ASIIN Seal & EUR-ACE®

Accreditation Report

CMI Programme
Electronics, Electrical Engineering and Automatic Control

Provided by
University of Paul Sabatier (Toulouse III)

Version: March 18th, 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 Electronique, énergie électrique, automatique	CMI Electronics, Electrical Engineering and Automatic Control	ASIIN, EUR-ACE® Label		02
Date of the contract: 6 June 2020 **Submission of the final version of the self-assessment report:** 7 August 2020 **Date of the online discussions:** 15-16 December 2020 **at:** online discussions				
Peer panel: Prof. Dr. Dirk Dahlhaus, Universität Kassel Prof. Dr. Franck Chollet, University of Franche-Comté Philipp Dedié, PhDSoft-Ingenieure Ingenieurbüro für IT-Projektleitung Bastien Penninckx, student representative, University of Montpellier				
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 May 2015 ASIIN General Criteria, as of 10 December 2015				

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes
[2] TC: Technical Committee for the following subject areas: TC 02 - Electrical Engineering/Information Technology

Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering / Information Technology as of December 9, 2011

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 Electronique, énergie électrique, automatique	CMI Electronics, Electrical Engineering and Automatic Control	Energie Electrique: Conversion, Matériaux, Développement durable (E2-CMD) ; Electronique des Systèmes Embarqués et Télécommunications (ESET) ; Systèmes et Microsystèmes Embarqués (SME) ; Ingénierie des Systèmes Temps Réel (ISTR) ; Robotique: Décision et Commande (RODECO) ; Signal Imagerie et Applications Audio-vidéo Médicales et Spatiales (SIAAMS) ; Radiophysique Médicale - GénieBioMédical (RM-GBM) ; "Sciences et Technologies des Plasmes" (STP)	7	Full time	Double Degree option for STP specialisation	10 Semesters	360 ECTS	In CMI1 (via the national post-bac Parcoursup platform) or in CMI1 semester 2 (depending on the results at the semester 1). In CMI2 and CMI3. Exceptionally in CMI4. First time of offer : 2011

For the degree programme, the institution has presented the following profile on the University website (translated from French with www.DeepL.com/Translator (free version)):

"The objective of the Master's degree is to train specialists in the fields of electronics, electrical engineering, automation, industrial computing and signal processing by giving graduates the skills to analyze, design, implement and operate systems and their constituent components present in these fields. The training prepares students for the current industrial context, and provides them with the means to easily adapt to its future evolution and make them drivers of this evolution.

The training teams, made up of teacher-researchers and researchers from major research laboratories and players in the industrial sector, enable the integration into the Master's program of the latest advances in the field of research in line with industrial needs. Approximately 15% of the hourly volume of M2 is provided by industrialists, 85% by teacher-researchers and researchers."

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

For the specialisation **“Energie Electrique: Conversion, Matériaux, Développement durable”** (Electrical Energy: Conversion, Materials, Sustainable Development):

“The course is at the crossroads of knowledge and skills in power electronics, electrical engineering, materials and systems control. Energy is the common denominator, taking into account the requirements of sustainable development, economy and clean energy. The objective is to train executives specialized in electrical energy, associated conversion systems and their uses. Developed in partnership and co-accredited with the INP/ENSEEIHT, it offers three blocks of specialization in the 2nd year:

- Power Electronics, Actuators and Control (EPAC)
- Sustainable Management of Electrical Energy (GD2E)
- Integration of Power and Materials (IPM).

At the end of the end-of-study internship, the student can enter the professional world as an engineer or prepare a PhD in a wide variety of fields, both in major industrial groups (EDF, ERDF, Cegelec, Schneider, Nexter Electronics, Veolia, Areva, ON Semiconductor, ACTIA automotive, Continental, Valeo, Alsthom, Airbus, Liebherr-Aerospace, Safran, Eurocopter, Technofan, Thales, PSA, Renault, .) as well as in a large number of SMEs, and in teaching and research.”

For the specialisation **"Electronique des Systèmes Embarqués et Télécommunications (ESET)”** (Electronics of Embedded Systems and Telecommunications):

“The objective of the ESET program is to train scientific executives (engineers and/or researchers) specializing in the analysis and design of electronic systems dedicated to embedded applications, especially space and telecommunications. The knowledge acquired allows the understanding and development of devices on several levels of description from the microchip to the system. The training allows to apprehend the specificities of embedded systems such as energy management, electromagnetic compatibility between the different elements and data transmission aspects. The interaction with the software, low level, although it is not part of the priority of the training, is also addressed because its study is necessary to immerse oneself in the complexity of the embedded system. During these two years the students are led to work on an educational project centered on the design of the payload and other components of a nanosatellite or "cubesat", in collaboration with other establishments and industrial partners in Toulouse. This on-board system par excellence is used as an application platform in many of the training courses. It is also the subject of a specific teaching unit in the second year. During this last year, the course

offers 3 blocks of specialization in digital circuits (NUM), micro and nano technologies (MINA), opto-microwave and electromagnetism (OMI)."

For the specialisation **"Systèmes et Microsystèmes Embarqués (SME)"** (Embedded Systems and Microsystems):

"The vocation of this specialization is to train and certify engineers in Embedded Systems and Microsystems (EMS) capable of formalizing and understanding the development and implementation of complex systems at the conjunction of electronics, automation, industrial computing and information technology. These engineers will therefore be able to carry out missions of innovation and industrialization of products or services in the specific fields of embedded systems and microsystems.

As part of a continuous improvement process aimed at satisfying customers inside or outside their company, they will carry out the following actions:

- Modeling, design, development and implementation of systems or services,
- Analysis of the functions of the system to be studied and in deduction, writing of requirements and specifications,
- Determination of appropriate architectures for the realization of electronic and software functions (hardware/software partitioning),
- Joint use of system simulation and design models and tools,
- Choice of the components (hardware and software) to be used for the realization of these structures according to the constraints specific to embedded systems,
- Verification, test and validation of the system carried out, Production, management and administrative responsibilities,
- Leadership responsibilities."

For the specialisation: **"Ingénierie des Systèmes Temps Réel (ISTR)"** (Real time systems engineering):

"This course is the second year of the EEA-ISTR master's degree, which aims to train specialists in the design, analysis, implementation, optimization and operation of automatic and real-time, autonomous and/or embedded systems. This training is a response to the recurrent demand of the university's industrial partners and the research laboratories on which the training is based. This two-year master course has a first year common with the master EEA-RODECO. For this second year, a student will be brought to choose 3 blocks of specialization among 4:

- Control specialization (advanced linear control learning unit (LU), analysis and control LU of real-time systems, design and implementation LU of real-time controls) ;
- Autonomy specialization (Advanced temporal model LU, Control and simulation LU, Diagnosis and supervision LU) ;
- Reactivity Specialization (Real-Time Techniques LU, Real-Time System Design LU, Real-Time Networks LU);
- Reliability Specialization (Reliability LU, Verification and Validation LU, Fault Tolerance LU).
- The second year is open to alternation (professional contract)."

For the specialisation **"Robotique: Décision et Commande (RODECO)"** (Robotics: Decision and Control):

"The Robotics: Decision and Control (RODECO) course, although newly created, is based on a rich past. Indeed, it is a continuation of the M2 IRR (Artificial Intelligence, Pattern Recognition, Robotics), a common path with the M2 IARF (Artificial Intelligence and Pattern Recognition) of the computer science specialization. This course was thus well integrated into the training offer of the Paul Sabatier University. Its purpose was to give an opening to robotics, artificial intelligence and pattern recognition to students with a profile of automation engineer. In the same way, computer science students came to discover the field of robotics. Each graduate thus benefited from a double competence. Today, robotics is a discipline in its own right in full expansion. It therefore seems essential to continue to train students in these fields by adapting our training to best meet the needs of industry and researchers. This reflection led to the implementation of the RODECO course with two significant evolutions:

The creation of two specializations: "Robotics and Decision" and "Robotics and Control". The first one is a natural extension of the M2 IRR. Indeed, the association of competences between artificial intelligence, pattern recognition and robotics remains topical in most of the tasks considered at present within the framework of service robotics. This specialization reinforces the coupling between robotics and computer science and makes it possible to meet these challenges. The second specialization, "Robotics and Control", on the other hand, is completely new. It responds to a growing need for performance in the realization of robotic tasks, especially in an industrial context. Indeed, as these are becoming more and more demanding in terms of speed and precision, it is essential to strengthen the coupling between robotics and automation. The "Robotics and Control" specialization is therefore designed to provide students with all the skills needed to tackle high-performance control of robotic systems and meet these new challenges.

The opening to work-study programs under a professionalization contract. Indeed, among the university's new missions are work-study and lifelong learning (FTLV). In the master RODECO, some EU are thus open to the FTLV. This means that they can be followed by industrialists within the framework of their professional activities. The students will thus be able to meet people currently working in companies and find feedback from them. In addition, the format of the M2 has been modified to accommodate work-study students. These students sign a professionalization contract with a company and are therefore employees. They thus benefit from a strong professional experience that favors hiring following the training.

The RODECO program is aimed at students holding an EEA or equivalent degree. The first year aims to give a solid base in the field of automatic control. The second year is intended to complement the knowledge acquired in M1 by advanced teaching around robotics, computer science and system control. The students are then equipped to tackle very current issues such as high-performance industrial robotics where the control aspects are fundamental, and service robotics where decision and perception play an essential role. Following this reasoning, as indicated above, two blocks of specialization are proposed in M2:

"Robotics and decision" which proposes a reinforcement of the "computing" aspects (artificial intelligence, pattern recognition, man/machine dialogue), computer vision and mobile robotics. This specialization provides the skills needed to understand the field of service robotics;

"Robotics and Control" focuses on the development and implementation of advanced controls for robotics. This specialization therefore gives the necessary skills to develop advanced control/command solutions for the realization of high performance robotic tasks."

For the specialisation **"Signal Imagerie et Applications Audio-vidéo Médicales et Spatiales (SIA-AMS)"** (Signal Imaging and Audio-Video Medical and Space Applications):

"The course Signal Imaging and Applications in the Audio-video, Medical and Space fields (SIA-AMS) is aimed at students wishing to specialize in devices for data acquisition and exploitation (signals, images, video, hyperspectral images, etc.) in the various application fields of multimedia, medical imaging and space imaging.

This SIA-AMS master's program aims to train in the design and operation of signal and image acquisition, processing and analysis systems in various fast-growing sectors: earth and universe observation, medical imaging, digital telecommunications, multimedia, industrial process control... It is original by its interdisciplinary nature. Teaching is provided by specialists in engineering, science and health."

For the specialisation **“Radiophysique Médicale - GénieBioMédical (RM-GBM)”** (Medical Radiophysics and BioMedical Engineering):

“In healthcare institutions, the professions of medical physicists and biomedical engineers are interface professions, recognized and regulated (DQPRM, biomedical training). They ensure the quality and safety of care by practitioners by contributing their scientific and technical skills to the proper functioning of specialty medical equipment. They participate in specialized professional networks (Société Française de Physique Médicale (SFPM) and the Société Française de Radiologie (SFR), Association Française des Ingénieurs Biomédicaux, SFGBM (Société Française de Génie Biologique et Médical...).

Their resources also enable them to carry out activities in medical device healthcare companies (manufacturers or distributors), products and services such as radiation protection, application, quality, software (large groups, SME-VSE, SSII) or to participate in private/public research work (large groups, design offices, EPCST: Universities, CHU, CNRS, INSERM, INRA...).

This RM-GBM course trains operational executives in the high technology health sector, evolving alongside health professionals. RM-GBM training content:

- General scientific and multidisciplinary basis (English, communication, computer science, signal, images, sensors, imagery, metrology)
- Specialization in RM or GBM through 2 learning units per semester of the 1st year Master's degree. Teaching of professionalization and by projects for the students of the GBM option
- Teaching, research and preparation for the DQPRM competition for the students of the RM option.

The content of the courses is provided by scientific advisors directly from healthcare professionals (doctors, biomedical engineers, medical physicists, etc.) at the Toulouse University Hospital.”

For the specialisation **“Sciences et Technologies des Plasmes”** (Plasma Science and Technology) :

“The course Sciences and Technologies of Plasmas can be followed:

- entirely at the University Toulouse III Paul Sabatier,
- as a double-degree with one of the Canadian partner universities.

In both cases, the objective is to train students in plasma technologies by giving them a solid theoretical and experimental basis. For this purpose, this program relies on long periods of internships both in Master 1 and Master 2. Concerning the double-degree programme with one of the Canadian partner Universities, it is a Franco-Quebec course whose objective is to reinforce the existing link between the French (Université Paul Sabatier, Université Joseph Fourrier, CNRS) and Quebec (INRS, Université de Montréal) institutions involved in the Laboratoire International Associé (LIA) Sciences et Technologie des Plasmas (STEP), by backing a teaching component to the research activities. The expected outcomes of this project are

- A strong attractiveness (local, national and international), which will increase the incoming flow of students from outside UT3.
- A better visibility of the plasma training proposed at UT3 in the national context.
- A greater opening of the job market abroad for UT3 bi-graduate students.
- The emergence of joint research projects between French and Canadian laboratories involved in the project.
- The international coupling between research and training.

Teaching locations

The courses take place at the University Paul Sabatier. For the double-degree, during the year in Canada students will take courses in one of the partner universities (2 courses of 45h).

Contents:

- Study, design and optimization of systems involving electrical discharges.
- Implementation of an expertise in the field of cold plasmas and electric discharges.
- Search for solutions to a scientific or technological problem in the field of cold plasmas and associated applications.
- Project management concerning the study, design or optimization of a system or process involving cold plasmas.
- Technological watch in connection with the applications of electric discharges and cold plasmas.
- Design and mobilization of tools for the characterization of cold plasmas:
    - Realization of in situ measurements.
    - Development of modeling software.
- Advice concerning the choice of a suitable technology for the generation of an electric discharge according to the desired characteristics.”

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 (SAR)
- Objective-Module-Matrices for the CMI programme
- University website: https://www.univ-tlse3.fr/master-mention-electronique-energie-electrique-automatique-eea

Preliminary assessment and analysis of the peers:

The Cursus Master en Ingénierie (CMI) programmes are intensive, five-year degree programmes first introduced in France in 2012 by the Figure network, an association of French universities aiming to develop practically-oriented engineering degree programmes with strong links to industry and research. The CMI degree programmes are characterised by their higher workload of 360 ECTS credit points in total, by their more stringent admission requirements and smaller cohort sizes compared to most other degree programmes, by SECO (personal development, project management and economics) modules and by several mandatory internships. To obtain the CMI label, CMI students attend "regular" consecutive Bachelor and Master degree programmes, but also attend additional CMI courses (ex: SECO modules), and complete additional projects and internships, resulting in the 20% higher workload compared to the regular degree programmes. With this combination of components, the CMI programmes aim to provide an engineering education which is comparable or superior to the degrees offered at France's highly regarded engineering schools and thereby produce graduates with excellent employment prospects.

For the CMI Electronics, Electrical Engineering and Automatic Control (EEA), the University of Toulouse Paul Sabatier presents the overall programme objectives and learning outcomes in the self-assessment report (SAR). The objective-module-matrices match the

[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.

learning objectives of the Figure network 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 learning outcomes are listed in the appendix.

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 02 – Electrical Engineering. Furthermore, they comply with the standards and criteria of the EUR-ACE® Label.

The intended learning outcomes are also presented to the stakeholders within the framework of a development council which brings together representatives from academia (including the CMI's co-supporting laboratories), the business world and students.

From the answers supplied to the peers' preliminary questions, the peers learn that, due to the diverse specialisation options, there is no specific industry sector envisioned for the students. Graduates of the programme typically find employment in France. A fairly large proportion of graduates also pursues a PhD, which the peers view positively. 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 can see that the intended competences for the regular Bachelor and Master programmes, on which the CMI programme is based, are published on the University website, on separate pages. The peers note, however, that these differ from the desired learning outcomes listed in the SAR – the latter do not appear to be published online. To ensure transparency regarding the learning outcomes of the CMI programme, the peers require that these are published in a binding manner, accessible to the public, i.e. to students, teaching staff and other stakeholders.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report
- Diploma Supplement

Preliminary assessment and analysis of the peers:

The peers learn from the SAR that the programme name CMI Electronique, énergie électrique, automatique (EEA) is a national title and that 39 establishments in France offer an

EEA Master's degree. This type of training has been offered by the University since 1967. As with all CMI programmes, the programme carries "Cursus Master en Ingeniérie" (CMI) in its name.

The peers note that the programme name does not cover all subject areas – particularly the specialisation in plasma technology appears to be outside the scope of the name, although there is a connection to electrical engineering in the area of Microelectronics. They note that the large number of specialisations makes it exceedingly difficult to find a name covering all subject areas. The students note that the name and programme contents are, in their opinion, generally aligned, although they agree that not all contents are reflected. Following the discussions, the peers are under the impression that, within France, EEA is a standard name which is commonly associated with these subject areas.

With regards to the English programme name, the peers note that international students and outsiders are unlikely to have the same association with the name which exists within France. Therefore, they recommend that the English name is not simply a literal translation of the French name, but rather adapted to better reflect the contents. Furthermore, to avoid confusion, the University should ensure that the same English-language programme name is consistently used. This is not the case in the submitted self-assessment report. However, as almost all supporting documents and all website contents are in French, the peers note that this applies primarily to future situations where the English name may be used.

Criterion 1.3 Curriculum

Evidence:

- SAR
- Objective-Module Matrices
- Module descriptions
- Website of double-degree STP specialisation: http://masterstp-univ-tlse3.fr/a/presentation

Preliminary assessment and analysis of the peers:

The CMI EEA programme is based on consecutive Bachelor and Master EEA programmes and shares almost all teaching units with these programmes. The CMI curriculum includes more mandatory internships and additional classes, mainly in the field of SECO (personal development, project management and economics). As a result, CMI students have a workload of 36 ECTS credit points per semester (in comparison to 30 ECTS credit points for the

regular programmes). 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.

The peers note that, as with other CMI programmes, the CMI EEA curriculum features "Implementation Activities", which include projects as well as internships:

IAs	Level	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

In the first three years, courses pushing digital skills (IT, programming, modelling / simulation, data processing, etc.) also play an important role, composing 39 ECTS credit points.

As indicated in the SAR, additional notable features of the CMI EEA curriculum is its mandatory abroad experience (internship or semester abroad) and its numerous specialisation options, eight in total, which are pursued during the fourth and fifth year:

- Electronics of Embedded Systems and Telecommunications (ESET)
- **Embedded Systems and Microsystems** (SME)
- **Real Time Systems Engineering** (ISTR)
- **Robotics: Decision and Control** (RODECO)
- Signal, Imaging and Audio Video Medical and Space Applications (SIA-AMS)
- Medical Radiophysics and **BioMedical Engineering** (RM-GBM)
- **Electrical Energy: Conversion, Materials, Sustainable** Development (E2-CMD) - CMI5 common with the INP/ENSEEIHT of Toulouse
- Plasma Science and Technology (STP) - optional double degree with Canadian partner universities

Specialisations in **bold** can be combined with work-linked training or professional or apprenticeship contracts. Regardless of whether students are engaged in this type of contract, they follow the same curriculum.

For the Plasma Science and Technology (STP) double degree programme, the students spend one year in Quebec, Canada. During this year, they complete a research-related internship while completing two modules (equivalent to 16 ECTS credit points) at a partner university (either INRS, University Laval or University of Montreal). Students who complete the double-degree specialisation receive both a Canadian Master's degree as well as a French diploma.

After reviewing the objective-module matrices and module descriptions, 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. The peers are also of the opinion that the learning objectives as required by EUR-ACE are effectively achieved.

Criterion 1.4 Admission requirements

Evidence:

- SAR
- Admission requirements (CMI EEA parcoursSUP)
- Website of double-degree STP specialisation: http://masterstp-univ-tlse3.fr/a/presentation

Preliminary assessment and analysis of the peers:
As described in the SAR, the CMI EEA programme follows an admission 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 36 students, but this limit has thus far not been reached in any cohort. However, the number of applications has grown over the years.

The evaluation of the candidate's file, by the admissions jury, is based on the elements of assessment appearing in the "Fiche Avenir" (report card) filled in by the high school teachers, the cover letter of the candidate (or the training project argued by the student in case of reorientation) and in particular the interest in the CMI's field of specialization; the grades in the scientific disciplines: Mathematics, Physics, Engineering Sciences (if applicable), with particular attention to the teachers' assessments; the TPE (supervised personal work) and the teacher's assessment; and the grades for the first and final year in English and French.

All these criteria are explicitly indicated on the Parcoursup platform and are therefore accessible to candidates. Students can also join the programme in the second semester by

demonstrating very good grades and preparing a cover letter. Students who join in the second year must "catch up" by taking the missed CMI modules from the first year. In the third year, the CMI programme also accepts students with a DUT (University Diploma of Technology) who are interested in reorienting towards a longer course of studies. A gateway consisting of specific modules ensures that these students are on the same level as the other students.

For the dual-degree programme with the Canadian partner universities, students must submit an application file that will be evaluated by a jury made up of two French and two Quebec representatives responsible for the respective Master's programmes. Candidates must be supported by a referring professor; the French specialisation coordinators help the French students find a host professor at the Canadian partner Universities. Candidates must be accepted by both universities. The admission requirements are listed on the website where the dual-degree is presented.

The peers are of the opinion that the admission requirements are adequate and help to ensure that the intended learning outcomes can be reached. Based on the information provided in the SAR, the peers can see that there are rules concerning when and under what conditions students can join the programme in later semesters. However, the peers are unclear about where these rules are published, and ask the University to provide this information.

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

In its statement, the University responds to the peers' concern regarding the transparency of the learning outcomes. The peers can see that the learning outcomes indicated in the SAR are now published on the website of the EEA faculty and therefore transparent to stakeholders.

Regarding the programme name, the University indicates that a discussion will take place at the department level to find the most appropriate English-language translation. The peers support this measure, maintaining their recommendation that it should not be merely a literal translation but should adequately reflect the programme contents.

Regarding the location where the rules for entry in the second and third years are published, the peers can see that a document "*Conditions d'Admission en CMI*" ("Conditions for the Admission to the CMI") can be downloaded from multiple websites related to the programme. The peers are thus satisfied that these rules are transparent.

Criterion fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- SAR
- Module descriptions
- Annual survey results 2019-2020
- Online discussions

Preliminary assessment and analysis of the peers:
The CMI EEA degree programme is divided into modules consisting of a sum of teaching and learning whose contents are concerted. Descriptions of the modules are provided for each year of the programme. The module descriptions will be discussed further under criterion 5.1.

As previously mentioned, the CMI EEA is based on a regular Bachelor (years 1-3) and Master (years 4 and 5) programmes. The first semester of the first year focuses on general sciences, mathematics and IT. In the subsequent semesters, the modules become increasingly specialised. In the fourth and fifth year, the students pursue one of eight specialisations, which can in some cases be combined with part-time trainee / apprenticeship contracts. Once commenced, a switch between specialisations is not possible. Students are able to define an individual focus and course of study via the specialisations as well as via the internships and mandatory study abroad experience (either internship or semester abroad).

In total, the programme requires four internships of varying durations. The subject of the internship is validated by the person in charge of the year of training before the student commences the internship. The University notes in the SAR that students tend to complete their internships either in laboratories or in companies, and that students tend to struggle when looking for their initial 5-week “immersion” internship, which takes place between the first and second year, as they have little experience. According to the provided annual survey results, the majority of the students in the second and third year rated their immersion internship as uninteresting. The peers note that this internship may be a contributor to the high programme abandonment and reorientation rates among students in the first years, discussed in greater detail under criterion 3.

The peers positively view the module “Communication and internship search" in the second year, which teaches students how to effectively prepare their internship searches, and which is also favourably rated by the majority of students. The peers note that it may be helpful to move this module into the first year, so that students are better prepared to search for their immersion internships and may have a more satisfying experience. While the peers are satisfied that the internship search assistance provided by the University is sufficient, and that all working practice intervals or internships are well-integrated into the curriculum, they ask the University to explain whether any measures have been implemented to address students’ low interest in the immersion internship. From the SAR and the discussions, the peers furthermore gain the impression that securing international internships has been particularly difficult for students. The peers therefore recommend that the University implement measures to increase international internship opportunities.

Related to this, as well as to the students’ obligation to spend time abroad, the peers encourage the integration of additional English-language contents in the curriculum. As noted by the University in the SAR, a significant proportion of past CMI EEA students failed to achieve a sufficient score on the Test of English for International Communication (TOEIC) exam at the end of their studies, leading to a deferral of their CMI label. As a result, the programme coordinators introduced preparation courses in years 2 and 3 in 2017. The effects of these new courses will be seen in 2021. During the discussions, however, the students also express a desire for additional English-language contents in the other modules - this is currently the case in only a very small number of modules. The peers approve of the students suggestion, and recommend that more English-language contents (lectures, exercises, readings, presentations, etc.) be integrated in the other modules. In this regard, they also encourage the University to internationalise the programme and attract international students. The peers note that a thorough comprehension of English, including technical English, as well as experience working with students from other countries, will better prepare the students for the global job market.

The students also report during the discussions that many of the projects and exercises carried out in their classes are overly theoretical. They feel that the courses would benefit from the greater integration of real-world projects, which could for instance be done in cooperation with industrial partners. The students’ desire for increased interaction with industry is also expressed in the annual survey results submitted by the University. The peers agree with the students that this would help to prepare them for subsequent employment and recommend that the University increase students’ interaction with industry during in-course projects.

For semesters abroad, the program and the modules to be followed is defined in accordance with the semester of the course, with the person in charge of the year of study, before

departure, in order to be able to validate the semester on return. All the credits acquired abroad are taken into account to validate the corresponding CMI study semester. The peers believe that this procedure for recognizing students' achievements and competences acquired outside the higher education institution effectively ensures that the desired learning outcomes can be reached. They are furthermore under the impression that the students receive sufficient aid in finding and financing study-abroad programmes from the University's International Relations Service. The peers also approve of the programme coordinators' action plan to expand the number of cooperation agreements with English-language programmes in the EEA area.

As with all CMI degree programmes, students who fail to "validate" a CMI semester (by failing too many exams, for instance) do not have the option to retake the semester, rather, they fail out of the CMI programme and fall back into the regular Bachelor or Master degree programme. Exceptions are made only under special (for example health-related) circumstances. As a result, students cannot exceed the prescribed course duration of 10 semesters. The performance of the cohorts is discussed in greater detail under criterion 3.

Criterion 2.2 Work load and credits

Evidence:

- SAR
- Module descriptions

Preliminary assessment and analysis of the peers:
The University utilises the ECTS credit point system, comprising both attendance-based learning and self-study. The University communicates in its SAR that, in the programme, the average number of hours per ECTS credit point is 22 hours. During the discussions, the University reveals that a University-wide reduction in the number of attendance-based hours per credit point was implemented a few years ago, but that the number of self-study hours had not been adjusted. While reviewing the initially submitted documents, the peers note that the number of hours in many cases falls below the 25-30 work hours per credit point required by the ECTS User Guide standard.

As revealed during the discussions, the current number of hours assigned by the programme coordinators and teachers is based on personal experience and rough estimates. The students report that in general, the workload is manageable, and that they consider it to roughly correspond to the number of credit points. The peers are thus under the impression that the workload for the students is not excessive and that structure-related peaks in the workload have been avoided. However, given the low average number of hours per credit point, the peers consider it necessary for the University to conduct an evaluation of

the workload in the programme's various modules, to ensure alignment. The University must also adjust all related documentation, including the module descriptions, commitment charter, etc., accordingly.

Criterion 2.3 Teaching methodology

Evidence:

- SAR
- Sample student reports

Preliminary assessment and analysis of the peers:
As suggested in the SAR, the overall programme workload can be broken into 40% of classroom work, 25% of internships and projects (AMS) in autonomy and 35 % of self-study. Teaching formats include team building, creativity workshops, interactive amphitheatres, tests (MCQs on the Moodle platform) for self-assessment, lectures, games, and projects in small, self-directed groups.

With regards to research, students benefit from the environment, methods and research resources provided by the CMI's co-supporting laboratories. Students conduct research throughout the curriculum in the course of internships and projects. As suggested by the SAR, Students are introduced to working independently, to taking initiative and to individual research on subjects that concern them.

After reviewing sample student reports provided by the University, the peers are satisfied that familiarising the students with independent academic research and writing plays a vital role in the programme. The teaching methods and instruments used appear to support the students in achieving the learning outcomes. While the peers are under the impression that the degree programme is designed to be well-balanced between attendance-based learning and self-study, they see a need to include more information about self-study in the module descriptions, which is discussed under criterion 5.1.

Criterion 2.4 Support and assistance

Evidence:

- SAR
- University website: https://www.univ-tlse3.fr/campus-1
- Online discussions

Preliminary assessment and analysis of the peers:

As indicated in the SAR and on the University website, the University offers a number of services to students, such as an International Relations Service for study abroad experiences, a language laboratory, Social Assistance, a Psychological Support Unit, and a number of others. Scholarships are available, including for study-abroad. Students can also benefit from advice and help from their peers via the student associations CMI Ville rose, CMI France, and CMI Alumni.

During the discussions, the students inform the peers that the international coordinator of internships is in touch with the students to help them plan their internships, and that teachers support the students in preparing CVs and applications.

On the technical side, independent work (projects and internships) is guided by at least one teacher-researcher who gives the students advice and follow-up. The students note that they have a good relationship with the faculty and that the faculty is generally responsive to their comments, questions and concerns.

The peers are thus satisfied that sufficient advice, guidance and assistance is available to support the students in achieving the learning outcomes.

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

With regards to the students' satisfaction with the first-year internships, the University notes that the most recent survey results (conducted after the audit) indicate that a majority of the students do in fact find their internships interesting and enriching. The University suggests that the results in the first survey may have been affected by the ambiguous phrasing of the question. The University notes that, as per the peers' recommendation, it will move the module "Communication and Internship Search" into the first year. The peers welcome this measure.

Regarding international internships, the University lists a number of existing partnerships with universities and institutes around the world which allow students to pursue international internships. It notes that CMI students have in the past not always taken advantage of these existing international internship opportunities. The University sees a greater need for expanding the number of cooperation agreements allowing students to complete a semester of study abroad in the EEA field. The University believes that this, in combination with the existing international internship agreements, will provide the students with ample international mobility opportunities. The peers are in agreement.

Regarding the integration of additional English-language contents in the CMI EEA curriculum, the University notes that this poses significant challenges due to limited teaching resources and the large number of specialisations. It is currently experimenting with the integration of additional English-language contents – with the help of the Language department, the practical work in the second-year Electronics module has been carried out in English since 2017: subjects of manipulation, documents, student/teacher exchanges, reports are in English. The University aims to continue this successful practice and is looking for volunteer teachers. As an additional measure, fourth-year students are to complete their internship reports in English.

Furthermore, the EEA department plans to launch an additional English-language Electrical Engineering Master's degree programme in the 2022 academic year. The CMI students will likely follow some of the modules. The peers consider the proposed measures for the integration of additional English-language contents satisfactory and recommend their implementation.

With regards to increased interaction with industry, the University notes that a number of modules in the final years of the programme related to the specialisations are taught by teaching staff with an industry-background. The University provides a list of industry partners involved in training students in innovation, creativity and entrepreneurship (ICE) in the first four years, and also describes in its statement how practical exercises and projects are related to real-world processes. The University indicates that it will examine possibilities to increase the number of teachers with an industry background in the first years of the programme, to further promote interaction with industry. In conclusion, the peers are under the impression that a sufficient level of practical content related to real-world applications is integrated in the programme. They recommend that the University’s implement its proposed measure to increase the number of teaching staff members with an industry background, as this will ensure additional practical content. While the peers see that students can already have internship options in both academic institutions and companies, the peers encourage the University to find companies willing to host CMI EEA interns on a regular basis, particularly with regards to final year internships.

Regarding the evaluation of the workload, the University notes that this will be implemented in accordance with the peers’ requirement.

Regarding the amount of self-study time in each module, the University indicates that it does not belong to its institutional practices to provide this information in the module descriptions. Rather, teachers tend to discuss workloads with students at the beginning of

each module. The module description layout is standardised and changes must be implemented at the University level. Therefore, while changes are possible, they may require some time to implement.

The peers note that, in accordance with the criteria, module descriptions must reveal the time allocated to attendance-based learning as well as self-study time. This will provide students and other stakeholders with transparency regarding the individual module's requirements. The University must therefore submit revised module descriptions with this information.

Criterion partially fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- *Modalités de contrôle des connaissances et des aptitudes* (MCCA)
- Examination rules for students in special situations: https://www.univ-tlse3.fr/amenagement-des-etudes
- Sample evaluation grids
- Sample exams

Preliminary assessment and analysis of the peers:
As indicated in the SAR, for the CMI EEA's "classic" modules (i.e. not including project or internship modules), the assessment is based on a continuous assessment in the form of reports, a partial examination (mid-term) and a final examination. Corrections and feedback provide students with continuous feedback on their progress. In some modules, students can also conduct self-assessment using resources made available by the teachers on the Moodle platform. The assessment forms implemented in each module are indicated in the *Modalités de contrôle des connaissances et des aptitudes (MCCA)*. Depending on the module and assessment, evaluation grids are used to ensure that criteria are transparent and that exams marked by different examiners are comparable.

The peers learn during the discussions that oral exams are also used as an assessment form. The students note that all oral exams are evaluated by at least two assessors. The only exception is a presentation which must be held in a Communication Skills module, where

only one evaluator is present. The peers note that, to ensure transparency and fairness, at least two assessors must be present for all graded oral presentations, including the presentation in this module.

As is typical for CMI programmes, the final project of the programme consists of a 4-6 month final internship in a company or laboratory. The internship subject is validated by the training supervisor, a teacher-researcher tutor is assigned and a three-party agreement is signed. As part of the final project, the student must write a report and orally defend it.

Special rules and modalities apply to students in special situations (handicapped student, top-level athlete/artist, chronic illness) with, in particular, an additional time given for completion of the assessment (generally an additional 33%). These rules are published online.

The students note during the discussions that the grading and correction of exams can take a long time – in some cases, students are unsure whether they can go on vacation or whether they should stay at the University to prepare for the retake. The programme coordinators and teachers confirm that this has been an issue at times, but that recently new rules have been implemented on the University level, requiring teachers to grade assessments within a specified time-frame. As a result, the peers believe sufficient measures have been implemented to address this problem.

Following their review of the provided sample exams, the peers are under the impression that the exams effectively measure to which extent students have reached the defined learning outcomes, at the desired level.

The University provides statistics reflecting the performance of several cohorts. The peers initially have trouble understanding these and receive an explanation following the online discussions. The peers note that the statistics are worrying – in three cohorts for which statistics were provided, the proportion of students who successfully attained the CMI label ranges between 7% to 33%. For instance, for the cohort 2014-2019, only 5 of the 25 students who entered the CMI programme successfully finished it. For the first three years, 5 students are listed as having abandoned the programme, another 5 as having failed, and another 5 as having “reoriented”. The numbers are similar in the other two indicated cohorts. As previously noted under criterion 2.1, the validation of the TOEIC also posed a significant problem for many cohorts in the past, causing 3-4 students in each cohort to be deferred in the final year. However, even excluding these final year failures, in total, more than half of the students who enter the programme abandon or fail the programme in the first three years, or pursue a reorientation.

While students who “fail” the CMI programme can simply fall back into the regular Bachelor or Master programme, these success rates are unusually low for a study programme. The

University notes during the discussions that some students leave the programme to attend engineering schools, which, in France, generally have a higher reputation for engineering-related degree programmes. However, the provided annual survey results also suggest that 40% of second-year survey responders are not satisfied with the programme, and a similar proportion from this year notes that the CMI does not meet their expectations. The satisfaction is higher among first- and third-year survey responders. The supplementary comments provided by the survey responders from the first three years are few in number and cover many topics, so that the peers are unable to determine a clear cause for the high failure, abandonment and reorientation rates. The peers ask the University to explain what has been done to determine the causes and which measures have been implemented by the University as a response.

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

Regarding the number of examiners for oral examinations, the University indicates in its response that two assessors will be present for future oral exams in the Communications Module. The peers welcome this measure. However, they are of the opinion that the University must implement a mechanism or rule to ensure that at least two assessors must be present for all graded oral presentations.

Regarding the high failure, abandonment and reorientation rates, the University suggests that this is due to the fact that students are aware they take little risk when signing up for the CMI EEA programme – if they do not succeed in the CMI programme, they can still succeed in the regular Bachelor / Master programme. Therefore, many students sign up. However, as soon as they encounter difficulties in the classical curriculum, students prefer to concentrate on the classical license and abandon the CMI. Others underestimate the necessary workload demanded by the CMI and do not validate the classical license year.

This behaviour has led the University to introduce personalised follow-up in the first three years to detect possible abandonments as early as possible or to prevent future failures, and to be stricter in the analysis of candidatures. As evidence, the University submits an overview of the reasons for abandonments and failures in the last five cohorts (however, due to the Covid-19 pandemic, a personalised follow-up was not possible in the academic year 2019-2020). In its statement, the University also provides an interpretation of the results for the different years, and notes that stricter recruitment procedures may have already reduced the number of students leaving the programme. In conclusion, the peers see that the University is taking adequate measures to counter the abandonment, failure and reorientation rates.

Criterion partially fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Staff handbook
- Online discussions

Preliminary assessment and analysis of the peers:
As indicated by the SAR, a large number of teaching staff is involved in the programme, including 85 teacher-researchers who stem from the supporting laboratories. Another 36 teaching staff members come from other departments. Specialist contributors from other laboratories or from industry are also involved. The University supplies a staff handbook with the qualifications.

During the discussions, the peers learn that the department is fairly young, so there are no retirements currently planned. The University notes that teachers are very interested in participating in CMI programmes due to their dynamic nature, therefore there is no concern that it will not be possible to find replacement staff.

After reviewing the staff's qualifications and following the online discussions, the peers are under the impression that the composition, scientific orientation and qualification of the teaching staff team are suitable for sustaining the degree. There are sufficient staff resources available for providing assistance and advice to students and for administrative tasks. The peers are also able to confirm that the research and development activities carried out by the teaching staff are in line with and support the level of academic qualification aimed at.

Criterion 4.2 Staff development

Evidence:

- SAR
- Online discussions

Preliminary assessment and analysis of the peers:
During the online discussions, the peers learn that there is currently no staff development plan. However, the University has set up a *Service d'Appui à la Pédagogie (SAP)* to help teachers use different resources (ex: Moodle) and offer them training on various topics. The teachers confirm that these didactical training options available – whether the teacher participates in these courses depends on the individual teachers' interest and motivation.

With regards to extended research periods, it is difficult for teachers to take off an entire term, as they must do 200 hours of teaching. However, teachers can take a semester off every 5 years for research or other purposes, and about 50% of the teachers do this.

An additional exchange forum for pedagogical practices is an annual symposium organised by the national EEA club, on the teaching of information technology and systems science and technology (Cetsis2017, Cetsis2018). Teachers from the EEA department take part in the organisation of this conference, propose articles or participate in it.

The peers thus conclude that there are sufficient 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
- Photos and videos of classrooms and laboratories
- Cooperation agreements with the universities of INRS, Laval and Montreal
- Online discussions

Preliminary assessment and analysis of the peers:
During the online discussions, the University leadership informs the peers that it has a strong interest in the CMI EEA programme, which is one of three CMI programmes at the University. Due to the programme's requirement that students must go abroad for studies or an internship, the programme is considered an important component of the University's slowly developing internationalisation strategy. While the number of students in the first years was low, the number has steadily increased over the years, indicating success. The peers furthermore learn that public University programmes in France do not have to meet performance indicators stipulated by any government authority, and that the continuation

of a programme is thus decided by the University. Following the discussion with the leadership, the peers are satisfied that there is programme funding for the duration of the proposed accreditation period.

As an onsite visit was not possible due to the Covid-19 pandemic, the University supplies photos and videos of the classrooms, laboratories and equipment. With regards to the available resources, the students confirm that there are many computers available in the library, many rooms available for working in groups, and good internet connections. There is also a small-scale workshop offering digital fabrication (fab lab) available to students but this is currently closed due to the pandemic. The teachers similarly note that they consider the available resources and infrastructure to be sufficient. While the SAR notes that many of the facilities require renovation or updating, after reviewing the provided photo and video material and following the online discussions, the peers are satisfied that the programme benefits from sufficient high-quality infrastructure.

While the University mentions a number of co-supporting laboratories in the SAR (ex: LAAS, Laplace, etc.), it does not submit any related cooperation agreements. The peers therefore ask the University to clarify the extent of the cooperation with any laboratories and to submit copies of any related cooperation agreements, if applicable.

The cooperation agreements with the Canadian partner universities concerning the double-degree Plasma Science and Technology specialisation have been submitted and appear to be in order. However, the University must submit photo and / or video evidence of the facilities of the partner universities.

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

Regarding the cooperation agreements with external laboratories, the University notes that letters of support from two laboratories (LAAS and Laplace) had been submitted with the original accreditation documents. The other laboratories mentioned in the SAR represent institutions from which some of the teaching staff comes but with which no formal cooperation agreement exists. The peers review the agreements and consider these to be satisfactory.

The University provides photo material concerning the laboratories and equipment of the Canadian partner Universities (University of Montreal, University Laval and the Institut national de la recherche scientifique (INRS). The peers see that the research laboratories available to the students pursuing the Plasma Science and Technology double-degree specialisation are adequately equipped.

Criterion fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- SAR
- Syllabi for all years of regular Bachelor and Master programmes
- Syllabi for all years containing only CMI courses
- Pedagogigal commitment charter (*Charte d'engagement*)
- *Modalités de controle des connaissances et des aptitudes* (MCCA)

Preliminary assessment and analysis of the peers:
The University provides a separate syllabus for each year of the regular Bachelor and Master programmes on which the CMI programme is based, containing the descriptions of the modules in that particular year. In addition, the University provides a separate syllabus for each year of the CMI programme, containing only the additional courses reserved for CMI students.

The peers note that the module descriptions in general reflect the requirements of the criterion, however, they do not mention the self-study hours, nor the forms of assessment. The self-study time for each module is specified in the commitment charter (pedagogical contract) that each CMI student signs at the beginning of the year. As is typical for French universities, assessment forms for each module are indicated in the *Modalités de controle des connaissances et des aptitudes* (MCCA). The SAR indicates that all this information is available on various websites and provides the links.

The peers are of the opinion that the separation of the module descriptions into altogether 10 different documents and the presentation of the self-study hours and assessment forms in an additional two separate documents is not conducive to students and other stakeholders obtaining a clear overview of the CMI programme and its contents. The peers furthermore note that none of the provided links leads to a website where the module descriptions for all the years, or even one year, can be easily found. The variety of websites, which includes separate websites for each year of the programme, furthermore suggests that information is very dispersed. The peers ask the University to provide evidence that the module descriptions are accessible to students.

In the opinion of the peers, interested students should be able to obtain this information from a single location. The University must ensure that all module descriptions for the programme (including the CMI modules and the modules from the regular programmes) are presented in a clear format (ideally a single file) which also contains the aforementioned self-study hours and forms of assessment for each module, and that this information is made available to students from an easily accessible location. Given the significant proportion of second-year students who report that the programme does not meet their expectations, transparent and easily accessible course information is particularly important, as this can be consulted by potential students and can help ensure they have more realistic expectations.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- SAR

Preliminary assessment and analysis of the peers:
As described in the SAR, the University provides, upon request by the student, a Bachelor's and a Master's degree and a transcript of grades for each year of the CMI. The Figure Network is responsible for awarding the CMI label, given to students. Students currently do not receive English-language diploma supplements, as this has until now been perceived to be an unnecessary additional administrative effort. However, in response to the accreditation requirements, the University explains it will implement an action plan to ensure that this is done. Following the online audit, the University submits sample English diploma supplements for the programme. The peers note that the University must still provide evidence that the diploma supplements are distributed to all students.

Criterion 5.3 Relevant rules

Evidence:

- SAR
- Pedagogigal commitment charter (*Charte d'engagement*)
- University website: http://master-eea.univ-tlse3.fr/textes-reglementaires/

Preliminary assessment and analysis of the peers:
The peers see that the rules and regulations, rights and duties of both the higher education institution and students are clearly defined in the provided documents. The students are made aware of their duties and rights via a commitment charter which they must sign at the beginning of every year.

As with the module descriptions, however, the peers note that information about rules and regulations appears to be dispersed across many different websites. The University provides a link where the regulations pertaining to the regular Master programme are made available, however, this site does not contain the rules pertaining to the CMI programme nor the Bachelor programme. The peers therefore ask the University to clarify how and where all rules pertaining to the CMI programme (including both Bachelor and Master years) are made available to students. They furthermore recommend that all information related to the CMI programme be made available in a consolidated form at a logical and easily accessible location.

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

In its statement, the University agrees that there is a large number of documents providing module information, and that this can be improved. However, it indicates that a single module handbook file is unlikely to be a viable option, considering the large number of specialisations. The University proposes instead to split the module handbook into Bachelor (years 1, 2 and 3) and Master years (years 4 and 5) and to create one module handbook for each Bachelor path ("fundamental", "health care engineering" and "reorientation towards long-term studies") and one module handbook for each of the eight Master specialisations.

The peers believe that for the CMI EEA programme a single, well-structured module handbook would be a preferable solution. This appears to be particularly achievable for the three Bachelor paths, as there is significant overlap (module descriptions that apply to multiple paths would only be listed once). However, they see that there is less overlap in the Master years and understand the University's concern that a single file with a very large number of module descriptions may be difficult to wield and cause download issues. They therefore believe separate files as proposed by the University are also acceptable. In either case, the peers stress that the handbooks must meet the ASIIN criteria and must be made available to students (i.e. published online).

With regards to the peers' request that the University provides evidence that Diploma Supplements are distributed to all students, the University provides evidence of diploma supplements given to recent graduates. The peers are thus satisfied that English-language diploma supplements are being distributed.

With regards to the publication of all relevant programme rules and regulations, the University describes in its statement how information related to the degree programme will be rationalised and provided in a more structured and accessible format. For instance,

much of the programme-related information is now published on the CMI page of the EEA department's website (https://eea.univ-tlse3.fr/cursus-master-en-ingenierie). The updated module descriptions must, however, still be published.

Criterion partially fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- SAR
- Online discussions

Preliminary assessment and analysis of the peers:
As mentioned under criteria 1.1, the programme's quality management system includes a "Conseil de Perfectionnement" which is a standard for all CMI programmes and ensures the involvement of various stakeholders including representatives from academia, industry and students in the programme development. This council meets on an annual basis. Additional external reviews occur within the framework of the review procedure conducted by the Figure Network, which takes place every five years. As reported by the programme coordinators, the staff members form working groups prior to this procedure to discuss and consider programme changes and updates.

With regards to feedback from alumni, the peers are pleased to learn during the discussions that many of the alumni are contacted after graduation and asked for feedback concerning the programme. The University maintains links with the alumni also with the goal of helping students find internships.

The University explains that students participate in annual surveys in which they can provide the programme coordinators with feedback for the entire year. The results for the 2019-2020 survey have been submitted and were already discussed under criterion 2.1. The peers learn during the discussions with the programme coordinators, teachers and students that there also exist a variety of informal exchanges during which the students can report grievances. This is facilitated by the small number of students. A teacher is formally

assigned to each cohort as “caretaker” – students can contact the caretaker in case of issues, including in case of problems with individual teachers. Furthermore, student delegates from each cohort (both official and unofficial) communicate regularly with the programme coordinators.

While the students report that the staff members are generally supportive and responsive to students’ concerns, they also express a desire for more formal and regular feedback mechanism, which they believe could contribute to the continuous development of the programme. For instance, there currently does not exist any means to provide formal and anonymous feedback on the individual modules.

While the peers positively view the regular informal exchanges between students and faculty, they fully agree with the students that a more formal feedback mechanism to identify possible issues in and improve individual modules is very important. The University must implement a closed-loop mechanism, including anonymous surveys, which allow the University to identify deficits and improvement potential at the module level. The peers consider this particularly important given the high abandonment, failure and reorientation rates in the first three years of the programme. As mentioned under criterion 2.2, the University must also establish whether the proposed workload (particularly self-study time) for each of the modules is accurate. Regular surveys on the module level are presumably an effective method to gather this information.

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

Regarding the implementation of surveys on the module level, the University indicates in its statement that an attempt was made to introduce such surveys several years ago but had been abandoned. Now, a working group is making preparations to propose a new charter for the evaluation of teaching and learning that will systematise the process and make it more effective. Model questionnaires will be offered to programmes and teachers to facilitate evaluation. The EEA department we will be vigilant to ensure that the workload is evaluated.

The peers positively view this proposal. However, the University must provide evidence that it has been implemented, i.e. that it has implemented a closed-loop mechanism, including anonymous surveys, which allows it to identify deficits and improvement potential at the module level.

Criterion not 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. (ASIIN 1.4) Information on where the rules which determine whether a student can join a programme in later semesters are published.

D 2. (ASIIN 2.1) Explanation of what has been done to address students' dissatisfaction with immersion internships

D 3. (ASIIN 3) Explanation of the high failure, abandonment and reorientation rates in the first three years of each CMI cohort, including the measures that have been implemented to determine the causes and the measures implemented by the University as a response

D 4. (ASIIN 4.3) Explanation clarifying the extent of the cooperation with any laboratories and copies of any related cooperation agreements

D 4. (ASIIN 5.2) Evidence indicating how or where module descriptions are made accessible to students.

D 5. (ASIIN 5.3) Evidence indicating how or where all rules pertaining to all years of the CMI programme are made available to students.

D 6. Please provide a compact curriculum overview (i.e. a table overview of all courses) for the Bachelor years and the Master years including all CMI courses in a single document.

E Comment of the Higher Education Institution (12.02.2021)

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

- Intended learning outcomes
- Objective-Module Matrix
- Results of survey regarding immersion internship (2021)
- Electrical Engineering Graduate School Presentation
- Partnership agreement with Quebec Universities
- Overview of Changes in Student Abandonment, Reorientation and Failure Rates
- Sample Module Handbooks for Specialisations
- Sample lists of learning units
- List of teachers
- Diploma supplements in French and English given to two graduates
- List of industry partners involved in Innovation – Creativity – Entrepreneurship courses
- Photos of the facilities at the Canadian partner universities

F Summary: Peer recommendations (03.01.2020)

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
CMI Electronics, Electrical Engineering and Automatic Control	With requirements for one year	30.09.2026	EUR-ACE®	30.09.2026

Requirements

A 1. (ASIIN 2.3) Ensure the assigned workload, particularly the self-study time, is correct for each module.

A 2. (ASIIN 2.3, 5.1) Ensure the module descriptions contain the correct work load and ECTS credit points, and make them available to all students.

A 3. (ASIIN 3) Ensure two examiners are present for all oral exams.

A 4. (ASIIN 6) Formalize a closed-loop process for module evaluation including anonymous student feedback.

Recommendations

E 1. (ASIIN 1.2) It is recommended to adjust the English name to better reflect the programme contents.

E 2. (ASIIN 2.1) It is recommended to implement the proposed measures to integrate additional English-language contents in the curriculum.

E 3. (ASIIN 2.1) It is recommended to implement the proposed measures to increase the number of teaching staff with an industry background and to provide students with additional opportunities to interact with industry via for example projects and internships.

E 4. It is recommended to provide the module descriptions in a single handbook.

G Comment of the Technical Committee 02 – Electrical Engineering/Information Technology (05.03.2021)

Assessment and analysis for the award of the ASIIN seal:

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

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

The Technical Committee deems that the intended learning outcomes of the degree programme comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology.

The Technical Committee 02 – Electrical Engineering/Information Technology recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
CMI Electronics, Electrical Engineering and Automatic Control	With requirements for one year	30.09.2026	EUR-ACE®	30.09.2026

Requirements

A 1. (ASIIN 2.3) Ensure the assigned workload, particularly the self-study time, is correct for each module.

A 2. (ASIIN 2.3, 5.1) Ensure the module descriptions contain the correct work load and ECTS credit points, and make them available to all students.

A 3. (ASIIN 3) Ensure two examiners are present for all oral exams.

A 4. (ASIIN 6) Formalize a closed-loop process for module evaluation including anonymous student feedback.

Recommendations

E 1. (ASIIN 1.2) It is recommended to adjust the English name to better reflect the programme contents.

E 2. (ASIIN 2.1) It is recommended to implement the proposed measures to integrate additional English-language contents in the curriculum.

E 3. (ASIIN 2.1) It is recommended to implement the proposed measures to increase the number of teaching staff with an industry background and to provide students with additional opportunities to interact with industry via for example projects and internships.

E 4. It is recommended to provide the module descriptions in a single handbook.

H Decision of the Accreditation Commission (16.03.2021)

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 committee.

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

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do not comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology.

The Accreditation Commission decides to award the following seals:

Degree Programme	**ASIIN Seal**	**Maximum duration of accreditation**	**Subject-specific label**	**Maximum duration of accreditation**
CMI Electronics, Electrical Engineering and Automatic Control	With requirements for one year	30.09.2026	EUR-ACE®	30.09.2026

Requirements

A 1. (ASIIN 2.3) Ensure the assigned workload, particularly the self-study time, is correct for each module.

A 2. (ASIIN 2.3, 5.1) Ensure the module descriptions contain the correct work load and ECTS credit points, and make them available to all students.

A 3. (ASIIN 3) Ensure two examiners are present for all oral exams.

A 4. (ASIIN 6) Formalize a closed-loop process for module evaluation including anonymous student feedback.

Recommendations

E 1. (ASIIN 1.2) It is recommended to adjust the English name to better reflect the programme contents.

E 2. (ASIIN 2.1) It is recommended to implement the proposed measures to integrate additional English-language contents in the curriculum.

E 3. (ASIIN 2.1) It is recommended to implement the proposed measures to increase the number of teaching staff with an industry background and to provide students with additional opportunities to interact with industry via for example projects and internships.

E 4. It is recommended to provide the module descriptions in a single handbook.

I Fulfilment of Requirements (18.03.2022)

Analysis of the peers and the Technical Committee/s (18.03.2022)

Status: Initial treatment

Meeting date TC 02: 04.03.2022

Meeting date AC: 18.03.2022

Requirements

A 5. (ASIIN 2.3) Ensure the assigned workload, particularly the self-study time, is correct for each module.

Initial Treatment	
Peers	Not completely fulfilled Justification: A detailed study of the self-learning time required for each module was carried out. However, according to the university, there are still 2 or 3 anomalies, a much too low or too high volume of face-to-face work. These anomalies will only be corrected at the start of the 2022 academic year. Moreover, the peers do not have an indication what 'anomalies' really mean.
TC 02	not (completely) fulfilled Justification: The Technical Committee follows the decision of the peers.

A 6. (ASIIN 2.3, 5.1) Ensure the module descriptions contain the correct workload and ECTS credit points, and make them available to all students.

Initial Treatment	
Peers	Not fulfilled Justification: The result of the 'module descriptions' is still a collection of some cryptic Excel sheets, which are not easy to read and understand. The university indicates that they are not planning to provide descriptions, and instead only want to improve and modify their data base, which is not what the peers were asking for.
TC 02	Not fulfilled Justification: The Technical Committee follows the decision of the peers.

A 7. (ASIIN 3) Ensure two examiners are present for all oral exams.

Initial Treatment	
Peers	Not fulfilled Justification: Rules about the number of examiners will only be specified at some point in the academic year 2022-23.
TC 02	Not fulfilled Justification: The Technical Committee follows the decision of the peers.

A 8. (ASIIN 6) Formalize a closed-loop process for module evaluation including anonymous student feedback.

Initial Treatment	
Peers	Not fulfilled Justification: A closed-loop mechanism, including anonymous surveys, is still being finalized. The procedure will be voted on in February and implemented at the beginning of the 2022 academic year.
TC 02	Not fulfilled Justification: The Technical Committee follows the decision of the peers.

Draft resolution for the AC on 18.03.2022:

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
CMI Programme Electronics, Electrical Engineering and Automatic Control	Not fulfilled	EUR-ACE®	6 months prolongation

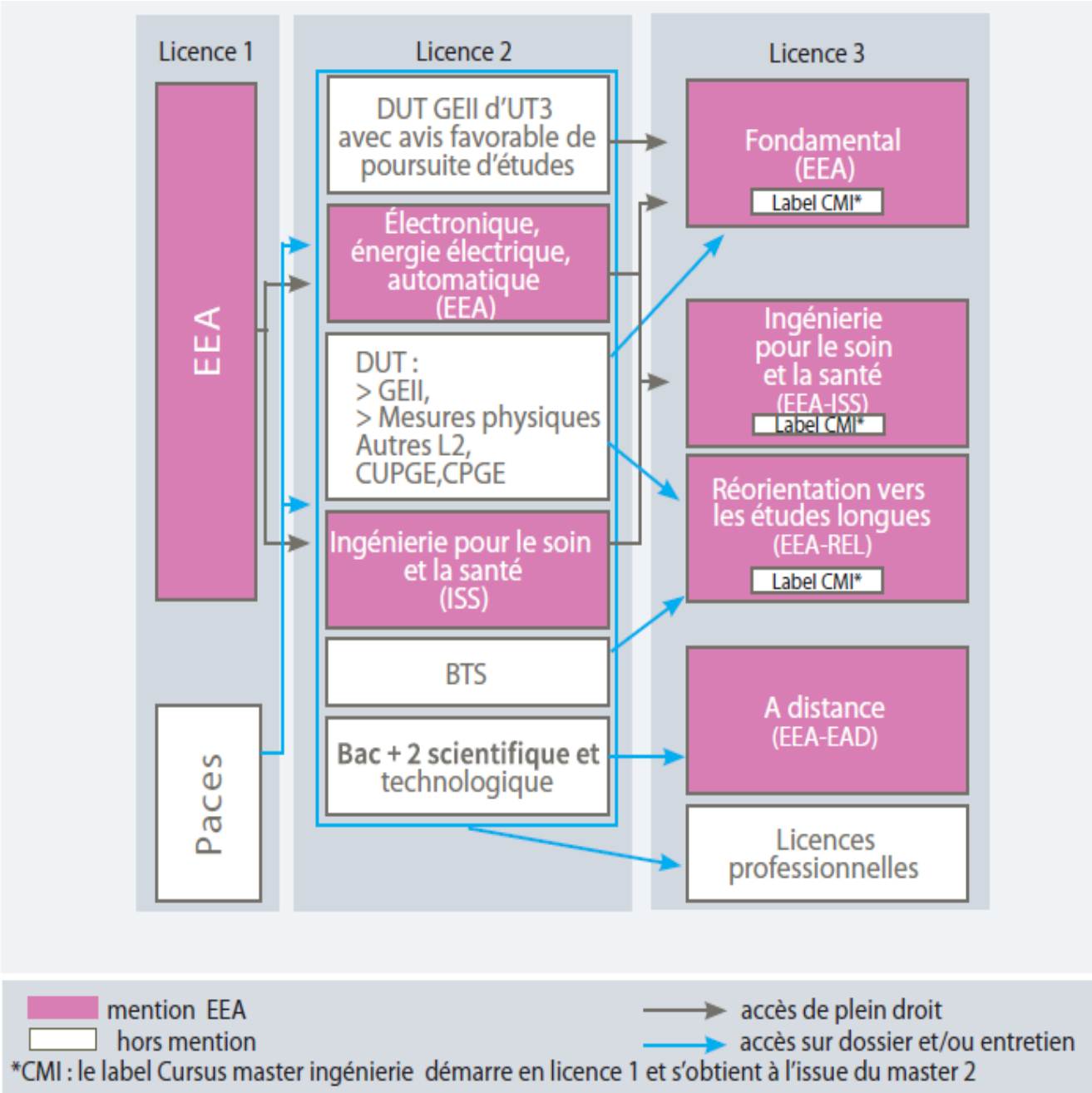
Appendix: Programme Learning Outcomes and Curricula

According the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the CMI degree programme:

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
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.

The following **curriculum** is presented:



Bachelor path „fundamental“				*ECTS si option*	ECTS
L1	S1	EPEEA1AM	MATHÉMATIQUES		6
L1	S1	EPEEA1BM	PHYSIQUE/CHIMIE		6
L1	S1		Physique		
L1	S1		Chimie		
L1	S1	EPEEA1CM	INFORMATIQUE ET OUTILS MATHÉMATIQUES		6
L1	S1	EPTRI1A1	Informatique		
L1	S1	EPTRI1A2	Informatique (TP en autonomie)		
L1	S1	EPFAO1A1	Outils mathématiques continues		
L1	S1	EPEEA1DM	DEVENIR ÉTUDIANT		3
L1	S1	EPEEA11	UE à choix (2/6)		6
L1	S1	EPEEA1EM	SCIENCES DU NUMÉRIQUE	*3*	
L1	S1	EPEEA1FM	LUMIÈRE ET COULEUR	*3*	
L1	S1	EPEEA1GM	SCIENCES APPLIQUÉES	*3*	
L1	S1	EPEEA1HM	BIOLOGIE DE LA CELLULE	*3*	
L1	S1	EPEEA1IM	BIOLOGIE MOLÉCULAIRE	*3*	
L1	S1	EPEEA1JM	DÉFIS DES GÉOSCIENCES ET ENJEUX SOCIÉTAUX	*3*	
L1	S1	EPEEA1VM	ANGLAIS		3
L1	S1		**Visite labo**		0
L1	S2	EPEEA2AM	MATHÉMATIQUES		6
L1	S2	EPEEA2BM	ÉLECTRICITÉ		6
L1	S2	EPEEA2CM	MÉCANIQUE		6
L1	S2	EPEEA2DM	ÉNERGIE		6
L1	S2	EPEEA2EM	TRAITEMENT NUMÉRIQUE DE L'INFORMATION		3
L1	S2	EPEEA2VM	ANGLAIS		3
L1	S2		**Projet tuteuré : recherche technologique**		5
L2	S3	EDMKM3JM	***Mise à niveau PACES***		0
L2	S3	EDEAF3AM	CONNAISSANCE DE L'ENTREPRISE		3
L2	S3	EDEAF3BM	INFORMATIQUE 1		3
L2	S3	EDEAF3CM	MATHÉMATIQUES 1		3
L2	S3	EDEAF3DM	PROJET PROFESSIONNEL		3
L2	S3	EDEAF3EM	ÉNERGIE ÉLECTRIQUE		3
L2	S3	EDEAF3FM	CAO		3
L2	S3	EDEAF3GM	THERMIQUE-FLUIDES		3
L2	S3	EDMKM3G1	Thermique		
L2	S3	EDMKM3G2	Mécanique des fluides		
L2	S3	EDEAF3HM	AUTOMATIQUE		3
L2	S3	EDMKM3H1	Automatique		
L2	S3	EDMKM3H2	Electronique		
L2	S3	EDEAF3IM	DYNAMIQUE		3
L2	S3	EDMKM3I1	Dynamique		

L2	S3	EDMKM3I2	Matériaux		
L2	S3	EDEAF3VM	ANGLAIS		3
L2	S3		**Communication et préparation au stage**		3
L2	S3		**Study of a scientific experiment in a research laboratory**		5
L2	S4	EDEAF4AM	MATHÉMATIQUES 2		4
L2	S4	EDEAF4BM	TECHNIQUES SCIENTIFIQUES		4
L2	S4	EDEAF4DM	PROJET EEA FONDAMENTAL		4
L2	S4	EDEAF4HM	MACHINE ÉLECTRIQUE		3
L2	S4	EDEAF4IM	ÉLECTROMAGNÉTISME		3
L2	S4	EDEAF4PM	TRAITEMENT DU SIGNAL ET DE L'IMAGE		3
L2	S4	EDEAF4QM	SYSTÈMES À ÉVÉNEMENTS DISCRETS		3
L2	S4	EDEAF4RM	ÉLECTRONIQUE		3
L2	S4	EDEAF4R1	Electronique		
L2	S4	EDEAF4R2	TP d'électronique		
L2	S4	EDEAF4VM	ANGLAIS		3
L2	S4		**Développement d'une base de données scientifique**		6
L2	S4		**Stage immersion en entreprise (>= 1 mois)**		5
L3	S5	ELEAF5AM	INFORMATIQUE INDUSTRIELLE		6
L3	S5	ELEAF5A2	Informatique industrielle		
L3	S5	ELEAF5AM	Techniques Scientifiques		
L3	S5	ELEAF5BM	MATHÉMATIQUES		6
L3	S5	ELEAF5B1	Mathématiques		
L3	S5	ELEAF5B2	Bureau d'Etudes Matlab		
L3	S5	ELEAF5CM	TRANSMISSION		6
L3	S5	ELEAF5C1	Transmission		
L3	S5	ELEAF5C2	Instrumentation		
L3	S5	ELEAF5DM	INITIATION À LA RECHERCHE		3
L3	S5	ELEAF5FM	OUTILS ÉLECTRIQUES POUR L'ÉLECTRONIQUE		6
L3	S5	ELEAF5F1	Outils Electriques pour l'électronique		
L3	S5	ELEAF5F2	Techniques Scientifiques matricielles		
L3	S5	ELEAF5F3	Bureau d'Etudes Spice		
L3	S5	ELEAF5VM	ANGLAIS		3
L3	S5		**UE synthèse utilisant un ENT (EEA Fonda)**		3
L3	S6	ELEAF6AM	ÉLECTRONIQUE		6
L3	S6	ELEAF6A1	Electronique Analogique		
L3	S6	ELEAF6A2	Bureau d'Etude Electronique		
L3	S6	ELEAF6A3	Electronique Numerique		
L3	S6	ELEAF6BM	ÉNERGIE ÉLECTRIQUE		6
L3	S6	ELEAF6B1	Eletrotechnique		
L3	S6	ELEAF6B2	Electronique de Puissance		
L3	S6	ELEAF6B3	Bureau d'Etudes Energie Electrique		
L3	S6	ELEAF6CM	AUTOMATIQUE		6

L3	S6	ELEAF6DM	TRAITEMENT DU SIGNAL		3
L3	S6	ELEAF6FM	STAGE D'IMMERSION PROFESSIONNELLE		3
L3	S6	ELEAF6IM	PROJET EEA		3
L3	S6	ELEAF6VM	ANGLAIS		3
L3	S6		**Art, culture, sciences et société**		3
L3	S6		**Réseaux informatiques et C2i**		3
L3	S6		**Compléments technologiques ou projet**		4

			Bachelor path „Healthcare Engineering“	***ECTS si option***	**ECTS**
L1	S1	EPEEA1AM	MATHÉMATIQUES		6
L1	S1	EPEEA1BM	PHYSIQUE/CHIMIE		6
L1	S1		Physique		
L1	S1		Chimie		
L1	S1	EPEEA1CM	INFORMATIQUE ET OUTILS MATHÉMATIQUES		6
L1	S1	EPTRI1A1	Informatique		
L1	S1	EPTRI1A2	Informatique (TP en autonomie)		
L1	S1	EPFAO1A1	Outils mathématiques continues		
L1	S1	EPEEA1DM	DEVENIR ÉTUDIANT		3
L1	S1	EPEEA11	UE à choix (2/6)		6
L1	S1	EPEEA1EM	SCIENCES DU NUMÉRIQUE		
L1	S1	EPEEA1FM	LUMIÈRE ET COULEUR		
L1	S1	EPEEA1GM	SCIENCES APPLIQUÉES		
L1	S1	EPEEA1HM	BIOLOGIE DE LA CELLULE		
L1	S1	EPEEA1IM	BIOLOGIE MOLÉCULAIRE		
L1	S1	EPEEA1JM	DÉFIS DES GÉOSCIENCES ET ENJEUX SOCIÉTAUX		
L1	S1	EPEEA1VM	ANGLAIS		3
L1	S1		**Visite labo**		0
L1	S2	EPEEA2AM	MATHÉMATIQUES		6
L1	S2	EPEEA2BM	ÉLECTRICITÉ		6
L1	S2	EPEEA2CM	MÉCANIQUE		6
L1	S2	EPEEA2DM	ÉNERGIE		6
L1	S2	EPEEA2EM	TRAITEMENT NUMÉRIQUE DE L'INFORMATION		3
L1	S2	EPEEA2VM	ANGLAIS		3
L1	S2		**Projet tuteuré : recherche technologique**		5
L2	S3	EDMKM3JM	***Mise à niveau PACES***		0
L2	S3	EDEAF3AM	CONNAISSANCE DE L'ENTREPRISE		3
L2	S3	EDEAF3BM	INFORMATIQUE 1		3

L2	S3	EDEAF3CM	MATHÉMATIQUES 1		3
L2	S3	EDEAF3DM	PROJET PROFESSIONNEL		3
L2	S3	EDEAF3EM	ÉNERGIE ÉLECTRIQUE		3
L2	S3	EDEAF3FM	CAO		3
L2	S3	EDEAF3GM	THERMIQUE-FLUIDES		3
L2	S3	EDMKM3G1	Thermique		
L2	S3	EDMKM3G2	Mécanique des fluides		
L2	S3	EDEAF3HM	AUTOMATIQUE		3
L2	S3	EDMKM3H1	Automatique		
L2	S3	EDMKM3H2	Electronique		
L2	S3	EDEAF3IM	DYNAMIQUE		3
L2	S3	EDMKM3I1	Dynamique		
L2	S3	EDMKM3I2	Matériaux		
L2	S3	EDEAF3VM	ANGLAIS		3
L2	S3		**Communication et préparation au stage**		3
L2	S3		**Study of a scientific experiment in a research laboratory**		5
L2	S4	EDEAF4AM	MATHÉMATIQUES 2		4
L2	S4	EDEAF4BM	TECHNIQUES SCIENTIFIQUES		4
L2	S4	EDEAI4FM	INGÉNIERIE POUR LE SOIN ET LA SANTÉ		4
L2	S4	EDEAF4HM	MACHINE ÉLECTRIQUE		3
L2	S4	EDEAF4IM	ÉLECTROMAGNÉTISME		3
L2	S4	EDEAF4PM	TRAITEMENT DU SIGNAL ET DE L'IMAGE		3
L2	S4	EDEAF4QM	SYSTÈMES À ÉVÉNEMENTS DISCRETS		3
L2	S4	EDEAF4RM	ÉLECTRONIQUE		3
L2	S4	EDEAF4R1	Electronique		
L2	S4	EDEAF4R2	TP d'électronique		
L2	S4	EDEAF4VM	ANGLAIS		3
L2	S4		**Développement d'une base de données scientifique**		6
L2	S4		**Stage immersion en entreprise (>= 1 mois)**		5
L3	S5	ELEAF5AM	INFORMATIQUE INDUSTRIELLE		6
L3	S5	ELEAF5A2	Informatique industrielle		
L3	S5	ELEAF5AM	Techniques Scientifiques		
L3	S5	ELEAF5BM	MATHÉMATIQUES		6
L3	S5	ELEAF5B1	Mathématiques		
L3	S5	ELEAF5B2	Bureau d'Etudes Matlab		
L3	S5	ELEAF5CM	TRANSMISSION		6
L3	S5	ELEAF5C1	Transmission		
L3	S5	ELEAF5C2	Instrumentation		
L3	S5	ELEAF5DM	INITIATION À LA RECHERCHE		3
L3	S5	ELEAI5IM	INGÉNIERIE POUR LE SOIN ET LA SANTÉ 1		6
L3	S5	ELEAF5VM	ANGLAIS		3
L3	S5		**UE synthèse utilisant un ENT (EEA Fonda)**		3

L3	S6	ELEAF6AM	ÉLECTRONIQUE		6
L3	S6	ELEAF6A1	Electronique Analogique		
L3	S6	ELEAF6A2	Bureau d'Etude Electronique		
L3	S6	ELEAF6A3	Electronique Numerique		
L3	S6	ELEAF6BM	ÉNERGIE ÉLECTRIQUE		6
L3	S6	ELEAF6B1	Eletrotechnique		
L3	S6	ELEAF6B2	Electronique de Puissance		
L3	S6	ELEAF6B3	Bureau d'Etudes Energie Electrique		
L3	S6	ELEAF6CM	AUTOMATIQUE		6
L3	S6	ELEAF6DM	TRAITEMENT DU SIGNAL		3
L3	S6	ELEAF6FM	STAGE D'IMMERSION PROFESSIONNELLE		3
L3	S6	ELEAI6IM	INGÉNIERIE POUR LE SOIN ET LA SANTÉ 2		3
L3	S6	ELEAF6VM	ANGLAIS		3
L3	S6		**Art, culture, sciences et société**		3
L3	S6		**Réseaux informatiques et C2i**		3
L3	S6		**Compléments technologiques ou projet**		4

			Bachelor path „Reorientation towards long-term studies“	***ECTS si option***	**ECTS**
L3	S5	ELEAR5AM	INFORMATIQUE INDUSTRIELLE		3
L3	S5	ELEAF5A1	Informatique industrielle		
L3	S5	ELEAR5A1	Mise à niveau informatique		
L3	S5	ELEAR5BM	MATHÉMATIQUES 1		3
L3	S5	ELEAR5CM	MATHÉMATIQUES 2		6
L3	S5	ELEAR5EM	EEA-1		6
L3	S5	ELEAR5EM	Circuits électriques		
L3	S5	ELEAR5EM	Fondamentaux de l'électrotechnique		
L3	S5	ELEAR5EM	Conversion d'énergies		
L3	S5	ELEAR5FM	ÉLECTRONIQUE		3
L3	S5	ELEAR5F1	Electronique analogique		
L3	S5	ELEAR5F2	Spice		
L3	S5	ELEAR5GM	GÉNIE ÉLECTRIQUE		3
L3	S5	ELEAR5HM	AUTOMATIQUE		3
L3	S5	ELEAR5VM	ANGLAIS		3
L3	S5		**UE Initiation à la gestion de projet (EEA REL)**		3
L3	S6	ELEAR6AM	CALCUL SCIENTIFIQUE		3
L3	S6	ELEAR6BM	THÉORIE DU SIGNAL		6
L3	S6	ELEAR6CM	AUTOMATIQUE DES SYSTÈMES LINÉAIRES		6
		ELEAR6C1	Automatique des systèmes linéaires		
		ELEAR6C2	Automatique à évènements discrets		
L3	S6	ELEAR6DM	ÉLECTRONIQUE NUMÉRIQUE		3

L3	S6	ELEAR6EM	GESTION DE PROJET - BUREAU D'ÉTUDES		3
L3	S6	ELEAR61I	UE à Choix (1/2))		3
L3	S6	ELEAR6FM	GÉNIE ÉLECTRIQUE : SYSTÈMES TRIPHASÉS	*3*	
L3	S6	ELEAR6GM	ÉLECTRONIQUE: PHYSIQUE COMPOSANT ONDES	*3*	
L3	S6	ELEAR6IM	INITIATION À LA RECHERCHE		3
L3	S6	ELEAR6VM	ANGLAIS		3
L3	S6		**Art, culture, sciences et société**		3
L3	S6		**Réseaux informatiques et C2i**		3
L3	S6		**Compléments technologiques ou projet**		4

Specialisation ESET				*ECTS si option*	ECTS
M1	S7	EMEAE1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAG1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAG1CM	Electricité : risques et perturbations		3
M1	S7	EMEAG1DM	Alimentations à découpage		3
M1	S7	EMEAG1EM	Simulation multiphysique		3
M1	S7	EMEAG1JM	Systèmes linéaires à temps continu I		3
M1	S7	EMEAG1KM	Convertisseurs statiques et machines électriques		6
M1	S7	EMEAG1LM	Composants passifs et matériaux		3
M1	S7		***UE à choix (1/4)***		3
M1	S7	EMEAT1F1	Instrumentation et chaîne de mesure	*3*	
M1	S7	EMEAT1G1	Décharges et plasmas dans le génie électrique	*3*	
M1	S7	EMEAT1H1	Systèmes électroniques non linéaires à diodes et AOP	*3*	
M1	S7	EMEAT1I1	Microcontrôleur	*3*	
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAG2AM	Modélisation et commande des convertisseurs statiques		3
M1	S8	EMEAG2BM	Modélisation dynamique des machines électriques		3
M1	S8	EMEAG2CM	Commande des machines électriques		3
M1	S8	EMEAG2DM	Energies renouvelables I		3
M1	S8	EMEAG2EM	Thermique et systèmes		3
M1	S8	EMEAG2FM	Propriétés des matériaux		3
M1	S8		***UE à choix (2/4)***		6
M1	S8	EMEAG2G1	Actionneurs électromagnétiques	*3*	
M1	S8	EMEAG2H1	Systèmes et composants passifs	*3*	
M1	S8	EMEAG2H1	Systèmes et composants passifs	*3*	
M1	S8	EMEAG2I1	Energies renouvelables II	*3*	
M1	S8	EMEAG2KM	INITIATION À LA RECHERCHE ET PROJET		3
M1	S8	EMEAE2VM	ANGLAIS		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAG3AM	Convertisseurs statiques et composants de puissance		3
M2	S9	EIEAG3BM	Convertisseurs statiques : Intégration et contraintes		3
M2	S9	EIEAG3CM	Réseaux électriques		3
M2	S9	EIEAG3DM	Etude de systèmes 1 (BE)		3
M2	S9	EIEAG3EM	Miniprojet alimentation à découpage		3
M2	S9	EIEAG3FM	Miniprojet système photovoltaïque		3
M2	S9	EIEAG3KM	Ouverture vers le milieu professionnel		3
M2	S9	EIEAG3LM	Anglais		3

M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAG4AM	Etude de systèmes 2 (BE)		4
M2	S10		***Sépcialisation IPM***		
M2	S9	EIEAG3IM	Matériaux : Modélisation, élaboration et caractérisation	*6*	6
M2	S10	EIEAG4KM	Matériaux diélectriques et fiabilité	*3*	3
M2	S10	EIEAG4HM	Miniprojet Isolation et Systèmes	*3*	3
M2	S10	EIEAG4IM	Conception pour l'intégration de puissance	*5*	5
M2	S10		***Spécialisation GD2E***		
M2	S9	EIEAG3GM	Synthèse et commande des alimentations à découpage	*3*	
M2	S9	EIEAG3HM	Miniprojet commande numérique d'un actionneur électrique	*3*	
M2	S10	EIEAG4BM	Systèmes asservis	*4*	
M2	S10	EIEAG4EM	Systèmes autonomes et éco-conception	*4*	
M2	S10	EIEAG4FM	Batiment économe et intelligent	*3*	
M2	S10		***Spécialisation EPAC***		
M2	S9	EIEAG3GM	Synthèse et commande des alimentations à découpage	*3*	
M2	S9	EIEAG3HM	Miniprojet commande numérique d'un actionneur électrique	*3*	
M2	S10	EIEAG4BM	Systèmes asservis	*4*	
M2	S10	EIEAG4CM	Commande des actionneurs électriques	*3*	
M2	S10	EIEAG4DM	Informatique de commande	*4*	
M2	S10	EIEAE4BM	STAGE		15
M2	S10				

			Specialisation SME	***ECTS si option***	**ECTS**
M1	S7	EMEAS1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAS1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAS1CM	Conception de systèmes		3
M1	S7	EMEAS1DM	Alimentations à découpage		3
M1	S7	EMEAS1EM	Ingénierie Système		3
M1	S7	EMEAS1FM	Modèles pour le parallélisme		3
M1	S7	EMEAS1GM	OS pour les systèmes critiques		3
M1	S7	EMEAS1HM	Modélisation des composants pour les CI		3
M1	S7	EMEAS1IM	Compatibilité électromagnétique (CEM)		3
M1	S7	EMEAS1KM	Capteurs et systèmes électroniques non linéaires		3

M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAS2AM	Microélectronique		6
M1	S8	EMEAS2BM	Réalisations système		6
M1	S8	EMEAS2CM	Réseaux pour la commande de systèmes embarqués		3
M1	S8	EMEAS2DM	Stage SME		9
M1	S8	EMEAS2GM	Initiation à la recherche et projet		3
M1	S8	EMEAS2VM	Anglais		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M2	S9	EIEAS3BM	Processus d'ingenierie Systeme		3
M2	S9	EIEAS3CM	Conception et integration de systemes critiques		3
M2	S9	EIEAS3DM	Développement et test des logiciels intégrés		3
M2	S9	EIEAS3EM	Microsystemes et nanotechnologies		3
M2	S9	EIEAS3FM	Systemes optroniques		3
M2	S9	EIEAS3GM	Synthèse et mise en oeuvre des systèmes		9
M2	S9	EIEAS3HM	Architecture de l'electronique et conception conjointe		3
M2	S9	EIEAS3VM	ANGLAIS		3
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAS4AM	Innovation/Legislation/Marketing		6
M2	S10	EIEAS4BM	STAGE		15
M2	S10	EIEAS4CM	Projet de Grande Envergure		9
M2	S10				

			Specialisation ISTR	***ECTS si option***	**ECTS**
M1	S7	EMEAT1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAT1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAT1CM	Conception de systèmes		3
M1	S7		***UE à choix (1/3)***		3
M1	S7	EMEAT1DM	Processeurs et logiciels pour le traitement du signal	*3*	
M1	S7	EMEAT1EM	Traitement des images	*3*	
M1	S7	EMEAT1FM	Instrumentation et chaîne de mesure	*3*	
M1	S7	EMEAT1GM	Systèmes à événements discrets, modélisation et analyse		6
M1	S7	EMEAT1HM	Systèmes linéaires à temps continu II		3
M1	S7	EMEAT1IM	Microcontrôleur		3

M1	S7	EMEAT1JM	Systèmes linéaires à temps continu I		3
M1	S7	EMEAT1KM	Performance et robustesse des systèmes linéaires asservis		3
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAT2AM	Techniques de mises en oeuvre pour les systèmes à événements discrets		3
M1	S8	EMEAT2BM	Outils pour la commande des systèmes parallèles		3
M1	S8	EMEAT2CM	Systèmes linéaires à temps discret et identification		3
M1	S8	EMEAT2DM	Représentation et analyse des systèmes non linéaires		3
M1	S8	EMEAT2EM	Conception orientée objet des systèmes de commande		3
M1	S8	EMEAT2FM	Commande des systèmes linéaires à temps discret		3
M1	S8		***UE à choix (2/3)***		6
M1	S8	EMEAT2GM	Réseaux pour la commande de systèmes distribués	*3*	
M1	S8	EMEAT2HM	Modélisation et commande des convertisseurs statiques	*3*	
M1	S8	EMEAT2IM	Problématiques des systèmes embarqués	*3*	
M1	S8	EMEAE2KM	Initiation à la recherche et projet		3
M1	S8	EMEAET2VM	Anglais		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAT3JM	Gestion de projet et formation générale		4
M2	S9	EIEAT3AM	Conception des systèmes orientée objet et Systèmes temps réel		4
M2	S9	EIEAT3CM	Ingénierie système et gestion d'entreprise		4
M2	S9	EIEAT3DM	***UE à Choix 1 (3/4)***		9
M2	S9		Commande linéaire avancée	*3*	
M2	S9		Techniques pour le temps réel	*3*	
M2	S9		Modèles temporels avancés	*3*	
M2	S9		Sureté de fonctionnement	*3*	
M2	S9	EIEAT3EM	***UE à Choix 2 (3/4)***		9
M2	S9		Analyse et commande des sytèmes temps réel	*3*	
M2	S9		Conception des systèmes temps réel	*3*	
M2	S9		Contrôle et simulation	*3*	
M2	S9		Vérification et validation	*3*	
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAT4DM	***UE à Choix 3 (3/4)***		9
M2	S10		Réseaux temps réel	*3*	
M2	S10		Tolérances aux fautes	*3*	
M2	S10		Diagnostic et supervision	*3*	

M2	S10		Conception et mise en œuvre des commandes temps réel	*3*	
M2	S10	EIEAT4V1	Anglais		3
M2	S10	EIEAT4CM	Projet		3
M2	S10	EIEAT4BM	STAGE		15
M2	S10				

			Specialisation RODECO	***ECTS si option***	**ECTS**
M1	S7	EMEAT1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAT1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAT1CM	Conception de systèmes		3
M1	S7		***UE à choix (1/3)***		3
M1	S7	EMEAT1DM	Processeurs et logiciels pour le traitement du signal	*3*	
M1	S7	EMEAT1EM	Traitement des images	*3*	
M1	S7	EMEAT1FM	Instrumentation et chaîne de mesure	*3*	
M1	S7	EMEAT1GM	Systèmes à événements discrets, modélisation et analyse		6
M1	S7	EMEAT1HM	Systèmes linéaires à temps continu II		3
M1	S7	EMEAT1IM	Microcontrôleur		3
M1	S7	EMEAT1JM	Systèmes linéaires à temps continu I		3
M1	S7	EMEAT1KM	Performance et robustesse des systèmes linéaires asservis		3
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAT2AM	Techniques de mises en oeuvre pour les systèmes à événements discrets		3
M1	S8	EMEAT2BM	Outils pour la commande des systèmes parallèles		3
M1	S8	EMEAT2CM	Systèmes linéaires à temps discret et identification		3
M1	S8	EMEAT2DM	Représentation et analyse des systèmes non linéaires		3
M1	S8	EMEAT2EM	Conception orientée objet des systèmes de commande		3
M1	S8	EMEAT2FM	Commande des systèmes linéaires à temps discret		3
M1	S8		***UE à choix (2/3)***		6
M1	S8	EMEAT2GM	Réseaux pour la commande de systèmes distribués	*3*	
M1	S8	EMEAT2HM	Modélisation et commande des convertisseurs statiques	*3*	
M1	S8	EMEAT2IM	Problématiques des systèmes embarqués	*3*	
M1	S8	EMEAE2KM	Initiation à la recherche et projet		3
M1	S8	EMEAET2VM	Anglais		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5

M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAR3AM	Conception des systèmes orientée objet et Systèmes temps réel		4
M2	S9	EIEAR3BM	Vision et traitement d'images 2D		3
M2	S9	EIEAR3CM	Optimisation et estimation		5
M2	S9	EIEAR3DM	Reconnaissance des formes et apprentissage		3
M2	S9	EIEAR3EM	Robotique industrielle		5
M2	S9	EIEAR3IM	Gestion de projet et formation générale		4
M2	S9	EIEAR3VM	Anglais		3
			Spécialisation Robotique et Décision		
M2	S9	EIEAR3HM	Intelligence Artificielle et traitement de l'incertain	*3*	3
			Spécialisation Robotique et Commande		
M2	S9	EIEAR3FM	Commande linéaire avancée	*3*	
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10		***Spécialisation Robotique et Décision***		12
M2	S10	EIEAR4GM	Robotique Mobile & Intergiciel	*3*	
M2	S10	EIEAR4HM	Perception 3D	*3*	
M2	S10	EIEAR4IM	Intelligence artificielle et décision	*3*	
M2	S10	EIEAR4KM	Reconnaissance des Formes et technologies vocales	*3*	
M2	S10		***Spécialisation Robotique et Commande***		
M2	S10	EIEAR4BM	Commande pour les systèmes complexes	*3*	
M2	S10	EIEAR4DM	Commande de robots	*3*	
M2	S10	EIEAR4EM	Commande optimale	*3*	
M2	S10	EIEAR4JM	Conception et mise en oeuvre des commandes temps réel	*3*	
M2	S10	EIEAR4AM	Projet		3
M2	S10	EIEAT4BM	STAGE		15
M2	S10				

			Specialisation E2 CMD	***ECTS si option***	**ECTS**
M1	S7	EMEAE1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAG1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAG1CM	Electricité : risques et perturbations		3
M1	S7	EMEAG1DM	Alimentations à découpage		3
M1	S7	EMEAG1EM	Simulation multiphysique		3
M1	S7	EMEAG1JM	Systèmes linéaires à temps continu I		3
M1	S7	EMEAG1KM	Convertisseurs statiques et machines électriques		6

M1	S7	EMEAG1LM	Composants passifs et matériaux		3
M1	S7		***UE à choix (1/4)***		3
M1	S7	EMEAT1F1	Instrumentation et chaîne de mesure	*3*	
M1	S7	EMEAT1G1	Décharges et plasmas dans le génie électrique	*3*	
M1	S7	EMEAT1H1	Systèmes électroniques non linéaires à diodes et AOP	*3*	
M1	S7	EMEAT1I1	Microcontrôleur	*3*	
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAG2AM	Modélisation et commande des convertisseurs statiques		3
M1	S8	EMEAG2BM	Modélisation dynamique des machines électriques		3
M1	S8	EMEAG2CM	Commande des machines électriques		3
M1	S8	EMEAG2DM	Energies renouvelables I		3
M1	S8	EMEAG2EM	Thermique et systèmes		3
M1	S8	EMEAG2FM	Propriétés des matériaux		3
M1	S8		***UE à choix (2/4)***		6
M1	S8	EMEAG2G1	Actionneurs électromagnétiques	*3*	
M1	S8	EMEAG2H1	Systèmes et composants passifs	*3*	
M1	S8	EMEAG2H1	Systèmes et composants passifs	*3*	
M1	S8	EMEAG2I1	Energies renouvelables II	*3*	
M1	S8	EMEAG2KM	INITIATION À LA RECHERCHE ET PROJET		3
M1	S8	EMEAE2VM	ANGLAIS		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAG3AM	Convertisseurs statiques et composants de puissance		3
M2	S9	EIEAG3BM	Convertisseurs statiques : Intégration et contraintes		3
M2	S9	EIEAG3CM	Réseaux électriques		3
M2	S9	EIEAG3DM	Etude de systèmes 1 (BE)		3
M2	S9	EIEAG3EM	Miniprojet alimentation à découpage		3
M2	S9	EIEAG3FM	Miniprojet système photovoltaïque		3
M2	S9	EIEAG3KM	Ouverture vers le milieu professionnel		3
M2	S9	EIEAG3LM	Anglais		3
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAG4AM	Etude de systèmes 2 (BE)		4
M2	S10		***Sépcialisation IPM***		
M2	S9	EIEAG3IM	Matériaux : Modélisation, élaboration et caractérisation	*6*	6
M2	S10	EIEAG4KM	Matériaux diélectriques et fiabilité	*3*	3
M2	S10	EIEAG4HM	Miniprojet Isolation et Systèmes	*3*	3
M2	S10	EIEAG4IM	Conception pour l'intégration de puissance	*5*	5
M2	S10		***Spécialisation GD2E***		

M2	S9	EIEAG3GM	Synthèse et commande des alimentations à découpage	*3*	
M2	S9	EIEAG3HM	Miniprojet commande numérique d'un actionneur électrique	*3*	
M2	S10	EIEAG4BM	Systèmes asservis	*4*	
M2	S10	EIEAG4EM	Systèmes autonomes et éco-conception	*4*	
M2	S10	EIEAG4FM	Batiment économe et intelligent	*3*	
M2	S10		***Spécialisation EPAC***		
M2	S9	EIEAG3GM	Synthèse et commande des alimentations à découpage	*3*	
M2	S9	EIEAG3HM	Miniprojet commande numérique d'un actionneur électrique	*3*	
M2	S10	EIEAG4BM	Systèmes asservis	*4*	
M2	S10	EIEAG4CM	Commande des actionneurs électriques	*3*	
M2	S10	EIEAG4DM	Informatique de commande	*4*	
M2	S10	EIEAE4BM	STAGE		15
M2	S10				

			Specialisation SIA AMS	***ECTS si option***	**ECTS**
M1	S7	EMEAE1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAG1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAI1DM	Processeurs et logiciels pour le traitement du signal		3
M1	S7	EMEAI1EM	Traitement des images		3
M1	S7	EMEAI1FM	Instrumentation et chaîne de mesure		3
M1	S7	EMEAI1GM	Signaux et systèmes		3
M1	S7	EMEAI1HM	Introduction à l'exploitation statistique de données		3
M1	S7	EMEAI1KM	Traitement numérique du signal		3
M1	S7	EMEAI1MM	Applications du traitement du signal et d'images		3
M1	S7		***UE à choix (1/4)***		3
M1	S7	EMEAI1CM	Systèmes électroniques non linéaires : PLL et applications télécoms	*3*	
M1	S7	EMEAI1IM	Microcontrôleur	*3*	
M1	S7	EMEAI1JM	Systèmes linéaires à temps continu I	*3*	
M1	S7	EMEAI1LM	Outils scientifiques pour la métrologie	*3*	
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAI2AM	Analyse et interprétation des images		3
M1	S8	EMEAI2BM	Méthodes de classification		3
M1	S8	EMEAI2CM	Signaux et télécommunications 1		3
M1	S8	EMEAI2DM	Signaux et télécommunications 2		3

M1	S8	EMEAI2EM	Modélisation et estimation pour les signaux et systèmes		3
M1	S8	EMEAI2FM	Analyse spectrale des signaux et systèmes		3
M1	S8	EMEAI2GM	Capteurs optiques et formation des images		3
M1	S8		***UE à choix (1/4)***		3
M1	S8	EMEAI2HM	Problématiques des systèmes embarqués	*3*	
M1	S8	EMEAI2IM	Commande des systèmes linéaires à temps discret	*3*	
M1	S8	EMEAI2JM	Réseaux pour la commande de systèmes distribués	*3*	
M1	S8	EMEAI2MM	Physique pour l'instrumentation	*3*	
M1	S8	EMEAG2KM	INITIATION À LA RECHERCHE ET PROJET		3
M1	S8	EMEAE2VM	ANGLAIS		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAI3BM	Connaissance de l'entreprise, communication et gestion de projets		3
M2	S9	EIEAI3CM	Traitement du signal		4
M2	S9	EIEAI3DM	Traitement et analyse des images		3
M2	S9	EIEAI3EM	Analyse statistique de données		4
M2	S9	EIEAI3FM	Informatique et projets scientifiques		6
M2	S9	EIEAG3LM	Anglais		3
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAI4AM	Estimation et optimisation		3
M2	S10		***Sépcialisation Spatial***		19
M2	S9	EIEAI3GM	Vision par ordinateur	*3*	
M2	S9	EIEAI3HM	Capteurs et instrumentation	*4*	
M2	S10	EIEAI4CM	Observation de la terre	*4*	
M2	S10	EIEAI4DM	Cartographie thématique	*4*	
M2	S10	EIEAI4EM	Systèmes d'information géographiques et bases de données	*4*	
M2	S10		***Spécialisation Audio Vidéo***		
M2	S9	EIEAI3GM	Vision par ordinateur	*3*	
M2	S9	EIEAI3HM	Capteurs et instrumentation	*4*	
M2	S10	EIEAI4FM	Représentation, analyse des signaux audio et vidéo	*6*	
M2	S10	EIEAI4GM	Débruitage et classification des signaux et images, traitement de la parole et de la musique	*6*	
M2	S10		***Spécialisation Médical***		
M2	S9	EIEAI3IM	Techniques d'imagerie et images en médecine	*4*	
M2	S9	EIEAI3JM	Interactions photons et électrons haute énergie	*3*	
M2	S10	EIEAI4HM	Implémentation et optimisation d'algorithmes de traitement des images	*3*	
		EIEAI4IM	Extraction de données anatomiques et physiopathologiques	*4*	
		EIEAI4JM	Imagerie fonctionnelle médicale	*5*	

M2	S10	EIEAE4BM	STAGE		15
M2	S10				

Specialisation GBM				*ECTS si option*	ECTS
M1	S7	EMEAM1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAM1BM	Techniques et Implémentation de Méthodes Numériques		3
M1	S7	EMEAM1CM	Outils chimiques pour le biomédical		3
M1	S7	EMEAM1DM	Informatique et base de données		3
M1	S7	EMEAM1EM	Traitement des images		3
M1	S7	EMEAM1FM	Instrumentation et chaîne de mesure		3
M1	S7	EMEAM1GM	Signaux et systèmes		3
M1	S7	EMEAM1HM	Introduction à l'exploitation statistique de données		3
M1	S7	EMEAM1KM	Traitement numérique du signal		3
M1	S7	EMEAM1LM	Outils scientifiques pour la métrologie		3
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAM2AM	Analyse et interprétation des images		3
M1	S8	EMEAM2BM	Physique pour l'instrumentation		3
M1	S8	EMEAM2CM	Capteurs bio-médicaux		3
M1	S8	EMEAM2DM	Imageries médicales		3
M1	S8	EMEAM2EM	Capteurs chimiques		3
M1	S8	EMEAM2FM	Chimie, biochimie et biomatériaux pour la santé		6
M1	S8	EMEAM2JM	Physique médicale et dosimétrie		3
M1	S8	EMEAG2KM	INITIATION À LA RECHERCHE ET PROJET		3
M1	S8	EMEAE2VM	ANGLAIS		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M1	S8		**Stage recherche, 6 semaines minimum**		6
M2	S9	EIEAM3BM	Législation et gestion des risques en santé		3
M2	S9	EIEAM3CM	Radioprotection pour les applications médicales		4
M2	S9	EIEAM3DM	Informatique en santé (réseau, DICOM, PACS, Télésanté)		3
M2	S9	EIEAM3LM	Marketing		3
M2	S9	EIEAM3MM	Ingénierie des capteurs		8
M2	S9	EIEAM3NM	DMTB1 Dispositifs Médicaux et Thématiques Biomédicales 1		6
M2	S9	EIEAM3VM	Anglais		3
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2
M2	S10	EIEAM4BM	DMTB 2 Dispositifs Médicaux et Thématiques Biomédicales 2		5

M2	S10	EIEAM4CM	Ingénierie Biomédicale		5
M2	S10	EIEAM4EM	Management en santé		5
M2	S10	EIEAM4DM	STAGE		15
M2	S10				

			Specialisation STP	*ECTS si option*	ECTS
M1	S7	EMEAP1AM	CONNAISSANCE DE L'ENTREPRISE ET COMMUNICATION		3
M1	S7	EMEAP1CM	ELECTRICITÉ : RISQUES ET PERTURBATIONS		3
M1	S7	EMEAP1GM	DÉCHARGES ET PLASMAS DANS LE GÉNIE ÉLECTRIQUE		3
M1	S7	EMEAP1FM	INSTRUMENTATION ET CHAÎNE DE MESURE		3
M1	S7	EMEAP1DM	PHYSIQUE DES PLASMAS : PRINCIPES DE BASE		6
M1	S7	EMEAP1HM	SOURCES PLASMAS		3
M1	S7	EMEAP1IM	MINI-PROJET PLASMAS		3
M1	S7	EMEAP1EM	SIMULATION MULTIPHYSIQUE		3
M1	S7	EMEAP1VM	ANGLAIS		3
M1	S7		**Préparation au certificat de langue**		3
M1	S7		**C2i-MI, entrepreneuriat, innovation**		4
M1	S8	EMEAP2AM	ALIMENTATION DES PLASMAS		3
M1	S8	EMEAP2BM	STAGE M1 PARCOURS LOCAL		11
M1	S8	EMEAP2CM	PLASMAS POUR LE BIOMÉDICAL		3
M1	S8	EMEAP2DM	PLASMAS POUR L'AÉRONAUTIQUE ET L'ESPACE		5
M1	S8	EMEAP2EM	PLASMAS POUR L'ÉNERGIE ET L'ENVIRONNEMENT		5
M1	S8	EMEAP2FM	PROPRIÉTÉS DES MATÉRIAUX		3
M1	S8		**Implication citoyenne (à faire en L2 et/ou L3 et/ou M1)**		5
M2	S9	EIEAP33IM	UE à choix (1/2)		3
M2	S9		MATÉRIAUX DIÉLECTRIQUES ET FIABILITÉ		
M2	S9		SOURCES PLASMAS		
M2	S9	EIEAP31IM	UE à choix (1/2)		3
M2	S9		TECHNIQUES ET IMPLÉMENTATION DE MÉTHODES NUMÉRIQUES		
M2	S9		MINI-PROJET PLASMAS		
M2	S9	EIEAP3NM	OUVERTURE VERS LE MILIEU PROFESSIONNEL		3
M2	S9	EIEAP32IM	UE à choix (1/2)		6
M2	S9		MATÉRIAUX : MODÉLISATION, ÉLABORATION ET CARACTÉRISATION		
M2	S9		PHYSIQUE DES PLASMAS : PRINCIPES DE BASE		
M2	S9	EIEAP3JM	DIAGNOSTICS DES PLASMAS		3
M2	S9	EIEAP3CM	MODÉLISATION DES PLASMAS		3
M2	S9	EIEAP3LM	ANGLAIS		3
M2	S9	EIEAP3MM	ATELIERS MICRO-ÉLECTRONIQUES		6
M2	S9		**Préparation au certificat de langue**		3
M2	S9		**C2i-MI, entrepreneuriat, innovation**		2

M2	S10	EIEAP4FM	Plasmas pour l'aéronautique et l'espace		6
M2	S10		Plasmas pour l'énergie et l'environnement		6
M2	S10		Plasmas pour le biomédical		3
M2	S10		STAGE M2 Parcours local		15