

The French text of this document (see next page) shall be deemed the authentic version, the English translation being intended for information purposes only.

2023-2024 **Systems Engineering**
Interdisciplinary Minor

Management of Technology Section
Minor Advisor : Prof. Th. Weber

Lecturers, credits and course periods are subject to change

Courses already taken within the frame of the bachelor or master cannot be taken a second time in a minor

101 credits

Code	Courses	Lecturers	Course catalogue	Credits	Nb of places	Semester
Group "Mineur"				30		
CORE COURSES						
MICRO-570	Advanced machine learning (not given in 23-24)	Billard	MT	4		S
MICRO-455	Applied machine learning	Billard	MT	4	A	
MGT-484	Applied probability & stochastic processes	Sutter	MTE	4	A	
COM-502	Dynamical system theory for engineers (not given in 23-24) 1)	Thiran P.	SC	6		S
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4	A	
MGT-448	Statistical inference and machine learning 1)	Kiyavash	MTE	4	A	
MICRO-405	Systems engineering (not given in 23-24)	Bellouard/Feusier/Gass/Moser + Feusier	MT	3	A	
DOMAIN-SPECIFIC COURSES						
Industrial engineering						
ME-516	Lifecycle performance of product systems	Friot	GM	3		S
Operations research						
MGT-431	Information: strategy & economics	Weber Th.	MTE	4	A	
MGT-483	Optimal decision making	Kuhn	MTE	4		S
MGT-526	Supply chain management	Seifert	MTE	4	60	S
Space systems engineering						
ENG-411	Concurrent engineering challenge	Kneib/Rodriguez	--	2	15	S
EE-584	Spacecraft design and system engineering	Rodriguez Martinez	EL	4	A	
Energy and process systems engineering						
ME-451	Advanced energetics	Maréchal	GM	5	A	
ME-454	Modelling and optimization of energy systems	Maréchal	GM	4	A	
Systems biology						
BIO-463	Genomics and bioinformatics	Luisier/Rougemont	SV	4		S
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3	A	
BIO-341	Dynamical systems in biology	Naef/Shillcock	SV	4	A	
Network systems engineering						
MGT-416	Causal inference (not given in 23-24) 1)	Kiyavash	MTE	4		S
COM-514	Mathematical foundations of signal processing (not given in 23-24)	Fageot	SC	6	A	
COM-512	Networks out of control 1)	Grossglauser/Thiran P.	SC	6		S
Control engineering						
ME-524	Advanced control systems	Karimi	GM	3		S
ME-523	Commande non linéaire	Müllhaupt	GM	3	A	
ME-425	Model predictive control	Jones	GM	4	A	
ME-421	System identification	Karimi	GM	3		S
Project						
ENG-422	Optional project in Systems engineering	Various lecturers	--	8	A	S

Remarks :

1) Given every 2 years

Legend :

A = autumn, S = spring

1 semester = 14 weeks

Les enseignants, les crédits et la période des cours sont indiqués sous réserve de modifications.
 Les cours déjà suivis au bachelors ou au master ne peuvent pas être repris dans le mineur.

101 crédits offerts

Code	Matières	Enseignants sous réserve de modification	Livret de cours	Crédits	Nb de places	Période des cours		
						AUT	PRI	
Groupe "Mineur"								
						30		
CORE COURSES								
MICRO-570	Advanced machine learning (pas donné en 2023-24)	Billard	MT	4			P	
MICRO-455	Applied machine learning	Billard	MT	4		A		
MGT-484	Applied probability & stochastic processes	Sutter	MTE	4		A		
COM-502	Dynamical system theory for engineers (pas donné en 2023-24) 1)	Thiran P.	SC	6			P	
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4		A		
MGT-448	Statistical inference and machine learning 1)	Kiyavash	MTE	4		A		
MICRO-405	Systems engineering (pas donné en 2023-24)	Bellouard/Feusier/Gass//Moser + Feusier	MT	3		A		
DOMAIN-SPECIFIC COURSES								
Industrial engineering								
ME-516	Lifecycle performance of product systems	Friot	GM	3			P	
Operations research								
MGT-431	Information: strategy & economics	Weber Th.	MTE	4		A		
MGT-483	Optimal decision making	Kuhn	MTE	4			P	
MGT-526	Supply chain management	Seifert	MTE	4	60		P	
Space systems engineering								
ENG-411	Concurrent engineering challenge	Kneib/Rodriguez	--	2	15		P	
EE-584	Spacecraft design and system engineering	Rodriguez Martinez	EL	4		A		
Energy and process systems engineering								
ME-451	Advanced energetics	Maréchal	GM	5		A		
ME-454	Modelling and optimization of energy systems	Maréchal	GM	4		A		
Systems biology								
BIO-463	Genomics and bioinformatics	Luisier/Rougemont	SV	4			P	
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3		A		
BIO-341	Dynamical systems in biology	Naef/Shilcock	SV	4		A		
Network systems engineering								
MGT-416	Causal inference (pas donné en 2023-24) 1)	Kiyavash	MTE	4			P	
COM-514	Mathematical foundations of signal processing (pas donné en 2023-24)	Fageot	SC	6		A		
COM-512	Networks out of control 1)	Grossglauser/Thiran P.	SC	6			P	
Control engineering								
ME-524	Advanced control systems	Karimi	GM	3			P	
ME-523	Commande non linéaire	Müllhaupt	GM	3		A		
ME-425	Model predictive control	Jones	GM	4		A		
ME-421	System identification	Karimi	GM	3			P	
Project								
ENG-422	Optional project in Systems engineering	Divers enseignants	--	8		A	P	

Remarques :

1) Cours donné tous les 2 ans

Légende :

A = automne, P = printemps

1 semestre comprend 14 semaines.