

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

2022-2023 **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

Codes	Course	Lecturers	Course catalogue	Credits	Nb of places	Semester
CORE COURSES						
MICRO-570	Advanced machine learning	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	Thiran P.	SC	4		S
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4	A	
MGT-448	Statistical inference and machine learning (not given in 2022-23) 1)	Kiyavash	MTE	4	A	
MICRO-405	Systems engineering	Feusier/Gass/Bellouard/Moser	MT	3		S
DOMAIN-SPECIFIC COURSES						
Industrial engineering						
ME-516	Lifecycle performance of product systems	Friot	GM	3		S
Operations research						
MGT-528	Operations: economics & strategy	Weber	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						
EE-584	Spacecraft design and system engineering	Foing	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	Rougemont	SV	4		S
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3	A	
BIO-341	Systèmes dynamiques en biologie	Naef	SV	4	A	
Network systems engineering						
MGT-416	Causal inference	Kiyavash	MTE	4		S
COM-514	Mathematical foundations of signal processing	Simeoni /Fageot	SC	6	A	
COM-512	Networks out of control (not given in 2022-23) 1)	Grossglauser/Thiran P.	SC	4		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 or S

Remark :

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

Codes	Matières	Enseignants	Livret des cours	Crédits	Nbre places	Période des cours
CORE COURSES						
MICRO-570	Advanced machine learning	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	Thiran P.	SC	4		P
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4		A
MGT-448	Statistical inference and machine learning (pas donné en 2022-23)	1) Kiyavash	MTE	4		A
MICRO-405	Systems engineering	Feusier/Gass/Bellouard/Moser	MT	3		P
DOMAIN-SPECIFIC COURSES						
Industrial engineering						
ME-516	Lifecycle performance of product systems	Friot	GM	3		P
Operations research						
MGT-528	Operations: economics & strategy	Weber	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						
EE-584	Spacecraft design and system engineering	Foing	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	Rougemont	SV	4		P
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3		A
BIO-341	Systèmes dynamiques en biologie	Naef	SV	4		A
Network systems engineering						
MGT-416	Causal inference	Kiyavash	MTE	4		P
COM-514	Mathematical foundations of signal processing	Simeoni /Fageot	SC	6		A
COM-512	Networks out of control (pas donné en 2022-23)	1) Grossglauser/Thiran P.	SC	4		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 ou P

Remarque :

1) Cours donné tous les 2 ans

Légende :

A = automne, P = printemps

1 semestre comprend 14 semaines.