

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

2021-2022 FINANCIAL ENGINEERING

Master cycle

Code	Courses	Lecturers (subject to change)	Programs	Semester									Credits	Number of places	Exam period	Form of exams
				MA1			MA2			MA3						
				c	e	p	c	e	p	c	e	p				
	Block 1 : Foundation courses												30			
FIN-411	Accounting for finance	2) Cauvin	IF	2									2	100	W	written no withdrawal
FIN-403	Econometrics	Fuster	IF	2	2								4		W	written
FIN-401	Introduction to finance (only for IF students)	Morellec	IF	2	2	1							6		W	written
FIN-406	Macroeconomics	Lambertini	IF	2	1								4		W	written
FIN-414	Optimization methods	2) Perazzi	IF	1	1								2		A sem	
HUM-nnn	SHS : introduction au projet	Various lecturers	CDH	2		1							3		A sem	
HUM-nnn	SHS : projet	Various lecturers	CDH							3			3		S sem	no withdrawal
FIN-415	Stochastic calculus	Filipovic/Malamud	IF	3	2								6		W	written
	Block 2 : Advanced courses												32			
FIN-503	Advanced derivatives	Perazzi	IF							2	1		4		A sem	
FIN-404	Derivatives	Hugonnier	IF				3	2					6		S	written
FIN-407	Financial econometrics	Gourier	IF				3	2					6		S	written
FIN-416	Interest rate and credit risk models	Filipovic	IF							3	2		6		W	written
FIN-405	Investments	Collin-Dufresne	IF				3	2					6		S sem	
FIN-417	Quantitative risk management	Malamud	IF							2	2		4		W	written
	Group 1 : Electives courses												28			
MICRO-570	Advanced machine learning	Billard	MT				2	0.5	0.5				4		S	oral
MATH-351	Advanced numerical analysis	Picasso	MA	2	2								5		W	written
CS-401	Applied data analysis	West	IN	2		2							6		W	written
MICRO-455	Applied machine learning	Billard	MT	4									4		W	written no withdrawal
EE-311	Apprentissage et intelligence artificielle	Liebling	EL				2		2				4		S	written
CS-456	Artificial neural networks	Gerstner	IN				2	2					5		S	written
MGT-416	Causal inference	Kiyavash	MTE				2	1					3		S sem	
FIN-472	Computational finance	Glau/Pulido/Pasricha/Goel	IF							2	2		5		W	written
COM-401	Cryptography and security	Vaudenay	SC	4	2								7		W	written
MGT-432	Data science for business	Younge	MTE							3	1		6		A sem	no withdrawal
EE-559	Deep learning	Fleuret	EL				2	2					4	500	S	written no withdrawal
FIN-419	Ethical behavior in the financial industry	2) Nahas	IF	1.5									2		A sem	
FIN-413	Financial applications of blockchains and distributed ledgers	2) Xu	IF	1.5									3		A sem	no withdrawal
FIN-525	Financial big data	Challet	IF							3			3		A sem	no withdrawal
FIN-420	Financial intermediation	Fuster	IF				3						4		S sem	
FIN-523	Global business environment	Mondragon/Tsiaras	IF	2	1								4		A sem	
COM-402	Information security and privacy	Hubaux/Oechslin	SC	3	1	2							6		W	written
MGT-431	Information: strategy & economics (not given in 2021-22)	Weber Th.	MTE				3						4		S sem	no withdrawal
CS-430	Intelligent agents (not given in 2021-22)	Faltings B.	IN	3	3								6		A sem	
CS-433	Machine learning	Jaggi/Flammario	IN							4	2		7		W	written
FIN-418	Machine learning for finance	Ackerer	IF							3			3		A sem	
MICRO-401	Machine learning programming	Billard/Busch	MT			2							2		A sem	no withdrawal
MATH-463	Mathematical modelling of behavior	Lurkin	GC	2	2								5		W	written
MATH-408	Modern regression methods	Davison	MA				2	2					5		S	written
MATH-456	Numerical analysis and computational mathematics	Vazquez Hernandez	MA	2	2								4		W	written
MATH-451	Numerical approximation of PDEs	Buffa	MA				2	2					5		S	written
MATH-450	Numerical integration of stochastic differential equations	Abdulle	MA				2	2					5		S	written
MGT-454	Principles of microeconomics	Mack	MTE	3	1								4		W	written
FIN-410	Real options and financial structuring	2) Arnold	IF							2	1		4		A sem	
MATH-447	Risk, rare events and extremes	Davison	MA							2	2		5		W	written
MGT-448	Statistical inference and machine learning (not given in 2021-22 1)	Kiyavash	MTE	2	2								4		W	written
MATH-412	Statistical machine learning	Obozinski	MA	2	2								5		W	written
MATH-342	Time series	Ohlede	MA				2	2					5		S	written
FIN-522	Venture capital (MA3 only)	Fahlenbrach	IF							3			4		A sem	
	Total number of credits of the master cycle :												90			

Notes :

* Please refer to Exams Rulebook (article 2, paragraph 4)

1) Course given every 2 years

2) Special schedule: see the IF website <https://go.epfl.ch/fe>

no withdrawal = no withdrawal after the registration deadline

Engineering internship :

See the details in the implementing regulations

All the courses of the M1 and M2 semesters have been established as prerequisites for the courses of the M3 semester.

Courses of the M3 semester cannot be taken in the M1 semester

Codes:	4nn: regular master courses 5nn: advanced master courses
Column l/e/p:	number of contact hours per week of lectures (l) exercises (e), practical work (p)
Semesters:	M1: 1st semester (Autumn) M2: 2nd semester (Spring) M3: 3rd semester (Autumn)
Exam period:	W and S: exam carried out during the Winter (W) or Summer (S) exam period A sem and S sem: exam carried out during the Autumn (A sem) or Spring semester (S sem)

Code	Matières	Enseignants : sous réserve de modification	Sections	Semestres									Crédits	Nbre places	Période des épreuves *	Type examen *	
				MA1			MA2			MA3							
				c	e	p	c	e	p	c	e	p					
	Bloc 1 : Cours fondamentaux																
FIN-411	Accounting for finance	2) Cauvin	IF	2										2	100	H	écrit sans retrait
FIN-403	Econometrics	Fuster	IF	2	2									4		H	écrit
FIN-401	Introduction to finance (only for IF students)	Morellec	IF	2	2	1								6		H	écrit
FIN-406	Macrofinance	Lambertini	IF	2	1									4		H	écrit
FIN-414	Optimization methods	2) Perazzi	IF	1	1									2		sem A	
HUM-nnn	SHS : introduction au projet	Divers	CDH	2		1								3		sem A	
HUM-nnn	SHS : projet	Divers	CDH						3					3		sem P	sans retrait
FIN-415	Stochastic calculus	Filipovic/Malamud	IF	3	2									6		H	écrit
	Bloc 2 : Cours avancés																
FIN-503	Advanced derivatives	Perazzi	IF							2	1			4		sem A	
FIN-404	Derivatives	Hugonnier	IF				3	2						6		E	écrit
FIN-407	Financial econometrics	Gourier	IF				3	2						6		E	écrit
FIN-416	Interest rate and credit risk models	Filipovic	IF							3	2			6		H	écrit
FIN-405	Investments	Collin-Dufresne	IF				3	2						6		sem P	
FIN-417	Quantitative risk management	Malamud	IF							2	2			4		H	écrit
	Groupe 1 : Branches à option																
MICRO-570	Advanced machine learning	Billard	MT				2	0,5	0,5					4		E	oral
MATH-351	Advanced numerical analysis	Picasso	MA	2	2									5		H	écrit
CS-401	Applied data analysis	West	IN	2		2								6		H	écrit
MICRO-455	Applied machine learning	Billard	MT	4										4		H	sans retrait
EE-311	Apprentissage et intelligence artificielle	Liebling	EL				2		2					4		E	écrit
CS-456	Artificial neural networks	Gerstner	IN				2	2						5		E	écrit
MGT-416	Causal inference	Kiyavash	MTE				2	1						3		sem P	
FIN-472	Computational finance	Glau/Pulido/Pasricha/God	IF							2	2			5		H	écrit
COM-401	Cryptography and security	Vaudenay	SC	4	2									7		H	écrit
MGT-432	Data science for business	Younge	MTE							3		1		6		sem A	sans retrait
EE-559	Deep learning	Fleuret	EL				2	2						4	500	E	sans retrait
FIN-419	Ethical behavior in the financial industry	2) Nahas	IF	1,5										2		sem A	
FIN-413	Financial applications of blockchains and distributed ledger	2) Xu	IF	1,5										3		sem A	sans retrait
FIN-525	Financial big data	Challet	IF							3				3		sem A	sans retrait
FIN-420	Financial intermediation	Fuster	IF				3							4		sem P	
FIN-523	Global business environment	Mondragon/Tsiaras	IF	2	1									4		sem A	
COM-402	Information security and privacy	Hubaux/Oechslein	SC	3	1	2								6		H	écrit
MGT-431	Information: strategy & economics (not given in 2021-22)	Weber Th.	MTE				3							4		sem P	sans retrait
CS-430	Intelligent agents (not given in 2021-22)	Faltings B.	IN	3	3									6		sem A	
CS-433	Machine learning	Jaggi/Flammarion	IN							4	2			7		H	écrit
FIN-418	Machine learning for finance	Ackerer	IF							3				3		sem A	
MICRO-401	Machine learning programming	Billard/Busch	MT			2								2		sem A	sans retrait
MATH-463	Mathematical modelling of behavior	Lurkin	GC	2	2									5		H	écrit
MATH-408	Modern regression methods	Davison	MA				2	2						5		E	écrit
MATH-456	Numerical analysis and computational mathematics	Vazquez Hernandez	MA	2	2									4		H	écrit
MATH-451	Numerical approximation of PDEs	Buffa	MA				2	2						5		E	écrit
MATH-450	Numerical integration of stochastic differential equations	Abdulle	MA				2	2						5		E	écrit
MGT-454	Principles of microeconomics	Mack	MTE	3	1									4		H	écrit
FIN-410	Real options and financial structuring	2) Arnold	IF							2	1			4		sem A	
MATH-447	Risk, rare events and extremes	Davison	MA							2	2			5		H	écrit
MGT-448	Statistical inference and machine learning (not given in 2021)	Kiyavash	MTE	2	2									4		H	écrit
MATH-412	Statistical machine learning	Obozinski	MA	2	2									5		H	écrit
MATH-342	Time series	Ohlde	MA				2	2						5		E	écrit
FIN-522	Venture capital (MA3 only)	Fahlenbrach	IF							3				4		sem A	
	Total des crédits du cycle master :													90			

Remarques :

* Se référer à l'art. 2 al. 4 du règlement d'application

1) cours donnés en alternance tous les 2 ans

2) Horaire spécial - voir: <https://go.epfl.ch/fe>

sans retrait = pas de retrait possible après le délai d'inscription

Stage d'ingénieur :

Voir les modalités dans le règlement d'application

Tous les cours des semestres MA1 et MA2 sont des prérequis pour les cours du semestre MA3.**Les cours mentionnés au semestre MA3 ne peuvent pas être pris au semestre MA1.**