

# Master en génie mécanique @ EPFL





- A. Master degree @EPFL
- B. Orientations/specializations
- C. Where to find SGM information ?
- D. Specific information : specializations, minor, Project et SHS
- E. Professors and laboratories



Contact :

Directeur de section



Pr. Guillermo Villanueva

Adjoint de section



Dr Alain Prenleloup

Apprentie



Mme Burdet Ines

Secrétaire



Mme Anne Legrand



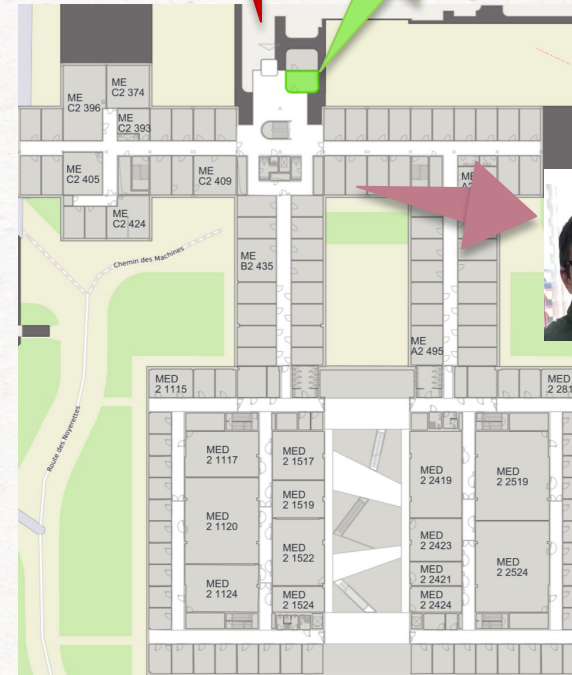
Contact :

- Reception hours:  
10h – 12h Monday to Friday
- By appointment or by email :  
[sgm@epfl.ch](mailto:sgm@epfl.ch)

Main entrance SGM



Secretariat



Deputy SGM



Director SGM  
MED 3 1226

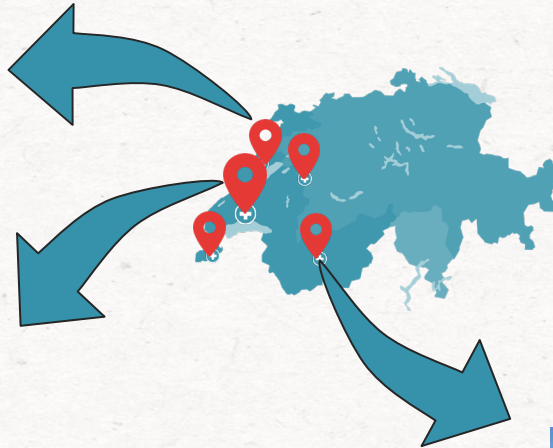




Neuchâtel



EPFL worldwide



Lausanne



Sion



The EPFL should be a model university in terms of :

- Its culture of respect, tolerance and integrity
- The rich variety of para-academic activities





The EPFL should be a model university in terms of :

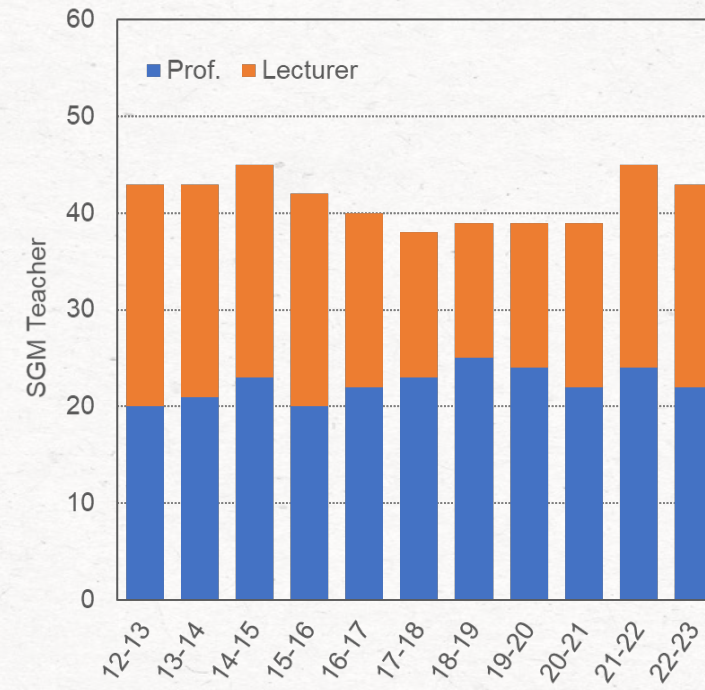
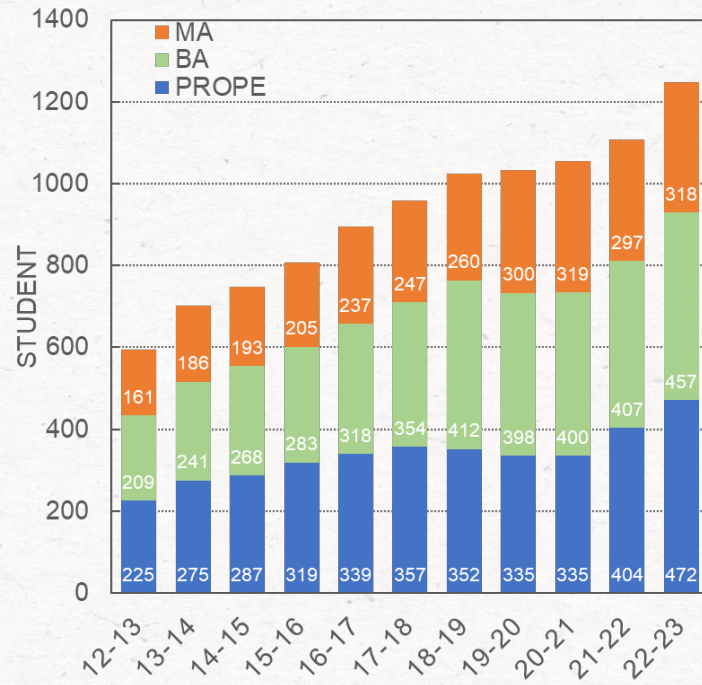
- Harassment, violence and discrimination are not tolerated here
- Provide and seek support
- Talk about it, bring up the problems



- > [go.epfl.ch/tsn](https://go.epfl.ch/tsn) (Trust and Support Network)
- > Take the online training on Moodle: « Promoting Respect »

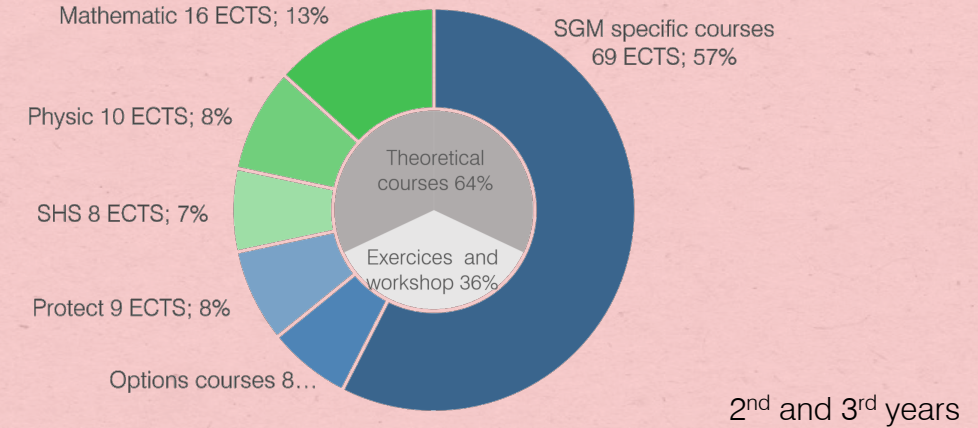
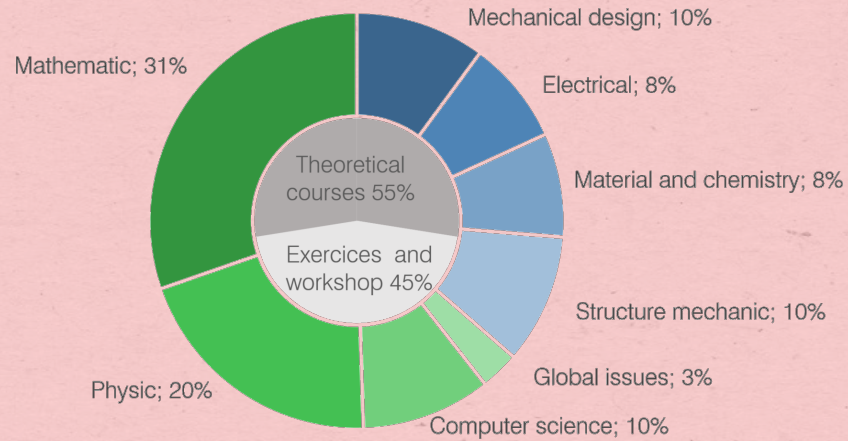


Statistic : students - teachers

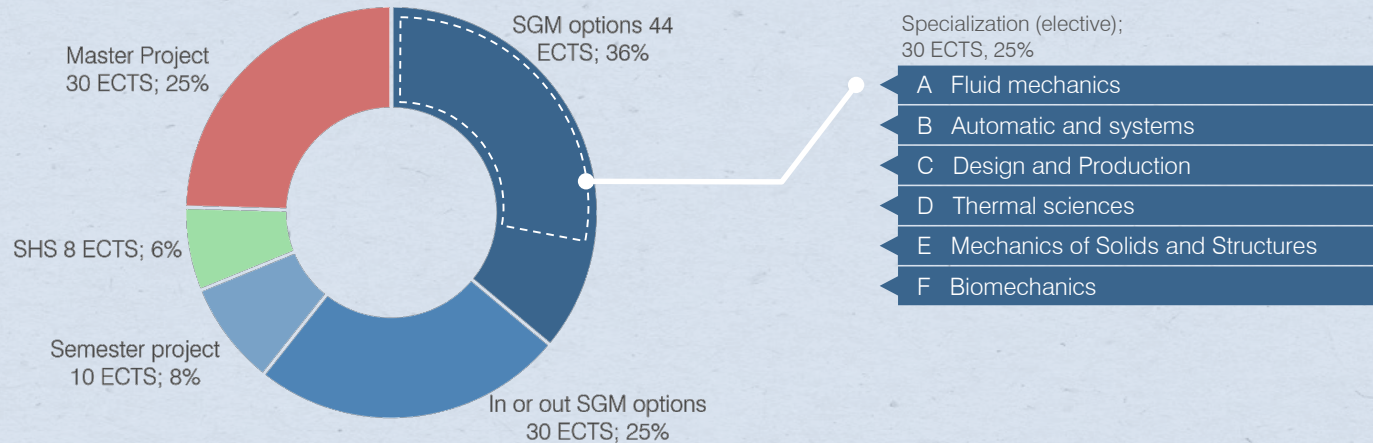




Bachelor: 180 ECTS



Master : 120 ECTS



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)



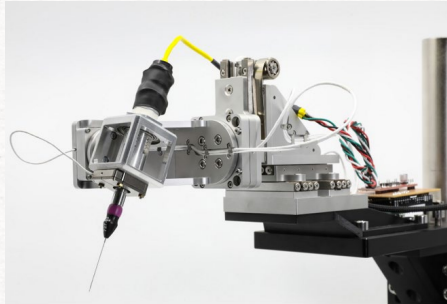
MSc curriculum (120 ECTS)

« GROUPE »	<b>Electives in Mechanical Engineering</b> Specialization : $\geq 30$ ECTS (Excel form on <a href="http://sgm.epfl.ch">sgm.epfl.ch</a> )	$\geq 44$ ECTS
« GROUPE »	<b>Other electives / Minor</b>	$\geq 30$ ECTS
« BLOC »	1 Semester Project in Mechanical Engineering	10 ECTS
	SHS Course + Project	6 ECTS
	<b>Internship and Master Project in Mechanical Engineering</b>	30 ECTS



# B. Orientations/specializations

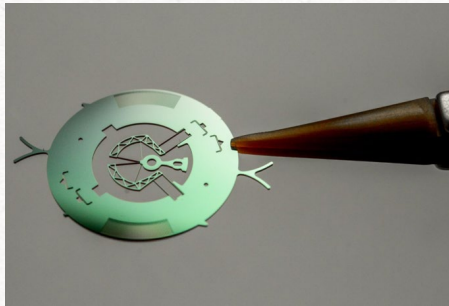
BIOMECHANICS



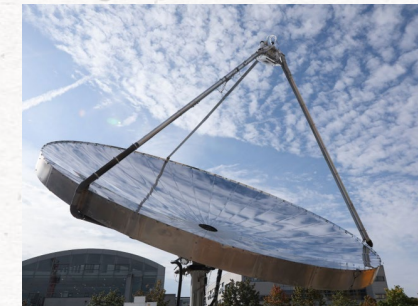
CONTROL, ROBOTICS, AND SYSTEMS



DESIGN AND MANUFACTURING



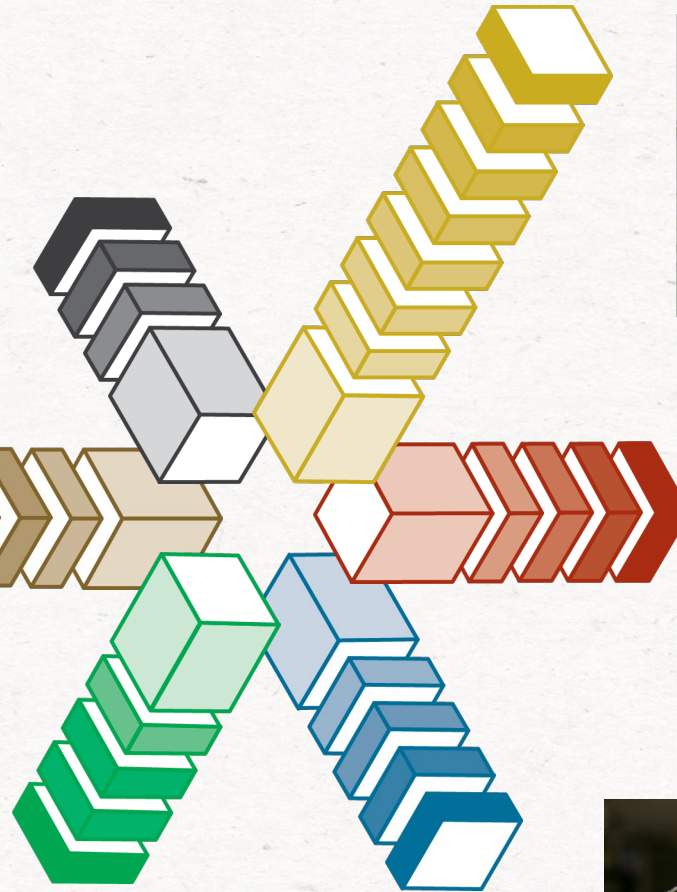
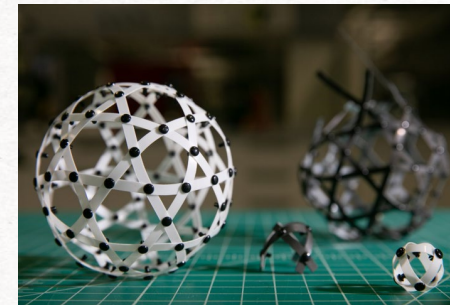
THERMAL SCIENCES AND ENERGY



MECHANICS OF FLUIDS



MECHANICS OF SOLIDS AND STRUCTURES





# B. Orientations/specializations





# B. Orientations/specializations

Pr. Selman Sakar

BIOMECHANICS



CONTROL, ROBOTICS, AND SYSTEMS



Dr. Christophe Salzmann

DESIGN AND MANUFACTURING

Pr. Jürg Schiffmann



THERMAL SCIENCES AND ENERGY



Pr. Giulia Tagliabue

MECHANICS OF FLUIDS

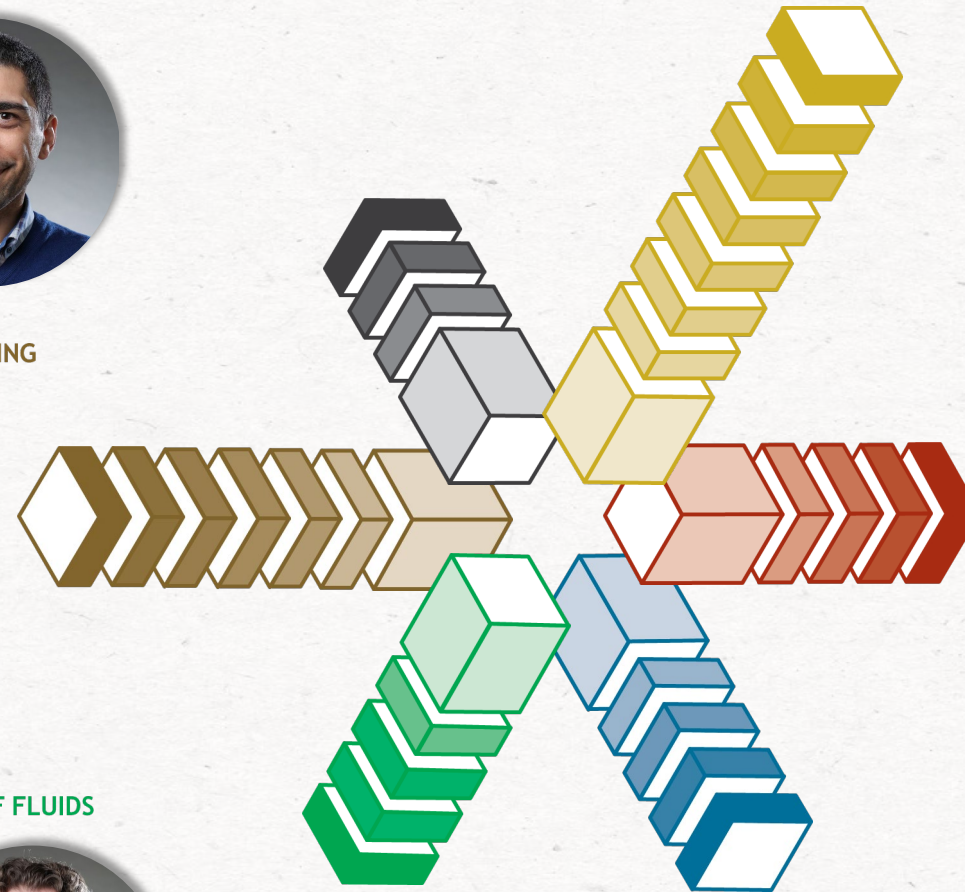
Pr. Tobias Schneider



MECHANICS OF SOLIDS AND STRUCTURES



Pr. Pedro Reis





Page générale de l'IGM: <https://sti.epfl.ch/fr/sgm/>

**EPFL** Sciences et techniques de l'ingénieur

Recherche... FR Login

**GÉNIE MÉCANIQUE**

Home A propos BSc en génie mécanique **MSc en génie mécanique** Etudes doctorales Contact

**BERNINA challenge: La machine à coudre est un bijou d'ingénierie**

Série d'été – Projet de bachelor (6). Loin des aprioris, des clichés et des stéréotypes associés aux métiers de la couture, une quinzaine d'étudiantes et étudiants bachelor ont choisi de passer un semestre à développer des projets autour de machines à coudre BERNINA.

[Read more](#)

**900**  
Etudiants en Bachelor

**315**  
Etudiants en Master

Useful documents

Overview

Master Cycle course list

Admission criteria and application

Semester projects

Master projects

Engineering Internship

Specializations

Minor in Mechanical Engineering

Minor in Energy



Orientation : <https://sti.epfl.ch/fr/sgm/specialisations/>



The screenshot shows the EPFL website's 'GÉNIE MÉCANIQUE' section. At the top, there is the EPFL logo and navigation links for 'Recherche...', 'FR', and 'Login'. Below the logo, the page title 'GÉNIE MÉCANIQUE' is displayed. A horizontal menu contains links for 'Home', 'A propos', 'BSc en génie mécanique', 'MSc en génie mécanique', 'Études doctorales', and 'Contact'. The main content area is titled 'Spécialisations' and features a sub-section for 'Mécanique des fluides'. This section includes a paragraph of text, a small image of an aircraft wing, and a contact person: 'Personne de contact : Prof. Tobias Schneider'.

Useful documents

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Engineering Internship

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Minor in Mechanical Engineering

Minor in Energy



Documents utiles : <https://sti.epfl.ch/fr/sgm/documents-utiles/>

The screenshot shows the EPFL website header with the logo and navigation menu. The main content area is titled 'GÉNIE MÉCANIQUE' and features a 'Documents utiles' section with a list of links to various documents.

**EPFL** Sciences et techniques de l'ingénieur

Recherche... FR Login

**GÉNIE MÉCANIQUE**

Home A propos BSc en génie mécanique MSc en génie mécanique Études doctorales Contact

**Documents utiles**

- [Master course selection form](#), more about Master studies here
- [Application for validation of an internship outside of ISA portal](#), more about internships here
- [Request for authorization to carry out a semester project outside of SGM](#), more about semester projects here
- [Application for validation of Bachelor courses in Master study plan](#), more about Master studies here
- [Master study plan](#)
- Instructions for semester projects
- Instructions for Master projects
- Presentation of Master studies

## Useful documents

Overview

Master Cycle course list

Admission criteria and application

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Master projects

Engineering Internship

Specializations

Minor in Mechanical Engineering

Minor in Energy



<b>Etudiant:</b>	Prénom et nom de l'étudiant					
<b>Date:</b>	jj.mm.aaaa					
<b>Filière:</b>	aucune					
<b>Conseiller:</b>	aucun					
<b>Mineur:</b>	aucun					
<b>Visa conseiller de filière:</b>						
	<b>Cours</b>	<b>Code</b>	<b>ECTS</b>	<b>Semestre d'enseignement</b>	<b>Semestre dans le plan</b>	<b>Filière</b>
<b>Cours SGM</b>	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
	Cours	#N/A	0	#N/A	à définir	aucune
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	Cours	#N/A	0	#N/A	à définir	aucune
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	Cours	#N/A	0	#N/A	à définir	aucune
<b>Cours BA</b>					à définir	
<b>Bloc Projets</b>	Projet Génie Mécanique I SHS: Introduction au projet SHS: Projet	ME-401	10 3 3	Aut./Prin. Aut. Prin.	à définir à définir à définir	
<b>Cours hors SGM</b>					à définir à définir à définir à définir à définir à définir à définir à définir à définir à définir	
<b>Respect du règlement</b>						
Nombre total d'ECTS (≥ 90)			16			
Nombre d'ECTS en SGM (≥ 44)			0			
Nombre d'ECTS de Filière (≥ 18)			0			
Nombre d'ECTS du Mineur (≥ 30)			0			
<b>Charge de travail par semestre</b>						
Nombre d'ECTS 1er semestre (≥ 25 et ≤ 35)			0			
Nombre d'ECTS 2ème semestre (≥ 25 et ≤ 35)			0			
Nombre d'ECTS 3ème semestre (≥ 25 et ≤ 35)			0			
Approbation du Directeur de Section pour cours BA requise.						
Signature:						
al/mq, 16.12.2015						

Concentration: not mandatory!

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

44+ ECTS  
From the list on the 2<sup>nd</sup> 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 2<sup>nd</sup> sheet

Becomes green if your plan complies with the rules

Suggested workload 25-35 ECTS / semester



Cours	Fiche	Code	Enseignant	Filière							ECTS	Sem.	Exam.
				A	B	C	D	E	F				
Advanced control systems	<a href="#">link</a>	ME-524	Karimi		B	C	D	F			3	Prin.	sans retrait/no withdrawal
Advanced energetics	<a href="#">link</a>	ME-451	Maréchal				D				5	Aut.	
Advanced heat transfer	<a href="#">link</a>	ME-465	Haussemer				D				3	Prin.	
Aerodynamics	<a href="#">link</a>	ME-445	Mulleners	A			D	E			3	Aut.	
Aérodynamique et interaction fluide-structure	<a href="#">link</a>	ME-435	Farhat	A			D	E			3	Aut.	
Applied mechanical design	<a href="#">link</a>	ME-403	Schweigen			C					4	Aut.	sans retrait/no withdrawal
Bases de la robotique	<a href="#">link</a>	MICRO-450	Bieuler/Bouri		B	C					3	Aut.	
Biomechanics of the cardiovascular system	<a href="#">link</a>	ME-481	Stergiopoulos	A			E	F			3	Prin.	
Biomechanics of the musculoskeletal system	<a href="#">link</a>	ME-482	Pioletti				E	F			5	Aut.	
Cavitation et phénomènes d'interface	<a href="#">link</a>	ME-462	Farhat	A			D				3	Aut.	
Commande non linéaire	<a href="#">link</a>	ME-523	Müllhaup		B	C					3	Aut.	
Composites polymères + TP	<a href="#">link</a>	MSE-340	Bourban/Michaud				E	F			4	Aut.	
Computer-aided engineering	<a href="#">link</a>	ME-417	Stroud			C					5	Prin.	
Conception mécanique intégrée	<a href="#">link</a>	ME-418	Schorderet			C	E	F			3	Prin.	
Dynamique numérique des solides et des structures	<a href="#">link</a>	ME-473	Gmür	A		C	E	F			5	Prin.	
Engines and fuel cells	<a href="#">link</a>	ME-551	van Herle	A		D					4	Aut.	
Fabrication assistée par ordinateur	<a href="#">link</a>	ME-416	Kyrtisis			C					5	Aut.	
Flow of dispersed media	<a href="#">link</a>	ME-463	Vacat	A		C	E	F			3	Aut.	
Fracture mechanics	<a href="#">link</a>	ME-432	Botis/Cugnoni			C	E	F			4	Prin.	
Hydraulic turbomachines	<a href="#">link</a>	ME-453	Avellan	A		D	E	F			4	Aut.	
Hydrodynamics	<a href="#">link</a>	ME-444	Gallaire	A		D	E	F			5	Prin.	
Hydrodynamique acoustique	<a href="#">link</a>	ME-443	Nicolet	A		D	F				3	Prin.	
Instability	<a href="#">link</a>	ME-466	Gallaire	A		D					3	Aut.	
Introduction to nuclear engineering	<a href="#">link</a>	ME-464	Pautz/Hursin				D				2	Prin.	
Lifecycle performance of product systems	<a href="#">link</a>	ME-516	Kyrtisis			C	D				3	Prin.	
Mechanical product design and development	<a href="#">link</a>	ME-410	Curtin			C					4	Aut.	sans retrait/no withdrawal
Mechanics of composites	<a href="#">link</a>	ME-430	Curtin			C	E	F			2	Aut.	
Methods for rapid production and development	<a href="#">link</a>	ME-415	Bolliat E.			C					3	Aut.	
Model predictive control	<a href="#">link</a>	ME-425	Jones		B						3	Prin.	
Modelling and optimization of energy systems	<a href="#">link</a>	ME-454	Maréchal				D				4	Prin.	
Multi-body simulation	<a href="#">link</a>	ME-475	Sakar				D				3	Prin.	
Numerical flow simulation	<a href="#">link</a>	ME-474	Sawley	A			D	F			5	Aut.	
Numerical methods in biomechanics	<a href="#">link</a>	ME-484	Yarnold				F				3	Prin.	
Numerical methods in heat transfer	<a href="#">link</a>	ME-571	Mazum	A		D					3	Prin.	sans retrait/no withdrawal
Particle-based methods	<a href="#">link</a>	ME-476	Sawley	A		C	E	F			4	Prin.	sans retrait/no withdrawal
Production management	<a href="#">link</a>	ME-419	Yoo			C					5	Aut.	
Projet Génie mécanique II	<a href="#">link</a>	ME-402	Divers enseignants								10	Aut./Prin.	sans retrait/no withdrawal
Renewable energy (for ME)	<a href="#">link</a>	ME-460	Haussemer/Van Herle	A		D					4	Prin.	
Robotique industrielle et appliquée	<a href="#">link</a>	MICRO-451	Bieuler/Bouri		B	C					2	Prin.	
Simulation and optimisation of industrial applications	<a href="#">link</a>	ME-499	Yoo				C	D			4	Prin.	sans retrait/no withdrawal
System identification	<a href="#">link</a>	ME-421	Karimi		B	C	D	E	F		3	Aut.	sans retrait/no withdrawal
Systèmes mécatroniques	<a href="#">link</a>	ME-424	Agnewade		B	C					5	Prin.	
Thermal power cycles and heat pump systems	<a href="#">link</a>	ME-499	Kane				D				2	Prin.	
Turbomachines thermiques	<a href="#">link</a>	ME-455	Ott		A		D				5	Aut.	
Turbulence	<a href="#">link</a>	ME-467	Schneider		A						3	Aut.	
Two-phase flows and heat transfer	<a href="#">link</a>	ME-446	Thome/Seenen/Marcinichen		A		D				5	Aut.	sans retrait/no withdrawal
Advanced satellite positioning	<a href="#">link</a>	ENV-542	Botteron/Skaloud		B						4	Prin.	
Applied machine learning	<a href="#">link</a>	MICRO-455	Billard		B						4	Aut.	
Assembly techniques	<a href="#">link</a>	MSE-464	Plummer/Wieber				E				2	Prin.	
Biophysics I	<a href="#">link</a>	PHYS-301	Plummer				F				3	Prin.	
Biophysics II	<a href="#">link</a>	PHYS-302	Verkhovskiy				F				4	Aut.	
Capteurs	<a href="#">link</a>	MICRO-330	Renaud/Boero		B						4	Prin.	
Commande d'actionneurs à l'aide d'un microprocesseur + TP	<a href="#">link</a>	MICRO-510	Koeschli+Koeschli/Hodder/Perriard		B						2	Prin.	
Composites technology	<a href="#">link</a>	MSE-440	Bourban/Michaud				E				3	Aut.	
Computational motor control	<a href="#">link</a>	CS-432	Jisebert		A	B					4	Prin.	
Computer simulation of physical systems I	<a href="#">link</a>	PHYS-403	Pasquarello		A						4	Aut.	
Convex optimization and applications	<a href="#">link</a>	CS-454	Letzer		B						4	Prin.	
Corrosion et protection des métaux + TP	<a href="#">link</a>	MSE-311	Mischler			C					3	Prin.	
Déformations des matériaux	<a href="#">link</a>	MSE-310	Lozé				E				4	Aut.	
Distributed intelligent systems	<a href="#">link</a>	ENG-466	Martinoli		B						5	Aut.	
Dynamical system theory for engineers	<a href="#">link</a>	COM-502	Thiran		B						4	Aut.	
Environmental transport phenomena	<a href="#">link</a>	ENG-420	Parté Agel+Crouzy		A						5	Aut.	
Evolutionary robotics	<a href="#">link</a>	MICRO-515	Floreano				F				4	Prin.	
Human robot interfaces	<a href="#">link</a>	MICRO-453	Bieuler/Bouri		B						3	Prin.	
Image optics	<a href="#">link</a>	MICRO-421	Hertz/Schwarz								3	Prin.	
Industrial automation	<a href="#">link</a>	CS-487	Piolet-Dawid/Tournier		B						3	Prin.	
Integrated transducers and drives	<a href="#">link</a>	EE-461	Köchli		B						3	Aut.	
Laser microprocessing	<a href="#">link</a>	MICRO-520	Hoffmann			C					2	Prin.	
Life cycle engineering of polymers	<a href="#">link</a>	MSE-430	Letzerter				E				2	Aut.	
Materials selection	<a href="#">link</a>	MSE-474	Vaucher/Michler/Slegmann				E				2	Prin.	
Numerical approximation of PDE's I	<a href="#">link</a>	MATH-451	Nobis		A						5	Aut.	
Numerical methods for conservation laws	<a href="#">link</a>	MATH-459	Hesthaven		A						5	Aut.	
Physiologie par systèmes II	<a href="#">link</a>	BIO-377	Boy				F				4	Prin.	
Propagation of acoustic waves	<a href="#">link</a>	EE-549	Martin				E				3	Aut.	
Recycling of materials	<a href="#">link</a>	MSE-463	Letzerter			C					2	Prin.	
Robotics practicals	<a href="#">link</a>	MICRO-453	Billard/Floreano/Mondada		B						2	Prin.	sans retrait/no withdrawal
Space mission design and operations	<a href="#">link</a>	EE-585	Nicollier			C					2	Prin.	
Statistique II	<a href="#">link</a>	CIVIL-224	Lestuzzi/Vurpillot				E				4	Prin.	
Supply chain management	<a href="#">link</a>	ME-526	Seliger				E				4	Prin.	
Surface analysis	<a href="#">link</a>	MSE-361	Miraldi/Sapichnov/Mischler			C					4	Aut.	
Systèmes embarqués microprogrammés	<a href="#">link</a>	EE-310	Arenza		B	C					4	Aut.	
Techniques d'assemblage	<a href="#">link</a>	MICRO-440	Chautems			C					3	Prin.	
Technologie et mise en œuvre des polymères +TP	<a href="#">link</a>	MSE-360	Manson/Plummer+Plummer				E				4	Aut.	
Tribology	<a href="#">link</a>	MSE-485	Mischler				E				2	Aut.	

Cours gérés par la SGM

Cours choisis gérés par une autre section

SGM

Reconnu pour GM



What are the learning prerequisites ?

**FICHES DE COURS**

Propédeutique | Cycle Bachelor | Cycle Master | Mineur | Ecole doctorale

PDF

## Advanced control systems

**ME-524**

**Enseignant(s) :**  
Karimi Alireza

**Langue:**  
English

**Withdrawal**  
It is not allowed to withdraw from this subject after the registration deadline.

**Summary**  
This course covers some theoretical and practical aspects of robust and adaptive control. Robust controller design with H-infinity performance, digital controller design with pole placement technique, direct, indirect and switching adaptive control are studied and implemented in a hands-on lab.

**Content**  
Stability, performance and robustness of closed-loop control systems. Robust controller design by loop shaping. Robust H-infinity controller design in the frequency domain. Multivariable decoupling controller design. Gain-scheduled controller design.  
Two-degree of freedom RST digital polynomial controller. Pole placement technique and its relation to Internal Model Control (IMC), Model Reference Control (MRC) and Minimum Variance Control (MVC). Robust pole placement with Q parameterization. Parameter adaptation algorithms. Direct and Indirect adaptive control. Switching adaptive control.

**Keywords**  
Adaptive control, robust control, digital RST controller.

**Learning Prerequisites**

**Required courses**  
Control systems + Lab

**Recommended courses**

- Control Systems
- System Identification
- Multivariable systems

**Important concepts to start the course**

- Analyze a linear dynamical system (both time and frequency responses)
- Represent a linear system by a transfer function
- Identify a dynamic system using experimental data
- Design a PID controller
- Design a simple controller for a dynamic system

**Learning Outcomes**  
By the end of the course, the student must be able to:

- Design an advanced controller for a dynamic system, A11
- Assess / Evaluate the stability, performance and robustness of a closed-loop system, A12
- Define (specifications) the adequate control performance for dynamic systems, A13
- Propose several control solutions, formulate the trade-offs, choose the options, A14

**DANS LES PLANS D'ÉTUDES**

▼ **Génie mécanique, 2018-2019, Master semestre 2**

<b>Semestre</b> Printemps	<b>Forme de l'examen</b> Pendant le semestre
<b>Crédits</b> 3	<b>Matière examinée</b> Advanced control systems
<b>Cours</b> 2 Heure(s) hebdo x 14 semaines	<b>Projet</b> 1 Heure(s) hebdo x 14 semaines

► **Génie mécanique, 2018-2019, Master semestre 4**

► **Gestion de l'énergie et durabilité, 2018-2019, Master semestre 2**

► **Gestion de l'énergie et durabilité, 2018-2019, Master semestre 4**

► **Microtechnique, 2018-2019, Master semestre 2**

► **Microtechnique, 2018-2019, Master semestre 4**

► **Robotique, 2018-2019, Master semestre 2**

► **Mineur en Systems Engineering, 2018-2019, Semestre printemps**

**SEMAINE DE RÉFÉRENCE**

	Lu	Ma	Me	Je	Ve
8-9					
9-10					
10-11			MER334		
11-12					
12-13					
13-14					
14-15					
15-16					
16-17					
17-18					
18-19					
19-20					
20-21					
21-22					

■ Cours ■ Exercice, TP ■ Projet, autre

**LÉGENDE**



**Learning Prerequisites**

**Required courses**  
Control systems + Lab

**Recommended courses**

- Control Systems
- System Identification
- Multivariable systems

**Important concepts to start the course**

- Analyze a linear dynamical system (both time and frequency responses)
- Represent a linear system by a transfer function
- Identify a dynamic system using experimental data
- Design a PID controller
- Design a simple controller for a dynamic system



How to choose and register for courses ?

1. Create your study plan for the 3 semesters (Excel form)
2. If you do a specialization : submit it for approval to the concentration advisor and then to SGM secretariat
3. A course can count once either in a Minor or in Groupe « options »
4. Register for courses in IS-Academia (mandatory) before September 29<sup>th</sup>
5. Announce all major modification (ex : minor surrender) of your study plan to our secretariat (update and submit your form)
6. Exam withdraw until the 10<sup>th</sup> week's semester, except for semester courses (November 26)
7. 2 Bachelor courses may eventually be accepted with the section's Director prior agreement



How to choose and register for courses ?

General exam withdrawal deadline for 2023-24 Winter Session: 24 November 2023

It is not possible to withdraw after 29<sup>th</sup> September from the semester courses listed here:

- ME-403 Applied mechanical design
- ~~▪ ME-482 Biomechanics of the musculoskeletal system~~
- ME-414 Computational multi-scale modeling of solids
- ME-498 Continuous improvement of manufacturing systems
- ME-428 Data-driven design & fabrication methods
- ME-412 Experimental methods in engineering mechanics
- ME-516 Lifecycle performance of product systems
- ME-410 Mechanical product design and development
- ME-480 Mechanobiology: how mechanics regulate life



How to choose and register for courses ?

General exam withdrawal deadline for 2023-24 Winter Session: 24 November 2023

It is not possible to withdraw after 29<sup>th</sup> September from the semester courses listed here:

- ME-469 Nano-scale heat transfer
- ME-474 Numerical flow simulation
- ME-419 Production management
- ME-467 Turbulence
- MICRO-413 Advanced additive manufacturing technologies
- ENV-542 Advanced satellite positioning
- MICRO-421 Imaging optics
- MGT-555 Innovation & entrepreneurship in engineering
- MICRO-401 Machine learning programming
- MSE-351 Surface analysis



How to choose and register for courses ?

Art. 12 al. 5 (english)

It is the student's responsibility to have a study plan that complies with the section rules





### Minors : subscription before the end of the first semester

Recommended Minors (any other EPFL Minor is accepted)

- Energy
- Management of technology and entrepreneurship
- Computational science and engineering
- Materials science and engineering
- Biomedical technologies
- Spatial technologies
- Engineering for Sustainability

### Procedure

- Select the minor in IS-Academia
- Contact the Minor advisor
- Fill-in the registration form (copy to SGM)
- Register for courses in IS-Academia
- Withdrawal from a Minor: contact SGM to convert part of the Minor's ECTS to electives



**Specializations** are elective

- Domain consolidation
- 30 ECTS with variable fundamental base courses

30 credits fundamental base courses :

- A Fluid mechanics: 17
- B Automatic and systems: 9
- C Design and Production: 17
- D Thermal sciences : 15
- E Mechanics of Solids and Structures : 8
- F Biomechanics : 8



## Semestre project

- Semester projects in Mechanical Engineering
  - Projet I : mandatory; 10 ECTS (10 x 30 h /14 weeks  $\approx$  21.5 hours per week)
  - Projet II : elective; 10 ECTS
- Visit the web pages of the various [laboratories](#), and make sure that the teacher responsible for the project is affiliated with the Institute of Mechanical Engineering. If this is not the case, you must submit the project to the Section Director for approval.
- Registration procedure :
  1. Find a project
  2. Contact the project manager
  3. Request [authorization](#) to carry out a project outside GM
  4. Register the project in IS-A (student portal, course selection)
  5. Have the form signed by the professor (or research professor) responsible for supervision
  6. Forward the form to the secretary's office



## SHS (social and Human sciences)

EPFL | YOU ARE | BY SCHOOL | ABOUT EPFL

EPFL > Study Plans > Master Cycle > Humanities and Social Sciences Program

### STUDY PLANS

Propedeutics | Bachelor Cycle | **Master Cycle** | Minor | Doctoral School

FDF

#### Sciences humaines et sociales 2018-19

HSS : Introduction to project

Courses	Programs	Lecturers	Specialisation	Master 1	Master 2	Exam	Credits
Code				i e p	i e p		
<b>Artistic practices I</b> HUM-401(a)	SHS	Nova		2h	1h	During the semester	3
<b>China: the rebirth of a great power I</b> HUM-434(a)	SHS	Kernen		2h	1h	During the semester	3
<b>Collective creation: improv-arts &amp; engineering I</b> HUM-441(a)	SHS	Henein		2h	1h	During the semester	3
<b>Digital humanities I</b> HUM-439(c)	SHS	Bott Grandjean		2h	1h	During the semester	3
<b>Energy economics and policy I</b> HUM-411(c)	SHS	Romerio		2h	1h	During the semester	3
<b>Engineering ethics I</b> HUM-412(c)	SHS	Polier		2h	1h	During the semester	3
<b>Experimental cognitive psychology I</b> HUM-403(a)	SHS	Abu-Akkel		2h	1h	During the semester	3
<b>Global perspectives, local realities I</b> <i>(This course is strongly recommended for students enrolled in the Minor in Science, Technology and Area Studies - HUM-498(a, b, c))</i> HUM-440(a)	SHS	Hoesli Laperrouza		2h	1h	During the semester	3
<b>Going East I</b> HUM-402(a)	SHS	Graezer Bideau		2h	1h	During the semester	3
<b>Graphic design V</b> HUM-407(a)	SHS	Faure		2h	1h	During the semester	3
<b>History and architecture of the EPFL I</b> HUM-418(a)	SHS	Lugon Lüthi		2h	1h	During the semester	3
<b>History of globalization I</b> HUM-427(a)	SHS	Lin		2h	1h	During the semester	3
<b>How people learn I</b> HUM-432(a)	SHS	Tormey		2h	1h	During the semester	3
<b>Images of nature I</b> HUM-409(a)	SHS	Mauron Layaz Ourednik		2h	1h	During the semester	3

**LEGEND**

- L Lecture
- R Recitation
- P Practical courses
- \* Option courses
- L Lecture in French
- L Lecture in English
- L Lecture in German
- L Lecture in Italian
- L Lecture in French and English
- ☀ Summer sessions
- ❄ Winter sessions
- 🌸 Spring semester
- 🍂 Autumn semester

**For more information**

Student services  
Master at EPFL  
Admissions  
Humanities and Social Sciences Program

The SHS program is over two semesters (Fall-Spring)

**REGISTER NOW!**



### 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 (+1 week for vacation)
  - at EPFL: 17 weeks
  - outside EPFL: 25 weeks
- Conditional PDM: minimum of 82 ECTS
- Informative course sheet ME-599
- Expected work: Written report, oral presentation and poster
- Evaluation method : Oral defense of the written report



### Projet de Master

- Visit the web pages of the various [laboratories](#) and make sure that the teacher in charge of the project is affiliated with the Mechanical Engineering Section. If not, you'll need to find a co-supervisor from the Mechanical Engineering Institute.
- Project registration :
  1. The subject must be defined by, or in conjunction with, the GM Section Professor.
  2. The dates and conditions (e.g. location, contact person) of the PDM must be defined.
  3. In the case of in-company projects, it is generally necessary to sign a contract between the company and the student (private contract, covering, among other things, working conditions).
  4. For projects abroad (university or company), check entry requirements (visa)
  5. Register the project in IS-Accademia
  6. Print out the form (ISA) and have it signed by the professor (or research professor) responsible for supervision
  7. Send the form to the secretariat



## Industrial internship

- When to do an internship
  - Between bachelor's and master's degrees
  - Between semesters (during the summer)
  - During a semester off
  - In parallel with a semester (not necessarily full-time)
  - With the Master's project
- How to find an internship
  - Internship portal
  - Personal search and validation request to the section deputy
- Other
  - Minimum duration 8 weeks and maximum 6 months (average ~5 months)
  - Outside universities
  - Requirements corresponding to the skills of a mechanical engineer
  - Agreements imposed by companies are generally refused by the school



### Industrial internship

- Three-way contract between the student, the company (usually the internship supervisor or HR) and the academic supervisor ([alain.prenleloup@epfl.ch](mailto:alain.prenleloup@epfl.ch))
- If you have any questions, please contact the STI faculty internship coordinator ([hind.klinke@epfl.ch](mailto:hind.klinke@epfl.ch))
- Full presentation will take place in October, 12:00 – 13:00



Hind Klinke



### Be aware that !

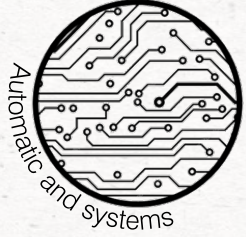
- You need to pass each exam
- The 44 ECTS in Mechanical Engineering can only come from the list in the Excel sheet
- You need 30 ECTS for a specialization
- If you do a Minor you are not allowed to take any additional ECTS outside Mechanical Engineering
- Begin your SHS this Fall
- To begin your Master Project you must have passed at least 82 ECTS
- Dedicated presentation with Q&A : Monday 25 September



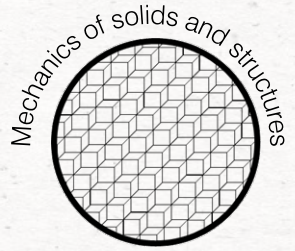












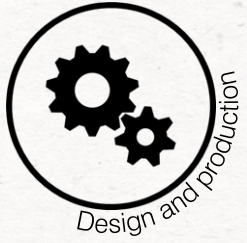


















**Thanks for your attention**

[sgm@epfl.ch](mailto:sgm@epfl.ch)