2024-2025 **Systems Engineering Interdisciplinary Minor**

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

CODE	Courses	Lecturers	Course catalogue	Credits	Nb of places	Semester	
Group "Minor"				**30**			
CORE COURSES							
MGT-484	Applied probability & stochastic processes	Cristi	MTE	4		A	
COM-502	Dynamical system theory for engineers 1)	Thiran P.	SC	6			S
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4		A	
MICRO-455	Machine learning I	Billard	MT	4		A	
MICRO-570	Machine learning II	Billard	MT	4			S
MICRO-405	Systems engineering (not given in 24-25)	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	Timonina/Markoff	MTE	4	60		S
	Space systems engineering						
ENG-411	Concurrent engineering of space missions	Kneib	EL	2			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-341	Dynamical systems in biology	Naef/Shillcock	SV	4		A	
BIO-463	Genomics and bioinformatics	Bitbol/Luisier7 Rougemont	SV	4			S
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3		A	
	Network systems engineering						
MGT-416	Causal inference	Kiyavash	MTE	4			S
COM-512	Networks out of control (not given in 2024-25) 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

Systems Engineering
Mineur interdisciplinaire

Section de Management de la Technologie
Responsable : Prof. Th. Weber

validé par la Vice-présidence académique le 20 juin 2024

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

97   crédits offerts

CODE	MATIERES	ENSEIGNANTS sous réserve de modification	LIVRET DE COURS	CREDITS ECTS	NBRE PLACES	PERIODE DES COURS AUT	PERIODE DES COURS PRI
Groupe "Mineur"				**30**			
CORE COURSES							
MGT-484	Applied probability & stochastic processes	Cristi	MTE	4		A	
COM-502	Dynamical system theory for engineers 1)	Thiran P.	SC	6			P
MATH-265	Introduction to optimization and operations research	Bierlaire	GC	4		A	
MICRO-455	Machine learning I	Billard	MT	4		A	
MICRO-570	Machine learning II	Billard	MT	4			P
MICRO-405	Systems engineering (pas donné en 2024-25)	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	Timonina/Markoff	MTE	4	60		P
	Space systems engineering						
ENG-411	Concurrent engineering of space missions	Kneib	EL	2			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-341	Dynamical systems in biology	Naef/Shillcock	SV	4		A	
BIO-463	Genomics and bioinformatics	Bitbol/Luisier/Rougemont	SV	4			P
ChE-411	Principles and applications of systems biology	Hatzimanikatis	CGC	3		A	
	Network systems engineering						
MGT-416	Causal inference	Kiyavash	MTE	4			P
COM-512	Networks out of control (pas donné en 2024-25) 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) Given every 2 years

Légende :
A = automne, P = printemps
1 semestre comprend 14 semaines.