Mechanical Engineering Master @ EPFL
A. Mechanical engineering Master @epfl.ch
B. Program’s objectives
C. Orientations/specializations
D. Study plan
E. Admission criteria
F. Mechanical engineering labs, PhDs and Professors
A. Mechanical engineering Master @epfl.ch

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F. MechEngineering institute

- Mechanics of Fluids
- Mechanics of Solids/Structures
- Control, Robotics, Systems
- Design and Manufacturing
- Thermal Sciences and Energy
- Biomechanics

- Energy, Environment, and Sustainability
- Aeronautics, Astronautics, and Space
- Bio+Medical Engineering
- Micro+Nano Engineering
- Materials and Soft Matter
- Data-Driven Design
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F. MechEngineering institute

Neuchâtel → Design labs

EPFL worldwide

Lausanne → main campus

Sion → Energy labs
Training in mechanical engineering is at the same time broad and very specialized (highly interdisciplinary).

Going from computing the fluid flow around an airplane or optimizing a hip prosthesis, and managing large multi-faceted projects, such as the design, energy production systems, etc.

Based on fundamental scientific knowledge and engineering know-how.

The program develops competences in fluid and solid mechanics, biomechanics, automation, production systems and energy-related topics.

It also fosters skills in advanced computation modeling and problem solving techniques.

...
The program can be built around one of the following specializations (30 ECTS necessary):

A. Fluid mechanics
B. Automatic and systems
C. Design and production
D. Thermal sciences
E. Mechanics of solids and structures
F. Biomechanics

Students can also choose a 30 ECTS minor: recommended

- Biomedical technologies
- Computational science and engineering
- Energy
- Engineering for sustainability
- Management, technology and entrepreneurship
- Materials science
- Space technologies
European Credit Transfer and Accumulation System: 1 ECTS = 30 work hours
(60 ECTS per year x 30 work hours / 45 work weeks = 40 hours by weeks)
• Consecutively to the Bachelor in mechanical engineering from EPFL or ETHZ

• From another section of EPFL with a strong academic record and under the condition of validating a passerelle between 30 and 60 ECTS

• After having completed a bachelor degree in mechanics from a Swiss university and having obtained excellent academic record (GPA ≥ 85%) and under the condition of validating a passerelle between 30 and 60 ECTS to complete the missing orientation

• After having completed a bachelor's degree in mechanics in an excellent university abroad and having obtained an outstanding academic record
- Lab Master projects (between 2020-21 and 2021-22)

**BIOMECHANICS**

- Limitations in helmet testing methods: should brain injury metrics be considered in the development of sports helmets?

**DESIGN AND MANUFACTURING**

- Modeling and investigation of small-scale gas bearing supported turbomachinery

**MECHANICS OF FLUIDS**

- Instability of the flow past a 3D rectangular bluff body

**CONTROL, ROBOTICS, AND SYSTEMS**

- Inter-seasonal Performance of Gaussian Process-based Model Predictive Control of Buildings

**THERMAL SCIENCES AND ENERGY**

- Synthesis of a planar ordered array of plasmonic nanospheres for self-healing

**MECHANICS OF SOLIDS AND STRUCTURES**

- Contact Mechanics for Hyperelastic Materials
• **Industrial** Master projects (between 2020-21 and 2021-22)

- **Biomechanics**
  - Analysis of the components and sub-components of a cardiac pump and improvement of technical solutions of the devices

- **Design and Manufacturing**
  - Development of parametric numerical simulations predicting the failure conditions of thin plies composite shafts

- **Mechanics of Fluids**
  - Statistical analysis of a turbulent horseshoe vortex in front of a hemisphere protruding from a rough bed

- **Mechanics of Solids and Structures**
  - Multiscale modelling of a connection element for polymeric part

- **Thermal Sciences and Energy**
  - Industrial Process Optimization for Solar Fuels Production

- **Control, Robotics, and Systems**
  - Optimization of cold chain systems for drone-led deliveries and releases
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- Indépendant: 8; 5%
- En doctorat: 25; 15%
- En recherche: 7; 4%
- Sans emploi: 5; 3%
- En emploi: 121; 73%

- Salaires:
  - Très élevée: 10
  - Elevée: 46
  - Moyenne: 49
  - Faible: 9
  - Très faible: 7

- Reconnaissance titre:
  - Très élevée: 26
  - Elevée: 44
  - Moyenne: 34
  - Faible: 11
  - Très faible: 6

- Adéquation formation:
  - Très élevée: 21
  - Elevée: 49
  - Moyenne: 27
  - Faible: 17
  - Très faible: 7

- Tâches accomplies:
  - Très élevée: 29
  - Elevée: 52
  - Moyenne: 29
  - Faible: 10
  - Très faible: 1

- Satisfaction générale:
  - Très élevée: 28
  - Elevée: 57
  - Moyenne: 31
  - Faible: 41

- Ingénieur de R&D
- Consultant (tous domaines)
- Ingénieur de production / exploitation / logistique
- Gestionnaire de projet
- Ingénieur Support / Test / Mise en service
- Chercheur académique
Thanks for your attention

sgm@epfl.ch