

Commission de la **Formation** et de la **Vie Universitaire** | **CFVU**

Séance du 07 octobre 2024

Délibération n° 085-2024
Point 03.1

Point 03.1. de l'ordre du jour
Modifications de maquettes des diplômes d'ingénieur – ESBS

EXPOSE DES MOTIFS

L'ESBS soumet au vote de la CFVU les modifications de maquettes de ses diplôme d'ingénieur pour l'année universitaire 2024/2025.
Des changements qui restent néanmoins mineurs et qui concernent le volume horaire, le nom de responsable d'un cours, ou un changement d'approche (approche par compétences notamment).

Cette approche par compétences concerne les 1ères et 2èmes années pour le cycle d'ingénieur en biotechnologie (BT).
Pour les cours d'allemand, les étudiants n'auront pas à choisir de groupe, ils seront placés en fonction du niveau de langue à l'entrée à l'école.
Certains cours ont été supprimés (notamment celui de J. Karpenko affilié à la Faculté de Pharmacie), tandis que d'autres ont été créés comme « Recent Advances in Biotherapies » ou « Structures for Customized Drugs », par exemple.
Un autre changement majeur dans les maquettes concerne l'introduction de cours portés sur l'intelligence artificielle : « Applications & Limits of AI in Biotechnology » en 2A et « AI & Biosciences » en 3A qui demandent la réorganisation de certains cours. Ces matières faisaient jusqu'alors défaut dans l'offre de formation de l'école.

Le TOIEC va disparaître pour la promotion 2026 car la nouvelle certification PeopleCert a été retenue à l'échelle de l'université et sera accessible entre janvier et mai 2025. Chaque étudiant sera autonome pour déterminer la période qui lui semble la plus judicieuse pour préparer et passer la certification en anglais. Les heures anciennement dédiées au TOIEC ont donc pu être utilisées pour de nouveaux cours.

Les modifications ont été approuvées par le conseil de composante le 26 juin 2024.

Délibération
La Commission de la formation et de la vie universitaire de l'Université de Strasbourg adopte les **modifications de maquettes des diplômes d'ingénieur de l'ESBS.**

Résultat du vote

Nombre de membres en exercice	40
Nombre de votants	21
Nombre de voix pour	21
Nombre de voix contre	0
Nombre d'abstentions	0
Ne prend pas part au vote	0

Destinataires de la décision

- Rectorat de la Région Académique Grand Est, Chancellerie des Universités
- Direction Générale des Services
- Direction des études et de la scolarité
- ESBS

Fait à Strasbourg, le 08 octobre 2024

Le Directeur Général des Services adjoint appui aux missions

A handwritten signature in blue ink, appearing to read 'C. de Casteljaud', with a stylized flourish at the end.

Christophe de Casteljaud

Maquette - Master Franco-Allemand - Synthetic Biology

Master 1 - Semester 1 - Track Synthetic Biology - Academic Year 2024/2025							
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)	Total hrs student
	UE Advanced Biotechnology I						
EB000MIY	Immunology	iy	C. Gavériaux	20	0		20
EB000MIM	ImmunoTechnology	ic	M. Donzeau	12	0		
EB000MGG	Genetic Engineering	ge	B. Chatton	24	14	8	46
EB000MGN	Genomics and epigenomics	gs	O. Lecompte B. Chatton	18	10		28
EB00HMG	TP Génie Génétique et Microbiologie	miP	C. Rigouin A.L. Duchemin			35	35
	UE Engineering Sciences						
EB000MED	Experimental design	ed	Y. Nominé	8			8
EB000MSA	Statistics	st	N. Paul	10	10		20
EB00HMCR	Critical Scientific Reading	cr	B. Kieffer C. Rigouin		8		40
EB000MMM	In Silico Protein Engineering	mm	A. Dejaegere	6	16		22
PH03EM20	TP Conception et Production de BioMédicaments I	pharma	M. Zeniou		5	19	24
	UE Humanities, Economy & Social Sciences I						
LD22CM01	English III	en3	R. Piotto M. Ruhlmann		24		24
LD12CM01	Deutsch III (Option 1)	de3	A. Hacker P. Krauth		24		24
EB012MFE	FLE III (Option 2)	fr3	M. Keller		24		24
EB000MBE	BioEthics	be	A. Stephan	10			10
	UE Advanced Practicals						
EB000MSM	Synthetic Microbiology		A. Becksei (Basel)	15			15
EB000MSY	Synthetic Microbiology Practicals	syP	A. Becksei (Basel)			55	55

Master 1 - Semester 2 - Track Synthetic Biology - Academic Year 2024/2025							
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)	Total hrs student
	UE Advanced Biotechnology II						
EB00HMTP	TP Protein Purification	puP	C. Spenlé	6	4	38	48
EB00HMCC	TP Culture Cellulaire	cuP	C. Spenlé			24	24
and choose one item out of the 2 below							
EB000MBH	Neurobiotechnology	ne	D. Bagnard	22			22
EB000MMT	Metabolism & Biotechnologies for BT	mt	G. Orfanoudakis	20	6		26
	UE Humanities, Economy & Social Sciences II						
LD23PM01	English	en	R. Piotto		16		16
LD13PM01	Deutsch IV (option 1)	de4	A. Hacker P. Krauth		24		24
EB012MFL	FLE IV (option 2)	fr4	M. Keller		20		20
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	9	13
	UE Practical Plant Biotechnology						
EB012MPM	Plant Molecular Biology	pm	T. Laux Freiburg	24			24
EB012MPB	Plant Molecular Biology Practicals	pbP	T. Laux Freiburg			140	140
	UE Specialized Project I (3 weeks)						
EB14HMPS	Project in Synthetic Biology I	syR	W. Weber Freiburg	6	8	61	75

Master 2 - Semester 1 - Track Synthetic Biology - Academic Year 2024/2025								
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)	Total hrs student
	UE Specialized biotech I							
EB000MIS	Introduction to system biology	is	N. Molina	6		21		27
EB000MCT	Current topics in synthetic biology	ct	C. Rigouin			12		12
EB000MRA	Recent Advances in Biotherapies	ra	C. Rigouin M. Zeniou		28			28
EB000MDB	Project Design in Synthetic Biology	db	C. Rigouin			8	4	12
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2	30

	UE Specialized biotech II							
EB000MHG	Human & Molecular Genetics	hg	B. Chatton	22				22
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
Choose 1 item out of the 2 below								
EB000MCM	Comparative and medical genomics	gc	O. Lecompte	16		12		28
???	Structures for Customized Drugs	scud	E. Kellenberger		14		18	32

	UE Humanities, Economy & Social Sciences III							
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
PH4LKM03	Coaching recherche emploi / alternance/stage		M. Bouhdoud	12				12

	UE Specialized projects II (5 weeks)							
EB000MST	Project in Synthetic Biology II	stR	W. Weber				12 5	125

Master 2 - Semester 2 - Track Synthetic Biology - Academic Year 2024/2025							
Codes APOGEE	EP	TEACHERS	CM (H)	TD (H)	Nb étud / grp	TP/T AE (H)	Total hrs student
UE IN2 : Internships II							
EB013M61	internship						6 months

Maquette - Master Franco-Allemand - High Throughput Biology

Master 1 - Semester 1 - Track High Throughput Biology - Academic Year 2024/2025						
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)
	UE Advanced Biotechnology I					
EB000MIY	Immunology	iy	C. Gavériaux	20	0	
EB000MIM	ImmunoTechnology	ic	M. Donzeau	12	0	
EB000MGG	Genetic Engineering	ge	B. Chatton	24	14	8
EB000MGN	Genomics and epigenomics	gs	O. Lecompte B. Chatton	18	10	
EB000HGM	TP Génie Génétique et Microbiologie	miP	C. Rigouin A.L. Duchemin			35
	UE Engineering Sciences					
EB000MED	Experimental design	ed	Y. Nominé	8		
EB000MSA	Statistics	st	N. Paul	10	10	
EB000MCR	Critical Scientific Reading	cr	B. Kieffer C. Rigouin		8	
EB000MMM	In Silico Protein Engineering	mm	A. Dejaegere	6	16	
PH03EM20	TP Conception et Production de BioMédicaments I	phar ma	M. Zeniou		5	19
	UE Humanities, Economy & Social Sciences I					
LD22CM01	English III	en3	R. Piotto M. Ruhlmann		24	
LD12CM01	Deutsch III (Option 1)	de3	A. Hacker P. Krauth		24	
EB012MFE	FLE III (Option 2)	fr3	M. Keller		24	
EB000MBE	BioEthics	be	A. Stephan	10		
	UE Advanced Practicals					
EB000MSM	Synthetic Microbiology		A. Becksei (Basel)	15		
EB000MSY	Synthetic Microbiology Practicals	syP	A. Becksei (Basel)			55

Master 1 - Semester 2 - Track High Throughput Biology - Academic Year 2024/2025						
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)
	UE Advanced Biotechnology II					
EB00HMTP	TP Protein Purification	puP	C. Spenlé	6	4	38
EB00HMCC	TP Culture Cellulaire	cuP	C. Spenlé			24
and choose one item out of the 2 below						
EB000MIB	Image in Biology: Processing	im	C. Deville D. Dujardin	12	12	
EB000MAE	Advanced Experimental Design	ae	Y. Nominé	14	12	
	UE Humanities, Economy & Social Sciences II					
LD23PM01	English	en	R. Piotto		16	
LD13PM01	Deutsch IV (option 1)	de4	A. Hacker P. Krauth		24	
EB012MFL	FLE IV (option 2)	fr4	M. Keller		20	
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	9
	UE Practical Plant Biotechnology					
EB012MPM	Plant Molecular Biology	pm	T. Laux Freiburg	24		
EB012MPB	Plant Molecular Biology Practicals	pbP	T. Laux Freiburg			140
	UE Specialized Project I (3 weeks)					
EB14HMPS	Project in Synthetic Biology I	syR	W. Weber Freiburg	6	8	61

Master 2 - Semester 1 - Track High Throughput Biology - Academic Year 2024/2025								
Codes APOGEE	EP	Code EDT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TAE (H)	Total hrs student
EB15KU3A	UE Specialized Biotech HT I							ECTS
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2	30
EB00HMAO	Advanced Topics in Omics	ao	O. Lecompte B. Kieffer	14		6	4	24
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12		28

Master 2 - Semester 2 - Track High Throughput Biology - Academic Year 2024/2025									
Codes APOGEE	EP	TEACHERS	CM (H)	TD (H)	Nb étud / grp	TP/T AE (H)	Nb étud / grp	Total hrs student	Coeff.
UE IN2 : Internships II									30 ECTS
EB013M61	internship						6 months		

Maquette - diplôme ingénieur BT - FISA

Year 3 - Semester 5 - EB013S05 - Année 2023/2024								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)	Total hrs student

EB013U5A	UE SB1 : Specialized Biotechnology I		C. Rigouin	ECTS			
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22			22
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin			12	12
EB000MIS	Introduction to Systems Biology	is	N. Molina	6		21	27
EB000MTG	Integration and Reporting of Practical Results	tg	A.L. Duchemin			12	12

EB013U5B	UE ES5 : Engineering Sciences V		O. Lecompte	ECTS			
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12	28
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	30
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	12
PH7???	Structures for Customized Drugs *	scud	E. Kellenberger		14		18
PH00GMBD	Biomolecules: description, bioreactivity and targeting *	bbb	M.V. Spanedda	20		12	32
EB000MRA	Recent Advances in Biotherapies	ra	C. Rigouin M. Zeniou		28		28
PH4LKMCT	Common Technical Document: cases studies	ctd	M. De Giorgi	8		16	24
EB00HMAO	Advanced Topics in Omics	ao	B. Kieffer O. Lecompte	14		6	24
EB00HMSH	Data Sciences for Health	sh	O. Lecompte R. Carapito	10		9	23

EB013U5C	UE HE5 : Humanities, Economics & Social Sciences V		D. Bagnard	ECTS			
EB000MIP	Intellectual Property	ip	P. Jeannequin	12			12
PH4LKM02	Le médicament, les BPF, la vie en entreprise du LEEM (e-learning)	cf	CFA LEEM			10	10
PH4LKM03	Coaching recherche emploi / alternance/stage	xx	M. Bouhdoud	12			12
PH4LKM07	Découverte du monde socio professionnel		M. Zeniou			25	25
PH4LKM04	Developpement professionnel et connaissance de soi		C. Vonthron		20		20

EB013U5D	UE PR5 : Specialized projects (5 weeks)		G. Orfanoudakis	ECTS			
EB000MPC	Project New Business	nbR	G. Orfanoudakis D. Bagnard	40		40	80
EB02KMBA	Applied Bioproduction for Apprenticeship	ba	D. Takahashi			105	105

Year 3 - Semester 6 - EB013S06 - Année 2023/2024								
Code EdT	TEACHERS	CM (H)	TD (H)	Nb étud / grp	TP/TAE (H)	Nb étud / grp	Total hrs student	Coeff.
UE IN2 : Final Internship							ECTS 30	
Période en entreprise							6 months	

Maquette - diplôme ingénieur CBT

YEAR 1 - CHEMBIOTECH — SEMESTER 1 - EB021S01 – Année 2024/2025

CODE APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs student
EB021U1A	UE FB1 : Fundamental Biochemistry and Biology I M. Donzeau						
EB000MTR	Prokaryotic Transcription	tp	M. Donzeau	10		1	10
EB021MTC	Eukaryotic Transcription for CBT	tc	M. Donzeau	12		1	12
EB000MTL	Translation	tl	A.L. Duchemin	10	2	1	12
EB000MRP	Replication	rp	D. Takahashi	12		1	12
EB021MIB	Introduction to Biochemistry	bh	F. Deryckere	10		1	10
				54	2	5	56
EB021U1B	UE BC1 : Methods for Biological Chemistry I						
EB000MPR	Protein Engineering	pt	B. Kieffer, V. Torbeev C. Deville	12	6	0	18
CP011MMT	Statistics	ECPM	A. Hechner R. Debalme	8,2	3,5	0	11,7
EB000MEL	Electronics & Biosensors	el	M. Madec	12		1	12
EB021MAC	Analytical Biochemistry for CBT	ac	B. Kieffer C. Deville	14	14	4	31
EB021U1C	UE ES1 : Engineering Sciences I						
CP011M07	Thermodynamics	ECPM	C. Serra	5,8	9,3		15,1
CP011M8A	Transport phenomena	ECPM	C. Serra	7	9,3		16,3
CP011M05	Kinetics	ECPM	S. Pronkin V. Hubscher	8,2	5,8		14
EB021U1D	UE CH1 : Organic, Inorganic and Analytical Chemistry - Fundamentals I						
EB000MIC	Orga & Inorga Chemistry	oi	A. Panossian	8	2	1	10
CP011MSP	Spectroscopies for Chemistry and Proteins	ar	S. Choppin J. Brandel B Kieffer, L. Sabatier	19	7,8		26,9
EB021U1E	UE HE1 : Humanities, Economics & Social Sciences I D. Dujardin						
CP011MLA	English	ECPM	I. Offord		45		45
CP011MAA	Deutsch / Español / Français	ECPM	H. Biermann		45		45
EB021MHS	Health & Safety for CBT	hy	F. Roulland ???		9	0	9
EB000MCO	Communication	co	Y. Nominé D. Dujardin	2	6	0	8
EB021U1F	UE PR1 : Practicals I C. Deville						
EB000MIE	Instrumentation Essentials	in	CD FD MD VT YN	14	14	4	32
EB000MBP	Instrumentation & Biochemistry Practicals	ibP	C. Deville M. Donzeau M. Frey V. Torbeev			52	52
	Total ECTS						30

YEAR 1 - CHEMBIOTECH - SEMESTER 2 - EB021S02 – Année 2024/2025

CODE APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs studen +
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EB021U2A	UE FB2 : Fundamentals of Biology II		D. Dujardin				
EB000MML	Microbiology	mb	C. Rigouin	12	4	1	17
EB000MEP	Enzymology	ez	B. Chatton	8	8	1	17
EB000MCB	Cellular Biology	cb	D. Dujardin C. Deville	20	4	1	25

EB021U2B	UE ES2 : Engineering Sciences II		O. Lecompte				
EB000MDS	Computer Sciences for Biotechnologies	ds	B. Kieffer C. Deville	6	12	12	28
EB000MBF	Bioinformatics	bi	O. Lecompte	14	10	2	24

EB021U2C	UE CH2 : Organic, Inorganic and Analytical Chemistry - Fundam						
EB000MBC	Bioorganic Chemistry	bo	V. Torbeev	8	4	1	12
CP011MRO	Organic reactivity I	ECPM	D. Hazeldard, F. Leroux (carbonyles)	7	3,5	0	10,5
		ECPM	P. Compain, A. Speicher (molecular stereochemi stry)	5,8	2,3	0	8,1
		ECPM	P. Compain A. Speicher (multiples bond C_C)	4,7	2,3	0	7
		ECPM	M. Ribagorda (substitution /elimination)	8,2	2,3	0	10,5
CP011MEV	Life elements	ECPM	M. Chetcuti	9,3	1,2		10,5

EB021U2D	UE HE2: Humanities, Economics & Social Sciences II F. Deryckere						
CP011MLB	English	ECPM	I. Offord		30		30
CP011MAB	Deutsch / Español / Français	ECPM	H. Biermann		30		30
EB000MEC	Economics & Industries	ec	BioTech Corner		12		12
EB000MGP	Project Management	gp	ScienceMe Up	10		0	10
EB000MPO	Professional Project 2S	pp	C. Gavériaux	4	1		5
CP011MEP	Sustainable development in the chemical industry	ECPM	C. Fournier Green	7			7
CP011MRE		ECPM	C. Fournier (REACH)	3,5			3,5
CP011MDD		ECPM	development	3,5			3,5

EB021U2E	UE PR2 : Practicals II		C. Rigouin				
EB000MGE	Genetic Engineering	geP	A.L. Duchemin	4		31	35
EB000MEZ	Enzymology Practicals	ezP	C. Gavériaux B. Chatton	2	0	27	29
CP011MP2	Organic Chemistry	ECPM	D. Hazeldard			28	28
CP011MP1	Analytical Chemistry	ECPM	V. Delval J. Brandel			56	56
EB000MMP	Microbiology Practicals	mbP	C. Rigouin	2	1	27	30

	Total ECTS						30
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YEAR 2 - CHEMBIOTECH - SEMESTER 3 - EB022S03 – Année 2024/2025

CODE APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs student
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EB022U3A	UE AB1 : Applied Molecular Biology & Biochemistry I G. Orfanoudakis						
EB000MIY	Immunology	iy	M. Donzeau	20	0		20
EB000MIM	Immunotechnology	ic	M. Donzeau	12	0	0	12
EB000MGG	Genetic Engineering	ge	B. Chatton	26	14	8	48
EB000MMB	Metabolism & Biotechnologies for CBT	me	G. Orfanoudakis	20	4	4	28

EB022U3B	UE CH3 : Organic, inorganic and analytical chemistry - applications III						
CP012MRO	Organic Reactivity II	ECPM	S. Choppin ((hetero)chemistry	7	2,3		9,3
		ECPM	P. Compant (tools for molecular chemistry)	4,7	2,3		7
CP012MBB	Analytical and bioanalytical chemistry	ECPM	S. Choppin L. Sabatier	16,4	4,6		21

EB022U3C	UE ES3 : Engineering Sciences III A. Dejaegere						
EB022MMO	Molecular Modeling	mo	A. Dejaegere	10	16		26
EB000MED	Experimental Design	ed	Y. Nominé	8			8
CP012W11	Industrial mission	ECPM	F. Roulland	9,3	21		30,3

EB022U3D	UE HE3 : Humanities, Economics & Social Sciences III A. Stephan						
CP012MVA	English	ECPM	I. Offord		19,3		19,3
CP012MAA	Deutsch / Français	ECPM	H. Biermann		19,3		19,3
EB000MIF	Industrial Finances	fc	C. Gruber	4	8		12
EB000MBE	Bioethics	be	A. Stephan	10			10
EB000MQU	Quality	qu	J. Martin	12			12

EB022U3E	UE PR4 : Practicals III V. Torbeev						
EB022MBC	Bioconjugated Chemistry	bcP	V. Torbeev			10	10
CP011MP2	Organic Chemistry	ECPM	D. Hazelard			56	56

EB022U3F	UE IN1 : Internship I F. Deryckere ECTS						
EB022MIN	1st year Internship		F. Deryckère				

	Total ECTS						30
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YEAR 2 - CHEMBIOTECH - SEMESTER 4 - EB022S04 – Année 2024/2025

CODE APOGEE	EP	Code EdT	Teachers	CM (H)	TD (H)	TP/TA E (H)	Total hrs student
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EB022U4A	UE CH4 : Organic, inorganic and analytical chemistry - applications IV						
CP012M3H	Bio-inorganic chemistry	ECPM	S. Fleutot	11			10,5
CP012MOR	Organic Reactivity III	ECPM	P. Compain	14	5,8		19,8
CP012M3R	Supported synthesis of biomolecules	ECPM	G. Hanquet, I. Izzo	11	3,5		14

EB022U4B	UE ES4 : Engineering Sciences IV D. Takahashi						
CP012MBG	Process Engineering for Chemistry	ECPM	C. Serra	10	5,8		16,2
EB022MPG	Process Engineering for Biotechnologies	pg	D. Takahashi	8	8		16
CP012M5I	Industrial mission	ECPM	F. Roulland		8,2		8,2

EB022U4C	UE HE4 : Humanities, Economics & Social Sciences IV A. Stephan						
CP012MVB	English	ECPM	I. Offord		19		19
CP012MAB	Deutsch / Français	ECPM	H. Biermann		19		19
EB000MPE	Project Bioethics	bj	A. Stephan C. Gavériaux		4	9	13

EB022U4D	UE PR4 : Practicals IV C. Spenlé						
EB022MPF	Protein Purification Practicals	ppP	C. Spenlé	6	4	38	48
EB022MCC	Cell Culture Practicals for CBT	ceP	C. Spenlé			24	24
CP012M3P	Process Engineering	ECPM	B. Ernst			56	56
CP012MX1	Analytical & Bioanalytical Chemistry	ECPM	V. Delval J. Brandel			56	56

	Total ECTS	30
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YEAR 3 - CHEMBIOTECH - SEMESTER 5 - EB023S05 – Année 2024/2025

CODE APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)	Total hrs student
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EB023U5A	UE RE1 : Red ChemBioTech I V. Torbeev							
PH4LKMDDB	Structures Macromoléculaires & Découvertes de Médicaments	dd	E. Kellenberger	14		17		31
PH???	Structures for Customized Drugs	scud	E. Kellenberger		14		18	32
EB023MRP	Retrosynthesis for Pharma and Agro Molecules	re	G. Hanquet	10				10
EB023MCP	Chemical Protein Synthesis	ps	V. Torbeev	8				8
PH4LKMTX	Toxicology	to	F. Pons	18				18
PH4LKMDPE	Drug discovery & Development (case-study)	ddm	J. Karpenko	25,5		1,5		27
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22				22

EB023U5B	UE GR1 : Green ChemBioTech I							
EB023MEX	Ecotoxicology	tx	C. Cosio	8				8
CH97KMC3	Biomass Valorization	F. CHIM	V Beneteau JM Weibel	24				24
EB023MBR	Bioremediation	br	C. Rigouin	8				8
CP013MQ1	Bioplastics	ECPM	L. Averous	15,16				15,16
CP013CB1	Recycling for biofuels	ECPM	B. Ernst	12,8				12,8

EB023U5C	UE HE5 : Humanities, Economics & Social Sciences V							
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
EB023MPO	Professional Project 3ACBT	po	G. Roulland	8				8
CP013ML1	English	ECPM	I. Offord			10		10
CP013MAL	Deutsch / Français	ECPM	H. Biermann			20		20

EB023U5D	UE PR5 : Projects V							
EB023M66	Project ChemBioTech	chR	D. Hazeldard				160	160

EB023U5E	UE IN2 : Internship II							
EB023M04	2nd year Internship	pr	D. Hazeldard					0

Total ECTS	30
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YEAR 3 - CHEMBIOTECH - SEMESTER 6 - EB023S06 – Année 2024/2025

CODE APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	Student Nb/grp	TP/TAE (H)	Nb grp	Total hrs student	Total hrs teacher	Coeff.
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M1S1 biotech pharma										
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TD par ta. (H)	TP/T AE (H)	Total hrs stu	
PH4LGUBA	UE : Biotechnologie avancée									
EB000MIY	Immunology	iy	???	20						20
EB000MIM	ImmunoTechnology	ic	M. Donzeau	12						12
PH03EMGG	Conception et production des biomédicaments I : théorie	pharma	M. Zeniou	20						20
PH	Conception et production des biomédicaments I : applications	pharma	M. Zeniou					9		9
PH00GMES	Statistiques expérimentales	pharma	J. Godet	16		6				22

PH4LGUSP	UE : Sciences pharmaceutiques I									
PH00GMDM	Découverte de médicament	pharma	L. Bourrel		20	8			28	
PH00GMLG	Les grandes pathologies: de la cible au médicament	pharma	JP. Gies	15	10	15			40	
PH	Conception et production des biomédicaments II : étude de cas	pharma	M. Zeniou	16		3			19	

PH4LGUFS	UE : Formation Sciences Humaines, Sociales et Economiques I									
LD52RM01	English	en	R. Piotto			16			16	
EB000MBE	BioEthics	be	A. Stephan	10					10	
PH70GMDP	Droit Pharmaceutique & Propriété Intellectuelle	pharma	J.Y. Pabst	20					20	

PH4LGUTP	UE : Travaux Pratiques I									
PH03EM20	Conception et production des biomédicaments I: pratique	pharma	M. Zeniou			5,5		19	25	
EB00HMGM	TP Génie Génétique et Microbiologie	miP	C. Rigoulin A.L. Duchemin					35		

M1S2 biotech pharma										
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TD part a. (H)	TP/T AE (H)	Total hrs student	
PH4LHUCB	UE Chimie Biologique, Bioinformatique									
EBEXHMBI	Bioinformatique	bf	O. Lecompte	14		10			24	

PH4LHUSP	UE Sciences Pharmaceutiques II									
PH4LHMGP	Pharmacogenetics	pharma	M. Zeniou	8		4		20	32	
PH4LHMBT	Biotechnology & Therapeutic Innovations	pharma	M. Zeniou	7,5		23			30,5	
PH70HMTI	Toxicologie Intégrée	pharma	F. Pons C. Ronzani	15		3			18	

	UE Modèle précliniques (1 choix)									
	Cellules souches, approches expérimentales et thérapeutiques	pharma	M. Lehmann	14	5	6			24,5	
	Genetic animal models	pharma	M. Zeniou	16		10			26	

PH4LHUF5	UE : Formation Sciences Humaines, Sociales et Economiques II									
LD20HM01	English	en	R. Piotto M. Ruhlmann			16			16	
PH00HMDQ	Démarche Qualité en Pratique	pharma	C. Maechling		5	20			25	
PH00HMP0	Préparation à l'Insertion Professionnelle	pharma	Van Overloop			8			8	
EB000MPE	Project BioEthics	bj	A. Stephan C. Gaveriaux			4		9	13	

PH4LHUTP	UE Travaux Pratiques II									
PH00HMMT	Méthodologie du Travail de Recherche	pharma	T. Chataigneau					35	35	
EB00HMCC	TP Culture Cellulaire	cuP	C. Spenié					24	24	
EB00HMTP	TP Protein Purification	puP	C. Spenié	6		4		38	48	
EBEXHMEB	Project in environment of the bioproduction factory	ebR	D. Takahashi	6		24		45	75	

	BLOC OBLIGATOIRE POUR TOUS							
	UE Biotechnologie pharmaceutique avancée I							
	Recent Advances in Biotherapies		C. Rigouin M. Zeniou		28		28	
PH4LMCT	Common Technical Document: Case study *	pharma	M. De Giorgi	8			8	
LD52RM01	Exploring topics of choice (english)	en	M. Ruhlmann			20	20	
PH4LMQ02	Le médicament, les BPF, la vie en entreprise: e-learning	cf	CFA LEEM		10		10	
	UE Formation Sciences Humaines Sociales et Economiques III							
PH4LMQ03	Coaching recherche emploi/alternance/stage		M. Bouhdoud	12,5			12,5	
PPH4LMQ04	Developpement professionnel et connaissance de soi		C. Vonthron		20		20	
EB000MIP	Intellectual Property	ip	JM. Deltorn	12		12	24	
EB000MPC	Project New Business	nbR	D. Bagnard G. Orfanoudakis	40		40	80	

BLOC OBLIGATOIRE APPRENTISSAGE									
PH4LKUB1	UE projet (alternant)								
EB52HMBA	Applied Bioproduction for Apprenticeship	ba	D. Takahashi				105	105	
PH4LKUB1	UE Biotechnologie Pharmaceutique Avancée II (alternant)								
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22					22
EB000MHT	High Throughput Approaches	ht	C. Gavériaux	20		8	2		30
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin	12					12
PH4LKUB1	UE Biotechnologie Pharmaceutique Avancée II (alternant) (choisir 1 cours)								
	Structure for Customized Drugs		E. Kellenberger		14		18		32
PH00GMBD	Biomolecules: description, bioreactivity and targeting	pharma	M.V. Spanedda	20		12			32
UE Découverte du monde professionnel									
PH4LKM07	Découverte du monde socio professionnel		M. Zeniou		25				

M254 biotech pharma								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TD pa rta - (H)	TP/ TAE (H)	Total hrs stu dent

PH4LLUS	UE Internships							
PH4LLUS	stage							6 months

Maquette - Master Biologie synthétique

M1S1 biologie synthétique - EB14GS01 2023-2024							
Codes APOGEE	EP	Cod e EdT	TEACHERS	CM (H)	TD (H)	TP/ TAE (H)	Total hrs student

EB14GU1A	UE Advanced Biotechnology I						ECTS
EB000MIY	Immunology	iy	M. Donzeau	20			20
EB000MIM	ImmunoTechnology	ic	M. Donzeau	12			12
EB000MGG	Genetic Engineering	ge	B. Chatton	26	14	8	48
EB000MGN	Genomics and Epigenomics	gs	O. Lecompte B. Chatton	18	10		28

EB14GU1B	UE Methodology for Research						ECTS
EB000MED	Experimental design	ed	Y. Nominé	8			8
EB000MSA	Statistics	st	N. Paul	10	10		20
EB000MMS	In Silico Protein Engineering	mm	A. Dejaegere	6	16		22
EB00HMCRC	Critical Scientific Reading	cr	B. Kieffer C. Rigouin		8		40

EB14GU1C	UE Humanities, Economy & Social Sciences I						ECTS
LD20GM01	English	en	R. Piotto		16		16
EB000MBE	BioEthics	be	A. Stephan	10			10
EB000MQU	Quality	qu	J. Martin	12			12

EB14GU1D	UE Practicals I						ECTS
PH03EM20	Conception et Production de BioMédicaments I : pratique	pharma	M. Zeniou		5	19	24
EB00HMGMI	TP Génie Génétique et Microbiologie	miP	C. Rigouin A.L. Duchemin			35	35

M1S2 biologie synthétique - EB14HS02 2023-2024							
Codes APOGEE	EP	Cod e EdT	TEACHERS	CM (H)	TD (H)	TP/ TAE (H)	Total hrs student

EB14HU2A	UE Advanced Biotechnology II						ECTS
EB000MAS	Advanced Statistics	as	N. Paul		10		10
EB000MDS	Computer Sciences for Biotechnology	ds	B. Kieffer	6	12	12	30
EB000MIB	Image in Biology: Processing	im	C. Deville D. Dujardin	12	12		24
EB000MMT	Metabolism & Biotechnologies for BT	mt	G. Orfanoudakis	20	6		26
EB000MBH	Neurobiotechnology	ne	D. Bagnard	22			22

EB14HU2B	UE Humanities, Economy & Social Sciences II						ECTS
LD23PM01	English	en	R. Piotto		16		16
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	9	13
EB000MLR	National & International Labor Regulation	lr	M. Bintz	10			10

EB14HU2C	UE Practicals II						ECTS
EB00HMTP	TP Protein Purification	puP	C. Spenlé	6	4	38	48
EB00HMCC	TP Culture Cellulaire	cuP	C. Spenlé			24	24
EB000MSY	Synthetic Microbiology Practicals	syP	A. Becksei			55	55
EB000MSM	Synthetic Microbiology	sy	A. Becksei	15			15

EB14HU2D	UE Specialized Project (3 weeks)						ECTS
EB14HMPS	Project in Synthetic Biology I	syR	C. Rigouin	6	8	61	75

EB014U2E	UE IN1 : Internships 1						ECTS
EB14HMIR	Initiation à la Recherche BS	ir	C. Rigouin				

M2S3 Biologie Synthétique - EB14KS03 | Année 2024/2025

Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TAE (H)	Total hrs student
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EB14KU3A	UE Specialized Synthetic Biotech I							ECTS
EB000MIS	Introduction to System Biology	is	N. Molina	6		21		27
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin	0		12		12
EB000MDB	Project Design in Synthetic Biology	db	C. Rigouin			8	4	12

EB14KU3B	UE Specialized Synthetic Biotech II							ECTS
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2	30
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22				22

Choose 2 items out of the 3 below

EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12		28
???	Structures for Customized Drugs	scud	E. Kellenberger		14		18	32
EB000MRA	Recent Advances in Biotherapies	ra	C. Rigouin M. Zeniou		28			28
PH4LKM01	Drug discovery & development: case study	ddm	J. Karpenko	25,5		1,5		27

EB14KU3C	UE Humanities, Economy & Social Sciences III							ECTS
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
PH4LKM03	Coaching recherche emploi / alternance/stage		M. Bouhdoud	12				12

EB14KU3D	UE Specialized Projects II (5 weeks)							ECTS
EB000MST	Project in Synthetic Biology II	stR	C. Rigouin				125	125

M1S1 Biotechnologie Haut-Débit EB15GS01 Année 2024/2025							
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs student

EB15GU1A	UE Advanced Biotechnology I						ECTS
EB000MIY	Immunology	iy	M. Donzeau	20	0		20
EB000MGG	Genetic Engineering	ge	B. Chatton	26	14	8	48
EB000MGN	Genomics & Epigenomics	gs	O. Lecompte B. Chatton	18	10		28

EB15GU1B	UE Methodology for Research						ECTS
EB000MED	Experimental design	ed	Y. Nominé	8			8
EB000MSA	Statistics	st	N. Paul	10	10		20
EB000MMS	In Silico Protein Engineering	mm	A. Dejaegere	6	16		22
EB00HMCR	Critical Scientific Reading	cr	C. Rigouin B. Kieffer		8		40

EB15GU1C	UE Humanities, Economy & Social Sciences I						ECTS
LD20GM01	English	en3	R. Piotto		16		16
EB000MBE	BioEthics	be	A. Stephan	10			10
EB000MQU	Quality	qu	J. Martin	12			12

EB15GU1D	UE Practicals I						ECTS
PH03EM20	Conception et Production de BioMédicaments I : pratique	phar ma	M. Zeniou		5	19	24
EB00HMG M	TP Génie Génétique et Microbiologie	miP	C. Rigouin A.L. Duchemin			35	35

M1S2 Biotechnologie Haut Débit – EB15HS02 Année 2024/2025							
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs student

EB15HU2A	UE Advanced Biotechnology II						ECTS
EB000MAE	Advanced Experimental Design	ae	Y. Nominé	14	12		26
EB000MDS	Computer Sciences for biotechnology	ds	B. Kieffer	6	12	12	30
EB000MAS	Advanced Statistics	as	N. Paul		10		10
EB000MMT	Metabolism & biotechnologies for BT	mt	G. Orfanoudakis	20	6		26
EB000MIB	Images in Biology: Processing	im	C. Deville D. Dujardin	12	12		24
EB000MAI	Applications and limits of AI in Biotechnology	ai	O. Lecompte	9	5		14

EB15HU2B	UE Humanities, Economy & Social Sciences II						ECTS
LD23PM01	English IV	en4	R. Piotto		16		16
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	9	13
EB000MLR	National & International Labor Regulation	lr	M. Bintz	10			10

EB15HU2C	UE Research Project						ECTS
EB00HMIR	Initiation à la Recherche HD	ih	B. Kieffer			105	105

EB15HU2D	UE Specialized Project (3 weeks)						ECTS
EB15HMPG	Project in High Throughput Biotechnology	hhr	B. Kieffer C. Deville			75	75

M2 Biotechnologie Haut-Débit - SEMESTRE 3 - EB15KS03 Année 2024/2025								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)	Total hrs student

EB15KU3A	UE Specialized Biotech HT I							ECTS
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2	30
EB00HMAO	Advanced Topics in Omics	ao	O. Lecompte B. Kieffer	14		6	4	24
EB000MDO	Project Design in Omics	do	B. Kieffer			8	4	12
EB00HMSH	Data Sciences for Health	sh	O. Lecompte R. Carapito	10		9	4	23

EB15KU3B	UE Specialized Biotech HT II							ECTS
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12		28
EB000MIS	Introduction to Systems Biology	is	N. Molina	6		21		27
EB000MAN	AI in Biosciences	an	O. Lecompte	11		6	12	29
	Choose 1 item out of the 2 below							
???	Structures for Customized Drugs	scud	E. Kellenberger		14		18	32
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22				22

EB15KU3C	UE Humanities, Economy & Social Sciences III							ECTS
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
PH4LKM03	Coaching recherche emploi / alternance/stage	xx	M. Bouhdoud	12				12

EB15KU3D	UE Specialized projects II (5 weeks)							ECTS
EB000MPT	Project in High Throughput Biotechnology II	hdR	B. Kieffer				125	125

I2 Biotechnologie Haut-Débit - SEMESTRE 4 - EB15LS04 Année 2024/2025							
Codes APOGEE	EP	Cod e EdT	TEACHERS	CM (H)	TD (H)	TP/ TAE (H)	Total hrs student

EB15LU4A	UE Internships					ECTS
EB000MIN	internship					4-6 months

Maquette - Master Sciences de la Données

M1 Sciences de la Données EB18GS11 Année 2024/2025								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	CI (H)	TP/TAE (H)	Total hrs student
EB18GU1A	UE C1 : Concepts, enjeux et transdisciplinarité							
MIEXGMC1	Concepts, enjeux et transdisciplinarité		N. Lachiche B.Kieffer	4	20		4	
EB18GU1B	UE M1 : Méthodes d'apprentissage supervisé							
MIEXGMP1	Méthodes d'apprentissage supervisé		C. Meillier N. Lachiche	6	8		14	
EB18GU1C	UE D1 : Collecte, fiabilité et visualisation des données							
MIEXGMD1	Collecte, fiabilité et visualisation des données		X. Dolques	6	8		14	
EB18GU1D	UE Genomics & Epigenomics							
EB000MGN	Genomics & Epigenomics	gs	O. Lecompte B. Chatton	18	10			28
EB18GU1E	UE Critical Readings							
EB000MBE	Bioethics	be	A. Stephan	10				1
EB00HMCR	Critical Scientific Reading	cr	C. Rigouin B. Kieffer				8	40
EB18GU1F	UE Immunology							
EB000MIY	Immunology	iy	C. Gavériaux	20				20
EB18GU1G	UE Experimental Design							
EB000MED	Experimental Design	ed	Y. Nominé	8				8
EB18GU1H	UE Statistics							
EB000MSA	Statistics	st	N. Paul	10	10			20
EB18GU1I	UE Metabolism and biotechnologies							
EB000MMB	Metabolism & Biotechnologies for CBT	me	G. Orfanoudakis	20	4	0	4	28
EB18GU1J	UE English							
LD20GM01	English III	em3	R. Piotto		16			16

M1 Sciences de la Données – EB18HS21 | Année 2024/2025

Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)	Total hrs student
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EB18HU2A	UE C2 : Ethique et droit						
MIEXHMC2	Ethique et droit		J.M. Deltorn/F. Macrez	4	20	4	

EB18HU2B	UE M2 : Méthodes d'apprentissage non supervisé et d'apprentissage profond						
MIEXHMP2	Méthodes d'apprentissage non supervisé et d'apprentissage profond		N. Lachiche C. Meillier	6	8	14	

EB18HU2C	UE D2 : Outils statistiques						
EB000MAS	Advanced Statistics	as	N. Paul		10		10
MIEXHMD2	Outils statistiques		E. Birmele X. Dolques	6	8	14	

EB18HU2D	UE A1 Projet transdisciplinaire 1						
MIEXHMA1	Projet transdisciplinaire 1		N. Lachiche		28		

EB18HU2E	UE Advanced Experimental Design						
EB000MAE	Advanced Experimental Design	ae	Y. Nominé	14	12		26

EB18HU2F	UE Projet Initiation à la Recherche						
EB00HMIR	Initiation à la Recherche HD	ih	B. Kieffer			105	105

EB18HU2G	UE Image processing in biology						
EB000MIB	Image in Biology: Processing	im	C. Deville D. Dujardin	12	12		24

EB18HU2H	UE Project in Bioethics						
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	9	13

EB18HU2I	UE English						
LD23PM01	English IV	en	R. Piotto		16		16

M2S1 Sciences de la Donnée - EB18KS03 Année 2024/2025							
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TA E (H)	Total hrs student

EB18KU3A	UE M3 : Méthodes symboliques ou numériques						
MIEXKMP3	Méthodes symboliques ou numériques		N. Lachiche X. Dolques	8	8	14	30

EB18KU3B	UE D3 : Représentation et traitement des données						
MIEXKMD3	Représentation et traitement des données		C. Meillier D. Bernhard	6	8	14	28

EB18KU3C	UE A2 : Projet transdisciplinaire 2						
MIEXKMA2	Projet transdisciplinaire 2		N. Lachiche B. Kieffer		28		28

EB18KU3D	UE High Throughput Approaches						
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20	8	2	30

EB18KU3E	UE Introduction to system biology						
EB000MIS	Introduction to Systems Biology	is	N. Molina	6	21		27

EB18KU3F	UE Advanced Topics in Omics						
EB00HMAO	Advanced Topics in Omics	ao	O. Lecompte B. Kieffer	14	6	4	24

EB18KU3G	UE Comparative and medical genomics						
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	14	12		26

EB18KU3H	UE Applied data sciences						
EB000MAN	AI in Biosciences	an	O. Lecompte	11	6	12	29
EB00HMSH	Data-Sciences-for-Health	sh	O. Lecompte R. Carapito	10	9	4	23

EB18KU3I	UE Professional integration						
EB00HMPD	Professional Integration in Data-Sciences	pd	B. Kieffer		20		20

EB18KU3J	UE Project in High Throughput Biotechnology II						
EB000MPT	Project in High Throughput Biotechnology II	hdR	B. Kieffer			125	125

M2 Science de la Donnée - EB18LS04 Année 2024/2025								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/TAE (H)	Total hrs student	Coeff.

	EB18LU4A - UE Interships						30 ECTS
EB000MIN	internship						4-6 months

Maquette - Master Biotech Pharma - alternance

M2S3 biotech pharma									
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TD parta . (H)	TP/T AE (H)	Total hrs student

UE Biotechnologie pharmaceutique avancée I									
	Drug discovery and development : case studies	pharma	J. Karpenko		25.5	1.5			27
	Common technical Document: Case study *	pharma	M. De Giorgi	8		16			24
PH4LKM02	Le médicament, les BPF, la vie en entreprise: e-learning	cf	CFA LEEM		10				10

UE Formation Sciences Humaines Sociales et Economiques III									
PH4LKM03	Coaching recherche emploi/alternance/stage	cs	M. Bouhdoud	13					13
Pharma	Developpement professionnel et connaissance de soi		C. Vonthron		20				20
EB000MIP	Intellectual Property	ip	JM. Deltorn	12				12	24
EB000MPC	Project New Business	nbR	D. Bagnard G. Orfanoudakis	40		40			80

PH4LKUB1? ??	UE projet (alternant)								
EB52HMBA	Applied Bioproduction for Apprenticeship	ba	D. Takahashi					105	105

PH4LKUB1? ?	UE Biotechnologie Pharmaceutique Avancée II (alternant)								
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22					22
EB000MHT	High Throughput Approaches	ht	C. Gavériaux	20		8		2	30
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin	12					12

PH4LKUB1	UE Biotechnologie Pharmaceutique Avancée II (alternant) (choisir 1 cours)								
???	Structures for Customized Drugs	scud	E. Kellenberger		14			18	32
PH00GMBD	Biomolecules: description, bioreactivity and targeting	pharma	M.V. Spanedda	20		12			32

UE Découverte du monde professionnel									
	Découverte du monde socio professionnel		M. Zeniou		25				25

Maquette - Master Biologie Synthétique - alternance

M2S3 BIOL SYNTH - EB14KS31								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)	Total hrs student

EB19KU3A	UE Specialized Synthetic Biotech I							ECTS
EB000MIS	Introduction to System Biology	is	N. Molina	6		21		27
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin	0		12		12
EB000MDB	Project Design in Synthetic Biology	db	C. Rigouin			8	4	12

EB19KU3B	UE Specialized Synthetic Biotech II							ECTS
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S.	20		8	2	30
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22				22

Choose 2 items out of the 3 below

EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12		28
???	Structures for Customized Drugs	scud	E. Kellenberger		14		18	32
EB000MRA	Recent Advances in Biotherapies	ra	C. Rigouin M. Zeniou		28			28

EB19KU3C	UE Humanities, Economy & Social Sciences III							ECTS
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
PH4LKM03	Coaching recherche emploi / alternance/stage	cs	M. Bouhdoud	12				12
PH4LKM02	Le médicament, les BPF, la vie en entreprise (e-learning)	cf	CFA LEEM			10		10
PH4LKM07	Découverte du monde socio professionnel		M. Zeniou			25		25
PH4LKM04	Developpement professionnel et connaissance de soi		C. Vonthron		20			20

EB19KU3D	UE Specialized projects II (5 weeks)							ECTS
EB000MPC	Project New Business	nbR	G. Orfanoudakis D. Bagnard	40		40		80
EB02HMBA	Applied Bioproduction for Apprenticeship	ba	D. Takahashi				105	105

EB19LU4A	UE Entreprise							ECTS
	Période en entreprise		9 months					

M2 Biotech haut débit - SEMESTRE 3 - EB15KS31							
Codes APOGEE	EP	Cod e EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TA E (H)

EB1AKU1	UE Specialized biotech HT I						
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2
EB000MSH	Data Sciences for Health	sh	O. Lecompte R. Carapito	10		9	4
EB00HMAO	Advanced Topics in Omics	ao	B. Kieffer O. Lecompte	14		6	4

EB1AKU2	UE Specialized biotech HT II						
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12	
EB000MIS	Introduction to Systems Biology	is	N. Molina	6		21	
EB000MAN	AI in Biosciences	an	O. Lecompte	11		6	12
	Choose 1 item out of the 2 below						
???	Structures for Customized Drugs	scud	E. Kellenberger		14		18
EB000MMG	Human & Molecular Genetics	hg	B. Chatton	22			

EB1AKU3	UE Humanities, Economy & Social Sciences III						
EB000MIP	Intellectual Property	ip	P. Jeannequin	12			
PH4LKM03	Coaching recherche emploi / alternance/stage	cs	M. Bouhdoud	12			
PH4LKM02	Le médicament, les BPF, la vie en entreprise: e-learning	cf	CFA LEEM			10	
PH4LKM07	Découverte du monde socio professionnel		M. Zeniou			25	
PPH4LKM04	Developpement professionnel et connaissance de soi		C. Vonthron		20		

EB1AKU4	UE Specialized projects II (5 weeks)						
EB000MPC	Project New Business	nbR	G. Orfanoudakis D. Bagnard	40		40	
EB02HMBA	Applied Bioproduction for Apprenticeship	ba	D. Takahashi				105

UE Entreprise							
	Période en entreprise		9 months				

Maquette - diplôme ingénieurs Biotechnologie

Year 1 - Semester 1 - EB011S01 - Année 2024/2025							
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/T AE (H)	Total hrs student
EB011U1A	UE FB1 : Fundamentals of Biotechnology I			B. Chatton		ECTS	
EB000MTR	Prokaryotic Transcription	tp	M. Donzeau	10		1	10
EB011MTE	Eukaryotic Transcription for BT	te	B. Chatton	12		1	12
EB000MTL	Translation	tl	A.L. Duchemin	10	4	1	14
EB000MRP	Replication	rp	D. Takahashi	12		1	12
EB000MPN	Protein Engineering	pt	B. Kieffer, V. Torbeev C. Deville	12	6	0	18
EB011U1B	UE ES1 : Engineering Sciences I			Y. Nominé		ECTS	
EB011MAB	Analytical Biochemistry for BT	ab	B. Kieffer C. Deville	18	20	4	40
EB011MSI	Simulating Biological Systems	si	Y. Nominé	8	8	9	23
EB011MGC	General Chemistry I	cg	V. Torbeev	10	2	1	12
EB000MIC	Orga & Inorga Chemistry	oi	A. Panossian	8	2	1	10
EB000MEL	Electronics & Biosensors	el	M. Madec	12		1	12
EB011U1C	UE HE1 : Humanities, Economics & Social Sciences I			C. Gavériaux		ECTS	
Choose 1 item out of the 3 below							
LD52RM1T	English – Be part of a team	ie	M. Ruhlmann R. Sagar		24	0	24
LD62RM44	Deutsch stage intensif	id	A. Hacker, P. Krauth		24	0	24
	FLE Intensif	if	C. Goichon		24	0	24
Choose 1 item out of the 2 below							
LD52RM59	English – Let's talk about science	en1	M. Ruhlmann R. Sagar		20	0	20
LD52RM63	English – Raising awareness about social issues	en1	M. Ruhlmann R. Sagar		20	0	20
Choose 1 item out of the 3 below							
LD62RM01	Hallo Deutsch - Initiation 1	de1	A. Hacker, P. Krauth		24	0	24
LD62RM09	Deutsch – mal anders	de1	A. Hacker, P. Krauth		20	0	20
EB011MFE	FLE I	fr1	C. Goichon		20	0	20
EB011MHS	Health & Safety	hs	??? T. Devillers	4		2,5	6,5
EB000MCO	Communication	co	Y. Nominé D. Dujardin	2	6		6
EB011MPJ	Professional Project 1S	pj	??? M. Donzeau Y. Nominé		8	4	12
EB011U1D	UE PR1 : Practicals I			C. Deville		ECTS	
EB000MIE	Instrumentation Essentials	in	ALD CD FD MD VT YN	14	14	4	32
EB000MBP	Instrumentation & Biochemistry Practicals	ibP	C. Deville M. Donzeau M. Frey V. Torbeev			52	52

Year 1 - Semester 2 - EB011S02 - Année 2024/2025							
Coes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/T AE (H)	Total hrs student

EB011U2A	UE FB2 : Fundamentals of Biotechnology II		B. Chatton	ECTS			
EB000MCB	Cellular Biology	cb	D. Dujardin C. Deville	20	4	1	25
EB000MML	Microbiology	mb	C. Rigouin	12	4	1	16
EB000MEP	Enzymology	ez	B. Chatton	8	8	1	16
EB011MPL	Plant Physiology	pf	E. Decker	21	3	2	24

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EB011U2B	UE ES2 Engineering Sciences II		Y. Nominé	ECTS			
EB000MDS	Computer Sciences for Biotechnologies	ds	B. Kieffer C. Deville	6	12	12	28
EB000MBF	Bioinformatics	bi	O. Lecompte	14	10	2	24
EB011MGH	General Chemistry II	ch	V. Torbeev	8	4	1	12
EB000MBC	Bioorganic Chemistry	bo	V. Torbeev	8	4	1	12
EB011MBE	Bioenergetics	bg	V. Torbeev	12	6	2	18
EB011MMS	Modeling Biological Systems	ms	Y. Nominé	8	8	9	24

EB011U2C	UE HE2 : Humanities, Economics & Social Sciences II			D. Bagnard	ECTS		
Choose 1 item out of the 2 below							
LD52PM69	English – Student life	en1	M. Ruhlmann R. Sagar		20	0	20
LD52PM71	English – Promote your school or your product	en1	M. Ruhlmann R. Sagar		20	0	20
Choose 1 item out of the 3 below							
LD62PM02	Hallo Deutsch - Initiation 2	de1	A. Hacker, P. Krauth		24	0	24
	Deutsch –Tu doch was	de1	A. Hacker, P. Krauth		20	0	20
EB011MFL	FLE II	fr2	C. Goichon		20	0	20
EB000MPO	Professional Project 2S	pp	???	6	3	0	9
EB000MGP	Project Management	gp	ScienceMe Up	10		0	10
EB000MEC	Economics & Industries	ec	BioTech Corner		12	2	12

EB011U2D	UE PR2 : Practicals II		A.L. Duchemi	ECTS			
EB000MGE	Genetic Engineering Practicals	geP	A.L. Duchemin	4		31	35
EB000MMP	Microbiology Practicals	mbP	C. Rigouin	2	1	27	30
EB000MEZ	Enzymology Practicals	ezP	B. Chatton C. Gavériaux	2	0	27	29

EB011U2E	UE IN1 : Internships 1		C. Gavériaux	ECTS			
EB011MIS	1st year Internship		coord.				

Year 2 - Semester 3 - EB012S03 - Année 2024/2025							
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	TP/T AE (H)	Total hrs student

EB012U3A	UE AB1 : Advanced Biotechnology I			B. Chatton			ECTS
EB000MIY	Immunology	iy	M. Donzeau	20	0		20
EB000MIM	ImmunoTechnology	ic	M. Donzeau	12	0		12
EB000MGG	Genetic Engineering	ge	B. Chatton	26	14	8	48
EB000MGN	Genomics & Epigenomics	gs	O. Lecompte B. Chatton	18	10		28

EB012U3B	UE ES3 : Engineering Sciences III			Y. Nominé			ECTS
EB000MED	Experimental Design	ed	Y. Nominé	8			8
EB012MPE	Fundamentals of Bioproduction	pe	S. Mall-Gleissle A. Wilke (Offenburg)	12	12		24
EB000MMS	In Silico Protein Engineering	mm	A. Dejaegere	10	16		26
EB000MSA	Statistics	st	N. Paul	10	10		20

EB012U3C	UE HE3 : Humanities, Economics & Social Sciences			A. Stephan			ECTS
LD52RM3U	English – My scientific project	en3	R. Piotto M. Ruhlmann		20	0	20
Choose 1 item out of the 3 below							
LD62RM03	Deutsch - So lebe ich	de3	A. Hacker, P. Krauth		24	0	24
LD62RM40	Deutsch – kezako	de3	A. Hacker, P. Krauth		20	0	20
EB012MFE	FLE III	fr3	M. Keller		20		20
EB000MIF	Industrial Finances	fc	M. Gruber	4	8		12
EB000MBE	BioEthics	be	A. Stephan	10			10
EB000MQU	Quality	qu	M. Ludwig ? Quality Assistance ?	12			12

EB012U3D	UE PR3 : Practicals III			D. Dujardin			ECTS
EB012MPF	DSP: Protein Purification Practicals	ppP	A. Stephan	6	4	62	72
EB012MCC	Cell Culture Practicals	ccP	D. Dujardin F. Deryckere	8		56	64

Year 2 - Semester 4 - EB012S04 - Année 2024/2025								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	TD (H)	Nb étud / grp	TP/T AE (H)	Total hrs student

EB012U4A	UE AB2 : Advanced Biotechnology II			B. Chatton			ECTS	
EB000MSM	Synthetic Microbiology	sy	A. Becksei	15		0		15
EB012MPM	Plant Molecular Biology	pm	??? et al.	24		0		24
EB012MVI	Virology	vi	F. Deryckere M. Masson	14		0	2	16
EB000MBH	Neurobiotechnology	ne	D. Bagnard	22		0		22

EB012U4B	UE ES4 : Engineering Sciences IV			C. Deville			ECTS	
EB000MAE	Advanced Experimental Design	ae	Y. Nominé	14	12	25		26
EB000MAS	Advanced Statistics	as	N. Paul		10	25		10
EB000MAI	Applications and limits of AI in Biotechnology	ai	O. Lecompte	9	5	60		14
EB000MIB	Images in Biology: Processing	im	C. Deville D. Dujardin	12	12	25		24
EB000MMT	Metabolism & Biotechnologies for BT	mt	G. Orfanoudakis	20	8	25		28

EB012U4C	UE HE4 : Humanities, Economics & Social Sciences IV			A. Stephan			ECTS	
LD52PM75	English – Welcome to professional world	en4	M. Ruhlmann R. Sagar		20	25	0	20
Choose 1 item out of the 2 below								
LD62PM45	Deutsch – Stage fin de parcours	de4	A. Hacker, P. Krauth		24	25	0	24
EB012MFL	FLE IV	fr4	M. Keller		20	20		19
EB000MPE	Project BioEthics	bj	A. Stephan C. Spenlé		4	35	9	13
EB012MSF	Scientific Fact Checking	sf	A. Stephan D. Dujardin	2	8	25		10
EB000MLR	National & International Labor Regulation	lr	xxx	10		0		10

EB012U4D	UE PR4 : Practicals IV			A.L. Duchemin			ECTS	
EB000MSY	Synthetic Microbiology Practicals	syP	A. Becksei			0	55	55
EB012MPB	Plant Molecular Biology Practicals	pbP	??? et al.			0	140	140
EB012MAG	Advanced Genetic Engineering Practicals	agP	A.L. Duchemin			0	35	35

Year 3 - Semester 5 - EB013S05 - Année 2024/2025								
Codes APOGEE	EP	Code EdT	TEACHERS	CM (H)	CI (H)	TD (H)	TP/TAE (H)	Total hrs student

EB013U5A	UE SB1 : Specialized Biotechnology I			C. Rigouin				ECTS
EB000MCT	Current Topics in Synthetic Biology	ct	C. Rigouin			12		12
EB000MDB	Project Design in Synthetic Biology	db	C. Rigouin			8	4	12
EB000MDØ	Project Design in Omics	dø	B. Kieffer			8	4	12
EB00HMAO	Advanced Topics in Omics	ao	B. Kieffer O. Lecompte	14		6	4	24
EB013MIG	Images in Biology: Practicals	igP	C. Spenlé				16	16
EB013MCA	Images in Biology: Classification	ca	C. Deville	4		8		12
EB000MTG	Integration and Reporting of Practical Results	tg	A.L. Duchemin			12		12

EB013U5B	UE ES5 : Engineering Sciences V			O. Lecompte				ECTS
EB000MBI	USP Development Practicals	bpP	M. Donzeau				70	70
EB000MCM	Comparative & Medical Genomics	gc	O. Lecompte	16		12		28
EB000MHT	High Throughput Approaches	ht	B. Kieffer, C. Carapito, S. Cianferani, Y. Nominé	20		8	2	30
EB000MID	Introduction to Data Sciences	da	B. Kieffer	4		4	4	12
EB000MIS	Introduction to Systems Biology	is	N. Molina	6		21		27

EB013U5C	UE HE5 : Humanities, Economics & Social Sciences V			D. Bagnard				ECTS
EB000MIP	Intellectual Property	ip	P. Jeannequin	12				12
EB000MPI	Professional Integration	pi	???			22		22

EB013U5D	UE PR5 : Specialized projects (5 weeks)			G. Orfanoudakis				ECTS
EB000MST	Project in Synthetic Biology II	stR	C. Rigouin G. Radziwil A. Becksei				125	125
EB000MPT	Project in High Throughput Biotechnology II	hdR	B. Kieffer C. Deville T. Laux				125	125
EB000MPC	Project New Business	nbR	G. Orfanoudakis D. Bagnard	40		40		80
EB013MGM	USP: from Bench to Factory	gmR	D. Takahashi R. Wagner				75	75
EB013MPA	Project in Biotech Processes	paR	C. Zell (Offenburg)				125	125

Year 3 - Semester 6 - EB013S06 - Année 2024/2025									
Codes APOGEE	Code EdT	TEACHERS	CM (H)	TD (H)	Nb étud / grp	TP/T AE (H)	Nb étud / grp	Total hrs student	Coeff.

EB013U6A	UE IN2 : Final Internship	C. Gavériaux						ECTS	30
EB000MIN	internship							6 months	