ASIIN Seal & EUR-ACE Label

Accreditation Report

CMI Programme Biology, Health, Environment
CMI Biologie, Santé, Environnement

Provided by
University of Lorraine

Version: 18 March 2022

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
CMI Biologie, Santé, Environnement	CMI Biology, Health, Environment	ASIIN, EUR-ACE® Label		01, 10

Date of the contract: 18 June 2020

Submission of the final version of the self-assessment report: 24 July 2020

Date of the discussions: 8-9 October 2020

at: online due to COVID-19 restrictions

Peer panel:

Prof. Dr. Tilman Achstetter, City University of Applied Sciences (Bremen)

Prof. Dr. Joachim Fensterle, University of Applied Sciences Rhein-Waal

Prof. Dr. Adeline Gand, University of Cergy Pontoise

Mr. Helmut Krist, Independent Consultant

Mr. Emilien Carton, Student Representative, University of Marseille

Representative of the ASIIN headquarter: Arne Thielenhaus

Responsible decision-making committee: Accreditation Commission for Degree Programmes

Criteria used:

European Standards and Guidelines as of 15.05.2015
ASIIN General Criteria as of 10.12.2015
Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28 June 2019

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes.
[2] TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering; TC 10 - Life Sciences.

B Characteristics of the Degree Programme

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
CMI Biologie, Santé, Environnement	CMI Biology, Health, Environment	-Microbiology -Molecular Engineering	7	Full time	-	10 Semesters	360 ECTS	Fall semester, 2012

For the degree programme CMI Biology, Health, Environment, the institution has presented the following profile (automatically translated) on its website:

The Master's Degree in Engineering Biology, Health, Environment (BSE)

- The Master's Degree in Engineering is a new training program in engineering professions developed at the University.

- The CMI BSE targets the field of biotechnology, health and the environment.

- This 5-year course (bachelor and master) is aimed in particular at new bachelors enrolled in the Life Sciences Bachelor's degree (SV) at the Faculty of Science and Technology of the University of Lorraine.

- It is based on the Bachelor's Degree in Life Sciences and the Master's Degrees in Life Sciences and Microbiology (depending on the speciality chosen).

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Objective: to become an expert engineer

- Which professions are targeted?

- Research and Development Engineer (R&D),
- Project manager in the design office,
- Consultant,

[3] EQF = The European Qualifications Framework for lifelong learning

- research professions in the case of a doctoral degree.

- Which economic sectors?

- The food-processing industry,
- Environment (treatment and recovery of waste, water, polluted sites and soils),
- the Pharmaceutical and Cosmetic industry,
- Medical diagnosis.

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A context of excellence

- The CMI-FIGURE curriculum is the winner of the "Initiatives d'Excellence en Formations Innovantes" (IDEFI) program in 2012.

- The FIGURE network, of which the University of Lorraine is a member, is made up of 30 research universities, whose programs respect a national charter of excellence.

*Training in Engineering by Research Universities

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The strong points

- A network of companies and laboratories in France and abroad
- A strong partnership with industrialists: conferences, projects and internships throughout the training course.
- The support of nationally (CNRS, INRAE, INSERM) and internationally recognized research laboratories
- Privileged access to the technological platforms of the laboratories for the realization of experimental projects
- High level equipment dedicated to practical work in free access.

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Admission requirements and start of the training

Training starts in the first half of L1.

- The admission of candidates is based on the selection of files via the parcoursup admission platform, followed by an interview during the last quarter of the final year of high school.
- Admission is also possible at the end of the first semester of L1 depending on the results obtained and following a selection on the basis of a file and interview.

- For students enrolled in another program (other than SV, PACES, Classe Préparatoire, IUT, BTS), access is possible in S2 and/or S3, or even S5 under certain conditions.

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A pedagogy aiming at the development of autonomy, open-mindedness, autonomy, open-mindedness knowledge integration

- Teaching in small groups, permanent tutoring allowing the realization of projects and the construction of a professional project.
- Progressive programs allowing the integration of the disciplinary knowledge and skills sought by the company
- Emphasis on "role-playing": workshops, projects, internships (L1, L3, M1 and M2)
- Continuous practice of English
- Stays abroad: international study semester in S5 (Erasmus or BCI) and possibility of internships abroad.

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Demanding training to match your ambition

A Bachelor's/Master's degree course valued by the CMI:

- A reinforcement of the training by 120 hours/year of additional teaching compared to a classic li-cence/master's course.
- A training in biology (microbiology, molecular engineering, biotechnologies) refocused on the targeted field of expertise and complemented by scientific fundamentals (biostatistics, bioinformatics, biophysics)

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A training open to the socio-economic world... A guarantee of high level integration!

- A complete program of human sciences (communication, management, business knowledge, written and oral expression, general culture) for a better adequacy with the expectations of the company.

C Peer Report for the ASIIN Seal[4]

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Self-assessment report
- Module descriptions
- Objective Module Matrices for the CMI programme
- Audit discussions
- Minutes of the Development Council

Preliminary assessment and analysis of the peers:
For the CMI Biology, Health, Environment (BSE), the University of Lorraine presents the overall programme objectives and learning outcomes in the self-assessment report (SAR). The objective-module-matrices match the learning objectives of the Figure network[5] with the specific learning outcomes of the CMI and the ASIIN subject-specific criteria (SSC). The matrices also detail the specific modules, which correspond to the intended learning outcomes. The peers appreciate the detailed overview and are satisfied that the intended learning outcomes match the individual modules of the curriculum.

The Figure network has defined the following learning outcomes for CMI:

1. acquisition of fundamental and disciplinary knowledge necessary for the specialisation and in order to operate in a multidisciplinary context

[4] This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

[5] The Figure network ("Formation à l'ingénierie par des Universités de Recherche", Reseau Figure) is an international network of universities that offer Master Courses in Engineering (CMI). The network members collaborated in establishing a training concept that is based on a coherent five-year programme, strong link with research and innovation in the curriculum, the relevance of graduate qualifications to the needs of companies and societies, the promotion of international openness and a culture of training quality (including an accreditation and monitoring process within the network). For more information see https://reseau-figure.fr/?lang=en

2. development of the capacity to select and apply analytical methods and tools , and to critically interpret results
3. the identification, formulation and resolution of real problems whilst taking account of technical and non-technical constraints (security, environment, economic & ethical factors)
4. development and design of new products at the cutting edge of disciplinary knowledge and technological advances
5. identification, localisation and acquisition of data
6. conception and execution of experiments, interpretation and exploitation of experiment results
7. use of digital tools and realisation of simulations in order to lead studies and research possible solutions
8. application of industrial and respect of safety and usage guidelines
9. awareness of economical, organisational and managerial issues
10. management of projects and professional and technical activities
11. integration of professional and technical knowledge to enable informed judgement and decision-making
12. use of various methods for clear, unambiguous communication
13. operation in an international, individual or team context
14. life-long training.

As the CMI BSE includes two training specialties, there are four additional specific learning outcomes for each specialty. For the specialty “Microbiology”:

SLO1: Acquire conceptual knowledge of microbial genetics and genomics, physiology of microorganisms, microbial ecosystems and microbial interactions
SLO2: Analyse complex situations in microbiology, formulate working hypotheses according to the fields of application and propose experimental strategies to validate them
SLO3: Apply the cutting edge methodologies allowing the study of micro-organisms, their activity, their diversity and their evolution, in order to conduct autonomously an experimental protocol in the field of industrial, medical and environmental microbiology
SLO4: Design and carry out independently an experimental approach to respond to a problem where microorganisms are at the heart of biological reactions and transformations in relation to their environment (biotic or abiotic)

For the specialty “Molecular Engineering”:

SLO1: Acquire conceptual knowledge of the biochemistry and molecular biology of prokaryotic and eukaryotic cells
SLO2: Analyse complex situations in molecular and cellular engineering, to formulate working hypotheses according to the fields of application and to propose experimental strategies to validate them

SLO3: Apply cutting-edge methodologies for the study of RNAs and proteins, the regulation of their synthesis and maturation, in order to autonomously design and manage an experimental protocol in the fields of genetic engineering, metabolic engineering and synthetic biology
SLO4: Design and carry out autonomously an experimental approach where biochemical and functional modifications of nucleic acids and proteins are at the heart of medical applications

The peers analyse the learning outcomes for the CMI and agree that they are consistent with the expectations of the European Qualification Framework Level 7. Based on the provided Objective-Module Matrix, they can see that the learning outcomes comply with the respective Subject-Specific Criteria of the ASIIN Technical Committee 10 – Life Sciences. Furthermore, they comply with the standards and criteria of the EUR-ACE Label. The peers also note that the learning outcomes detailed by Figure align with the ENAEE learning objectives for the EUR-ACE label. The peers note that the intended learning outcomes (Nr. 4) also include engineering design. The peers see limitations with regards to the achievement of this learning outcome, which are described under criterion 1.3.

As described in the SAR, each year, annual assessments are carried out with each class of students that may lead to changes in the implementation of the acquisition of competences. The intended learning outcomes are also presented to the stakeholders within the framework of a development council which brings together representatives from academia (in particular the CMI's co-supporting laboratories), the business world and students. The industrial members have judged the proposals to be compatible with the expectations of their field and sector of activity. The peers are thus satisfied that stakeholders are included in the process of formulating and further developing the objectives and learning outcomes.

During the discussions, the peers learn that there is no specific industry sector envisioned for the students. Thus far, the graduates have gone into diverse areas, including for instance cheese production and healthcare for horses. Others are working on PhDs. The working alumni report that they had no difficulty finding a job, and the industry representatives confirm that the students' profile is attractive. The peers are thus satisfied that the intended learning outcomes are aligned with the needs of the job market.

The peers note that, while there are descriptions of the CMI BSE programme on multiple websites, the websites do not include a description of the intended learning outcomes. Furthermore, neither the University website nor the dedicated CMI BSE programme website mention the two specialisations – this information can only be found on the website of the Nancy CMI Student Association. The peers are of the opinion that the intended learning outcomes as well as the specialisations must be published in a binding format and described in more detail. The University could for instance also include them in the pedagogical agreement signed by the students. As revealed during the audit discussions with the

programme coordinators, a number of students abandoned the programme due to differing expectations. Transparency with regards to the programme contents and objectives is therefore particularly important.

Criterion 1.2 Name of the degree programme

Evidence:

- SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
As described in the SAR, the name of the programme "Biologie, Santé, Environnement" (Biology, Health, Environment) has been frequently discussed by the programme staff. The University is aware that the programme name suggests a significant focus on health, environmental and/or sustainability issues. As revealed by the curriculum and during the discussions, however, there are no modules focusing on any of these issues. These subject areas only appear in connection with occasional projects. For instance, during the discussions the teachers explain that in one project students worked with proteins related to inflammation. The students also explain that some of them do internships in health- or environment-related areas (for example working on pathogens).

The peers are particularly concerned about the programme name in light of the proportionally high number of students which decide to abandon the programme, especially after the first and third years. The programme coordinators explain that this is also of concern to them, which is why in the admission process special care is taken to provide students with all information possible to ensure that they do not have a false idea of the programme contents. This is done, for instance, during the interviews with candidates. Nonetheless, this has seemingly not affected the number of students which abandon the programme.

The peers are of the opinion that the contents in the programme related to health and environment are not sufficient to justify the programme name and, especially in light of the number of students leaving the programme after the first year, believe that the name must more closely reflect the programme contents.

Criterion 1.3 Curriculum

Evidence:

- Objective Module Matrices for the CMI programme

- Module descriptions
- Audit discussions

Preliminary assessment and analysis of the peers:
The peers review the curriculum of the CMI BSE in order to identify whether the available modules are able to achieve the described qualification objectives. They take into consideration the study plan, objective-module-matrices, and the individual module descriptions.

As the university explains in the self-assessment report, a "CMI (Master degree in engineering) is a selective curriculum characterized by:

- continuity and coherence over five years, built on reinforced bachelor's and master's curricula;
- a balance between the disciplinary base and specialization, on the one hand, and the fundamental disciplines, scientific complements and social, economic and cultural openness (SECO), on the other hand;
- a co-responsibility by research laboratories of international level whose researchers participate in the training throughout the curriculum;
- a pedagogy of experience involving numerous situation-setting activities, internships in laboratories and companies and at least one period of international mobility."

CMI programmes are based on consecutive Bachelor and Master programmes and share teaching units with these programmes. The CMI curricula usually include more mandatory internships and possibilities for mobility. Due to the additional classes, mainly in the field of SECO (personal development, project management and economics), CMI students study 36 ECTS per semester. Students have to "validate" each CMI year, i.e. pass the regular as well as the CMI modules, in order to obtain the CMI. The non-validation of a CMI year does not prevent the possibility of validating the year of the study programme on which the CMI is based. This means that students could obtain the Bachelor and Master degree even if they fail to obtain the CMI label.

At the University of Lorraine, the CMI BSE is partially based on the curriculum of the Bachelor's degree programme in Life Sciences and the Master's degree programmes in Microbiology and Life Sciences. In addition to these classes, students have to take six additional ECTS-credits per semester in the field of "social, economic and cultural openness". These are intended to enable the students to "develop autonomy, cooperative behaviour and understanding of the environments necessary for professional life".

The curriculum also includes a number of "implementation activities" aimed at consolidating scientific knowledge and developing operational and relational skills:

Activities	Year	ECTS	Duration
Engineering initiation project	CMI1	3	60 h
Immersion internship in a company	End of CMI1	3	5 weeks
Literature review project	CMI2	3	60 h
Long integrator project	CMI3	6	120 h
Specialization internship in a laboratory or in a company	End of CMI3 or of CMI4	9	10 weeks
Long project integrator in laboratory	CMI4	6	160 h
End-of-studies internship in a laboratory or in a company	CMI5	24	24 weeks

The peers can see that the activities allow the students to obtain substantial practical and scientific experience in the course of their studies.

As mentioned under criterion 1.2, the peers do not believe that the programme name accurately reflects the programme contents. While it is clear that "environment" is not a major focus of the programme, the peers ask to what extent environmental issues, sustainability and circular economy are present in the curriculum. The programme coordinators explain that ecological aspects can play a role in some projects, for instance, the ecological impact of toothpaste may be discussed. Sustainability aspects are also considered in the module related to entrepreneurship.

Following the discussions, the peers are under the impression that sustainability and circular economy have a very limited presence in the curriculum. As these issues are very important subjects for future generations, the peers highly recommend that more related contents are included in the curriculum.

After reviewing the provided documents, the peers are particularly interested to learn how the intended learning outcomes related to the design of new products, processes and systems are achieved. During the discussions, the programme coordinators explain that students learn this in the course of various projects, often including internship projects. For instance, students may clone gene expressions or produce modified organisms. In one project, students had to understand the role of an amino acid and had to design accordingly protein. In the course of an "incubator" project, the students also learn about the business aspects associated with production.

While the peers favourably view these projects, they are under the impression that they constitute standard activities associated with the life sciences and do not fall into the category of "Engineering" as the term is understood by the European Network for Accredita-

tion of Engineering Education (ENAEE). The peers examine the list of Biology-related programmes which have previously received the EUR-ACE label and note that all include more technical contents than the CMI BSE programme. During the audit discussions, the peers learn that the industry representatives distinguish between the CMI programme graduates and the graduates from classical engineering schools – CMI graduates are in their opinion well-equipped for R&D and management positions, due to their broader approach, while the graduates from classical engineering schools are more likely to occupy technical positions related to process development and production. The peers are therefore under the impression that CMI graduates differ from typical engineering graduates particularly with regards to technical competences. Furthermore, the peers note that, while projects can help develop engineering design competences, it must then be ensured that all students participate in these types of projects. The peers do not see that this is currently being done.

Aside from this, the peers see that the overall objectives and intended learning outcomes are systematically substantiated and updated in the individual modules. From the provided documentation, it is clear which knowledge, skills and competences students will acquire in each module.

Criterion 1.4 Admission requirements

Evidence:

- SAR
- Programme website
- Audit discussions

Preliminary assessment and analysis of the peers:
As described in the SAR, the CMI BSE programme follows an admissions procedure typical for all CMI programmes. Students are able to apply via the national platform Parcoursup, which is used by all individuals seeking to enter a French University programme. The annual intake is limited to 20 students, therefore the candidates who have the best grades are invited to a 30-minute interview in which they must explain their motivation for joining the programme. Following the interview, the admissions committee makes a final decision.

Entering the programme is generally only possible in the first two years, as CMI courses cannot be compensated. The peers learn during the discussions that under exceptional circumstances, a student may also be able to join for the final two years of the programme, but this is only the case if the student transfers from another CMI programme. There was so far only one case where this happened.

The peers see that the admissions process is stringent and supports the students in achieving the learning outcomes. The admission process is described on the CMI BSE programme website and is therefore transparent and binding.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

In its statement, the University notes that a new programme website is under development on which the two specialties and the respective learning outcomes are indicated. This website is already online. On this site, a link is provided to a page containing the additional 14 learning outcomes common to all CMI programmes. The University also notes that the peers' suggestion to include the desired learning outcomes in the pedagogical charter – which must be signed by the students – is to be discussed at the next meeting of the Reseau Figure. The charter is issued by the network and changes thus require its approval. The peers are therefore under the impression that the University has taken sufficient steps to ensure that the desired learning outcomes are well-communicated and transparent.

With regards to the programme name, the University proposes to conduct a survey and to discuss new programme names with students and industry partners. A new name will be proposed to the programme's development council and subsequently to the University at the end of the 2020-2021 academic year. The name would be implemented at the beginning of the 2022 academic year. The peers favourably view this approach but note that the name change should take place soon, ideally within the next 12 months.

With regards to contents related to sustainability and circular economy, the University points out that, in line with the sustainable development goals 9, 14 and 15, the CMI course encourages students to innovate and better understand the mechanisms of terrestrial and aquatic life. Climate change is discussed in the first semester in the General Biology module. In the ninth semester, the sustainability-related ISO standards ISO 14000 and ISO 26000 are discussed. The University lists a number of additional modules in which related issues are supposedly addressed, however, the peers are unable to see this based on the respective module descriptions.

On an institutional level, the University has also set up departments dedicated to various sustainable development goals such as gender equality (objective 5), fighting against inequalities (10), ecological mobility (13), and eco-mobility (11) or clean energy (7).

The peers see that sustainability issues are to some extent integrated in the curriculum. However, the use of the word "Environment" in the programme name suggests a significantly larger presence of such issues than is currently the case. If the University maintains the name "Environment" in the programme name, the peers feel that at least one module

dedicated to environment and sustainability would be required. If “Environment” is removed from the programme name, the peers believe that additional environment and sustainability-related contents would be beneficial, although not required.

With regards to Engineering Design, the University notes that these competences are mainly developed in the course of projects and internships. Beforehand, SECO modules provide students with a systemic understanding of professional environments and companies (organization and life in companies; human resources and employment; financial resources in and of the company; technological resources, etc.) which they can then apply in combination with their Biology-related knowledge to solve complex problems related to the study of a product or process.

According to the University, there are two modules, one at bachelor’s level (CMI3, UE 6.73: Metrology, Quality, Plans of Experiences), the other at master’s level (CMI5, UE 9.601 project plan assessment) directly related to engineering design. Module 6.73 deals with the implementation of simple experimental designs to reduce the experimental load. Students learn how to choose the appropriate design and how to design a test campaign. In the development of these designs for a product or process, students must consider (1) costs and cost control, (2) reliability of the implementation of a process and (3) time saving. While considering these constraints, students must still try to achieve the best possible quality. The metrology side also covers international vocabulary, national and international certification bodies, standards, and everything related to measurement and measurement uncertainty. These parameters seem important to us in engineering design because they are part of both technical and non-technical constraints.

Module 9.601 (Project Plan Assessment) aims in particular to strengthen students’ skills in the field of experiments. Among other things, students evaluate the effectiveness of the progress of a project by setting up experimental designs. They also learn how to trace and check the consistency of the chosen solution in relation to the needs expressed by the client. They learn to formalise the client's need and develop proposals which fit the context in which the project takes place (stakeholder awareness). To do this, the students draw on their project carried out in the previous semester (module 7.605). They revisit each phase of the project, identifying the stakeholders, needs and constraints (e.g. standards to be followed, etc.) from a societal, environmental, economic and technical point of view, with the aim of improving the performance of the future system.

The students apply these skills in the course of projects and internships (Implementation Activities, or IAs). Project management is fully integrated into the IAs and allow the stu-

dents to acquire competencies in group management and to manage non-technical constraints such as time, costs, constraints imposed by the client etc. Along with its statement, the University provides a number of sample projects.

The peers note that the students are exposed to design and the development of methodologies in the course of the indicated projects. However, as these projects focus on the life sciences, they do not believe that they constitute "Engineering" as the term is traditionally understood at the European level. Based on the provided sample projects, they are furthermore under the impression that this exposure can vary significantly from student to student and cohort to cohort, depending on the type of project which the faculty has chosen for that particular year. It is therefore not ensured that all students develop the design competences. Additional modules, dedicated for instance to production and process, could help ensure that all students are exposed to these contents.

While the peers see the ASIIN criterion fulfilled, the peers consider the EUR-ACE criterion unfulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- SAR
- Module descriptions
- Audit discussions

Preliminary assessment and analysis of the peers:

The degree programme is divided into modules, which comprise a sum of teaching and learning units. Modules usually consist of lectures, seminars, practical work (lab work, workshops), projects and/or internships. The learning objectives are detailed in the module descriptions. The peers judge the structure of the modules to be adequate and fitting. The contribution of each module in reaching the qualification level and the overall intended learning outcomes is explained clearly and comprehensively.

All internships are integrated into the curriculum and, through the obligatory report and defence, the University also monitors the quality of the internships in terms of relevance, content and structure.

Although CMI students follow a common study plan including projects and internships, they can freely choose one of the two specialisation for their master's programme. The choice of specialisation as well as the choice of where to apply for internships and international mobility allows for an individual study pathway.

With regards to mobility, the CMI students are obliged to study abroad in the fifth semester. In most cases, the duration of the stay is one semester, in the case of the UK it is one year, due to the fact that the UK semesters do not align well with the French semesters. The choice of the study programme is made in consultation with two members of the teaching team, considering the students' objectives of specialisation at the CMI 4-5 level (thus the choice of the master's degree). It must be validated by the person in charge of the course before the student applies to the host university. During the discussions, the students report that they are very satisfied with their study abroad experiences and found them enriching. Students are assisted by the international relations department and can also apply for financial aid. In addition to study abroad semesters, students are encouraged to complete one or more of their required internships abroad.

The peers see that the students have excellent mobility options at their disposal and that there are rules in place for recognising achievements and competences acquired outside the University. To the faculty, the peers pass on the students' wish to have more options for extended (one year) study abroad stays.

As described in the SAR, in the past years a number of students exceeded the regular programme duration due to the fact that they did not validate the English language requirement (via TOEIC or CLES exam) on time. During the discussions, the peers learn that this is generally not related to the students' problems with English, rather it is due to the fact that the workload in the final semester is high. Furthermore, since the results of the TOEIC exam are only valid for a period of two years, many students try to postpone it to the end. This way, once they enter the workforce, their results are valid for the maximum time period. In order to prevent students from exceeding the normal course duration, the programme coordinators have now made it mandatory for students to validate their English skills in the 9th semester.

The peers favourably view this measure to ensure that the regular course duration is not exceeded. While they believe that the study abroad experiences as well as the English courses significantly contribute to the students' English language skills, they believe the students could be given more opportunities to practice English in the regular courses. So

far, English is spoken in very few courses. The peers also believe the programme could benefit from internationalization, i.e. more incoming international students. Currently there are very few, as the courses are almost all in French. The peers thus recommend increasing the use of English in the curriculum and internationalizing the programme.

In the discussions with the industry representatives and alumni, the alumni recommend introducing additional contents related to statistics, scientific communication and specialised software. As each of these aspects was only mentioned by one person, the peers do not see an urgent need to address these issues, but pass these suggestions on to the faculty for consideration.

Following the audit discussions and the review of the provided documents, the peers are under the impression that there are no unaddressed structural issues which would prevent students from completing the degree in the regular course duration. The modules have been adapted to the requirements of the degree programme and ensure that both the qualification level and the overall intended learning outcomes are achieved.

Criterion 2.2 Work load and credits

Evidence:

- Module descriptions
- Audit discussions
- University website: http://fst.univ-lorraine.fr/sites/fst.univ-lorraine.fr/files/pdf/fst-mcc-licences-regles-generales-2020-2021.pdf

Preliminary assessment and analysis of the peers:
As described in the SAR, the programme workload consists of 360 ECTS credit points, where one ECTS credit point consists of 25-30 hours. As indicated in the module descriptions, the workload comprises both attendance-based learning and self-study. All compulsory elements are included.

During the review of the module descriptions, the peers note that the number of hours per ECTS varies widely from module to module, between 23, 25, 28 and 30 hours. In the Learning Units S8-8U03, CMI 8.602, and CMI 8.605 the number of hours per ECTS is around 20 hours. In the Learning Unit CMI 8.606, 9 ECTS are given for 120 hours.

According to the documents supplied by the University, the University guidelines state that an ECTS must be equivalent to 25-30 hours of work. The peers note that this corresponds to the definition given by the ECTS User Guidelines.

In the audit discussions, the programme coordinators suggest that the information provided in the module descriptions is incorrect – generally, the faculty uses a definition in which an ECTS credit point corresponds to 10 hours of teaching and 15 hours of self-study.

The peers note that revised module descriptions with the correct number of hours and ECTS must be handed in. In general, they also recommend that the University defines a fixed number of hours per ECTS credit point rather than a range. This will render the workload more transparent for all stakeholders and facilitate conversion.

During the discussions with the students, the peers learn that a project at the end of the 7th semester was creating a peak in the workload. However, the students were able to discuss and resolve this with the faculty: in the future, the project will begin at the beginning of the semester, so that the students have more time to complete it. Following these discussions, the peers are under the impression that there are no remaining structure-related peaks in the workload.

Criterion 2.3 Teaching methodology

Evidence:

- SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
Based on the SAR and the supplied documents, the peers learn that teaching methods include laboratory work, projects, workshops as well as e-learning contents and classic seminars and lectures. The CMI students participate in both the "regular" courses of the University's Life Sciences Bachelor programme and Microbiology and Life Sciences Master programmes, as well as special CMI courses. Particularly in the first years, regular lectures can include several hundred students. The CMI courses only include CMI students and can therefore employ a greater variety of teaching methods. For instance, one CMI course includes an intensive two-day workshop in which students must develop a concept for a Biotech Start-up. Additional CMI courses aim to boost student creativity and include creating art. One of the teachers also notes that he implements a flipped-classroom format in which students are introduced to content at home and practice working through it in class. From the provided module descriptions, the peers can see that the degree programme is designed to be well-balanced between attendance-based learning and self-study.

The peers learn that, as a result of the COVID-19 pandemic, the amount of e-learning content has significantly increased. According to the programme coordinators, the digital teaching environment ARCHE is actively used – with it, teachers can generate quizzes which the students can use for self-assessment. Some of the teaching staff has embraced e-learning methods while others still struggle with it. As revealed during the discussions, approximately 70% of the staff have gone through training related to e-learning.

Following the discussions, the peers are under the impression that the current teaching methods (particularly in the non-CMI courses) rely mostly on traditional lectures and seminars. The peers note that e-learning and blended learning, as well as other newer teaching methods such as flipped classroom, can be especially valuable in the current COVID-19 situation where the amount of face-to-face time between students and teachers may be reduced. They recommend increasing the use of these newer teaching methods in the programme.

Familiarising the students with independent academic research and writing takes place in multiple ways. In application courses, the students must analyse scientific articles. In several modules, students must analyse and explain in an oral presentation a scientific work (a specific article or a larger subject). In their final-year project, the students must provide a bibliographical review in their project report. Following the discussions and the review of documents (including sample student projects) submitted by the University, the peers see that independent academic research and writing plays a vital role in the programme.

Criterion 2.4 Support and assistance

Evidence:

- SAR
- Audit discussions
- Website of student digital space: https://ent.univ-lorraine.fr/#Tous
- Website of the international relations office: http://fst.univ-lorraine.fr/international/programmes-d-echanges
- Website of career guidance services: https://www.univ-lorraine.fr/content/nos-services-dinformation-orientation-conseil-aide-linsertion-professionnelle

Preliminary assessment and analysis of the peers:
As described in the SAR, students at the Université de Lorraine can benefit from various scholarships, student housing and moderately priced restaurants. On campus, they have access to career guidance services, an infirmary, a sports activity service included in the registration fee, a university library with a digital space, online resources via a digital workspace, and the international relations service which advises students in organising stays abroad, via the Erasmus or BCI programme.

Throughout the CMI programme, students are supported by the teaching staff and the CMI BSE student association, as well as by the CMI national student association. Each semester, the head of studies presents the training contents and evaluation methods. Informal meetings are organised about twice a semester with the delegates of each class, the head of studies and some teachers to discuss issues such as workloads, timetabling problems or administrative formalities. The student association's premises allow all CMI students to share a moment of conviviality or help each other (list of internships, list of companies). These two systems contribute to the smooth integration into the curriculum.

Regarding lab work, in addition to the tutors who supervise each project, the students receive help from laboratory staff or doctoral students. During the projects, students are free to interact as much as they want with their respective tutors, either face-to-face or using the digital tools made available to the students (e.g. IBM connection). A visit to the CMI BSE supporting laboratories is organized during the first year to give students a concrete vision of the research world and to show them the premises where their internship/project will take place during the training.

During the discussions, the students confirm that the teachers are available when they need help and that the programme coordinators are very open to the students' feedback. Overall, the peers are under the impression that the relationship between the students and faculty is good and that the students receive both technical and general guidance which helps them to achieve the learning outcomes and complete the course within the scheduled time.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

In its statement, the University points out certification in English at a B2 level is compulsory to obtain the degree, and that the teaching of English is already well developed throughout the course. It indicates that it nonetheless plans to increase the amount of English in the curriculum. In the fourth year, students will be required to prepare written project material and orally defend projects in English (the latter is already being done). In the longer term,

it plans to make it compulsory for students to write and/or defend in English for final year internships wherever they take place. The peers support these plans and recommend their implementation.

With regards to the internationalisation of the programme, the University cites its international cooperation with Universities in North America and India. Additional cooperation agreements are planned with Taiwan, South Korea and China. One student from Lebanon has joined the programme this year, two other international students joined previously. The University also plans to promote the programme in the French-speaking world with the Agence Universitaire de la Francophonie. It furthermore indicates that it will open the programme to Erasmus students. The peers favourably view these plans and recommend that the University implements them.

With regards to the workload, the University indicates that the module descriptions may contain some mistakes, and that the number of hours of personal work may have in some cases been underestimated. The peers note that the workload distribution and credit point system must be in compliance with the ECTS User Guide and the University's own rules. The University must therefore submit corrected module descriptions. Furthermore, they maintain their recommendation to establish a fixed number of hours per credit point, as this facilitates transparency and makes discrepancies as mentioned above less likely.

With regards to the utilized teaching methods, the University states that newer methods have been implemented in a number of the CMI reinforcement modules. The University feels that classical methods nonetheless still have their place and are in numerous cases more effective and efficient. The University aligns the teaching methods with the desired learning outcomes and the assessment of these outcomes. The University notes that a characteristic feature of the CMI, and therefore of the CMI BSE, is the emphasis placed on learning by experience, which is based in particular on a strong link with research.

The University notes that the teaching staff is increasingly relying on digital tools and resources (digital working environment, tutorials, course videos, etc.) to make students' learning more active and to lighten the load on lectures while focusing on the difficulties encountered by students and on concrete situations. Following the University's comments, the peers are satisfied that the University is making sufficient efforts to ensure appropriate teaching methods.

In conclusion, the peers consider criterion 2 to be partially fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Sample exams and projects
- Guidelines and Evaluation Forms of Interactive Activities
- Exam rules for Bachelor programmes: http://fst.univ-lorraine.fr/sites/fst.univ-lorraine.fr/files/pdf/fst-mcc-licences-regles-generales-2020-2021.pdf;
- Exam rules for Master programmes: http://fst.univ-lorraine.fr/sites/fst.univ-lorraine.fr/files/pdf/fst-mcc-master-regles-generales-2020-2021.pdf

Preliminary assessment and analysis of the peers:
The peers analyse the provided documents and notice that all modules of the CMI programme are examined. Examination types include written exams, time-limited lab exams (practical exercises), work reports, report and defence of projects and internships, oral presentations and other models of evaluations e.g. for team work exercises and projects. Concerning the situational workshops and internships, a set of instructions and evaluation grids are communicated by the pedagogical team at the beginning of each workshop in order to give the students the tools to achieve the acquisition of the targeted skills. At the end, the test usually consists of a written report and/or restitution of the work carried out in the form of an oral presentation, with post-project oral feedback on management after the defence.

The module descriptions mention the form of the exams; evaluation modalities are communicated to students at the beginning of the semester. All relevant rules and regulations regarding the exam procedures are anchored and published on the university website. There are also university guidelines and support services for handicapped students.

Internships and projects carried out in companies or research laboratories are subject to prior validation by members of the teaching team and then, at the end of the training, to an evaluation by the tutor. The final project also takes place as part of the final internship and requires students to demonstrate the skills they have acquired throughout the programme, including not only biology-related competences but also competences related to project management. During the internship, students must independently manage a research project, including calculating costs, managing timelines, conducting a bibliographic review, preparing a written report and concluding it with an oral defence.

The peers inspect a sample of exams, internship reports and final projects and are overall satisfied with the general quality of the samples. The focus on practical application within

the curriculum is also reflected in the types of exams chosen, which allows assessing the defined learning outcomes of the CMI.

Overall, the peers find that the system, conception and organization of examinations employed in the CMI is efficient.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

The expert panel considers criterion 3 fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- SAR
- CVs of teaching staff
- Audit discussions

Preliminary assessment and analysis of the peers:
The peers learn from the SAR that the pedagogical team is made up of 51 staff members. The staff are involved not only in the CMI programme but also in the regular Life Sciences Bachelor and Microbiology and Life Sciences Master programmes. A large number of teacher-researchers are attached to the various CMI BSE supporting laboratories. Several members of the technical staff participate in the teaching: a librarian assists the students in their bibliographical research, two guidance counsellors, in relation with a biology teacher, guide the students in their personal and professional project.

As indicated in the SAR, professionals are also involved in the training, overseeing part of the CMI's specific teaching for a total of approximately 250 hours. They are involved in modules related to business knowledge and operation, project management, entrepreneurship (especially student entrepreneurship) and business creation.

During the discussions, the teachers report that, due to financial difficulties faced by the university, the workload per teacher has increased. A number of the teachers spend more hours teaching than they would normally. While some teachers appreciate the opportunity to work extra hours and thereby increase their earnings, a number of the teachers would also prefer to return to their regular workload.

The peers learn that despite these conditions, the staff can take a semester off for research purposes. This is currently being done by several members of the teaching staff.

Following the discussions, the peers are satisfied that the composition, scientific orientation and qualification of the teaching staff are suitable for sustaining the degree, and that there are sufficient staff resources available for providing assistance and advice to students, and for administrative tasks. However, the peers understand the teachers' situation and recommend that the University increases the number of supporting staff so that the staff can return to a regular workload.

Criterion 4.2 Staff development

Evidence:

- SAR
- Website of University's pedagogical service: http://sup.univ-lorraine.fr/
- Audit discussions

Preliminary assessment and analysis of the peers:
As described in the SAR, the University Engineering and Pedagogical Innovation Service (SU2IP) of the Université de Lorraine offers training courses for the University staff every year, including training related to supporting students with distance learning, and role-playing activities. The Réseau Figure® has also set up training courses, notably when the first CMIs were created, with a training course on problem-based and project-based learning. Four CMI-BSE teachers participated in this course in 2013. At present there is no didactic training plan established for the CMI BSE team, but there is co-training promoted by exchanges between teachers during juries or pedagogical meetings. The staff have so far authored two articles on teaching methods.

Every teacher at the University can furthermore benefit every five years from a career follow-up organised by the human resources department and can at that time express his or her personal needs.

As mentioned under criterion 2.3, a number of teachers have gone through training related to e-learning, also as a result of the COVID-19 pandemic.

Following the discussions, the peers are satisfied that there are offers and support mechanisms available for teaching staff who wish to further develop their professional and teaching skills.

Criterion 4.3 Funds and equipment

Evidence:

- SAR
- Audit discussions
- Letters from Laboratories, Institutions, Companies

Preliminary assessment and analysis of the peers:
During the discussions with the university leadership, the peers learn that the programme exists since 2012 and is the only CMI programme at the university. Other CMI programmes were initiated but were abandoned.

The University has faced some financial difficulties in recent years, reducing the amount of funding available for many programmes. However, the CMI programme has thus far always received the funding necessary as the current University leadership is committed to the programme. The programme is financed on the one hand by student registration fees, but also with the help of national funds made available through the ORION project, which will last until 2030. The peers are thus under the impression that – for the duration of the accreditation period - the funds for the programme are secured.

A part of the expert panel visits the university facilities including the supporting laboratories (LIEC, IAM and IMOPA) and platforms (ASIA and IBSLOR). Based on the provided documents the peers can see that the programme also has a number of cooperation agreements with external laboratories and companies with regards to carrying out student internships and projects. The facilities are also discussed with the students and teachers. Following the visit and discussions, the panel is satisfied that the students have access to excellent facilities.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The University does not provide a statement with regard to this criterion. The panel maintains its recommendation to increase the number of supporting staff in the programme.

The panel considers criterion 4 fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module descriptions

Preliminary assessment and analysis of the peers:
The peers review the module descriptions and see that these to a large extent fulfil the requirements. The descriptions indicate how many hours are dedicated to different types of teaching, such as lectures, seminars and practical exercises. There is currently no mention of recommended literature. As explained in the SAR, each teacher provides appropriate literature directly to students during the course, allowing for more flexibility if new literature is added.

As described in the SAR, the module descriptions are not published online. Students can find their work schedule, including name of the course, name of the teacher, time schedule and classroom, in their personal digital workspace at the beginning of the semester. The workspace also indicates the teaching method (lectures, application courses, practical works or integrated courses) for each session, warning student to bring their lab coats, if necessary.

The peers note that the complete module descriptions meeting the ASIIN criteria must be accessible to all students, and that this is currently not the case. Given the fact that a number of students decide to abandon the programme in the first year due to differing expectations, this added transparency can be valuable. The descriptions could be made available for download directly on the programme website.

The discrepancies between the number of ECTS credit points and the workload were already discussed under criterion 2.2.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- SAR

Preliminary assessment and analysis of the peers:
The University indicates in the SAR that a French-language diploma supplement can be obtained by students upon request, for the national diplomas. The plan is to provide CMI programme graduates a diploma supplement in both French and English within the next year.

The peers favourably view the University's plans to develop these documents and ask the University to submit these in due time. They note that an ASIIN accreditation for the full term can only be issued once English-language diploma supplements are issued to all graduating students.

Criterion 5.3 Relevant rules

Evidence:

- Pedagogical charter
- Charter of the Reseau Figure: https://reseau-figure.fr/wp-content/uploads/2020/03/Charte-R.Figure-06022020.pdf
- University website with rules and regulations: https://www.univ-lorraine.fr/RAA

Preliminary assessment and analysis of the peers:
As described in the SAR, a CMI-specific pedagogical charter is given to each student at the beginning of their first year. This charter must be read and signed by the student and details, among other things, the commitments that he or she must make as well as the specific regulations of the CMI. The charter also presents the modules over the 5 years and their distribution by training components.

The charter of the Réseau Figure®, available on the network's website, also lists the commitment of the different stakeholders: the Figure Network members, the students involved in a curriculum associated to a Figure Network label, the experts evaluating the Network members and the Figure Network management board.

As previously mentioned, the examination rules can be found on the Faculty of Sciences and Technologies website. The peers can thus confirm that the rights and duties of both the higher education institution and students are clearly defined and binding. All relevant course-related rules and regulations are available in the language of the degree programme and accessible for anyone involved.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

The University notes that a new programme website is being developed and that the module descriptions can be downloaded from there. The peers are able to locate this link, however, they note that many descriptions still contain significant inconsistencies with regards to the number of hours and awarded credit points. All such discrepancies should be removed from the descriptions and the updated and correct subscriptions published on the website. The University must provide evidence that this has been completed.

With regards to the Diploma Supplements, the University submits both a French-language and an English-language diploma supplement for the programme. The peers consider these to be in order. However, the peers note that the University must still provide evidence that the English- language diploma supplements are being distributed to the graduates.

Criterion 5 is not fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- SAR
- Minutes of the development council
- Quality Guidelines Figure
- Audit discussions

Preliminary assessment and analysis of the peers:
The SAR indicates that the programme employs both an internal and an external quality assurance process. The external quality assurance is conducted by the Reseau Figure via a self-evaluation and an audit. An overview of the Quality Assessment Framework is provided. Based on the results of this procedure, the programme coordinators develop an action plan to address the identified deficiencies.

Aside from this, the peers learn during the discussions that student representatives from each cohort informally meet with the programme coordinators every 1-2 months to discuss issues related to the programme. The students indicate that these discussions are very open and that the coordinators are very receptive to feedback. Every semester, there is also a general meeting in which all CMI students can participate and provide feedback. The feedback sessions allow the students to express themselves and give the teachers the opportunity to ask follow-up questions. Furthermore, the programme coordinators indicate that in those courses shared with the regular Bachelor and Master programmes, the students provide feedback via formal surveys.

While there is a person responsible for alumni relations, there are currently no alumni surveys. During the discussions with the alumni, the peers learn however that after graduation some of them were contacted by the programme coordinators and asked for feedback. As with all CMI programmes, there is also a development council (already mentioned under criterion 1.1.) which includes members of industry and therefore ensures feedback from other stakeholders.

In general, the peers can see that students and other stakeholders take part in the quality assurance process. The programme is subject to regular internal quality assessment procedures aiming at continuous improvement. However, the peers note that this system is informal. While it appears to work well, the peers believe that formal, anonymous, binding procedures for obtaining internal feedback are necessary to ensure that all students – including those who may be less inclined to speak about their concerns in front of others – are involved. With regards to the evaluation form distributed in the regular Bachelor and Master courses, the peers are interested in seeing a sample and ask the University to provide one.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

Along with its statement, the University submits a sample evaluation form. The University agrees with the panel's assessment that a formalization of evaluation methods in the CMI programme is necessary. For this, the programme coordinators will work with the University's quality department and also obtain feedback from CMI programmes at other universities. An online questionnaire is to be implemented by the end of the year.

The panel considers the evaluation form in order and approves the plans to formalize evaluations. It notes that evidence of the implemented survey must be submitted before the criterion can be considered fulfilled.

Criterion 6 is partially fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

D 1. Explanation of how all students are taught engineering design competences
D 2. Sample evaluation form
D 3. Sample English-language diploma supplement (if already available)

E Comment of the Higher Education Institution (30 October 2020)

The institution provided an extensive statement as well as the following additional documents :

- Explanation of how all students are taught engineering design competences
- Sample evaluation form
- Sample English-language and French-language diploma supplement

F Summary: Peer recommendations (6 November 2020)

Taking into account the additional information and the comments given by the University of Lorraine the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
CMI Biology, Health, Environment	With requirements for one year	EUR-ACE	30 September 2026

Requirements

A 1. (ASIIN 1.2) Ensure alignment between the programme name and contents.

A 2. (ASIIN 1.3) Ensure that all students are taught engineering design.

A 3. (ASIIN 5.1) Ensure the module descriptions contain the correct workload and ECTS credit points and make them available to all students.

A 4. (ASIIN 5.2) Issue an English-language diploma supplement to all graduates.

A 5. (ASIIN 6) Formalize evaluations for the CMI programme.

Recommendations

E 1. (ASIIN 1.3) It is recommended to integrate more content related to sustainability / sustainable development in the curriculum.

E 2. (ASIIN 2.1) It is recommended to implement the plans to give students more opportunities to practice English within the curriculum and internationalise the programme.

E 3. (ASIIN 2.2) It is recommended to define a fixed number of hours per ECTS credit point.

E 4. (ASIIN 4.1) It is recommended to increase the number of staff supporting the programme.

G Comment of the Technical Committees

Technical Committee 01 – Mechanical Engineering (18 November 2020)

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programme does not comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 01.

The Technical Committee 01 – Mechanical Engineering recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
CMI Biology, Health, Environment	With requirements for one year	-	30 September 2026

Requirements

A 1. (ASIIN 1.2) Ensure alignment between the programme name and contents.

A 2. (ASIIN 1.3) Ensure that all students are taught engineering design.

A 3. (ASIIN 5.1) Ensure the module descriptions contain the correct workload and ECTS credit points and make them available to all students.

A 4. (ASIIN 5.2) Issue an English-language diploma supplement to all graduates.

A 5. (ASIIN 6) Formalize evaluations for the CMI programme.

Recommendations

E 1. (ASIIN 1.3) It is recommended to integrate more content related to sustainability / sustainable development in the curriculum

E 2. (ASIIN 2.1) It is recommended to implement the plans to give students more opportunities to practice English within the curriculum and internationalise the programme

E 3. (ASIIN 2.2) It is recommended to define a fixed number of hours per ECTS credit point

E 4. (ASIIN 4.1) It is recommended to increase the number of staff supporting the programme.

Technical Committee 10 – Life Sciences (23 November 2020)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and agrees with the assessment of the peers.

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
CMI Biology, Health, Environment	With requirements for one year	-	30 September 2026

Requirements

A 1. (ASIIN 1.2) Ensure alignment between the programme name and contents.

A 2. (ASIIN 1.3) Ensure that all students are taught engineering design.

A 3. (ASIIN 5.1) Ensure the module descriptions contain the correct workload and ECTS credit points and make them available to all students.

A 4. (ASIIN 5.2) Issue an English-language diploma supplement to all graduates.

A 5. (ASIIN 6) Formalize evaluations for the CMI programme.

Recommendations

E 1. (ASIIN 1.3) It is recommended to integrate more content related to sustainability / sustainable development in the curriculum.

E 2. (ASIIN 2.1) It is recommended to implement the plans to give students more opportunities to practice English within the curriculum and internationalise the programme.

E 3. (ASIIN 2.2) It is recommended to define a fixed number of hours per ECTS credit point.

E 4. (ASIIN 4.1) It is recommended to increase the number of staff supporting the programme.

H Decision of the Accreditation Commission (3 December 2020)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission discusses the procedure and agrees with the assessment of the peers and the technical committees.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission is of the opinion that the development and design of microbiological products, which, as the University indicates in its response to the report, the students learn via specialised projects, can be considered "Engineering Design". However, the Commission agrees with the assessment of the peers that the contents of these projects vary from year to year, and may vary significantly, and that therefore it is not ensured that all students in the programme learn these skills. The Commission therefore currently does not consider the EUR-ACE "Engineering Design" criterion to be fulfilled, but is of the opinion that the EUR-ACE label can be awarded once the University provides evidence that all students are taught "Engineering Design".

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
CMI Biology, Health, Environment	With requirements for one year	EUR-ACE (Upon fulfilment of requirements)	30 September 2026

Requirements

A 1. (ASIIN 1.2) Ensure alignment between the programme name and contents.

A 2. (ASIIN 1.3) Ensure that all students are taught engineering design.

A 3. (ASIIN 5.1) Ensure the module descriptions contain the correct work load and ECTS credit points and make them available to all students.

A 4. (ASIIN 5.2) Issue an English-language Diploma Supplement to all graduates.

A 5. (ASIIN 6) Formalize evaluations for the CMI programme.

Recommendations

E 1. (ASIIN 1.3) It is recommended to integrate more content related to sustainability / sustainable development in the curriculum.

E 2. (ASIIN 2.1) It is recommended to implement the plans to give students more opportunities to practice English within the curriculum and internationalise the programme.

E 3. (ASIIN 2.2) It is recommended to define a fixed number of hours per ECTS credit point.

E 4. (ASIIN 4.1) It is recommended to increase the number of staff supporting the programme.

I Fulfillment of Requirements (18.03.2022)

Analysis of the peers and the Technical Committees (09.03.2022)

Requirements

A 1. (ASIIN 1.2) Ensure alignment between the programme name and contents.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: After consultation between the student representatives and the teaching staff, a new name for the programme was chosen: “Biotechnologies en Microbiologie et Ingénierie Moléculaire” (BioMIM) / “Biotechnologies in Microbiology and Molecular Engineering”. This name better reflects the two specialities to which the CMI leads (microbiology speciality and molecular engineering speciality). This will prevent applicants from having a false idea of the content of the programme and will also allow companies and future recruiters to better identify the fields of competence of the graduates.
TC 01	fulfilled Vote: unanimous Justification: The TC agrees with the peer group.
TC 10	fulfilled Vote: unanimous Justification: The TC follows the assessment of the peer group.

A 2. (ASIIN 1.3) Ensure that all students are taught engineering design.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: In order to make sure that all students are taught engineering design, U Lorraine will include an engineering course related to process development and production. This course will be implemented into the CMI4’s projects (1st year of Master) by including 10 hours dedicated to process simulation. This course is delivered to all the CMI4 students independently of their speciality.

TC 01	fulfilled Vote: unanimous Justification: The TC agrees with the peer group.
TC 10	fulfilled Vote: unanimous Justification: The TC follows the assessment of the peer group.

A 3. (ASIIN 5.1) Ensure the module descriptions contain the correct work load and ECTS credit points and make them available to all students.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: The module descriptions have been updated and now include the necessary information about the students' workload and the awarded ECTS point. In addition, the module descriptions are now directly accessible and downloadable from the programme's website.
TC 01	fulfilled Vote: unanimous Justification: The TC agrees with the peer group.
TC 10	fulfilled Vote: unanimous Justification: The TC follows the assessment of the peer group.

A 4. (ASIIN 5.2) Issue an English-language Diploma Supplement to all graduates.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: French and English versions of a Diploma Supplement will be issued with the diplomas starting with the graduation class of 2021.
TC 01	fulfilled Vote: unanimous Justification: The TC agrees with the peer group.
TC 10	fulfilled Vote: unanimous Justification: The TC follows the assessment of the peer group.

A 5. (ASIIN 6) Formalize evaluations for the CMI programme.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: U Lorraine has established an evaluation process that the teaching team has standardised with the DAPEQ department ("Delegation for Steering Assistance and Quality"). Each semester, the modules are evaluated by the students. The results are sent to those responsible for the modules. The answers of the CMI students are anonymous but can be distinguished from those of other students.
TC 01	fulfilled Vote: unanimous Justification: The TC agrees with the peer group.
TC 10	fulfilled Vote: unanimous Justification: The TC follows the assessment of the peer group.

Decision of the Accreditation Commission (18.03.2022)

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
CMI Biotechnologies in Microbiology and Molecular Engineering	All requirements fulfilled	EUR-ACE® upon the confirmation by ENAEE	30.09.2026

J Appendix: Programme Learning Outcomes and Curricula

According to the SAR, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the degree programme:

1. acquisition of fundamental and disciplinary knowledge necessary for the specialisation and in order to operate in a multidisciplinary context
2. development of the capacity to select and apply analytical methods and tools , and to critically interpret results
3. the identification, formulation and resolution of real problems whilst taking account of technical and non-technical constraints (security, environment, economic & ethical factors)
4. development and design of new products at the cutting edge of disciplinary knowledge and technological advances
5. identification, localisation and acquisition of data
6. conception and execution of experiments, interpretation and exploitation of experiment results
7. use of digital tools and realisation of simulations in order to lead studies and research possible solutions
8. application of industrial and respect of safety and usage guidelines
9. awareness of economical, organisational and managerial issues
10. management of projects and professional and technical activities
11. integration of professional and technical knowledge to enable informed judgement and decision-making
12. use of various methods for clear, unambiguous communication
13. operation in an international, individual or team context
14. life-long training.

For the specialty “Microbiology”:

SLO1: Acquire conceptual knowledge of microbial genetics and genomics, physiology of microorganisms, microbial ecosystems and microbial interactions
SLO2: Analyse complex situations in microbiology, formulate working hypotheses according to the fields of application and propose experimental strategies to validate them
SLO3: Apply the cutting edge methodologies allowing the study of micro-organisms, their activity, their diversity and their evolution, in order to conduct autonomously an experimental protocol in the field of industrial, medical and environmental microbiology
SLO4: Design and carry out independently an experimental approach to respond to a problem where microorganisms are at the heart of biological reactions and transformations in relation to their environment (biotic or abiotic)

For the specialty “Molecular Engineering”:

SLO1: Acquire conceptual knowledge of the biochemistry and molecular biology of prokaryotic and eukaryotic cells

SLO2: Analyse complex situations in molecular and cellular engineering, to formulate working hypotheses according to the fields of application and to propose experimental strategies to validate them
SLO3: Apply cutting-edge methodologies for the study of RNAs and proteins, the regulation of their synthesis and maturation, in order to autonomously design and manage an experimental protocol in the fields of genetic engineering, metabolic engineering and synthetic biology
SLO4: Design and carry out autonomously an experimental approach where biochemical and functional modifications of nucleic acids and proteins are at the heart of medical applications

The following **curriculum** is presented:

L1	S1	1.01 Biologie 1	Dominique Chardard	65 67 68
L1	S1	1.02 Biochimie et Biologie cellulaire	Bérénice Schaerlinger	64
L1	S1	1.03 Chimie Générale	Béatrice George	31
L1	S1	1.05 Mathématiques Physique	Claude Didierjean	25 26
L1	S1	1.06 Introduction aux Géosciences	Marc Lespinasse	36 35
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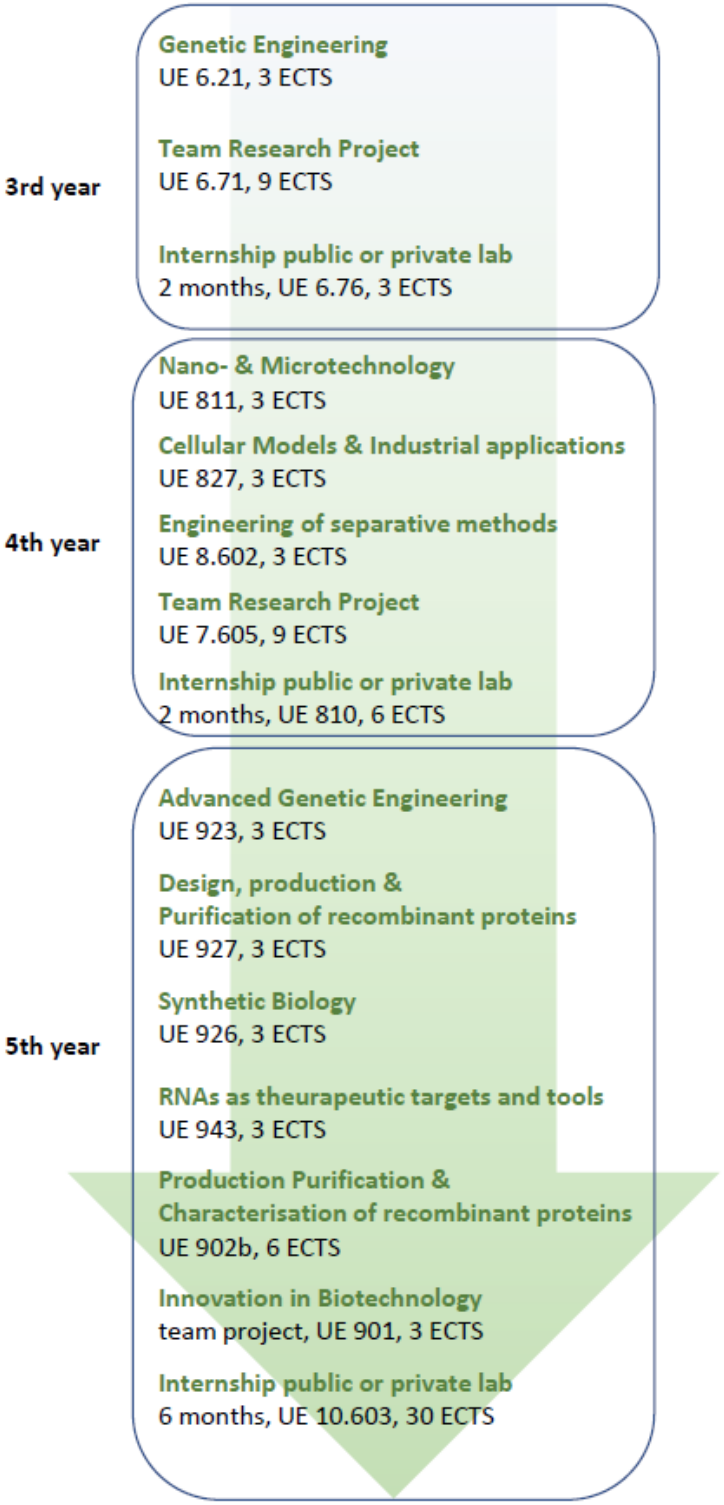
Main modules leading to molecular engineering specialist

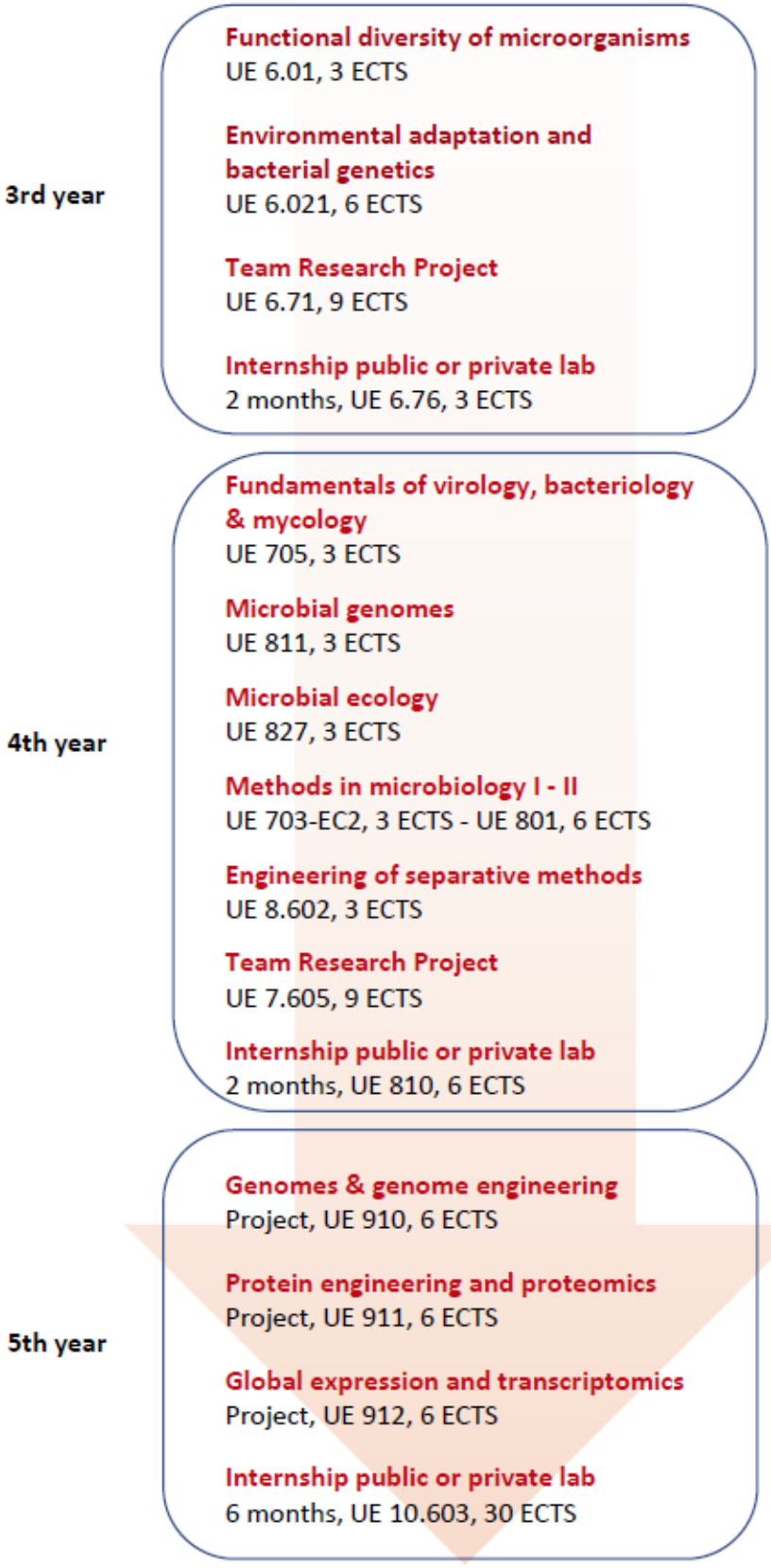
(excluding general knowledge such as, general biology, chemistry, physics etc)



Specialist in molecular engineering

Main modules leading to microbiology specialist

(excluding general knowledge such as, general biology, chemistry, physics etc)



Specialist in microbiology