

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

Séance du 26 septembre 2022

Délibération n° 072-2022

Point 05.1

Point 05.1 de l'ordre du jour

Modifications de maquettes – ESBS

EXPOSE DES MOTIFS

L'ESBS soumet à la CFVU les modifications de maquettes des cursus ingénieurs et Masters qui seraient à mettre en œuvre à la rentrée 2022/2023.

Ces modifications font suite à :

- une refonte pédagogique concernant la mise en place d'un nouvel outil pédagogique "Scientific Fact Checking". Ce module est soutenu par un financement IDEX,
- la mise en place de l'alternance sur trois parcours : Biotechnologie Pharmaceutique, Biologie Synthétique et Biotechnologie Haut-Débit du Master mention "Biotechnologie",
- une réflexion menée sur une meilleure ventilation des Travaux Pratiques en 2ème année de la formation Ingénieur et une optimisation de l'acquisition des compétences,
- un souhait de simplifier la lisibilité de l'offre de formation de 3ème année des cursus ingénieurs et 2ème année des cursus Masters.

De cela, il en résulte les changements majeurs suivants :

- ré-équilibrage des TP entre les 2 semestres de la 2^{ème} année ingénieur,

| | Année 2021/2022 | Année 2022/2023 |
|------------------------------|-----------------|-----------------|
| 1 ^{er} semestre 2A | 55 | 135 |
| 2 ^{ème} semestre 2A | 350 | 230 |

Cette modification a entraîné un basculement de l'enseignement de virologie du 1^{er} vers le 2^{ème} semestre et la possibilité d'ajouter deux cours au 2^{ème} semestre : "Scientific Fact Checking" et "Advanced Statistics".

- refonte totale de la grille de 3^{ème} année Ingénieurs pour tenir compte de la mise en place de l'alternance dans les Masters. Cette modification était nécessaire de par le grand nombre de cours mutualisés.

Synthèse des changements horaires sur la formation ingénieurs :

Ces modifications ont conduit à :

- 1^{ère} année : -23 H
- 2^{ème} année : + 9 H
- 3^{ème} année : +22 H

Les coûts entraînés par ces modifications de maquettes sont intégralement pris en charge par la composante. Ces modifications ont été approuvées par le Conseil de la composante lors de sa séance du 26 Avril 2022.

Délibération

La Commission de la formation et de la vie universitaire de l'Université de Strasbourg adopte **les modifications de maquettes de l'ESBS**

Résultat du vote

| | |
|-------------------------------|----|
| Nombre de membres en exercice | 40 |
| Nombre de votants | 29 |
| Nombre de voix pour | 28 |
| Nombre de voix contre | 0 |
| Nombre d'abstentions | 1 |
| 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 27 septembre 2022

Le Directeur Général des Services adjoint appui aux missions



Christophe de Casteljau

1A ingénieurs Biotechnologie

Version du 2022/03/25

| YEAR 1 – SEMESTER 1 - EB011S01 | | | | |
|--------------------------------|----------|----------|-------------------|--------|
| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |

| UE FB1 : Fundamentals of Biotechnology I | | | ECTS | 9 |
|---|----|--------------------------|-------------|----------|
| Procaryotic Transcription | tp | M. Donzeau | 10 | 1 |
| Eukaryotic Transcription for BT | te | B. Chatton | 12 | 1 |
| Translation | tl | A.L. Duchemin | 12 | 1 |
| Microbiology | mb | C. Rigouin | 16 | 1 |
| Structural Biology | sb | B. Kieffer C. Deville | 18 | 1 |

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| UE ES1 : Engineering sciences I | | | ECTS | 9 |
|--|----|--------------------------|-------------|----------|
| Analytical Biochemistry for BT | ab | B. Kieffer C. Deville | 40 | 1,5 |
| Simulating Biological Systems | si | Y. Nominé | 24 | 1 |
| General Chemistry I | cg | V. Torbeev | 10 | 0,5 |
| Orga & Inorga Chemistry | oi | A. Panossian | 10 | 0,5 |
| Electronics & Biosensors | el | C. Ling | 11 | 0,5 |

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| UE HE1 : Humanities, Economy & Social Sciences I | | | ECTS | 6 |
|---|-----|--------------------------------------|-------------|----------|
| English I | en1 | R. Plotto, E. Jehl | 46 | 1 |
| Deutsch I | de1 | A. Hacker, P. Krauth | 46 | 1 |
| FLE I | fr1 | C. Goichon | 37 | 1 |
| Health & Safety | hs | C. Gaveriaux T. Devillers | 7 | / |
| Communication | co | Y. Nominé D. Dujardin | 8 | 0,5 |
| Professionnal Project 1S | pj | C. Gavériaux M. Donzeau Y. Nominé | 6 | / |

ajouter les 2H Fresque climat 1A BT+CBT, 2 groupes

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| UE PR1 : Practicals I | | | ECTS | 6 |
|---|-----|---|-------------|----------|
| Instrumentation Essentials | in | ALD CD FD MD VT YN | 32 | / |
| Instrumentation & Biochemistry Practicals | ibP | C. Deville M. Donzeau C. Ling V. Torbeev | 52 | 3 |

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| | | | | |
|----------------------|----|-------------|--|--|
| German Reinforcement | gr | H. Biermann | | |
|----------------------|----|-------------|--|--|

TOTAL ECTS 30

1A ingénieurs Biotechnologie

Version du 2022/03/25

| YEAR 1 – SEMESTER 2 - EB011S02 | | | | |
|--|----------|---------------------------------------|-------------------|----------|
| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |
| UE FB2 : Fundamentals of Biotechnology II | | | ECTS | 6 |
| Cellular Biology | cb | D. Dujardin C. Deville | 25 | 1 |
| Molecular Biotechnology | bt | D. Takahashi | 28 | 1 |
| Plant Physiology | pf | E. Decker | 24 | 1 |
| 77 | | | | |
| UE ES2 Engineering sciences II | | | ECTS | 9 |
| Computer Sciences for Biotechnologies | ds | B. Kieffer C. Deville | 28 | 1 |
| Bioinformatics | bi | O. Lecompte | 24 | 1 |
| General Chemistry II | ch | G. Hanquet | 10 | 0,5 |
| Bioorganic Chemistry | bo | V. Torbeev | 10 | 0,5 |
| Bioenergetics | bg | D. Takahashi A.Dejaegere / P.Dumas | 16 | 1 |
| Modeling Biological Systems | ms | Y. Nominé | 24 | 1 |
| 112 | | | | |
| UE HE2 : Humanities, Economy & Social Sciences II | | | ECTS | 3 |
| English II | en2 | R. Piotto, E. Jehl | 22 | 1 |
| Deutsch II | de2 | A. Hacker, P. Krauth | 22 | 1 |
| FLE II | fr2 | C. Goichon | 22 | 1 |
| Professionnal Project 2S | pp | C. Gavériaux | 5 | / |
| Project Management | gp | ScienceMe Up | 10 | / |
| Economy & Industries | ec | BioTech Corner | 12 | / |
| 71 | | | | |
| UE PR2 : Practicals II | | | ECTS | 6 |
| Genetic Engineering Practicals | geP | A.L. Duchemin | 35 | 1 |
| Microbiology Practicals | mbP | C. Rigouin | 30 | 1 |
| Enzymology | ezP | B. Chatton C. Gavériaux | 45 | 1,5 |
| 110 | | | | |
| UE IN1 : Internships 1 | | | ECTS | 6 |
| 1st year Internship | | coord. | | / |

TOTAL ECTS 30

2A ingénieurs Biotechnologie

Version du 2022/03/25

| YEAR 2 – SEMESTER 3 - EB012S03 | | | | |
|--------------------------------|----------|----------|-------------------|--------|
| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |

| UE AB1 : Advanced Biotechnology I | | | ECTS | 9 |
|-----------------------------------|----|---------------------------|------|-----|
| Immunology | iy | C. Gavériaux | 20 | 1 |
| ImmunoTechnology | ic | M. Donzeau | 12 | 1 |
| Genetic Engineering | ge | B. Chatton | 48 | 1,5 |
| Genomics & Epigenomics | gs | O. Lecompte B. Chatton | 28 | 1 |

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| UE ES3 : Engineering Sciences III | | | ECTS | 9 |
|-----------------------------------|----|--|------|---|
| Experimental Design | ed | Y. Nominé | 8 | 1 |
| Fundamentals of Bioproduction | pe | S. Mall-Gleissle A. Wilke (Offenburg) | 24 | 1 |
| In Silico Protein Engineering | mm | A. Dejaegere | 22 | 1 |
| Statistics | st | N. Paul | 20 | 1 |

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| UE HE3 : Humanities, Economy & Social Sciences III | | | ECTS | 6 |
|--|-----|--------------------------|------|-----|
| English III | en3 | R. Piotto M. Ruhlmann | 22 | 1 |
| Deutsch III | de3 | A. Hacker P. Krauth | 22 | 1 |
| FLE III | fr3 | M. Keller | 22 | 1 |
| Industrial Finances | fc | C. Gruber | 12 | 0,5 |
| BioEthics | be | A. Stephan | 10 | / |
| Quality | qu | J. Martin | 12 | 0,5 |

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| UE PR3 : Practicals III | | | ECTS | 6 |
|--------------------------------------|-----|-----------------------------|------|---|
| DSP: Protein Purification Practicals | ppP | A. Stephan | 72 | 2 |
| Cell Culture Practicals | ccP | D. Dujardin F. Deryckere | 64 | 2 |

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TOTAL ECTS 30

2A ingénieurs Biotechnologie

Version du 2022/03/25

YEAR 2 – SEMESTER 4 - EB012S04

| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |
|----|----------|----------|-------------------|--------|
|----|----------|----------|-------------------|--------|

| UE AB2 : Advanced Biotechnology II | | | ECTS | 9 |
|------------------------------------|----|---------------------------|------|-----|
| Synthetic Microbiology | sy | A. Becksei | 15 | 1 |
| Plant Molecular Biology | pm | T. Laux et al. | 24 | 1,5 |
| Virology | vi | F. Deryckere M. Masson | 16 | 1 |
| Neurobiotechnology | ne | D. Bagnard | 22 | 1,5 |

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| UE ES4 : Engineering Sciences IV | | | ECTS | 9 |
|-------------------------------------|----|---------------------------------------|------|-----|
| Advanced Experimental Design | ae | Y. Nominé | 25 | 1,5 |
| Advanced Statistics | as | N. Paul | 10 | 1 |
| Images in Biology: Processing | im | C. Devire D. Dujardin Y. Nominé | 25 | 1,5 |
| Metabolism & Biotechnologies for BT | mt | G. Orfanoudakis | 28 | 1,5 |

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| UE HE4 : Humanities, Economy & Social Sciences IV | | | ECTS | 3 |
|---|-----|----------------------------|------|------|
| English IV | en4 | R. Piotto E. Jehl | 22 | / |
| Deutsch IV | de4 | A. Hacker P. Krauth | 22 | / |
| FLE IV | fr4 | M. Keller | 19 | / |
| Project BioEthics | bj | A. Stephan C. Gaveriaux | 13 | 1,5 |
| Scientific Fact Checking | sf | A. Stephan D. Dujardin | 10 | 0,75 |
| National & International Labor Regulation | lr | M. Bintz | 10 | / |

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| UE PR3 : Practicals IV | | | ECTS | 9 |
|---|-----|---------------|------|---|
| Synthetic Microbiology Practicals | syP | A. Becksei | 55 | 2 |
| Plant Molecular Biology Practicals | pbP | T. Laux | 140 | 2 |
| Advanced Genetic Engineering Practicals | agP | A.L. Duchemin | 35 | 1 |

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TOTAL ECTS 30

3A ingénieurs Biotechnologie

Version du 2022/03/25

| YEAR 3 – SEMESTER 5 - EB013S05 | | | | | BT BS | BT HD | BT BP | Frei bg | | |
|--|-------------|--|----------------------|--------|------------------|------------------|------------------|--------------------|---|---|
| EP | Code EdT | TEACHERS | Total hrs student | Coeff. | | | | | | |
| UE SB1 : Specialized Biotechnology I | | | | | ECTS | 9 | 4 | 4 | 4 | 4 |
| Current Topics in Synthetic Biology | ct | C. Rigouin | 12 | 1 | 1 | 1 | 1,5 | 1,5 | | |
| Project Design in Synthetic Biology | db | C. Rigouin | 12 | 1 | 1 | | | | | |
| Project Design in Omics | do | B. Kieffer | 12 | 1 | | 1 | | | | |
| Images in Biology: Practicals | igP | C. Spénlé | 16 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | | |
| Images in Biology: Classification | ca | C. Deville | 12 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | | |
| Integration and Reporting of Practical Results | tg | ALD + xx | 20 | 1 | 1 | 1 | 1,5 | 1,5 | | |
| | | | | | 72 | 72 | 60 | 60 | | |
| UE ES5 : Engineering Sciences V | | | | | ECTS | 9 | 4 | 4 | 4 | 0 |
| USP Development Practicals | bpP | M. Donzeau | 70 | 3 | | | 3 | | | |
| Comparative & Medical Genomics | gc | O. Lecompte | 28 | 1 | 1 | 1 | 1 | | | |
| High Throughput Approaches | ht | C. Gavériaux | 33 | 1 | 1 | 1 | | | | |
| Introduction to Data Sciences | da | B. Kieffer | 12 | 1 | 1 | 1 | | | | |
| Introduction to Systems Biology | is | A. Dejaegere | 27 | 1 | 1 | 1 | | | | |
| | | | | | 100 | 100 | 98 | 0 | | |
| UE HES5 : Humanities, Economy & Social Sciences V | | | | | ECTS | 3 | 0 | 0 | 0 | 0 |
| Intellectual Property | ip | JM. Deltorn | 12 | / | / | / | / | / | | |
| Professional Integration | pi | E. Weiss G. Gavériaux | 28 | / | / | / | / | / | | |
| | | | | | 40 | 40 | 40 | 40 | | |
| UE PR5 : Specialized projects (5 weeks) | | | | | ECTS | 9 | 4 | 4 | 4 | 4 |
| Project in Synthetic Biology II | stR | W. Weber A. Becksei C. Rigouin E. Weiss | 125 | 4 | 4 | | | | | |
| Project in High Throughput Biotechnology II | hdR | B. Kieffer C. Deville T. Laux | 125 | 4 | | 4 | | | | |
| Project New Business | nbR | G. Orfanoudakis D. Bagnard | 80 | 2 | | | 2 | | | |
| USP: from Bench to Factory | gmR | D. Takahashi R. Wagner | 75 | 2 | | | 2 | | | |
| Project in Biotech Processes | paR | C. Zell (Offenburg) | 125 | 4 | | | | 4 | | |
| | | | | | 125 | 125 | 155 | 125 | | |
| | | | | | BT BS | BT HD | BT BP | Frei bg | | |
| | | | | | 337 | 337 | 353 | 225 | | |

TOTAL ECTS 30

3A ingénieurs Biotechnologie

Version du 2022/03/25

| YEAR 3 – SEMESTER 6 - EB013S06 | | | | | | | | | | | | |
|--------------------------------|-----------------|----------------------------------|----------|--------|--------|---------------|-------------|---------------|-------------------|-----------|--|--|
| Codes ROF | Codes APOGEE | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud / grp | TP/TA E (H) | Nb étud / grp | Total hrs student | Coeff. | | |
| | EB013U6A | UE IN2 : Final Internship | | | | | | | ECTS | 30 | | |
| EN26856 | EB000MIN | internship | | | | | | | 6 months | | | |

BIOTECH – SEMESTER 1 - EB021S01 – Année 2

| EP | Code EdT | TEACHERS | Total hrs student | Coef. |
|----|----------|----------|-------------------|-------|
|----|----------|----------|-------------------|-------|

| UE FB1 : Fundamental Biochemistry and Biology I | | | ECTS | 6 |
|--|-----------|-------------------|-------------|----------|
| Prokaryotic Transcription | tp | M. Donzeau | 10 | 0,75 |
| Eukaryotic Transcription for CBT | tc | M. Donzeau | 12 | 0,75 |
| Translation | tl | A.L Duchemin | 12 | 0,75 |
| Microbiology | mb | C. Rigouin | 16 | 0,75 |
| Introduction to Biochemistry | bh | F. Deryckere | 9 | 0,75 |

| Structural Methods and Informatics for Biological Chemist | | | ECTS | 6 |
|--|-----------|--------------------------|-------------|----------|
| Structural Biology | sb | B. Kieffer C. Deville | 18 | 1 |
| Statistics | ECPM | A. Hechner R. Debalme | 11,5 | 0,75 |
| Electronics & Biosensors | el | C. Ling | 11 | 0,75 |
| Analytical Biochemistry for CBT | ac | B. Kieffer C. Deville | 31 | 1,5 |

| Engineering Sciences I | | | ECTS | 6 |
|-------------------------------|------|---------------------------|-------------|----------|
| Thermodynamic | ECPM | R. Muller | 15,1 | 1,5 |
| Phenomen of transports | ECPM | R. Muller | 16,3 | 1,5 |
| Kinetics | ECPM | S. Pronkin V. Hubscher | 14 | 1,5 |

| Organic, Inorganic and Analytical Chemistry - Fundamentals | | | ECTS | 6 |
|---|------|--|-------------|----------|
| Orga & Inorga Chemistry | oi | A. Panossian | 11 | 1 |
| Spectroscopies for Chemistry and Proteins | ECPM | S. Choppin, J. Brandel B Kieffer, L. Sabatier | 26,9 | 2 |

| UE ES1 : Humanities, Economy & Social Sciences I | | | ECTS | 3 |
|---|------|--------------------------|-------------|----------|
| English | ECPM | I. Offord | 41 | 1 |
| Deutsch / Français | ECPM | H. Biermann | 41 | 1 |
| Health & Safety for CBT | hy | C. Simon C. Gavériaux | 9 | / |
| Communication | co | Y. Nominé D. Dujardin | 8 | 0,5 |

| UE PR1 : Practicals I | | | ECTS | 3 |
|---|-----------|---|-------------|----------|
| Instrumentation Essentials | in | CD FD MD VT YN | 32 | / |
| Instrumentation & Biochemistry Practicals | ibP | C. Deville M. Donzeau C. Ling V. Torbeev | 52 | 2 |

| | | | | |
|-------------------|--|--|--|-----------|
| Total ECTS | | | | 30 |
|-------------------|--|--|--|-----------|

MBIOTECH - SEMESTER 2 - EB021S02 - Ann

| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |
|----|----------|----------|-------------------|--------|
|----|----------|----------|-------------------|--------|

| UE FB2 : Fundamentals of Biology II | | | ECTS | 3 |
|--|----|---------------------------|-------------|----------|
| Molecular Biotechnology | bt | D. Takahashi | 28 | 1,5 |
| Cellular Biology | cb | D. Dujardin C. Deville | 25 | 1,5 |

| Engineering Sciences II | | | ECTS | 3 |
|---------------------------------------|----|--------------------------|-------------|----------|
| Computer Sciences for Biotechnologies | ds | B. Kieffer C. Deville | 28 | 1,5 |
| Bioinformatics | bi | O. Lecompte | 24 | 1,5 |

| Inorganic and Analytical Chemistry - Fundam | | | ECTS | 6 |
|--|------|-----------------------------------|-------------|----------|
| Bioorganic Chemistry | bo | V. Torbeev | 10 | 1 |
| Organic reactivity I | ECPM | D. Hazeldard, F. Leroux | 10,5 | 2 |
| | ECPM | P. Compain, A. Speicher | 7 | |
| | ECPM | P. Compain A. Speicher | 7 | |
| | ECPM | M. Ribagorda (substitution/eli | 10,5 | |
| Life elements | ECPM | M. Chetcuti | 10,5 | 1 |

| ES2 : Humanities, Economy & Social Sciences | | | ECTS | 6 |
|--|------|----------------|-------------|----------|
| English | ECPM | I. Offord | 28 | 1,5 |
| Deutsch / Français | ECPM | H. Biermann | 28 | 1,5 |
| Economy & Industries | ec | BioTech Corner | 12 | / |
| Project Management | gp | ScienceMe Up | 10 | / |
| Professionnal Project 2S | pp | C. Gavériaux | 5 | / |
| Green chemistry and ecoprocesses | ECPM | E. Pollet | 7 | 0,5 |
| REACH norms & rights of environnement | ECPM | L. Perrin | 3,5 | 0,5 |
| Sustainable development for industrial chemistry | ECPM | C. Dumas | 3,5 | 0,5 |

| UE PR2 : Practicals II | | | ECTS | 12 |
|-------------------------------|------|----------------------------|-------------|-----------|
| Genetic Engineering | geP | A.L. Duchemin | 35 | 1 |
| Enzymology | ezP | C. Gavériaux B. Chatton | 45 | 1 |
| Organic Chemistry | ECPM | D. Hazeldard | 28 | 1 |
| Analytical Chemistry | ECPM | V. Delval J. Brandel | 56 | 2 |
| Microbiology Practicals | mbP | C. Rigouin | 30 | 1 |

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|-------------------|--|--|--|-----------|
| Total ECTS | | | | 30 |
|-------------------|--|--|--|-----------|

EMBIOTECH - SEMESTER 3 - EB022S03 – Année

| EP | Code EdT | TEACHERS | Total hrs student | Coeff. |
|----|----------|----------|-------------------|--------|
|----|----------|----------|-------------------|--------|

| Applied Molecular Biology & Biochemistry III | | | ECTS | 9 |
|---|----|-----------------|-------------|----------|
| Immunology | iy | C. Gavériaux | 20 | 1 |
| Immunotechnology | ic | M. Donzeau | 12 | 0,5 |
| Genetic Engineering | ge | B. Chatton | 48 | 2 |
| Metabolism & Biotechnologies for CBT | me | G. Orfanoudakis | 28 | 1 |

| Organic, inorganic and analytical chemistry - application | | | ECTS | 3 |
|--|------|--|-------------|----------|
| Organic Reactivity II | ECPM | S. Choppin ((hetero)chemistry aromatic) | 9,3 | 1 |
| | ECPM | P. Compain (Tools for molecular chemistry) | 7 | |
| Analytical and bioanalytical chemistry | ECPM | S. Choppin L. Sabatier | 21 | 1 |

| Engineering Sciences III | | | ECTS | 6 |
|---------------------------------|------|--------------|-------------|----------|
| Molecular Modeling | mo | A. Dejaegere | 22 | 1,5 |
| Experimental Design | ed | Y. Nominé | 8 | 0,5 |
| Industrial mission | ECPM | P. Filizian | 24 | 1,5 |

| UE ES3 : Humanities, Economy & Social Sciences II | | | ECTS | 6 |
|--|------|-------------|-------------|----------|
| English | ECPM | I. Offord | 22 | 1,5 |
| Deutsch / Français | ECPM | H. Biermann | 22 | 1,5 |
| Industrial Finances | fc | C. Gruber | 12 | 0,75 |
| Bioethics | be | A. Stephan | 10 | / |
| Quality | qu | J. Martin | 12 | 0,75 |

| UE PR4 : Practicals III | | | ECTS | 3 |
|--------------------------------|------|-------------|-------------|----------|
| Bioconjugated Chemistry | bcP | V. Torbeev | 10 | 0,5 |
| Organic Chemistry | ECPM | D. Hazelard | 28 | 1 |

| UE IN1 : Internship I | | | ECTS | 3 |
|------------------------------|--|--------------|-------------|----------|
| 1st year Internship | | F. Deryckère | | 2 |

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|-------------------|--|--|--|-----------|
| Total ECTS | | | | 30 |
|-------------------|--|--|--|-----------|

MBIOTECH - SEMESTER 4 - EB022S04 - Ann

| EP | Code EdT | Teachers | Total hrs student | Coeff. |
|----|----------|----------|-------------------|--------|
|----|----------|----------|-------------------|--------|

| Organic, inorganic and analytical chemistry - applicat ECTS 6 | | | | |
|--|------|--------------------------------------|------|-----|
| Bio-inorganic chemistry | ECPM | S. Fleutot | 10,5 | 1 |
| Organic Reactivity III | ECPM | P. Compain (oxydo reduction) | 17,5 | 2 |
| | ECPM | P. Compain (carbanions and enolates) | 7 | |
| Supported synthesis of biomolecules | ECPM | G. Hanquet, I. Izzo | 14 | 1,5 |

| Engineering Sciences IV ECTS 6 | | | | |
|---|------|--------------|------|---|
| Process Engineering for Chemistry | ECPM | C. Serra | 16,2 | 1 |
| Process Engineering for Biotechnologies | pg | D. Takahashi | 16 | 1 |
| Industrial mission | ECPM | P. Filizian | 24 | 2 |

| ES4 : Humanities, Economy & Social Sciences ECTS 6 | | | | |
|---|------|----------------------------|----|---|
| English | ECPM | I. Offord | 20 | 1 |
| Deutsch / Français | ECPM | H. Biermann | 20 | 1 |
| Project Bioethics | bj | A. Stephan C. Gavériaux | 13 | 1 |

| UE PR4 : Practicals IV ECTS 12 | | | | |
|---------------------------------------|------|-------------------------|----|-----|
| Protein Purification Practicals | ppP | C. Spenlé | 48 | 1,5 |
| Cell Culture Practicals for CBT | xx | C. Spenlé | 24 | 0,5 |
| Process Engineering | ECPM | B. Ernst | 56 | 1,5 |
| Organic Chemistry | ECPM | D. Hazelard | 56 | 1,5 |
| Analytical & Bioanalytical Chemistry | ECPM | V. Delval J. Brandel | 56 | 1,5 |

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| | |
|-------------------|-----------|
| Total ECTS | 30 |
|-------------------|-----------|

Version du 2022/04/05

MBIOTECH - SEMESTER 5 - EB023S05 – Année

| EP | Code EdT | TEACHERS | Total hrs student | Coef. |
|----|----------|----------|-------------------|-------|
|----|----------|----------|-------------------|-------|

| Red ChemBioTech I | | ECTS 9 | | |
|---|-----|-----------------|----|-----|
| Structures Macromoléculaires & Découvertes de Médicaments | dd | E. Kellenberger | 31 | 1,5 |
| Retrosynthesis for Pharma and Agro Molecules | re | G. Hanquet | 10 | 0,5 |
| Chemical Protein Synthesis | ps | V. Torbeev | 8 | 0,5 |
| Toxicology | to | F. Pons | 18 | 1 |
| Drug discovery & Development (case study) | ddm | J. Karpenko | 27 | 1,5 |
| Human & Molecular Genetics | hg | B. Chatton | 24 | 1,5 |

| Green ChemBioTech I | | ECTS 6 | | |
|--|---------|-----------------------|------|-----|
| Ecotoxicology | tx | C. Cosio | 8 | 0,5 |
| Sugar chemistry and biomass revalorisation | F. CHIM | V Beneteau, JM Weibel | 24 | 1,5 |
| Bioremediation | br | V. Geoffroy | 8 | 0,5 |
| Bioplastics | ECPM | L. Averous | 17,4 | 1 |
| Recycling for biofuels | ECPM | B. Ernst | 12,8 | 1 |

| UE ES : Humanities, Economy & Social Sciences I | | ECTS 3 | | |
|--|------|------------------------------|------|---|
| Intellectual Property | ip | C. Ritzenthaler F. Macrez | 16 | / |
| Professional Project 3ACBT | po | G. Roulland | 8 | / |
| English | ECPM | I. Offord | 10,5 | 1 |
| Deutsch / Français | ECPM | H. Biermann | 21 | 1 |

| UE PR : Projects | | ECTS 6 | | |
|-------------------------|-----|---------------|-----|---|
| Project ChemBioTech | chR | D. Hazelard | 160 | 4 |

| UE IN1 : Internship II | | ECTS 6 | | |
|-------------------------------|----|---------------|---|---|
| 2nd year Internship | pr | D. Hazelard | 0 | 4 |

| | | | | |
|-------------------|--|--|--|-----------|
| Total ECTS | | | | 30 |
|-------------------|--|--|--|-----------|

Version du 2022/04/05

YEAR 3 - CHEMBIOTECH - SEMESTER 6 - EB023S06 – Année 2022/2023

| 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. |
|-----------------|----------------------------------|----------|----------|--------|--------|----------------|------------|--------|-------------------|-------------------|-----------|
| EB023U6A | UE IN2 : Final Internship | | | | | | | | | ECTS | 30 |
| EB023MIN | internship | | | | | | | | | 6 months | |

M2 ALTERNANTS parcours biologie synthétique 2022-2023

Version du 2022/03/25

| Alternants, M2S3 Biologie Synthétique - EB19KS03 – Année 2022 - 2023 | | | | | | | | | | |
|--|----|----------|----------|--------|--------|--------------|------------|--------------|-------------------|--------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. |

| EB19KU3A | UE Specialized Synthetic Biotech I | | | | | | | | ECTS | 6 |
|----------|-------------------------------------|----|--------------|---|----|----|--|----|------|---|
| EB000MIS | Introduction to System Biology | is | A. Dejaegere | 6 | 21 | 30 | | | 27 | 2 |
| EB000MCT | Current Topics in Synthetic Biology | ct | C. Rigouin | 0 | 12 | 15 | | 15 | 12 | 1 |

39

| EB19KU3B | UE Specialized Synthetic Biotech II | | | | | | | | ECTS | 12 |
|----------|--|----|--------------|------|-----|----|---|----|------|-----|
| EB000MDA | Introduction to Data Sciences | da | B. Kieffer | 6 | 6 | 30 | 6 | 30 | 18 | 1 |
| EB000MHT | High Throughput Approaches | ht | C. Gavériaux | 20 | 10 | 30 | 3 | 10 | 33 | 1,5 |
| EB000MMG | Human & Molecular Genetics | hg | B. Chatton | 24 | | | | | 24 | 1,5 |
| EB000MCM | Comparative & Medical Genomics | gc | O. Lecompte | 16 | 12 | 25 | | | 28 | 1 |
| PH4LKM01 | Drug discovery & development: case study | | J. Karpenko | 25,5 | 1,5 | | | | 27 | 1 |

130

| EB19KU3C | UE Humanities, Economy & Social Sciences III | | | | | | | | ECTS | 3 |
|----------|---|----|-------------|----|----|----|--|--|------|---|
| EB000MIP | Intellectual Property | ip | JM. Deltorn | 16 | | | | | 16 | / |
| PH4LKM03 | Coaching recherche emploi / alternance/stage | xx | M. Bouhdoud | 12 | | 40 | | | 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 | / |

83

| EB19KU3D | UE Specialized projects II (5 weeks) | | | | | | | | ECTS | 9 |
|----------|--|-----|-------------------------------|----|----|----|----|--|------|---|
| EB000MPC | Project New Business | nbR | G. Orfanoudakis D. Bagnard | 40 | 40 | 10 | | | 80 | 2 |
| EB02KMBA | Applied Bioproduction for Apprenticeship | ba | D. Takahashi | | | | 70 | | 70 | 2 |

150

ECTS

TOTAL 402 30

M2 ALTERNANTS parcours biotech haut débit, année 2022 / 2023

Version du 2022/03/25

| Alternants, M2 Biotechnologie Haut-Débit - SEMESTRE 3 - EB1AKS03, Année 2022 - 2023 | | | | | | | | | | |
|---|----|----------|----------|--------|--------|--------------|------------|--------------|-------------------|--------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. |

| EB1AKU3A | UE Specialized biotech HT I | | | | | | | | ECTS | 9 |
|----------|-------------------------------|----|----------------------------|----|----|----|---|----|------|---|
| EB000MDA | Introduction to Data Sciences | da | B. Kieffer | 4 | 4 | 30 | 4 | 30 | 12 | 1 |
| EB000MHT | High Throughput Approaches | ht | C. Gavériaux | 20 | 10 | 30 | 3 | 10 | 33 | 2 |
| EB00HMSH | Data Sciences for Health | sh | O. Lecompte R. Carapito | 8 | 8 | | 8 | | 24 | 2 |

69

| EB1AKU3B | UE Specialized biotech HT II | | | | | | | | ECTS | 6 |
|----------|--|----|--------------|------|-----|----|--|--|------|------|
| EB000MMG | Human & Molecular Genetics | hg | B. Chatton | 24 | | | | | 24 | 0,75 |
| EB000MCM | Comparative & Medical Genomics | gc | O. Lecompte | 14 | 12 | 25 | | | 26 | 0,75 |
| PH4LKM01 | Drug discovery & development: case study | | J. Karpenko | 25,5 | 1,5 | | | | 27 | 0,75 |
| EB000MIS | Introduction to Systems Biology | is | A. Dejaegere | 6 | 21 | 30 | | | 27 | 0,75 |

104

| EB1AKU3C | UE Humanities, Economy & Social Sciences III | | | | | | | | ECTS | 3 |
|----------|--|----|-------------|----|----|----|--|--|------|---|
| EB000MIP | Intellectual Property | ip | JM. Deltorn | 16 | | | | | 16 | / |
| PH4LKM03 | Coaching recherche emploi / alternance/stage | xx | M. Bouhdoud | 12 | | 40 | | | 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 | / |

83

| EB1AKU3D | UE Specialized projects II (5 weeks) | | | | | | | | ECTS | 12 |
|----------|--|-----|-------------------------------|----|----|----|----|--|------|----|
| EB000MPC | Project New Business | nbR | G. Orfanoudakis D. Bagnard | 40 | 40 | 10 | | | 80 | 3 |
| EB02KMBA | Applied Bioproduction for Apprenticeship | ba | D. Takahashi | | | | 70 | | 70 | 3 |

150

ECTS

406 30

M1 Biologie Synthétique

Version du 2022/03/25

| M1S1 biologie synthétique - EB14GS01 2022-2023 | | | | | | | | | | |
|--|----|----------|----------|--------|--------|--------------|-------------|--------------|-------------------|-------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/T AE (H) | Nb étud /grp | Total hrs student | Coef. |

| EB14GU1A | UE Advanced Biotechnology I | | | | | | | | ECTS | 12 |
|----------|-----------------------------|----|---------------------------|----|----|----|---|----|------|-----|
| EB000MIY | Immunology | iy | C. Gavériaux | 20 | | | | | 20 | 1,5 |
| EB000MIM | ImmunoTechnology | ic | M. Donzeau | 12 | | | | | 12 | 1 |
| EB000MGG | Genetic Engineering | ge | B. Chatton | 26 | 14 | 35 | 8 | 70 | 48 | 2 |
| EB000MGN | Genomics and Epigenomics | gs | O. Lecompte B. Chatton | 18 | 10 | 25 | | | 28 | 1,5 |

108

| EB14GU1B | UE Methodology for Research | | | | | | | | ECTS | 12 |
|----------|-------------------------------|----|--------------------------|----|----|----|--|--|------|----|
| EB000MED | Experimental design | ed | Y. Nominé | 8 | | | | | 8 | 1 |
| EB000MSA | Statistics | st | N. Paul | 10 | 10 | 50 | | | 20 | 2 |
| EB000MMS | In Silico Protein Engineering | mm | A. Dejaegere | 6 | 16 | 35 | | | 22 | 1 |
| EB00HMCR | Critical Scientific Reading | cr | B. Kieffer C. Rigouin | | 8 | | | | 40 | 2 |

90

| EB14GU1C | UE Humanities, Economy & Social Sciences I | | | | | | | | ECTS | 3 |
|----------|--|----|------------|----|----|---|--|--|------|-----|
| LD20GM01 | English | en | R. Piotto | | 16 | 1 | | | 16 | 1 |
| EB000MBE | BioEthics | be | A. Stephan | 10 | | | | | 10 | / |
| EB000MQU | Quality | qu | J. Martin | 12 | | | | | 12 | 0,5 |

38

| EB14GU1D | UE Practicals I | | | | | | | | ECTS | 3 |
|----------|---|--------|-----------------------------|--|---|--|----|----|------|---|
| PH4LKM17 | Conception et Production de BioMédicaments I : pratique | pharma | M. Zeniou | | 5 | | 19 | 20 | 24 | 1 |
| EB00HMGM | TP Génie Génétique et Microbiologie | miP | C. Rigouin A.L. Duchemin | | | | 35 | 20 | 35 | 1 |

59

TOTAL ECTS 30

M1 Biologie Synthétique

Version du 2022/03/25

M1S2 biologie synthétique - EB14HS02 2022-2023

| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/T AE (H) | Nb étud /grp | Total hrs student | Coef. |
|--------------|----|----------|----------|--------|--------|--------------|-------------|--------------|-------------------|-------|
|--------------|----|----------|----------|--------|--------|--------------|-------------|--------------|-------------------|-------|

| EB14HU2A | UE Advanced Biotechnology II | | | | | | | | ECTS | 9 |
|----------|-------------------------------------|----|--|----|----|----|----|----|------|---|
| EB000MAS | Advanced Statistics | as | N. Paul | | 10 | 25 | | | 10 | 1 |
| EB000MDS | Computer Sciences for Biotechnology | ds | B. Kieffer | 6 | 12 | 25 | 12 | 70 | 30 | 1 |
| EB000MIB | Image in Biology: Processing | im | C. Deville D. Dujardin Y. Nominé | 13 | 12 | 35 | | | 25 | 1 |
| EB000MMT | Metabolism & Biotechnologies for BT | mt | G. Orfanoudakis | 20 | 6 | 25 | | | 26 | 1 |
| EB000MBH | Neurobiotechnology | ne | D. Bagnard | 22 | | | | | 22 | 1 |

113

| EB14HU2B | UE Humanities, Economy & Social Sciences II | | | | | | | | ECTS | 3 |
|----------|---|----|----------------------------|----|----|----|---|----|------|-----|
| LD23PM01 | English | en | R. Piotto | | 16 | 50 | | | 16 | / |
| EB000MPE | Project BioEthics | bj | A. Stephan C. Gaveriaux | | 4 | 70 | 9 | 30 | 13 | 1,5 |
| EB000MLR | National & International Labor Regulation | lr | M. Bintz | 10 | | | | 50 | 10 | / |

39

| EB14HU2C | UE Practicals II | | | | | | | | ECTS | 9 |
|----------|-----------------------------------|-----|------------|----|--|--|----|----|------|---|
| EB00HMTP | TP Protein Purification | puP | C. Spenlé | 4 | | | 31 | 15 | 35 | 1 |
| EB00HMCC | TP Culture Cellulaire | cuP | C. Spenlé | 8 | | | 35 | 10 | 43 | 1 |
| EB000MSY | Synthetic Microbiology Practicals | syP | A. Becksei | | | | 55 | 20 | 55 | 2 |
| EB000MSM | Synthetic Microbiology | sy | A. Becksei | 15 | | | | | 15 | 1 |

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| EB14HU2D | UE Specialized Project (3 weeks) | | | | | | | | ECTS | 6 |
|----------|----------------------------------|-----|------------|---|---|--|----|----|------|---|
| EB14HMPS | Project in Synthetic Biology I | syR | C. Rigouin | 6 | 8 | | 61 | 20 | 75 | 3 |

75

| EB014U2E | UE IN1 : Internships 1 | | | | | | | | ECTS | 3 |
|----------|------------------------------|----|------------|--|--|--|--|----|------|---|
| EB14HMIR | Initiation à la Recherche BS | ir | C. Rigouin | | | | | 20 | | 2 |

30

TOTAL ECTS

M1 Biotechnologie Haut-Débit

Version du 2022/03/25

| M1S1 Biotechnologie Haut-Débit EB15GS01 | | | | | | | | | | |
|---|----|----------|----------|--------|--------|--------------|-------------|--------------|-------------------|-------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/T AE (H) | Nb étud /grp | Total hrs student | Coef. |

| EB15GU1A | UE Advanced Biotechnology I | | | | | | | | ECTS | 12 |
|----------|-----------------------------|----|---------------------------|----|----|----|---|----|------|----|
| EB000MIY | Immunology | iy | C. Gavériaux | 20 | 0 | 32 | | | 20 | 1 |
| EB000MGG | Genetic Engineering | ge | B. Chatton | 26 | 14 | 35 | 8 | 70 | 48 | 3 |
| EB000MGN | Genomics & Epigenomics | gs | O. Lecompte B. Chatton | 18 | 10 | 25 | | | 28 | 2 |

96

| EB15GU1B | UE Methodology for Research | | | | | | | | ECTS | 12 |
|----------|-------------------------------|----|---------------------------|----|----|----|--|--|------|----|
| EB000MED | Experimental design | ed | Y. Nominé | 8 | | | | | 8 | 1 |
| EB000MSA | Statistics | st | N. Paul | 10 | 10 | 50 | | | 20 | 2 |
| EB000MMS | In Silico Protein Engineering | mm | A. Dejaegere | 6 | 16 | 35 | | | 22 | 1 |
| EB00HMCR | Critical Scientific Reading | cr | C. Rigouin/ B. Kieffer | | 8 | | | | 40 | 2 |

90

| EB15GU1C | UE Humanities, Economy & Social Sciences I | | | | | | | | ECTS | 3 |
|----------|--|-----|------------|----|----|----|--|--|------|-----|
| LD20GM01 | English | en3 | R. Piotto | | 16 | 50 | | | 16 | 1 |
| EB000MBE | BioEthics | be | A. Stephan | 10 | | | | | 10 | / |
| EB000MQU | Quality | qu | J. Martin | 12 | | | | | 12 | 0,5 |

38

| EB15GU1D | UE Practicals I | | | | | | | | ECTS | 3 |
|----------|---|------------|-----------------------------|--|---|--|----|----|------|---|
| PH4LKM17 | Conception et Production de BioMédicaments I : pratique | phar ma | M. Zeniou | | 5 | | 19 | 20 | 24 | 1 |
| EB00HMGM | TP Génie Génétique et Microbiologie | miP | C. Rigouin A.L. Duchemin | | | | 35 | 20 | 35 | 1 |

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TOTAL ECTS 30

M1 Biotechnologie Haut-Débit

Version du 2022/03/25

M1S2 biotech Haut débit EB15HS02

| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. |
|--------------|----|----------|----------|--------|--------|--------------|------------|--------------|-------------------|--------|
|--------------|----|----------|----------|--------|--------|--------------|------------|--------------|-------------------|--------|

| EB15HU2A | UE Advanced Biotechnology II | | | | | | | | ECTS | 12 |
|----------|-------------------------------------|----|---------------------------|----|----|----|----|----|------------|-----|
| EB000MAE | Advanced Experimental Design | ae | Y. Nominé | 13 | 12 | 25 | | | 25 | 1,5 |
| EB000MDS | Computer Sciences for biotechnology | ds | B. Kieffer | 6 | 12 | 25 | 12 | 70 | 30 | 1,5 |
| EB000MAS | Advanced Statistics | as | N. Paul | | 10 | 25 | | | 10 | 1 |
| EB000MMT | Metabolism & biotechnologies for BT | mt | G. Orfanoudakis | 20 | 6 | 25 | | | 26 | 1 |
| EB000MIB | Images in Biology: Processing | im | C. Deville D. Dujardin | 13 | 12 | 25 | | | 25 | 1,5 |
| | | | | 32 | 46 | | 12 | 90 | 116 | |

| EB15HU2B | UE Humanities, Economy & Social Sciences II | | | | | | | | ECTS | 3 |
|----------|---|-----|----------------------------|----|----|----|---|----|-----------|-----|
| LD23PM01 | English IV | en4 | R. Piotto | | 16 | 50 | | | 16 | / |
| EB000MPE | Project BioEthics | bj | A. Stephan C. Gaveriaux | | 4 | 70 | 9 | 30 | 13 | 1,5 |
| EB000MLR | National & International Labor Regulation | lr | M. Bintz | 10 | | | | 50 | 10 | / |
| | | | | | | | | | 39 | |

| EB15HU2C | UE Research Project | | | | | | | | ECTS | 9 |
|----------|------------------------------|----|------------|--|--|--|-----|----|------------|---|
| EB00HMIR | Initiation à la Recherche HD | ih | B. Kieffer | | | | 105 | 20 | 105 | 4 |
| | | | | | | | | | 105 | |

| EB15HU2D | UE Specialized Project (3 weeks) | | | | | | | | ECTS | 6 |
|----------|--|-----|--------------------------|--|--|--|----|----|-----------|---|
| EB15HMPG | Project in High Throughput Biotechnology | hhr | B. Kieffer C. Deville | | | | 75 | 30 | 75 | 3 |
| | | | | | | | | | 75 | |

: génétique

TOTAL ECTS 30

M1 AISD

Version du 2022/03/25

| M1 Sciences de la Données EB18GS11 Année 2022 - 2023 | | | | | | | | | | | |
|--|---|----------|---------------------------|--------|--------|--------|--------------|------------|--------------|-------------------|------------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | CI (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | ECTS Coeff |
| EB18GU1A | UE C1 : Concepts, enjeux et transdisciplinarité | | | | | | | | | | 3 |
| MIEXGMC1 | Concepts, enjeux et transdisciplinarité | | | 4 | 4 | 20 | | | | | 1 |
| EB18GU1B | UE M1 : Méthodes d'apprentissage supervisé | | | | | | | | | | 3 |
| MIEXGMP1 | Méthodes d'apprentissage supervisé | | | | | | | | | | 1 |
| EB18GU1C | UE D1 : Collecte, fiabilité et visualisation des données | | | | | | | | | | 3 |
| MIEXGMD1 | Collecte, fiabilité et visualisation des données | | | | | | | | | | 1 |
| EB18GU1D | UE Genomics & Epigenomics | | | | | | | | | | 3 |
| EB000MGN | Genomics & Epigenomics | gs | O. Lecompte B. Chatton | 18 | 10 | | 25 | | | 28 | 1 |
| EB18GU1E | UE Critical Readings | | | | | | | | | | 3 |
| EB00HMCR | Critical Scientific Reading | cr | C. Rigouin/B. Kieffer | | | | | 8 | | 40 | 1 |
| EB18GU1F | UE Immunology | | | | | | | | | | 3 |
| EB000MIY | Immunology | iy | C. Gavériaux | 20 | | | | | | 20 | 0,5 |
| EB18GU1G | UE Experimental Design | | | | | | | | | | 3 |
| EB000MED | Experimental Design | ed | Y. Nominé | 8 | | | | | | 8 | 1 |
| EB18GU1H | UE Statistics | | | | | | | | | | 3 |
| EB000MSA | Statistics | st | N. Paul | 10 | 10 | | 50 | | | 20 | 1 |
| EB18GU1I | UE Metabolism and biotechnologies | | | | | | | | | | 3 |
| EB000MMB | Metabolism & Biotechnologies for CBT | me | G. Orfanoudakis | 20 | 4 | 0 | 25 | 4 | 25 | 28 | 1 |
| EB18GU1J | UE English | | | | | | | | | | 3 |
| LD22GM01 | English III | em3 | R. Piotto | | 16 | | 1 | | | 16 | 1 |

TOTAL ECTS 30

M1 AISD

Version du 2022/03/25

| M1 Sciences de la Données EB18HS21 Année 2022 / 2023 | | | | | | | | | | |
|--|--|----------|----------------------------|--------|--------|--------------|------------|--------------|-------------------|------------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | ECTS Coeff |
| EB18HU2A | UE C2 : Ethique et droit | | | | | | | | | 3 |
| MIEXHMC2 | Ethique et droit | | | | | | | | | 1 |
| EB18HU2B | UE M2 : Méthodes d'apprentissage non supervisé et d'apprentissage profond | | | | | | | | | 3 |
| MIEXHMP2 | Méthodes d'apprentissage non supervisé et d'apprentissage profond | | | | | | | | | 1 |
| EB18HU2C | UE D2 : Outils statistiques | | | | | | | | | 3 |
| EB000MAS | Advanced Statistics | as | N. Paul | | 10 | 20 | | | 10 | 1 |
| MIEXHMD2 | Outils statistiques | | | | | | | | | 1 |
| EB18HU2D | UE A1 Projet transdisciplinaire 1 | | | | | | | | | 3 |
| MIEXHMA1 | Projet transdisciplinaire 1 | | | | | | | | | 1 |
| EB18HU2E | UE Advanced Experimental Design | | | | | | | | | 3 |
| EB000MAE | Advanced Experimental Design | ae | Y. Nominé C. Deville | 13 | 12 | 30 | | | 25 | 1 |
| EB18HU2F | UE Projet Initiation à la Recherche | | | | | | | | | 6 |
| EB00HMIR | Initiation à la Recherche HD | ih | B. Kieffer | | | | 105 | | 105 | |
| EB18HU2G | UE Image processing in biology | | | | | | | | | 3 |
| EB000MIB | Image in Biology: Processing | im | C. Deville, D. Dujardin | 13 | 12 | 25 | | | 25 | 1 |
| EB18HU2H | UE Project in Bioethics | | | | | | | | | 3 |
| EB000MPE | Project BioEthics | bj | A. Stephan C. Gaveriaux | | 4 | 70 | 9 | 30 | 13 | 1 |
| EB18HU2I | UE English | | | | | | | | | 3 |
| LD23PM01 | English IV | en | R. Piotto | | 16 | 50 | | | 16 | 1 |

TOTAL ECTS 30

M2 Biologie Synthétique

Version du 2022/03/25

| M2S3 BIOL SYNTH - EB14KS03 2022 - 2023 | | | | | | | | | | | | I | M |
|--|--|----------|-----------------|--------|--------|--------------|------------|--------------|-------------------|-------------|------------|------------|----------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. | | | |
| EB14KU3A | UE Specialized synthetic biotech I | | | | | | | | | ECTS | 6 | 3 | 3 |
| EB000MIS | Introduction to System Biology | is | A. Dejaegere | 6 | 21 | 30 | | | 27 | 1 | 1 | 1 | |
| EB000MCT | Current Topics in Synthetic Biology | ct | C. Rigouin | 0 | 12 | 15 | | 15 | 12 | 1 | 1 | 1 | |
| EB000MDB | Project Design in Synthetic Biology | db | C. Rigouin | | 8 | 25 | 4 | 15 | 12 | 1 | 1 | 1 | |
| | | | | | | | | | | | 51 | 51 | |
| EB14KU3B | UE Specialized synthetic biotech II | | | | | | | | | ECTS | 12 | 5 | 5 |
| EB000MID | Introduction to Data Sciences | da | B. Kieffer | 4 | 4 | 25 | 4 | 25 | 12 | 1 | 1 | 1 | |
| EB000MHT | High Throughput Approaches | ht | C. Gavériaux | 20 | 10 | 30 | 3 | 10 | 33 | 1 | 1 | 1 | |
| EB000MMG | Human & Molecular Genetics | hg | B. Chatton | 24 | | | | | 24 | 1 | 1 | 1 | |
| Choose 2 items depending on the program | | | | | | | | | | | | | |
| EB000MCM | Comparative & Medical Genomics | gc | O. Lecompte | 16 | 12 | 25 | | | 28 | 1 | | O-2 | |
| PH4LKMDD | Structures macromoléculaires et découvertes de médicaments | dd | E. Kellenberger | 14 | 17 | | | | 31 | 1 | 1 | O-2 | |
| PH4LKM01 | Drug discovery & development: case study | | J. Karpenko | 25,5 | 1,5 | | | | 27 | 1 | 1 | O-2 | |
| | | | | | | | | | | | 152 | 100 | |
| EB14KU3C | UE Humanities, Economy & Social Sciences III | | | | | | | | | ECTS | 3 | | |
| EB000MIP | Intellectual Property | ip | JM. Deltorn | 16 | | | | | 16 | / | A/NA | A/NA | |
| PH4LKM03 | Coaching recherche emploi / alternance/stage | xx | M. Bouhdoud | 12 | | 40 | | | 12 | / | DISP | A/NA | |
| | | | | | | | | | | | 28 | | |
| EB14KU3D | UE Specialized projects II (5 weeks) | | | | | | | | | ECTS | 9 | 4 | 4 |
| EB000MST | Project in Synthetic Biology II | stR | C. Rigouin | | | | 125 | 30 | 125 | 2 | 4 | 4 | |
| | | | | | | | | | | | 125 | | |
| TOTAL ECTS | | | | | | | | | | 30 | 304 | | |

M2 Biologie Synthétique

Version du 2022/03/25

| EB14LS04 2022 - 2023 | | | | | | | | | |
|----------------------|----------|----------|--------|--------|--------------|------------|--------------|-------------------|--------|
| Codes APOGEE | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. |

| EB14LU4A | UE Internships | | | | | | | ECTS | 30 |
|----------|----------------|--|--|--|--|--|--|------------|----|
| EB000MIN | internship | | | | | | | 4-6 months | |

M2 Biotechnologie Haut-Débit

Version du 2022/03/25

| M2 Biotechnologie Haut-Débit - SEMESTRE 3 - EB15KS03 Année 2022 - 2023 | | | | | | | | | | | | I | M |
|--|---|----------|----------------------------|--------|--------|--------------|------------|--------------|-------------------|----------------|-----------|------------|------------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | Coeff. | | | |
| EB15KU3A | UE Specialized biotech HT I | | | | | | | | | ECTS 9 | 5 | 5 | |
| EB000MID | Introduction to Data Sciences | da | B. Kieffer | 4 | 4 | 25 | 4 | 25 | 12 | 1 | 1 | 1 | |
| EB000MHT | High Throughput Approches | ht | C. Gavériaux | 20 | 10 | 30 | 3 | 10 | 33 | 1 | 1 | 1 | |
| EB00HMAO | Advanced Topics in Omics | ao | O. Lecompte B. Kieffer | | 6 | | 12 | | 18 | 1 | 1 | 1 | |
| EB000MDO | Project Design in Omics | do | B. Kieffer | | 8 | 25 | 4 | 15 | 12 | 1 | 1 | 1 | |
| EB00HMSH | Data Sciences for Health | sh | O. Lecompte R. Carapito | 8 | 8 | | 8 | | 24 | 1 | 1 | 1 | |
| | | | | | | | | | | | 99 | 99 | |
| EB15KU3B | UE Specialized biotech HT II | | | | | | | | | ECTS 6 | 3 | 3 | |
| EB000MMG | Human & Molecular Genetics | hg | B. Chatton | 24 | | | | | 24 | 1 | 1 | 1 | |
| EB000MCM | Comparative & Medical Genomics | gc | O. Lecompte | 14 | 12 | 25 | | | 26 | 1 | 1 | 1 | |
| | One item depending on the program | | | | | | | | | | | | |
| PH4LKMDD | Structures Macromoléculaires & Découvertes de Médicaments | dd | E. Kellenberger | 14 | 17 | 30 | | | 31 | 1 | 1 | o1 | |
| EB000MIS | Introduction to Systems Biology | is | A. Dejaegere | 6 | 21 | 30 | | | 27 | 1 | | o1 | |
| | | | | | | | | | | | 81 | 81 | |
| EB15KU3C | UE Humanities, Economy & Social Sciences III | | | | | | | | | ECTS 3 | | | |
| EB000MIP | Intellectual Property | ip | JM. Deltorn | 16 | | | | | 16 | / | A/NA | A/NA | |
| EB00HMPD | Professional Integration in Data Sciences | pd | B. Kieffer | | 20 | 40 | | | 20 | / | A/NA | A/NA | |
| PH4LKM03 | Coaching recherche emploi / alternance/stage | xx | M. Bouhdoud | 12 | | 40 | | | 12 | / | | A/NA | |
| | | | | | | | | | | | 36 | 48 | |
| EB15KU3D | UE Specialized projects II (5 weeks) | | | | | | | | | ECTS 12 | 6 | 6 | |
| EB000MPT | Project in High Throughput Biotechnology II | hdR | B. Kieffer | | | | 125 | 30 | 125 | 6 | 6 | 6 | |
| | | | | | | | | | | | 125 | 125 | |
| ECTS | | | | | | | | | | | | | |
| TOTAUX | | | | | | | | | | | 30 | 341 | 353 |

M2 Biotechnologie Haut-Débit

Version du 2022/03/25

| M2 Biotechnologie Haut-Débit - SEMESTRE 4 - EB15LS04 Année 2022 - 2023 | | | | | | | | |
|--|----|----------|----------|--------|--------|------------|-------------------|--------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | TP/TAE (H) | Total hrs student | Coeff. |

| EB15LU4A | UE Internships | | | | | ECTS | 30 |
|----------|----------------|--|--|--|--|------------|----|
| EB00MIN | internship | | | | | 4-6 months | |

Version du 2022/03/25

| M2S1 Biotech et Sciences de la Donnée - EB18KS03 année 2022 - 2023 | | | | | | | | | | |
|--|---|----------|----------------------------|--------|--------|--------------|------------|--------------|-------------------|------------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb étud /grp | TP/TAE (H) | Nb étud /grp | Total hrs student | ECTS Coeff |
| EB18KU3A | UE M3 : Méthodes symboliques ou numériques | | | | | | | | | 3 |
| MIEXKMP3 | Méthodes symboliques ou numériques | | | | | | | | | |
| EB18KU3B | UE D3 : Représentation et traitement des données | | | | | | | | | 3 |
| MIEXKMD3 | Représentation et traitement des données | | | 6 | 8 | | 14 | | | |
| EB18KU3C | UE A2 : Projet transdisciplinaire 2 | | | | | | | | | 3 |
| MIEXKMA2 | Projet transdisciplinaire 2 | | | | | | | | | |
| EB18KU3D | UE High Throughput Approaches | | | | | | | | | 3 |
| EB00MHT | High Throughput Approaches | ht | C. Gavériaux | 20 | 10 | 30 | 3 | 10 | 33 | 1 |
| EB18KU3E | UE Introduction to system biology | | | | | | | | | 3 |
| EB00MIS | Introduction to Systems Biology | is | A. Dejaegere | 6 | 21 | 30 | | | 27 | 1 |
| EB18KU3F | UE Advanced Topics in Omics | | | | | | | | | 3 |
| EB00HMAO | Advanced Topics in Omics | ao | O. Lecompte B. Kieffer | | 6 | | 12 | | 18 | 1 |
| EB18KU3G | UE Comparative and medical genomics | | | | | | | | | 3 |
| EB000MCM | Comparative & Medical Genomics | gc | O. Lecompte | 14 | 12 | 25 | | | 26 | 1 |
| EB18KU3H | UE Applied data sciences | | | | | | | | | 3 |
| EB00HMSH | Data Sciences for Health | sh | O. Lecompte R. Carapito | 8 | 8 | | 8 | | 24 | 1 |
| EB18KU3I | UE Professional integration | | | | | | | | | 3 |
| EB00HMPD | Professional Integration in Data Sciences | pd | B. Kieffer | | 20 | 40 | | | 20 | / |
| EB18KU3J | UE Project in High Throughput Biotechnology II | | | | | | | | | 3 |
| EB000MPT | Project in High Throughput Biotechnology II | hdR | B. Kieffer | | | | 125 | 30 | 125 | 3 |

TOTAL ECTS 30

Version du 2022/03/25

| M2 Biotech et Science de la Donnée - EB18LS04 - Année 2022 - 2023 | | | | | | | | | | |
|---|----|----------|----------|--------|--------|--------|------------|--------|-------------------|-------|
| Codes APOGEE | EP | Code EdT | TEACHERS | CM (H) | TD (H) | Nb grp | TP/TAE (H) | Nb grp | Total hrs student | Coef. |

| EB18LU4A - UE Internships | | | | | | | | | | 30 ECTS |
|---------------------------|------------|--|--|--|--|--|--|--|------------|---------|
| EB000MIN | internship | | | | | | | | 4-6 months | |