Mechanical Engineering
Master at

École Polytechnique
Fédérale de Lausanne
SGM Contacts

Director
Pr. François Gallaire

Deputy
Dr Alain Prenleloup

Secretary
Mme Anne Legrand

Apprentice
Mme Asha Baskaralingam
Electives in Mechanical Engineering
Concentration: ≥18 ECTS
(Excel form on sgm.epfl.ch)

≥44 ECTS

Other electives / Minor

≥30 ECTS

1 Semester Project in Mechanical Engineering
SHS Course + Project

10 ECTS
6 ECTS

Internship and Master Project in Mechanical Engineering

30 ECTS
MSc Concentrations

6 CONCENTRATIONS

- Solids & Structures
- Energy
- Biomechanics
- Aero-Hydrodynamics
- Controls & Mechatronics
- Design & Production
MSc Concentrations

6 CONCENTRATIONS

Solids & Structures
- Transport
- Aerospace
- Energy production
- Sport technology
- Biomedical applications
- Material technology
- Design method

Energy
- Buildings, industry
- Transportation
- Electricity production
- Renewable energy
- Etc.

Aero-Hydrodynamics
- Flows of air and water
- Non-Newtonian fluids
- Multiphase flows
- Fluid-structure interaction
- Energy
- Bioengineering
- Transport

Biomechanics
- Applied: design of orthopedic or vascular implants
- Fundamental studies: investigation of the correlation between mechanical stimulations and biological response

Controls & Mechatronics
- Control: design controllers to ensure the system stability and performance
- Mechatronic: combination of mechanical, electromechanical, electronic, and computer systems

Design & Production
- Design process
- Creating the models
- Setting up experiments
- Design optimization
- Product manufacturing
Control and mechatronics

Dr Alireza Karimi
Mechanics of solids and structures

Pr. Guillermo Villanueva
Design and production

Prof. Jamie Paik
Where to find the orientations?

//EPFL/STI/Mechanical engineering/Education-SGM/SGM orientations/
How to choose and register for courses?

//EPFL/STI/Mechanical engineering/Education-SGM/Useful doc/

Pass conditions

Useful documents

BS Mechanical Engineering
How to choose and register for courses?

It is the student’s responsibility to have a study plan that complies with the rules (Art. 12 al. 5)

Art. 12 - Choix des branches

(5) L’étudiant est responsable de la conformité au règlement du choix des branches.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Code</th>
<th>ECTS</th>
<th>Semestre d'enseignement</th>
<th>Semestre de stage</th>
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Concentration: not mandatory!

Concentration advisor’s signature: needed only if you do a concentration

**44+ ECTS**
From the list on the 2nd sheet + 2 Bachelor courses (to be approved by Section Director)

**16 ECTS**
Semester project + SHS

**30+ ECTS**
Minor or any courses including those from the list on the 2nd sheet

Becomes green if your plan complies with the rules

Suggested workload 25-35 ECTS / semester
| Source | Title | Code | Enseignement | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|        |       |      |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

Already proposed by IS-Academia in the Groupe « Options »

To be looked up and placed in the Groupe « Options »
What are the learning prerequisites?

[Website Link]

LEARNING PREREQUISITES

Required courses:
- Continuum mechanics
- Solid mechanics

Important concepts to start the course:
- Apply the concepts of rigid and deformable body mechanics and of continuum mechanics to model and analytically solve problems of statics, structural stress analysis or simple mechanisms, S1
- Model with appropriate tools (analytical or numerical) the nonlinear (hyperelastic, plastic, buckling) and time-dependent (viscoelastic, viscoplastic) behaviour of structures and material under complex loadings, S12
- Basic programming skills in MATLAB or other high-level method

[Website Link] //edu.epfl.ch/studyplan/master/mechanical-engineering
Create your study plan for the 3 semesters (Excel form)

If you do a concentration: submit it for approval to the concentration advisor and then to SGM

A course can count once either in a Minor or in Groupe « options »

Register for courses in IS-Academia (mandatory)

Course registration deadline 18-19 Fall semester: 28 Sept.

You will probably have to modify your study plan every semester: update and submit your form
How to withdraw from exams?

General exam withdrawal deadline for 2018-19 Winter Session: 23 November 2018

It is not possible to withdraw after 28 September from the following courses:

- ME-401 Projet Génie mécanique I (semester project)
- ME-402 Projet Génie mécanique II (semester project)
- ME-524 Advanced control systems
- ME-403 Applied mechanical design
- ME-412 Experimental methods in engineering mechanics
- ME-410 Mechanical product design and development
- ME-476 Particle-based methods
- ME-499 Simulation and optimisation of industrial applications
- ME-421 System identification
- ME-446 Two-phase flows and heat transfer
Recommended Minors

- Energy
- Area and cultural studies
- Management of technology and entrepreneurship
- Computational science and engineering
- Materials science and engineering
- Biomedical technologies
- Spatial technologies

Any other EPFL Minor

Additional information available on Sections’ websites and [https://sac.epfl.ch/](https://sac.epfl.ch/)
Registration deadline

- End of the first semester
- Better at the beginning of the semester

Procedure

- Select the minor in IS-Academia
- Contact the Minor advisor
- Fill-in the registration form (copy to SGM)
- Register four courses in IS-Academia
- Withdrawal from a Minor: contact SGM to convert part or all the Minor’s ECTS to electives
Semester projects in Mechanical Engineering

- Projects I: mandatory (10 ECTS)
- Project II: elective (10 ECTS)

Registration procedure

- Find a project (Lab websites, contact an SGM teacher)
- Register for the project in IS-Academia and print the registration form
- Get the form signed by the SGM teacher in charge of the project
- Submit the signed form to SGM
The SHS program is over two semesters (Fall-Spring)

REGISTER NOW!
When?
- Before the Master Project (PDM)
- With the Master Project (PDME)

Duration
- ≥8 weeks, ≤6 months
- 25 weeks if combined with the Master Project
2 alternatives

- At EPFL under the (co)supervision of an SGM teacher
- Outside EPFL (University or company, combined or not with the internship) under the (co)supervision of an SGM teacher

Duration

- at EPFL: 17 weeks
- outside EPFL: 25 weeks
- You need to pass each exam
- The 44 ECTS in Mechanical Engineering can only come from the list in the Excel sheet
- You need 18 ECTS for an orientation
- If you do a Minor you are not allowed to take any additional ECTS outside Mechanical Engineering
- Begin your SHS this Fall
- To begin you Master Project you must have passed at least 82 ECTS
- Dedicated presentation with Q&A: Monday 25, 13:15 room CM 1 2