Studies Plan

Génie mécanique 2025-26

Block "Projects"

Lang.	Code	Sect.	Teacher	Specialization	Master 1 (C E L T P I)	Master 2 (C E L T P I)	Exam Session	Exam	Credit
Mechanical engineering project I									
	ME-401	GM	Profs divers		10h	10h	Sum Win	During the semester	10
HSS : Introduction to project									
		SHS					Win		3
HSS : Project									
		SHS					Sum		3

Group "Options accepted SGM"

Lang.	Code	Sect.	Teacher	Specialization	Master 1 (C E L T P I)	Master 2 (C E L T P I)	Exam Session	Exam	Credit
Advanced additive manufacturing technologies									
E	MICRO-413	MT	Brugger Pu			2h 2h	Sum	Oral	4
Advanced composites in engineering structures									
E	CIVIL-443	GC	Vassilopoulos		2h 1h		Win	Oral	3
Assembly techniques									
E	MSE-464	MX				2h	Sum	During the semester	2
Basics of mobile robotics									
E	MICRO-452	MT	Mondada		1h 1h 2h		Win	Written	4
Basics of robotics for manipulation									
E	MICRO-450	MT	Bouri		3h		Win	Written	3
Biophysics : physics of biological systems									
E	PHYS-302	PH	Rahi		2h 2h		Win	During the semester	4
Biophysics : physics of the cell									
E	PHYS-301	PH	Manley			2h 1h	Sum	Written	3
Composites technology									
E	MSE-440	MX	Bourban Michaud Wakeman		2h 1h		Win	During the semester	3
Computational motor control									
E	MICRO-436	MT	Ijspeert			2h 2h	Sum	During the semester	4
Computational optical imaging									
E	MICRO-421	MT	Psaltis			3h 1h	Sum	During the semester	4
Computer simulation of physical systems I									
E	PHYS-403	PH	Pasquarello		2h 2h		Win	Oral	4
Continuum mechanics and applications									
E	CIVIL-425	GC				3h 2h	Sum	Oral	6
Convex optimization									
E	MGT-418	MTE	Kuhn		2h 2h		Win	Written	5
Corrosion and protection of metals + Laboratory Work									
F	MSE-311	MX	Igual Muñoz			2h 1h	Sum	Oral	3
Deformation of materials									
F	MSE-310	MX	Logé		3h 1h		Win	Oral	4
Distributed intelligent systems									
E	ENG-466	SIE	Martinoli		2h 2h 1h		Win	Oral	5

C : Course, E : Exercise, L : Lab, TP : Practical work, P : Course based project, I : Individual project, * : option course / F : French courses, D : Deutsch courses, E : English Courses / Sum : Summer, Win : Winter

	Course / Code	Section	Professor					Semester	Exam	Credits
Dynamical system theory for engineers										
E	COM-502	SC				3h 1h		Sum	Written	6
Embedded motor control										
F	MICRO-510	MT	Hodder Köchli Perriard	1h	2h			Win	Oral	3
Energy and comfort in buildings										
E	CIVIL-407	GC	Favero Khovalyg Licina Sonta	2h 1h	2h			Win	During the semester	5
Energy geostructures										
E	CIVIL-444	GC				2h 1h	1h	Sum	Written	4
Environmental transport phenomena										
E	ENG-420	SIE	Crouzy Porté-Agel	2h 1h	2h			Win	Written	5
Industrial automation										
E	CS-487	SC	Sommer Tournier			2h 1h		Sum	Oral	3
Innovation & entrepreneurship in engineering										
E	MGT-555	MTE	Michaud Weber	2h	8h			Win	During the semester	10
Laser microprocessing										
E	MICRO-520	MT	Hoffmann		2h			Sum	Oral	2
Legged robots										
E	MICRO-507	MT	Ijspeert	2h 1h	1h			Win	During the semester	4
Machine learning for predictive maintenance applications										
E	CIVIL-426	GC	Fink	2h 2h	2h			Win	During the semester	6
Machine learning I										
E	MICRO-455	MT	Billard	4h				Win	Written	4
Machine learning II										
E	MICRO-570	MT				3h .5h	.5h	Sum	Oral	4
Machine learning programming										
E	MICRO-401	MT	Billard		2h			Win	During the semester	2
Materials selection										
E	MSE-474	MX	Michler Vaucher			2h		Sum	Written	2
Microprogrammed Embedded Systems										
F	EE-310	EL	Atienza Alonso	2h	2h			Win	Oral	4
Multiscale modelling in mechanics										
E	CIVIL-408	GC	Karapiperis	2h 2h				Win	During the semester	4
Nonlinear analysis of structures										
E	CIVIL-449	GC	Lignos Saloustros	3h 2h				Win	Written	6
Numerical approximation of PDEs										
E	MATH-451	MA	Antolin Sanchez Buffa			2h 2h		Sum	Written	5
Physiology by systems										
F	BIO-377	SV	Roy			3h 1h		Sum	Written	4
Polymer composites + Laboratory Work										
F	MSE-340	MX	Bourban Michaud	2h	2h			Win	Oral	4
Polymer science										
E	MSE-362	MX	Görl	2h 1h				Win	Written	3

Lang.	Code	Sect.	Teacher	Course	M1 C	M1 E	M1 L	M1 T	M1 P	M1 I	M2 C	M2 E	M2 L	M2 T	M2 P	M2 I	Exam Session	Exam	Credit
F	MICRO-330	MT	Boero Shea	**Sensors**							5h						Sum	Written	5
E	EE-511	EL	Chételat Ionescu	**Sensors in medical instrumentation**							2h	1h					Sum	Written	3
E	EE-585	EL	Kuntzer	**Space mission design and operations**	2h												Win	Oral	2
E	MSE-351	MX	Igual Muñoz Stolichnov	**Surface analysis**	2h			1h									Win	Written	3
E	CIVIL-450	GC	Khovalyg	**Thermodynamics of comfort in buildings**							1h			1h	1h		Sum	During the semester	3
E	MSE-433	MX	Leterrier Wakeman	**Towards sustainable materials**							3h	1h					Sum	During the semester	4
E	MSE-485	MX	Igual Muñoz	**Tribology**	2h												Win	During the semester	2

Group "Options SGM"

Lang.	Code	Sect.	Teacher	Course	M1 C	M1 E	M1 L	M1 T	M1 P	M1 I	M2 C	M2 E	M2 L	M2 T	M2 P	M2 I	Exam Session	Exam	Credit
E	ME-524	GM	Karimi	**Advanced control systems**							2h				1h		Sum	Written	3
E	ME-420	GM	Paik	**Advanced design for sustainable future**	2h	1h											Win	During the semester	5
E	ME-451	GM	Florez Orrego Maréchal	**Advanced energetics**	3h	2h											Win	Oral	5
E	ME-465	GM	Haussener	**Advanced heat transfer**							2h	1h					Sum	Written	3
E	ME-445	GM	Mulleners	**Aerodynamics**	2h	2h											Win	Written	4
F	ME-435	GM	Farhat	**Aeroelasticity and fluid-structure interaction**	2h	1h											Win	Written	3
E	ME-403	GM		**Applied mechanical design**	1h				4h								Win	During the semester	5
E	ME-481	GM	Stergiopoulos	**Biomechanics of the cardiovascular system**							2h	1h					Sum	Written	3
E	ME-482	GM	Pioletti	**Biomechanics of the musculoskeletal system**							2h	1h					Sum	During the semester	5
F	ME-462	GM	Farhat	**Cavitation and interface phenomena**	2h				1h								Win	Oral	3
E	ME-498	GM	Kaboli	**Continuous improvement of manufacturing systems**							2h				2h		Sum	During the semester	5
E	ME-428	GM	Hughes	**Data-driven design & fabrication methods**							2h				1h		Sum	During the semester	3
E	ME-473	GM	Burzio	**Dynamic finite element analysis of structures**	2h	1h											Win	Oral	3
E	ME-551	GM	Van Herle	**Engines and fuel cells**	3h												Win	Written	4

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Heat pump systems										
E	ME-459	GM	Schiffmann			2h 1h		Sum	Written	3
Hydraulic turbomachines										
E	ME-453	GM	Vagnoni	3h 1h				Win	Written	4
Hydroacoustic for hydropower plants										
E	ME-443	GM	Nicolet			2h	1h	Sum	Oral	3
Hydrodynamics										
E	ME-444	GM	Gallaire			2h 2h		Sum	Written	5
Instability										
E	ME-466	GM	Gallaire	2h 1h				Win	Written	3
Introduction to additive manufacturing										
E	ME-413	GM	Boillat Brugger Moser	2h	1h			Win	Written	3
Introduction to nuclear engineering										
E	ME-464	GM	Scolaro			2h		Sum	Written	2
Liquid-gas interfacial heat and mass transfer										
E	ME-446	GM	Lu	2h 1h				Win	Written	3
Mechanical engineering project II										
	ME-402	GM	Profs divers			2h	2h	Sum Win	During the semester	10
Mechanical product design and development										
E	ME-410	GM	Paik	2h	1h			Win	During the semester	5
Mechanics of slender structures										
E	ME-411	GM	Reis	3h	2h			Win	Written	5
Mechanics of soft and biological matter										
E	ME-470	GM		3h 1h				Win	During the semester	4
Mechanobiology: how mechanics regulate life										
E	ME-480	GM		2h 2h				Win	During the semester	4
Micro/Nanomechanical devices										
E	ME-426	GM	Villanueva	2h 2h				Win	Written	4
Micro/Nano robotics										
E	ME-436	GM	Sakar			2h 1h		Sum	During the semester	3
Modelling and optimization of energy systems										
E	ME-454	GM	Maréchal	2h 2h				Win	Oral	4
Model predictive control										
E	ME-425	GM	Jones	2h 2h				Win	Written	4
Multiagent decision-making and control										
E	ME-429	GM	Kamgarpour			2h 1h	1h	Sum	During the semester	4
Multivariable control										
E	ME-422	GM	Ferrari Trecate	2h 2h				Win	Written	4
Nano-scale heat transfer										
E	ME-469	GM	Tagliabue			2h 1h	1h	Sum	During the semester	4
Networked control systems										
E	ME-427	GM	Ferrari Trecate	2h 1h				Win	Written	3
Nonlinear Control Systems										
F	ME-523	GM	Müllhaupt	2h 1h				Win	Written	3
Numerical flow simulation										
E	ME-474	GM	Boujo	2h 2h				Win	During the semester	5
Numerical methods in biomechanics										
E	ME-484	GM	Terrier			2h 1h		Sum	Written	3

Lang.	Courses / Code	Sect.	Teacher	Specialization	Master 1 C E L T P I						Master 2 C E L T P I						Exam Session	Exam	Credit
	Product decarbonization and life cycle analysis																		
E	ME-517	GM	Wakeman		2h 1h				1h								Win	During the semester	4
	Production management																		
E	ME-419	GM	Kaboli		2h				2h								Win	During the semester	5
	Renewable energy (for ME)																		
E	ME-460	GM	Haussener Van Herle									2h 1h						Sum	Written	4
	Solar energy conversion																		
E	ME-468	GM	Haussener		2h 1h				1h								Win	Written	4
	System identification																		
E	ME-421	GM	Karimi									2h		1h				Sum	Written	3
	Thermal power plants																		
E	ME-458	GM	Van Herle									2h 1h						Sum	Written	3
	Turbulence																		
E	ME-467	GM	Schneider									3h 2h						Sum	During the semester	5

Master project

Lang.	Courses / Code	Sect.	Teacher	Specialization	Master 1 C E L T P I						Master 2 C E L T P I						Exam Session	Exam	Credit
	Engineering internship credited with master project(master in Mechanical engineering)																		
F	ME-597	GM	Profs divers						320h							320h	Sum Win	During the semester	0