotics

Computer Vision
- Marc Pollefeys: Computer Vision and Geometry
- Yu Fisher: Computer Vision
- Siyu Tang: Computer Vision and Learning
- Stelio Mintchev: Environmental Robotics
- Florian Dörfler: Automatic Control

Medical/Biomedical Robotics
- Salvatore Pane: Multi-Scale Robotics
- Daniel Ahmed: Acoustic Robotics
- Simone Schürle: Responsive Biomedical Systems Lab
- John Lygeros: Automatic Control

Automated and Control
- Robert Smith: Automatic Control
- Stelio Mintchev: Environmental Robotics
- Emilio Frazzoli: Information and Decision Systems
- Melanie Zeilinger: Intelligent Control Systems
- Roy Smith: Automatic Control
- Florian Dörfler: Automatic Control

Robotics, Systems and Control - https://master-robotics.ethz.ch/

ETH Zürich

05.03.2021
MSc in Data Science

Friday, 5 March 2021
Online Presentation 12.30-13.00
To join: https://ethz.zoom.us/j/93796419527
Data Science
The four paradigms

Thinking

Ontological

The world as it must be (necessary)

With our brain (natural)

Mathematics

Computing

Epistemic

The world as it is (contingent)

With a machine (artificial)

Physics

Data Science

"The Physics of CS"
## Structure

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### Design Principles

- Solid and sound knowledge in analyzing and handling of big data
- Specialized knowledge in a research area
- First experience in handling real data
Data Science at ETHZ

• Compact and profound program:
The specialized Master's program in data science equips students with all relevant knowledge and skills while combining theoretical foundations with practical experience.

• Personal choice of industry:
Medicine, finance or environment: data science is used in most fields and thus enables graduates of the program to work in their industry of choice.

• High demand:
Regardless of the industry, most large companies have data scientists working for or with them (e.g. banking, insurance, pharma, telecommunications).
Faculty D-INFK, D-ITET, D-MATH

• Core Faculty

• Adjunct Faculty
Master in Micro and Nanosystems

Friday, 5 March 2021
Online Presentation 12.30-13.00
To join: https://ethz.zoom.us/j/94758247670
Micro and nanosystems are all around us
Our tutors

- **D-MAVT**
  - Daniel Ahmed
  - Jürg Dual
  - Inge Herrmann
  - Christofer Hierold
  - Dennis Kochmann
  - Brad Nelson
  - David Norris
  - Salvador Pané i Vidal
  - Sotiris Pratsinis
  - Romain Quidant
  - Thomas Schutzius
  - Mark Tibbitt

- **D-ITET**
  - Jürg Leuthold
  - Mathieu Luisier
  - Janos Vörös
  - Vanessa Wood

- **D-PHYS**
  - Klaus Ensslin
  - Thomas Ihn

- **D-BSSE**
  - Andreas Hierlemann
MSc in Nuclear Engineering

Friday, 5 March 2021
Online Presentation 13.00-13.30
To join: https://ethz.zoom.us/j/94758247670
Was lernen Sie in 4 Semestern (120 cp)?
… und was ist die grösste Neuigkeit?

Begrüssen Sie die neue Professorin für Nukleare Sicherheit

Prof. Dr. Annalisa Manera
ab Herbstsemester 2021

• Kernspaltung und ihre technologische Nutzung als Energiequelle
• Nukleare Sicherheit, Effizienz, Umweltaspekte
• Wissen zur Kernfusion als Ergänzung
• Nukleare Techniken in Medizin, Forschung und Industrie jenseits des Kernkraftwerks
• Stoffzyklus von der Uranmine bis zur Entsorgung
• Integration der Kernkraft ins Energiesystem, Synergien mit anderen Energietechnologien
Motivationen

• Interessanter, vielseitiger und innovativer, als mancher denkt!
• Hohe Energiedichte der Kernenergie – Vorteil (viel Wirkung aus kleinen Stoffmengen) und Herausforderung (hohe Sicherheitsanforderungen)
• Kernenergie unterstützt Energiewende als leistungsstarker, umweltfreundlicher Konkurrent zu Kohle, Öl und Gas
• Reduziert Speicheraufwand bei Erneuerbaren durch Planbarkeit der Erzeugung
• Nuklare Methoden eröffnen eine Vielzahl nichtinvasiver Mess- und Diagnoseverfahren in Technik und Medizin
• Starke Therapiemöglichkeit für schwerste Erkrankungen
• Enjoy internationality of the nuclear community and your study mates!
• Multidisziplinarität eröffnet breite Karrieremöglichkeiten
MSc in Integrated Building Systems

Friday, 5 March 2021
Online Presentation 13:00-13:30
To join: https://ethz.zoom.us/j/94626181981
WHO SHOULD APPLY?
Highly qualified candidates who have recently or will soon complete their ETH Bachelor’s degree in one of the following areas: Architecture; Civil Engineering; Electrical Engineering; Environmental Engineering; Mechanical Engineering; Geomatic Engineering and Planning; or a degree which will appropriately prepare you for the MIBS course of study.

OVERVIEW
MIBS is an interdisciplinary study program that addresses one of the most pressing concerns today – the integration of sustainable energy technologies at the building and urban levels.

+ The curriculum provides graduates with a broader view of the complex topic of sustainable energy technology integration in real world contexts.

+ Students are exposed to the collaborative interaction between current leading research and industry experts involved in building systems and technologies.

+ Graduates are strategically positioned to shape the future of energy demand and supply in the built environment while supporting societal needs for more sustainable energy solutions.

INTERESTED? To apply, please visit: https://www.master-buildingsystems.ethz.ch
Master in Integrated Building Systems

TUTORS
Arno Schlueter, Architecture & Building Systems
Benjamin Dillenburger, Digital Building Technologies
Daniel Hall, Innovative & Industrial Construction
Guillaume Habert, Sustainable Construction
Jan Carmeliet, Building Physics

Kristina Shea, Engineering Design and Computing
John Lygeros, Computation and Control
Roy Smith, Computation and Control
Marco Mazzotti, Process Engineering
Stefano Brusoni, Technology & Innovation Management

PROGRAM HIGHLIGHTS
+ Tutor System
+ 120 ECTS over 4 semesters
+ Program taught in English
+ International Student Body & Alumni Network
+ Fundamental, Core, & Project Courses
+ Specialized Course Options per your focus
+ Curriculum & Career Advising

INTERESTED? To apply, please visit: https://www.master-buildingsystems.ethz.ch
MSc MTEC

Friday, 5 March 2021
Online Presentation 13:00-13:30
To join: https://ethz.zoom.us/j/93181260274
What the MSc MTEC is all about:

**Technology meeting management and economics.**

At MTEC we put your knowledge of technology and the natural sciences in organisational and societal contexts.

Today’s challenges are more complex than ever. They demand managers to take innovative approaches – crossing disciplines, crossing organisational cultures, crossing mindset of people.

**Going beyond theory.**

To make real change happen it takes more than pure theoretical understanding of our world.

Innovation is driven by technology but also by people. People who understand how to transform ideas and concepts into reality.

Let’s change the world together!

**Forging links.**

Collaboration is a key factor for success. This is why we go beyond teaching in lectures and offer a series of interactive course formats to foster team spirit and collaborative learning.

For some we partner up with real businesses, giving you the opportunity to develop your ideas on actual challenges organisations face.
"Regardless of their background, future managers need to have the ability to operate with other disciplines. While quantitative skills are important, speaking the language of different disciplines is decisive. If you have an insight but you are not able to communicate it, you have nothing."

Lara Warner
Chief Risk and Compliance Officer, Credit Suisse

Talk at the Risk Center, September 2020
What is next:

If you think that the MSc MTEC could be right for you, we invite you to two different sessions during the virtual fair Master Your Master’s 2021:

**MSc MTEC Info Session: 5 March | 13.00 – 13.30 p.m.**
Our director of studies, programme coordinator and a current MSc student present key aspects of the MSc MTEC to you.

**MSc MTEC Student Session: 5 March | 15.00 – 15.30 p.m.**
Talk to our students and get first-hand information about the programme.

You will receive an email invitation. At this moment you do not need to do anything, but if you are curious, find out more on our website:

www.mtec.ethz.ch/studies
MSc Biomedical Engineering

Friday, 5 March 2021
Online Presentation 13.30-14.00
To join: https://ethz.zoom.us/j/95610669868
MSc BME: Research and Education at the Interface of Engineering Sciences, Medicine and Biology

Five tracks:
- Bioelectronics
- Bioimaging
- Biomechanics
- Medical Physics
- Mol. Bioengineering

Four departments:
- D-ITET (leading house)
- D-HEST
- D-MAVT
- D-PHYS
MSc BME: Qualifying BSc Degrees

MSc BME

- Electrical Engineering BSc
- Mechanical Engineering BSc
- BSc Computer Science
- BSc Materials Science
- BSc Mathematics
- BSc Physics
- BSc Biology *
- BSc Materials Science
- BSc Health Sciences & Technology *

*: does not qualify for all tracks
MSc Biomedical Engineering is a 120 CP Master

- **Track Courses**  
  - Core courses of specialization (min. 12 cp)  
  - Elective courses of specialization (-- cp)  
  - Biology courses (-- cp)

- **Semester Project** 12 credits

- **Additional Research Projects and/or Track Courses** min. 24 credits
  - Semester project (min. 12 cp)  
  - Group- and Research projects (24 cp)  
  - Internship in industry (12 cp)

- **Science in Perspective (D-GESS)** min. 2 credits

- **Master Thesis** 30 credits
MSc in Cyber Security

Friday, 5 March 2021
Online Presentation 13.30-14.00
To join: https://ethz.zoom.us/j/91241779477
Cyber Security ETHZ / EPFL
Design Principles

• Cyber Security: Security of Connected Computer Systems
  • As opposed to physical security, i.e., door locks, etc.
  • Security of 5G, WiFi, TLS, Internet-of-Things, databases, etc.

• Program provides solid and sound knowledge in
  • Information Security
  • System Security
  • Network Security
  • Cryptography

• Gain competence of applying knowledge and skills in practical projects, and learn underlying formalisms

• Analytical thinking, self-organization, scientific working

• Exciting new area of global importance
  • High demand for graduates
Semester in Lausanne

• Students enrolled at ETH must start in Zurich
• One semester has to be spent at EPF Lausanne:
  • Minimum 20 CP, maximum 35 CP
  • Students receive a scholarship and support in searching for accommodation
  • Eligible courses published on MSc Cyber Security website
  • Study plan for the semester in Lausanne has to be approved by the studies administration
Flexibe Course Choices

• More choices in major than Computer Science MSc
  • Completely different set of courses at Lausanne

• More choices in minor
  • Pick courses out of another major area
  • Not only one of the focused minors offered in general Computer Science MSc

• Required credits do not sum up to total needed credits
  • Freedom to pick other courses

Eligibility:

• Consecutive: BSc in Computer Science / Communication systems

• BSc in these may apply: Electrical Engineering and Information Technology, Mechanical Engineering, Mathematics, Physics
Job Prospects

Excellent job prospects, with high demand in

- Tech sector
  - E.g.: anti-malware vendor, firewall vendor, FAANG, etc.
- Finance Sector
  - E.g.: Banks, stock exchange, etc.
- General Business
  - Any business has many networked systems that need protection
- Government and NGOs
- Academia
MSc in Quantum Engineering

Friday, 5 March 2021
Online Presentation 14.00-14.30
To join: https://ethz.zoom.us/j/98705052161
First generation of QUANTUM ENGINEERING

From the orientation Day to the ETH quantum labs in less than a month!
Why QUANTUM ENGINEERING?

Departments involved
The Master of Science in Quantum Engineering is a joint program of:
- Department of Information Technology and Electrical Engineering (ITEE, leading house)
- Department of Physics (DPHYS)

Master of Science Quantum Engineering

Quantum computing and technologies from ETH and industry partners
Quantum computing and technologies from ETH and industry partners

Information
Apply till March 30th
Application page

Quantum engineering is a new field at the interface of quantum physics, electrical engineering, and IT. It utilizes the laws of quantum physics to develop technologies that outperform classical engineering approaches. Quantum technologies will fundamentally change classical engineering paradigms in computing, information processing, and measurement.

Apply to become a quantum engineer at ETH!
We are proud to announce the start of our new program in quantum engineering at ETH and welcome our first 15 students!

Departments involved
The Master of Science in Quantum Engineering is a joint program of:
- Department of Information Technology and Electrical Engineering (ITP, leading house)
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Master of Science Quantum Engineering

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Master of Science Quantum Engineering

Information
Download brochure (PDF, 544 KB)

Quantum engineering mission statement
Quantum technologies in the hands of engineers
Quantum engineers are technicians that catalyze the

Quantum engineering is a new field at the interface of quantum physics, electrical engineering, and IT. It elucidates the laws of quantum physics to develop technologies that outperform classical engineering approaches. Quantum technologies will fundamentally change classical engineering paradigms in computing, information processing, and measurement.

Get the next generation of quantum engineers!
Join our weekly lunch for more information in March!
Register for the free event, Anja and Moritz, our first Master's student generation, share their InTech experience (PDF, 1.7 MB)

Check out our Ethercast! about the MSc Quantum Engineering, Anja, Andreas, and Soledad

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Master of QUANTUM ENGINEERING

A Joint program between D-ITET (leading house) and D-PHYS

Degree: MSc ETH QE

Added value
- Training at the interface of science and technology
- Define quantum science as an engineering toolkit
- Quantum technology in the hands of engineers

Quantum Engineering is the development of technology that capitalizes on the laws of quantum mechanics
Master of QUANTUM ENGINEERING

Even more added value!

- **small and familiar** student group (journal club and more)
- each student has **his own tutor** professor
- **Case Studies** and **QuanTech Workshop** – unique offering
- **Internship** with the industry partners

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</table>

\(^1\) each student has to carry out EITHER an industry internship OR a QuanTech lab; can be carried out in 2nd or 3rd semester

\(^2\) semester project can be carried out in 2nd or 3rd semester
Industry and laboratory internship

Quantum Engineering students are required to perform an internship either in an industry or in an ETH laboratory. Both options amount to 12 credit points. The internship should last at least 12 weeks. It should be primarily technical in nature.

(i) The industry internship is full-time, that is, it cannot be combined with classes.

(i) The QuanTech workshop ETH internship can be performed in parallel with classes.
Quantum Industry Day in Switzerland

QIDiS 2018/2019

- first of its kind!
- yearly 375 worldwide participants
- exhibitions & Face2Face meetings

- Workshops in quantum...
  - …computing
  - …communication
  - …sensing
  - … instrumentation
  - etc.
MSc in Computational Biology and Bioinformatics (CBB)

Friday, 5 March 2021
Online Presentation 14.00-14.30
To join: https://ethz.zoom.us/j/91909042291
MSc Computational Biology and Bioinformatics

- Two-years Master Programme, 120 ECTS, Language: English
- Joint Master Degree Programme: ETH Zürich, University of Basel, University of Zürich
- Location: Zürich and Basel. Lectures can be taken in Zürich and Basel, with University of Basel offering lectures in Basel, University of Zurich offering lectures in Zurich and ETH Zürich offering lectures at the Basel campus as well as the Zurich campus. Nearly all credits can be covered in either of the two cities alone.
- Four core areas: Bioinformatics, Biophysics, Biosystems and Big Data
- Flexible course selection
- 12 weeks total lab rotations
- Option for industrial internship (up to 12 weeks as part of the programme, longer internships will delay completion of studies beyond 2 years)
- 26 weeks Master`s Thesis
- Mentor-based study Programme
MSc Computational Biology and Bioinformatics

- In-depth understanding and command of methods, theories, and algorithms required for the computational analysis of complex biological data and systems
- Familiarity with key concepts of modern research in biology, including applications to medicine and biotechnology
- Focuses on the development of concepts and methods rather than merely on applications of bioinformatics
- In-depth knowledge in the areas of bioinformatics, biophysics, systems biology, and data science
- Interdisciplinary communication and collaboration with specialists in biology, computer science, mathematics, and other disciplines
- Includes practical experience in biology, computer science methods, and their combination
- Places particular emphasis on the systematic integration of experimental biology / data generation.
MSc Computational Biology and Bioinformatics – Job Perspectives

- Employment and entrepreneurship in pharmaceutical and biotechnological industry, including major global players headquartered in Basel and strong Swiss startup sector in the biotechnology field
- Broad variety of other sectors ranging from software engineering, bioinformatics, data analysis from pharma via IT to consulting
- About 60% of the graduates continue to obtain a PhD inside and outside of the department
Further Information
www.cbb.ethz.ch
www.bsse.ethz.ch

Get in touch with the Department:
student-admin@bsse.ethz.ch

Get in touch with current CBB Students:
ccbb@vis.ethz.ch
MSc in Biotechnology

Friday, 5 March 2021
Online Presentation 14.30-15.00
To join: https://ethz.zoom.us/j/98369934831
MSc in Biotechnology

Intensive training in the molecular science and engineering discipline of the 21st century with world-renowned scientists in the heart of the world's pharma capital

- The programme will take place **on the Basel site** of ETH Zurich
- Two-year master's degree programme, 120 ECTS, English language
- Research-oriented
- Course selection: mentor-based, flexible

*Programme elements*

- Few obligatory core classes, broad range of high-level electives
- Intensive lab-training in advanced topics in year 1
- Optional industrial internship
  - (12 weeks as part of the programme, longer internships will delay completion of studies beyond 2 years)
- 35 weeks master’s thesis
The programme is developed around three closely interrelated themes:

- **Intensive training in biotechnology with a strong research footing in modern topics** ranging from stem cell biology via immunotechnology, bionanotechnology and bioengineering to the various implementations of synthetic biology (cellular reprogramming, mammalian cell biotechnology, metabolic engineering, enzyme technology). Classes and seminars are complemented by **intensive training in modern laboratory techniques**, including genomics, optical analyses, use and engineering of microsystems, microbial biotechnology, and molecular and cellular engineering.

- The programme is designed to **integrate the quantitative and model-based approaches** that are crucial to modern biotechnology. Programme participants are invited and encouraged to endorse and exploit a broader, systems-oriented view of the cell, a particular strength of the ETH Department of Biosystems Science and Engineering.

- **Integration of core industrial and entrepreneurial elements** into the curriculum provides a strong foundation for future careers in the biotech and pharma industry - or any other field graduates might choose.
MSc Biotechnology – Job Perspectives

- Employment and entrepreneurship in pharmaceutical and biotechnological industry, including major global players headquartered in Basel and strong Swiss startup sector in the biotechnology field
- Broad variety of other sectors ranging from chemistry and chemical engineering, food biotechnology and consulting to insurance and public sector
- About half of the graduates continue to obtain a PhD inside and outside of the department
Further Information
www.master-biotech.ethz.ch
www.bsse.ethz.ch

Get in touch with the Department:
student-admin@bsse.ethz.ch

Get in touch with current Biotechnology Students:
bsa@ethz.ch
www.bsa.ethz.ch
MSc in Energy Science and Technology (MEST)

Friday, 5 March 2021
Online Presentation 14.30-15.00
To join: https://ethz.zoom.us/j/92333532065
Switzerland needs to get to net-zero-CO₂ emissions by 2050! But how?

Current energy facts for Switzerland:
• > 70% of CO₂ emissions are from the energy supply
• 80% of energy is imported – and it’s fossil based!

The energy challenge for Switzerland:
• Decarbonise the energy sector by 2050
• Electrification of transportation and heating
• Improve sufficiency and efficiency

The MEST programme aims to provide students with the skills required to complete this challenge.

We need you!!!
MSc in Energy Science and Technology (MEST): key points

To solve the energy challenge, electrical and mechanical engineering, economics and policy are all needed

Small, multidisciplinary and international intake. Dedicated Case Studies course.

MEST provides it all!

Excellent and diverse job opportunities:
- Industry
- Insurance
- Finance
- Administration / Federal Offices
- Consultancies

Build a sustainable energy system: Make a significant contribution!