ASIIN Seal & EUR-ACE® Label

Accreditation Report

National Diploma Degree Programmes
Mechanical Engineering
Process Engineering

Provided by
Institute of Technology Sfax

Version: 24 June 2022

Table of Content

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]
Diplôme National d'Ingénieur en Génie Mécanique	Mechanical Engineering	ASIIN, EUR-ACE® Label	--	TC 01
Diplôme National d'Ingénieur en Génie des Procédés	Process Engineering	ASIIN, EUR-ACE® Label	--	TC 01
Date of the contract: 2021-02-16 **Submission of the final version of the self-assessment report:** 2021-03-01 **Date of the onsite visit:** 5./6. May 2021 **at: online**				
Peer panel: Amal Ben Henda, Student Dr. Juergen Kussi, Bayer AG Prof. Dr. Ruediger Lange, Technical University of Dresden Prof. Dr. Jens Schuster, University of Applied Sciences Kaiserslautern				
Representative of the ASIIN headquarter: Dr. Michael Meyer				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				
European Standards and Guidelines as of 15.05.2015				

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes

[2] TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering; TC 02 - Electrical Engineering/Information Technology; TC 03 - Civil Engineering, Geodesy and Architecture; TC 04 - Informatics/Computer Science; TC 05 - Physical Technologies, Materials and Processes; TC 06 - Industrial Engineering; TC 07 - Business Informatics/Information Systems; TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture; TC 09 - Chemistry; TC 10 - Life Sciences; TC 11 - Geosciences; TC 12 - Mathematics; TC 13 - Physics.

ASIIN General Criteria, as of 10.12.2015 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering as of 09.12.2011	

B Characteristics of the Degree Programmes

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
Diplôme National d'Ingénieur en Génie Mécanique	National Mechanical Engineering Dipoma		7	Full time	--	6 Semester	180 ECTS	Once a year in Fall/Winter Semester; first offered in 2014
Diplôme National d'Ingénieur en Génie des Procédés	National Process Engineering Diploma		7	Full time	--	6 Semester	xxx ECTS/other CP	Once a year in Fall/Winter Semester; first offered in 2013

For the Diploma programme Mechanical Engineering the institution has presented the following profile in the self-assessment report.

Mechanical engineering refers to the set of knowledge related to mechanics, which is relevant to physical study of systems (movement, deformation, balance, metallurgy) and the technical one (mechanism), which will be used to create the diversity of mechanical products and systems. Combined with electronics, computer sciences and industrial automation, mechanic is the origin of major technological progress and is present in all leading sectors and the most active innovation areas.

At IIT, the choice of mechanical engineering was based on an in-depth analysis of the national industrial environment. It is obvious that this specialty is a technological discipline representing a core business in its own right in the industrial ecosystem, especially those with strategic objectives in the country such as those related to steel construction, manufacturing, petrochemicals, production, transportation and exploitation of conventional and new energies and the field of transportation. Mechanical engineering combines the associated knowledge in an engineering vision.

The role of the mechanical engineer is crucial in monitoring an industrial product throughout its life cycle: research and development, design, pre-project, development, industriali-

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

zation and organization, operation, recycling, etc. He is in charge of designing, dimensioning, modeling, optimizing, testing, realizing, installing, perfecting and maintaining mechanical systems. A prominent technical and scientific expert is able to work on both machines and advanced software, in collaboration with the design offices. It represents a technical job but rich in innovations, for expert candidates with a passion for technology.

For the Diploma programme Process Engineering the institution has presented the following profile in the self-assessment report.

Process engineering can be defined as the convergence of several disciplines that combine the knowledge and expertise that support the industrial transformation of raw or synthetic materials into one or more manufactured products by using unitary operations.

The process engineer is in direct connection with the major challenges of the century, mainly energy management, optimal transformation of raw materials to the limitation of environmental and safety hazards. In order to meet these challenges, higher education in process engineering has to rely on theoretical and practical knowledge in the different transfer phenomena, on all unit operations and through a good mastery of calculation methods, computer science and simulation.

A process engineer must also have a good sense of innovation and master the tools for designing new processes for the transformation and valorisation of matter and energy. He must have the ability to optimize operational processes and ensure the efficient running of production and transformation chains. Controlling the passage from laboratory scale to pilot and then industrial scale is also essential as well as respecting international standards related to quality, hygiene, safety and environment.

All these competencies give this specialty a wide range of potential sectors of activity in which the engineer can practice and innovate.

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:

- Objective Module Matrices for both degree programmes
- Presentation of the EPI Group
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
For the two degree programmes under review, the IIT presents extensive descriptions of the learning outcomes in the annex of their self-assessment report (SAR). These descriptions are accompanied by objective-module-matrices for each degree programme, matching learning objectives, modules, and the ASIIN subject-specific criteria (SSC).

The peers analyse the described learning outcomes and agree that they are overall consistent with the expectations of the European Qualification Framework Level 7 (equivalent to a Master's degree programme) as well as the respective Subject-Specific Criteria of the ASIIN Technical Committees 01-Mechanical and Process Engineering. Furthermore, they comply with the standards and criteria of the EUR-ACE Label.

Graduates should have consolidated knowledge of mathematic-scientific and engineering principles of mechanical engineering / process engineering and they should be qualified to analyse, solve, abstract and formulate practice-oriented problems and to apply innovative methods to problem solving. Additional the peers recognise that graduates should be able to identify, find and procure necessary information, plan and carry out analytic, model and experimental investigations and to investigate and assess the application of new and

[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.

emerging technologies in their discipline. The peers also determined that the graduates of IIT should be able to work in teams and to communicate with all parts of stakeholders.

In summary, the peers regard the qualification objectives to be adequate. From their point of view, the objectives will offer good chances for the graduates on the Tunesian labor market. For the past IIT confirmed that graduates had found jobs easily. Due to the Covil-19 pandemic, the labor market in Tunesia decreased dramatically. The peers appreciate that IIT has intensive its advisory system and support for students to find a job.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
The names of the programmes are published on the subject-specific webpage and in the examination regulations. The panel confirms that the name of the programme reflects the intended aims and learning outcomes completely.

Criterion 1.3 Curriculum

Evidence:

- Objective-module-matrices for both degree programmes
- Study plans for both degree programmes
- Module descriptions for each degree programme
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
In general at IIT, each student has to undertake a two-year long preparatory course before beginning studying the speciality, in this case mechanical or process engineering. The integrated preparatory course (IPC) allows graduates to access one of the study fields offered by IIT without competitive examination as the transition is made on the basis of continuous assessment. The IPC includes a common first year for all students of IIT and a second year of pre-course selection where students are given different study fields to choose. The con-

tents of the courses allow students to confidently develop skills in a professional engineering environment. Students are able to explore different fields of study before deciding which programme to study.

After the second year of study, students decide which of the engineering study programmes they want to pursue. In the following, the curriculum will focus on those three years when students study their specification. At IIT, those are the last three years of a five-year programme.

The Curriculum of the Mechanical Engineering Programme contains after the preparatory courses in the first year the modules Mathematics, industrial data, Management, design of mechanical systems, mechanical performance, energy and manufactory. In the second year the following modules are included: Manufacturing, Analyses of Materials, analysis of automation systems, performance of mechanical systems, on board systems and a module to prepare the professional career. The last year contains modules about design of industrial systems, applications of electrical systems and management of production systems. Additional students have two select five elective courses in one of the fields of Aeronautic, Energy, Industry 4.0 or Mechatronics and Automation. Finally, they have to pass a graduation project combined with an internship.

The curriculum of the Process Engineering Programme includes in the first year modules about applied Mathematics, Chemistry, Industrial IT, Thermodynamics, Transfer phenomes and Environment and Energy. In the second year students have to pass the modules unit Operations 1 and 2, Automation and Balance Sheet, energy, Electrochemistry and a module to prepare the professional career. The last year contains modules about advanced Processes 1 and 2. Additional students have two select five elective courses in one of the fields of Energy, Water environment, oil, or Agri-food. Finally, they have to pass a graduation project combined with an internship.

The peers review the curricula of the two degree programmes under consideration in order to identify whether the available modules are able to achieve the described qualification objectives. They take into consideration the study plans, objective-module-matrices and the individual module descriptions. The peers assess that the curricula of both degree programmes, detailed in the annex of this accreditation report, are well-founded, match international standards and thus allow the students to become well prepared for national and international occupations.

Overall, the peers conclude that the curriculum implements the intended learning outcomes adequately.

Criterion 1.4 Admission requirements

Evidence:

- Admission process
- Admission requirements
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:

From the information provided, the peers understand that admission to IIT and the respective degree programmes is generally based upon the final grade of the previous education, notwithstanding the different types of educational options. Students may apply directly to the two programmes when they have already obtained a Bachelor's degree or a Licence. Yet, students may also attain the two-year preparatory courses at IIT. Regardless of which educational path has been chosen, a ranking of the final grade of each applicant is established based on a certain calculation in which the average grade is valued four-times, the highest grade of either Mathematics, Physics, Engineering or Computer Science is also valued four-times and the highest grade of either French or English is valued two-times. Based on this ranking, interviews are carried out by the respective departments to assess the motivation of the best applicants. After the completion of the assessment process, applicants are ranked on a point-based system.

During the discussion with the students, the peers gained the impression that students are well informed about the admission requirements and procedures as all necessary information is gathered on IIT's website and published in the internal rules and regulations. Consequently, the peers judge the process to be transparent and adequate for selecting the best students for each degree programme.

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

As the university abstain from any comment on this criterion, the panel confirms their former assessment. They see the criterion completely fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Discussions with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
The structure of the programmes under review is clearly outlined on the subject-specific website. The programmes consiss of modules, which comprise a sum of teaching and learning. The module descriptions are also published on the subject-specific website. Based on the analysis of the sequence of modules and the respective module descriptions the peers concluded that the structure ensures that the learning outcomes can be reached by the students in general.

All modules include three to five courses. In most cases, contents are concerted adequately but in some modules the courses combined are relatively heterogeneous regarding their contents. For example is the course “scientific research and writhing methods” in the module General management training of the Mechanical Engineering programme combined with courses about economy and management. Therefore, the panel recommends to consider more intensively the context between the different sub-modules

The programmes also offers several elective courses, which allow students to define an individual focus. Based on the analysis of the curriculum and the module descriptions the peers confirmed that the objectives of the modules and their respective content help to reach both the qualification level and the overall intended learning outcomes.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Study plan of the degree programme
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:
As a credit point system, the universities use ECTS that is based on the complete student workload during contact hours at IIT and self-study periods. The overall workload in the programme are equivalent to 180 ECTS-Point in six semesters. Each Semester includes 30 ECTS-Points.

Compared to the objectives and the content, the workload defined for the individual modules seems to be realistic for the peers and they see that structure-related peaks in the workload have been avoided. The student feedback regarding the workload, which is regularly compiled through the course evaluation survey undertaken at the end of each study year, shows that students are generally content with their workload and believe the awarded credits to reflect the workload adequately.

Criterion 2.3 Teaching methodology

- Overview of permanent teachers‘ pedagogical evaluation
- Overview of pedagogical training
- Examples of pedagogical trainings
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:

Both degree programmes under review make use of different educational methods for teaching the courses, such as lectures, seminars, tutorials, laboratory practical work, excursions, internships, mini-projects and the final projects. The teachers further emphasize that for the majority of courses, scripts are available and that videos, mostly for the utilization of programming software, are also produced by IIT so the students can continue learning at home.

While the peers generally appreciate the possible teaching methods, they notice that students are mostly taught in lectures or seminars. While these forms of teaching are important to convey the theoretical aspects of each topic, for engineering programmes it is also crucial that students learn how to apply these skills. The peers acknowledge that students gain some practical skills through the internships, through the graduation project that is mostly combined with the internships but that they gain comparable less practical experiences in labs. Especially the work in laboratories is of great importance to the education of future engineers. During the discussions with the students and with the partners from industry, the peers learn that both also see a need for more practical, hands-on train-

ing of the students. As such, the peers recommend to create more opportunities for students to apply their theoretical knowledge in practice and to gain more hands-on experience.

The peers appreciate that IIT implemented several projects in different modules and a bigger project in the second year and established student-oriented learning and teaching elements.

Basics of project management students learn in the module "preparation for professional career". From the view of the peers it could be helpful to offer more opportunities for students to train their skills in project management including economic knowledge to calculate projects as well as communication abilities.

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:

During the on-site discussions with the programme coordinators, the teachers and especially the students, the peers gather a comprehensive impression of the offers related to supporting and assisting the students. Being a private university, IIT manages to offer classes in small size which enables close relations between staff and students and thus allows for constant and direct feedback in case any issues arise.

The students confirm that they are generally very satisfied with the support and assistance they receive from their professors and the teaching staff and that they can contact them at any time if problems of occur, whether related to the taught subjects or of a personal nature. As most teachers are non-permanent teachers, meaning they hold other occupations as well, the peers ask how student hold contact to these members of staff. They learn that non-permanent teachers have certain days during which they are always available in person but that students can also reach them throughout the entire week via email or phone.

Apart from subject-specific support, IIT also offers several other means to aid its students: the international office supports international mobility and annual career fairs allow students to connect with possible future employers.

In summary, the peers are satisfied with the support and assistance the students at EPI receive.

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

The peers appreciate the announcement of the university to discuss the structure of the modules.

Regarding the practical experiences and hand-on trainings of the students, the university set out to recommend students to extend their internships. The peers mentioned that this option would increase the workload of the students without being calculated for the credit points. Further on, it would be only voluntary for students and could not ensure, that students would get more experiences in lab practice. The university highlighted the remarkable number of workshops included in both programmes regarding the practical orientation of the students. But as the representatives of the labor market and the students themselves still see a lack in practical experiences the peers confirm their corresponding recommendation.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- Examination regulations
- Discussion with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:

The peers analyse the provided documents and notice that all course content within the reviewed degree programmes is examined. Examination types are selected based on their competences orientation and may include written exams, oral exams, presentations and project work, either alone or in teams. All relevant rules and regulations regarding the exam procedure are anchored and published on IIT's website. The presented module descriptions note the form of the examination.

Examinations take place two weeks after completion of the individual modules. This means that all module examinations are conducted at the end of the respective semester within a period of two weeks.

Due to the module structure and the fact that each course within a module has it own exam students have to pass up to 14 exams in a semester, which means during the examination

period several exams at one day could be possible. Although the students do not complain about the number of exams, it should be reduced from the point of view of the panel. Not only due to the accumulation of exams at the end of the semesters but also because of didactical reasons. In a study programme at level 7 of EQF student should be prepared for independent work and a close guided examination system do not really encourage students work independently. Therefore, the panel recommended to implement more exams of the complete modules instead of the single courses.

The panel assesses the exams of the single courses and find the requirements adequate to the aimed qualification level. As there is no final thesis implemented in the programmes the graduation project should replace it. After the assessment of several examples of the graduation project, the peers got the impression that these projects are close connected to the internships with tasks defined from industry partners. The panel appreciate final projects or theses combined with industry partners in general, if the requirements are defined by the university. Additionally, the peers got the impression that the scientific orientation of the projects does not correspond to an adequate final project. Therefore, they find it necessary to implement a thesis or final project, which ensures that students work on a set task independently at the level 7 of the EQF. That includes and adequate use of scientific research and writing methods.

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

The peers appreciate the announcement of the university to reduce the number of exams. As there could not be done any changes yet the peers confirm their corresponding recommendation.

Regarding the quality of the graduation project the university explains that students will be prepared for scientific writing in a separate module in order to elaborate the graduation project in an adequate way. The peers point out that they did not only see a lack in the scientific writing of the students but also in the tasks students have to deal in the graduation project. In their impression the tasks given by the industry partners do not have scientific requirements but are orientated at current practical issues the companies are dealing with. Therefore, the peers find it necessary that professors of the university mast define the tasks for the final projects in order to ensure a scientific orientation of the final project.

4. Resources

Criterion 4.1 Staff

Evidence:

- Lists of teachers
- Résumés of Teachers
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
In the self-assessment report the university presents data about the number and overall qualification of staff for the respective programmes and during the discussion the peers gained a good impression of the quality of the teaching personnel. Based on legal requirements in Tunesia, teaching staff must at least have a qualification on Master level and it is recommended that 50% of the staff members should hold a PhD. During the academic year 2020-21 24 fulltime lecturers are engaged at the university including 13 PhD-Graduates. 11 staff members have the status of professors.

Since IIT is a private University it does not follow completely the hierarchy of public Universities in Tunisia. Full professorships are not awarded, the difference between the staff members is their salary based on the individual teaching load as well as the qualification and performance. Nevertheless, IIT follows the definition of the minister for staff quantity with one professor for 25 students.

The quantity of the teaching staff ensures not only the implementation of the lectures but also the supporting and advisory system.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Discussions with programme coordinators and teaching staff

Preliminary assessment and analysis of the peers:
There are offers and support mechanisms available for teaching staff who wish to further develop their teaching skills. IIT also support research activities of the teaching staff in different ways. As there are no sabbaticals at private universities, IIT defined special holidays for 1-2 month wherein professors are able to work on specific research activities. But as most lecturers are more teaching oriented only few professors of IIT are publishing papers. The peers can understand this structure based on the general orientation of IIT as a practice

oriented university. Nevertheless, the panel recommends to offer more opportunities for the teaching staff to conduct more intensively research activities.

Criterion 4.3 Funds and equipment

Evidence:

- Partnership Agreements
- List of laboratories and equipment
- On-site visit
- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
During the online visit, the peers were able to gain a comprehensive impression of the facilities and laboratories at the faculty. Being a private institution, IIT is funded solely by tuition fees and donations from private enterprises as no government support is provided to sustain the institution.

The laboratories on-site are considered to be adequate for the conveyance of the programmes' fundamentals. The peers learn that it is not common for private universities in Tunisia to possess laboratories on their own facilities and that in order to perform the practical work, the departments close contracts with public universities or private companies that own the necessary equipment. For the two degree programmes Civil Engineering and Industrial Engineering, the students are gathered at IIT and are transported via bus shuttles to the respective facilities where the equipment is located. Although this seems quite unusual to the peers, they are able to understand that this procedure is well established and working and that the students are content with this arrangement.

The peers are convinced that the financial means were sufficient and secured for the timeframe of the accreditation. The equipment of the labs ensures the implementation of the programme.

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

The university mentions in its comment several research activities of the teaching staff. The peers appreciate that IIT is the first private university where professors have opportunities for research projects at all. Nevertheless they recommend to strengthen this activities by additional support of the university.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions

Preliminary assessment and analysis of the peers:
The students, as well as all other stakeholders, have access to the module descriptions via the websites of the programmes.

After reviewing the module descriptions, the peers confirm that they include all necessary information about the persons responsible for each module, the teaching methods and workload, the awarded credit points, the intended learning outcomes, the content, the admission and examination requirements and the forms of assessment.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

Evidence:

- Sample Diploma Supplement for each degree programme
- Self-Assessment Report

Preliminary assessment and analysis of the peers:
From the presented documents, the peers understand that at the graduation every student is awarded a Diploma, a Diploma Supplement and a transcript of records. The diploma supplements inform about the content and the objectives of the programmes but there are no statistical data according to the ECTS-Users‘ guide in addition to the final grade. For external stakeholder it would be helpful to know how many percentage of the graduates got an A, B,C or D in order to rank the individual grad in the graduation scheme of IIT.

Criterion 5.3 Relevant rules

Evidence:

- Internal Rules
- Exams Rules

- Self-Assessment Report
- Discussions during the on-site visit

Preliminary assessment and analysis of the peers:
From the documents provided as well as the discussions during the on-site visit, the peers assess that IIT follows a policy of transparent and open rules and regulations. All required rules and regulations are made accessible to students and are published on IIT's website. The discussion with the students confirms that they feel well informed about regulations and comfortable about the access to any information pertaining their degree programmes.

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

As the university abstain from any comment, the panel confirms their former assessment.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Statistics about students
- Questionnaire used for the evaluation of studies/teaching
- Industrial partners satisfaction questionnaire
- Overview of pedagogic monitoring
- Training/awareness plan
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
From the documents presented and from the discussions during the online visit the peers gain a positive impression of the quality management procedures that are in place at IIT and for the programmes under review.

Since IIT is a private university funded among others by the fees paid by the students the reliance on students' feedback and the necessity to ensure and improve the employability of the graduates are of major importance to the coordinators. Each course is being evaluated constantly through different surveys by teachers and students. Further surveys are

carried out by gathering statistics about graduates and alumni. The discussion with the students revealed that those in charge are always eager and open for feedback aside from the official evaluations and that students have the impression that their comments are taken into consideration with regard to the further improvement of the programmes. This becomes apparent in the constant curricular revision process that is performed under participation of students and industry partners. The industry representatives confirm in the discussion that the university is eager to receive feedback about new developments and trends and the employability of their graduates.

That this process is fruitful and effective, becomes visible in the high percentage of graduates that find employment immediately after graduation. Concerning the internal feedback loops the results of the course evaluations are centrally assessed and analysed before they are communicated to the Head of Department. He would then be responsible to initiate any measures if problems or needs for improvement have been detected. A summary of the results is made accessible to the students. In case the satisfaction of the students with staff members is deficient, the Heads of Department will contact the respective teacher, discuss the issue and propose solutions. If no improvement can be achieved over a longer period, the staff member will be dismissed. Thus, the peers agree that the quality management circles at IIT are well established and work under participation of all stakeholders.

In summary, the peers are satisfied with the quality management system at IIT, especially with the continuous feedback loops and the involvement of important stakeholder groups such as students, alumni and representatives from the industry.

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

As the university abstain from any comment, the panel confirms their former assessment.

D Additional Documents

„No additional documents needed“

E Comment of the Higher Education Institution

The university abstain from a comment.

F Summary: Peer recommendations

The peers recommend the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
National Diploma Mechanical Engineering	Without requirements	--	30.09.2026
National Diploma Process Engineering	Without requirements	--	30.09.2026

Requirements

A 1. ASIIN 3) Implement a thesis or final project which ensures that students work on a set task independently and at the level aimed for.

A 2. Provide statistical data according to the ECTS-Users‘ guide in addition to the final grade.

Recommendations

For both programmes

E 1. (ASIIN 4.2) It is recommended to offer more opportunities for the teaching staff to conduct more intensively research activities, e.g. sabbaticals.

E 2. (ASIIN 2.3) It is recommended to offer more opportunities for students to gain more practical experiences, e.g. by more lab practice.

E 3. It is recommended to reduce the number of exams in each semester or extend the period to write exams.

E 4. It is recommended to support foreign students more intensively regarding organizational and administrative issues.

E 5. (ASIIN 2.2, 2.3) It is recommended to consider more intensively the context between the different sub-modules in the didactical concept and the module structure.

G Comment of the Technical Committee 01 – Mechanical Engineering / Process Engineering

The Technical Committee discusses the procedure and follows the peers without any changes.

H Decision of the Accreditation Commission

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the procedure and follows the peers without any changes. As the peers assess the curricula much more positive than in the other procedure the commission find an accreditation with requirements adequately.

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 comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 01 – Mechanical Engineering/Process Engineering.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
National Diploma Mechanical Engineering	With requirements for one year	EUR-ACE	30.09.2026

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
National Diploma Process Engineering	With requirements for one year	EUR-ACE	30.09.2026

Requirements

A 1. ASIIN 3) Implement a thesis or final project which ensures that students work on a set task independently and at the level aimed for.

A 2. Provide statistical data according to the ECTS-Users‘ guide in addition to the final grade.

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For both programmes

E 1. (ASIIN 4.2) It is recommended to offer more opportunities for the teaching staff to conduct more intensively research activities, e.g. sabbaticals.

E 2. (ASIIN 2.3) It is recommended to offer more opportunities for students to gain more practical experiences, e.g. by more lab practice.

E 3. It is recommended to reduce the number of exams in each semester or extend the period to write exams.

E 4. It is recommended to support foreign students more intensively regarding organizational and administrative issues.

E 5. (ASIIN 2.2, 2.3) It is recommended to consider more intensively the context between the different sub-modules in the didactical concept and the module structure.

I Decision of the Accreditation Commission

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
National Diploma Mechanical Engineering	All Requirements fulfilled	EUR-ACE	30.09.2026
National Diploma Process Engineering	All Requirements fulfilled	EUR-ACE	30.09.2026

Appendix: Programme Learning Outcomes and Curricula

According to the SAR the following **objectives** and **learning outcomes** shall be achieved by the Diploma programme Mechanical Engineering:

AS-1. Service sector: Numerical calculation and simulation, design offices and control, industrial consulting and assistance, etc.
AS-2. Industrial sector: Automotive, aeronautics and railways, food processing, equipment, construction, production, robotics, high technological added value services, etc.
AS-3. Research and Development Centers: Mechanical engineers are therefore a crucial element in the industrial ecosystem and can primarily exercise the following professions:

P1- Maintenance Engineer: The industrial maintenance engineer's mission is to ensure the proper work and availability of the production activities' resources. Within this framework, he implements a corrective and preventive maintenance strategy on the site and manages the teams under his responsibility.

P2- Production Engineer: has a versatile role, varying from the analysis of the mechanical requirements of the production to the quality control. Depending on the company's size, he will be in charge of all or part of these functions. He is a team leader who devotes his time to the office and the workshops. As a good communicator, he knows the company's business, the materials and the specificities of mechanics very well.
P3- Design or control office engineer: is a project manager working in the design, research and development departments. A Control Office Engineer is a client, within the framework of a contract, who ensures that the regulatory requirements in terms of safety and structural solidity imposed by legislation are met for a given product/service.

P4- Materials Engineer: has a crucial role in the product innovation. He is essentially in charge of the design and the choice to be made in the purchase of the materials to be used, ensures cost reduction and the conformity and optimal use of raw materials.

P5- Mechatronics Engineer: is distinguished by his ability to handle electronics, computer sciences and mechanics at the same time, with the aim of designing intelligent and communicating integrated systems, or technological innovations that will be used in the automotive, aeronautics or energy sectors.

P6- Research and Development Engineer: participates in the design and development of new products, services or processes as part of an innovation project.

P7- Metal Construction Engineer: is in charge, in the design offices of service companies or engineering companies, of designing construction projects for buildings built from steel frames and structures - in particular industrial buildings, warehouses and shopping centers and or structures such as bridges, footbridges, dam gates...

P8- Project Management Engineer: supervises a team of engineers, industrial business managers or a project team to carry out projects of high technical and financial value (products, equipment, installations, services, solutions).

P9- Energy Engineer: is involved in all areas of energy efficiency, from design to renovations, including management and consultation with project owners and residents, local elected officials and administrations. He also works in the sectors of energy production, transmission and distribution.

- **Specific competences:** This type of competences is specific for mechanical engineering. They are subdivided into 16 subgroups:

SC1- To know and master the fundamental mathematical-scientific principles adapted to the engineering.

SC2- Know and master an approach to the application of a set of concepts and techniques of applied sciences with a full awareness of new discoveries in mechanical engineering.

SC3- Identify, analyze, and solve industrial problems specific to the study, design and production of mechanical systems and products using appropriate methods: modeling, simulation and optimization.

SC4- Analyze, model, and solve complex problems requiring the integration of emerging and innovative technologies.

SC5- Conceive designs for machinery, devices, programs or processes correspondent to the status of their knowledge and to develop them according to specified requirements.

SC6- Develop solutions for practice-oriented and partially usual/unusual problems.

SC7- Use their creativity to develop new and inventive practical solutions

SC8- Identify, find and procure necessary information in order to plan and carry out analytic, model and experimental investigations.

SC9- Assess data critically, investigate the application of new and emerging technologies and draw conclusions

SC10- Transfer new findings in engineering and natural sciences to industrial and commercial production under consideration of economic, ecologic and safety requirements as well as sustainability and environmental compatibility

SC11- Plan, control and monitor processes and to develop and operate systems and equipment

SC12- Familiarize themselves in a fast and targeted way with the new and unknown.

SC13- Function effectively as an individual and as a member of a team, including where relevant coordination of the team with effective communication abilities.

SC14- Demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context, and commit to professional ethics, responsibilities and norms of mechanical engineering practice

SC15- Working effectively in national and international contexts: mastery of several foreign languages, economic training, cultural openness, etc.

SC16- Developing intellectual skills related to research and development

These skills granted to future mechanical engineers at IIT allow them to easily integrate into the professional environment and to practice their businesses effectively.

The following **curriculum** is presented:

Department : Mechanical Engineering

Level of Study	Module	Coef GM	Coeff	Credit	Sem	Codification	Submodule	Out of Class Activities	Contact Hours	Total
First Year	GM1 Mathematics for engineers	5	1	1	1	GM 03 101	Mathematics for the engineer 01	14	21	35
			2	2	2	GM 03 201	Mathematics for the engineer 02	21	21	42
			2	2	2	GM 03 202	Probability and statistics	21	21	42
	GM2 Industrial data	8	2	2	2	GM 03 102	Applied computing	28	35	63
			1	1	1	GM 03 103	Regulation 01	7	21	28
			1	1	1	GM 03 104	Signal processing	14	14	28
			2	2	1	GM 03 105	Measurement and electrical installations	21	42	63
			2	2	2	GM 03 203	Robotics Workshop 01	28	28	56
	GM3 General and managerial training / Management industrielle	10	2	2	1	GM 03 106	Economy for the engineer	21	21	42
			2	2	2	GM 03 204	Management for the engineer	21	21	42
			2	2	2	GM 03 205	Scientific research and writing methodology	21	21	42
			2	2	1	GM 03 107	Preparation 01 for DELF	28	42	70
			2	2	2	GM 03 206	Preparation 02 for DELF	28	42	70
	GM4 Study and design of Mechanical Systems	10	2	2	1	GM 03 108	Design and analysis of mechanical systems 01	21	28	49
			2	2	2	GM 03 207	Design and analysis of mechanical systems 02	21	28	49
			2	2	1	GM 03 109	CAD Workshop- 01	28	28	56
			2	2	2	GM 03 208	CAD Workshop- 02	28	28	56
			2	2	1	GM 03 110	Computer-assisted drawing workshop	28	28	56
	GM5 Mechanical performance	7	2	2	1	GM 03 111	Solid mechanics	21	28	49
			2	2	1	GM 03 112	Material resistance RDM	21	28	49
			1	1	1	GM 03 209	Mechanical workshop	21	14	35
			2	2	2	GM 03 210	Mechanics of continuous media (MMC)	28	28	56
	GM6 Energy	8	2	2	2	GM 03 211	Thermal transfer	21	35	56
			1	1	1	GM 03 117	Thermodynamics	14	21	35
			2	2	2	GM 03 212	Study, modeling and optimization of renewable energy systems	21	21	42
			1	1	1	GM 03 113	Materials 01: Physical metallurgy	14	21	35
			2	2	2	GM 03 213	Materials 01: Polymer	14	28	42
	GM7 Manufacture	12	3	3	1	GM 03 114	Shaping without removing material	35	35	70
			3	3	2	GM 03 214	Shaping with material removal	35	35	70
			2	2	1	GM 03 115	Diagnosis and maintenance of mechanical systems	21	21	42

			2	2	2	GM 03 215	Metrology: measuring instruments	21	28	49
			2	2	1	GM 03 116	Quality management	21	21	42
	Total	**60**	**60**	**60**				707	**854**	**1561**

Level of Study	Module	Coef GM	Coeff	Credit	Sem	Codification	Submodule	Out of Class Activities	Contact H
Second Year	**GM1 Manufacturing**	**11**	2	2	1	GM 04 101	Power transmission system 01	21	28
			2	2	2	GM 04 201	Power transmission system 02	21	28
			3	3	2	GM 04 112	Manufacturing analysis	28	35
			2	2	1	GM 04 113	Numerically Controlled Machine Tools	35	35
			2	2	2	GM 04 209	Additive manufacturing	21	28
	GM2 Study and analysis of materials	**11**	2	2	1	GM 04 103	Materials03: Heat treatment	21	28
			3	3	2	GM 04 202	Materials 04: Analysis and behavior of materials	28	35
			2	2	1	GM 04 102	Non Destructive Control	35	35
			2	2	1	GM 04 104	Corrosion and Treatments and surfaces	21	28
			2	2	2	GM 04 203	Welding processes and metallurgy	21	35
	GM3 Performance of mechanical systems	**10**	2	2	1	GM 04 105	Modeling and Design of a metal structure	21	28
			2	2	1	GM 04 106	Modeling and Design by Finite element	21	28
			2	2	2	GM 04 204	Vibratory mechanics	21	28
			2	2	1	GM 04 107	Fluid mechanics	21	28
	GM4 Analysis of automatic systems	8	2	2	2	GM 04 205	Automation and Industrial IT	21	28
			2	2	2	GM 04 206	Operational research	21	21
			2	2	1	GM 04 108	Data analysis	21	28
			2	2	1	GM 04 109	Study of robotic systems	21	28
	GM5 Study of on-board systems	**11**	2	2	1	GM 04 110	control and industrial electronics	35	35
			2	2	2	GM 04 207	Control and regulation 02	21	21
			3	3	2	GM 04 208	Electrical engineering	35	28
			2	2	1	GM 04 211	Automotive Mechatronics 01	21	21
			2	2	1	GM 04 111	Electric machine	21	35
	GM6 Preparation for Professional Career	11	2	2	1	GM 04 114	Preparation for BEC 01 certification	28	42
			2	2	2	GM 04 212	Preparation for BEC 02 certification	28	42
			2	2	2	GM 04 210	Mechanical workshop	21	35
			2	2	2	GM 04 213	Entrepreneurial culture	21	21
			3	3	2	GM 04 214	End of Year Project	42	28
	Total	**62**	**60**	**60**				693	**840**

0 Appendix: Programme Learning Outcomes and Curricula

Level of Study	Module		Coef GM	Coeff	Credit	Semester	Codification	Sub-Module	Out of Class Activities	Contact Hours	Total
Third Year	**GM1 Study and design of industrial systems**	**Common modules**		2	2	5	GM 05 101	Hydraulic, pneumatics systems, and Turbomachines	14	42	56
				2	2		GM 05 102	Design and fabrication of pressure vessels according to ASME	21	28	49
				2	2		GM 05 109	CAD workshop 03	28	21	49
				1	1		GM 05 103	Thermal machines	7	21	28
	GM2 Application of electronic systems			2	2		GM 05 104	Study and development of mechanical systems: case study	21	21	42
				2	2		GM 05 105	Machine-converter association	28	28	56
				2	2		GM 05 106	Automotive mechatronics 02	28	21	49
	GM3 Management of production systems			2	2		GM 05 107	Matlab Workshop	28	21	49
				2	2		GM 05 108	Production management	28	28	56
				2	2		GM 05 110	Technical and maintenance management	28	21	49
				2	2		GM 05 111	Computer Aided Manufacturing (CAM)	28	28	56
	GM4 : Preparation for professional career			2	2		GM 05 112	Personalized Professional Project	21	21	42
				2	2		GM 05 113	mechanical engineering workshops	28	28	56
	GM 5 : Elective modules	**[OPT-1] Aeronautics**	**5**	1	1		GM_op 05 114	Principles of flights	7	21	28
				1	1		GM_op 05 115	AIRCRAFT SYSTEMS	7	21	28
				1	1		GM_op 05 116	THE TURBOJET ENGINE	7	21	28
				1	1		GM_op 05 117	Radar principles	7	21	28
				1	1		GM_op 05 118	Avionics flight management and guidance computation	7	21	28
		[OPT-2] Mechatronics and Automation	**5**	1	1		GM_op 05 119	General mechatronics	7	21	28
				1	1		GM_op 05 120	Modélisation et Simulation d'un Système Mécatronique	7	21	28
				1	1		GM_op 05 121	évaluation de la fiabilité des systémes mécatroniques	7	21	28
				1	1		GM_op 05 122	Modeling and Identification of systems	7	21	28
				1	1		GM_op 05 123	Robotic workshop	7	21	28
		[OPT-3] Energy		1	1		GM_op 05 124	Energetic audit	7	21	28
				1	1		GM_op 05 125	Cost analysis and profitability calculation of energy projects	7	21	28
				1	1		GM_op 05 126	Energetic efficiency	7	21	28
				1	1		GM_op 05 127	Diagnostic and maintenance of energy installations	7	21	28
				1	1		GM_op 05 128	Energy workshop	7	21	28
		[OPT-4] INDUSTRY 4.0	**5**	1	1		GM_op 05 129	Introduction to industry 4.0	7	21	28
				1	1		GM_op 05 130	Cyber phycal systems	7	21	28
				1	1		GM_op 05 131	workshop Artificial Intelligence Applied to Optimization and Robotics	7	21	28
				1	1		GM_op 05 132	Internet Of Things	7	21	28
				1	1		GM_op 05 133	Artificial Intelligence	7	21	28
	GM6 : Internships	**Internships**	**30**	3	3	6	GP 03 301	Initiation internship	75		75
				3	3		GP 04 301	Perfection Internship	75		75
				24	24		Gp 05 201	Graduation project	600		600
	Total		**35**	**60**	**60**				**1093**	**434**	**1527**

According to the SAR the following **objectives** and **learning outcomes** shall be achieved by the Diploma programme Process Engineering:

AS-1. Chemical & pharmaceutical field: This field includes companies manufacturing products by controlled chemical synthesis. This sector includes phytosanitary chemistry, pharmaceutical industry, polymer manufacture, paints and oleo chemistry.

AS-2. Electricity industry: This field includes power generation companies and branches such as service, maintenance and electrical systems installation companies.

AS-3. Food industry: It concerns industries transforming food products from agriculture or fishing into industrial food intended mainly for human consumption.

AS-4. Plastics: This field concerns the design, manufacturing and marketing industries of polymer materials used for many purposes such as packaging, agriculture and transport...

AS-5. Oil industry: This sector deals with the oil and gas industrial chains, from the reservoir to the end-user.

AS-6. Water and sanitation: This sector covers infrastructure and services related to providing safe and quality drinking water and sanitation services to households' industries.

AS-7. Energy: The energy industry includes integrated power utility companies. Energy companies are categorized based on how the energy that they produce is sourced and will typically fall into non-renewable and renewable categories:

AS-8. Textiles: The textile industry covers all the activities of design, manufacturing and marketing of textiles. The contribution of process engineering in this sector involves all transformation steps and auxiliary utilities.

AS-9. Waste recovery: this sector concerns industries that treat and/or valorize water, solid and gaseous wastes

P1. Manufacturing engineer: which consists in organizing, managing and controlling the production of one or more plants

P2. Methods engineer: which ensures the efficiency of industrial production processes, to find and study improvement opportunities on the processes.

P3. Control office manager: his mission is the prevention of technical risks related to the realization of projects.

P4. Technical Sales Engineer: able to play the role of Business Development Manager for a company's customers

P5. Industrial buyer: who selects and negotiates materials and/or consumables needed for the company's production, according to volume, cost and quality objectives

P6. QHSE manager: whose main role is to prevent industrial risks related to the environment of employees within a company

P7. Industrial project manager: that develops and implements a project. This job ensures the technical, administrative and budgetary management from the design phase to its completion.

P8. Production manager: which is in charge of supervising the manufacturing of the company's various product lines

P9. R&D engineer: who participates in the design and development of new products, services or processes as part of an innovation project

P10. Head of a design office: who analyzes the customer's expectations, coordinates the work of his/her teams and validates the provided response

Generic competences: This type of competences is common to all IIT engineering programs particularly to Process Engineering and Mechanical Engineering. They are subdivided into six subgroups.

GC1. ***Knowledge and Understanding:*** It consists of all the knowledge related to the specialty of process engineering necessary to understand the phenomena that may occur in the sectors of activity targeted by the program.

GC2. ***Engineering Analysis:*** It consists of abilities that allow the engineer to correctly analyze systems related to the specialty using appropriate tools

GC3. ***Engineering Design:*** it is about the competencies that enable the engineer to design and develop solutions using appropriate tools

GC4. ***Investigations and Assessment:*** it is the faculty of research and investigation that allows the engineer to identify for a specified theme: its state of the art, to analyze it and then develop it.

GC5. ***Engineering Practice:*** it is about practical competencies that the engineer must have

GC6. ***Transferable Skills:*** it consists of transversal competences and soft skills (leadership, teamwork, communication skills, problem-solving skills…)

Specific competences: This type of competences is specific for process engineering. They are subdivided into the following 16 sub-groups:

SC1. Gain an understanding of the multi-disciplinary context of process engineering.

SC2. Consolidate knowledge of mathematic-scientific and engineering principles of process engineering

SC3. Analyze and solve problems scientifically, which may be incompletely defined, and develop different scenario to get solutions

SC4. Use innovative methods for practice-oriented problem-solving with suitable methods of analyzing, modeling, simulating and optimizing.

SC5. Conceive process flowsheets and designs for industrial equipment in order to optimize solutions for practice-oriented problems

SC6. Develop new and inventive practical solutions to reduce industrial risks

SC7. Carry out literature research and plan and carry out suitable experiments in process engineering related field.

SC8. Critically assess data and draw conclusions.

SC9. Investigate and assess the application of new and emerging technologies in process engineering related field.

SC10. Independently plan, control and monitor processes and to develop and operate systems and equipment;

SC11. Combine knowledge in different fields for fast realization and to handle complexity;

SC12. Apply technical and economic solution in order to optimize processes

SC13. Use diverse methods to communicate effectively with the national and international engineering community and with society at large;

SC14. Demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice and commit to professional ethics;

SC15. Regularly conduct technical meetings in order to identify risky situations and decide on interventions.

SC16. Work effectively as leader of a team that may be composed of different disciplines and levels;

The following **curriculum** is presented:

Department: Process Engineering

Module	Coef GM	Coeff	Credit	Sem	Codification	Sub-module	Out of Class Acti
GM1 : Preparation for Professional Career	10	2	2	1	GP 03 101	Preparation for DELF 01 certification	28
		2	2	1	GP 03 102	Management for the engineer	21
		2	2	2	GP 03 201	Preparation for DELF 02 certification	28
		2	2	2	GP 03 202	Economy for the engineer	21
		2	2	2	GP 03 203	Scientific research and writing methodology	28
GM2 : Applied Mathematics	6	3	3	1	GP 03 103	Mathematics for engineers	35
		2	2	2	GP 03 204	Numerical analysis	28
		1	1	2	GP 03 205	Probability and statistics	7
GM 3 : Industrial IT	8	2	2	2	GP 03 102	Computer science	28
		2	2	1	GP 03 104	Automatic	21
		2	2	1	GP 03 206	Instrumentation and energy metrology	21
		2	2	2	GP 03 207	Electrotechnics	21
GM 4 : Chemistry	8	1	1	1	GP 03 105	Organic chemistry	7
		1	1	1	GP 03 106	Inorganic chemistry	7
		1	1	1	GP 03 107	Thermochemistry and Chemical Kinetics	14
		3	3	2	GP 03 208	Agri-food processes	35
		2	2	2	GP 03 209	Pharmaceutical industries and cosmetology	28
GM 5 : Thermodynamics	8	2	2	1	GP 03 108	Applied Thermodynamics	28
		2	2	1	GP 03 109	Turbomachinery technology	28
		2	2	2	GP 03 210	Polymer	21
		2	2	2	GP 03 211	Rheology	21
GM 6 : Transfer phenomena	11	2	2	1	GP 03 110	Heat transfer	28
		3	3	1	GP 03 111	Fluid mechanics	35
		3	3	1	GP 03 112	Material transfer	35
		3	3	2	GP 03 212	Practical Work in process engineering	35
GM 7 : Environment and energy	9	2	2	2	GP 03 213	Fossil energy and geophysical method of investigation	21
		2	2	1	GP 03 113	Renewable energies	21
		3	3	2	GP 03 214	Water treatment	35
		2	2	1	GP 03 114	Solid waste treatment	21
Total	60	60	60				707

Level of Study	Module	Coef GM	Coeff	Credit	Sem	Codification	Submodule	Out of Class Activities	Conta
Second Year	GM 1 : Unit Operation 01	13	2	2	1	GP 04 101	Distillation - Rectification	28	
			2	2	1	GP 04 102	Solvent extraction	28	
			2	2	1	GP 04 103	Absorption / Desorption	21	
			2	2	2	GP 04 201	Adsorption	28	
			2	2	2	GP 04 202	Oil extraction and refining technology	21	
			3	3	2	GP 04 203	Unit Operations Practical Work	35	
			2	2	1	GP 04 104	Solid - Fluid Operations	28	

	GM 2: Unit Operation 02	8	2	2	1	GP 04 105	Planning of experiments	21	
			2	2	2	GP 04 204	Fluidization	21	
			2	2	2	GP 04 205	Drying & Lyophilization	21	
	GM 3: Automatic and Balance Sheet	12	2	2	1	GP 04 106	Automatic and industrial informatics	21	
			2	2	1	GP 04 107	Introduction to industrial design	21	
			3	3	2	GP 04 206	Process simulation	35	
			3	3	2	GP 04 207	Functional Analysis of Processes	35	
			2	2	2	GP 04 208	Industrial Chemistry Processes	21	
	GM 4: Energy	7	2	2	1	GP 04 108	Energetic efficiency	21	
			2	2	1	GP 04 109	Cold and air conditioning production	21	
			1	1	2	GP 04 209	Operational research and optimization	14	
			2	2	2	GP 04 210	Heat exchangers	14	
	GM 5: Chemistry and electrochemistry	7	1	1	1	GP 04 110	Mechanics and physics of materials	14	
			2	2	1	GP 04 111	Analytical chemistry and electrochemistry	14	
			3	3	2	GP 04 211	Chemical Reaction Engineering	35	
			1	1	2	GP 04 212	Corrosion and Surface Treatment	14	
	GM 6: Preparation for Professional Career	13	2	2	1	GP 04 112	Preparation for BEC 01 certification	28	
			2	2	1	GP 04 113	Quality and Industrial Standards	21	
			2	2	1	GP 04 114	Entrepreneuriale culture	21	
			2	2	2	GP 04 213	Personalized Professional Project	21	
			2	2	2	GP 04 214	Preparation for BEC 02 certification	28	
			3	3	1	GP 04 115	End of Year Project	42	
	Total	**60**	**60**	**60**				693	

Level of Study	Module		Coef GM	Coef M	Credit	Sem	Codification	Sub-Module
Third Year	**GM1 : Preparation for Professional Career**	**Common module**	**5**	2	2	5	GP 05 101	Personalized Professional Project
				2	2		GP 05 102	Technico-economic study of the processes
				1	1		GP 05 103	Management systems of occupational health a safety - Preparation for 45001 certification
	GM2 : Advanced Processes 1		**4**	2	2		GP 05 104	Computational Fluid Dynamics
				2	2		GP 05 105	Chemical Engineering Apparatus Technology
	GM3 : Advanced Processes 2		**8**	2	2		GP 05 106	furnaces and boilers
				2	2		GP 05 107	Mechanical agitation and mixing
				2	2		GP 05 108	Filtration - membrane separation
				2	2		GP 05 109	Advanced Technology in polymers
	GM 4 : Elective Modules	**GM4 op : Energy**	**13**	3	3		GP_op 05 110	Energy workshops
				2	2		GP_op 05 111	Electrochemical Energy - Fuel Cell Engineering
				2	2		GP_op 05 112	Heat transfer with phase change
				2	2		GP_op 05 113	Combustion, pyrolysis, gasification
				2	2		GP_op 05 114	Sizing solar systems
				2	2		GP_op 05 115	Energy audit - Preparation for ISO 50001 certif
		GM4 Op : Water-environment	**13**	3	3		GP_op 05 116	Environmental engineering workshop
				2	2		GP_op 05 117	Decontamination processes
				2	2		GP_op 05 118	Water analysis and quality
				2	2		GP_op 05 119	Advanced oxidation and treatment processes
				2	2		GP_op 05 120	Environmental microbiology
				2	2		GP_op 05 121	Environnemental management system - Prepa for ISO14001 certification

		GM4 Op : Oil	**13**	3	3		GP_op 05 122	Petroleum Engineering Workshop
				2	2		GP_op 05 123	Reservoir engineering
				2	2		GP_op 05 124	Natural gas engineering
				2	2		GP_op 05 125	Advanced simulation in petroleum engineering
				2	2		GP_op 05 126	Well and fodder
				2	2		GP_op 05 127	Quality audit - Preparation for QHSE certificati
		GM4 Op : Agrifood	**13**	3	3		GP_op 05 128	Agri-food engineering workshop
				2	2		GP_op 05 129	Food microbiology
				2	2		GP_op 05 130	Promotion of co-products from the food indus
				2	2		GP_op 05 131	Conservation and packaging in the food indust
				2	2		GP_op 05 132	Food safety management (HACCP method)
				2	2		GP_op 05 133	Food Safety Management - Preparation for ISO certification
	GM5 : Internships	**Internships**	**30**	3	3	6	GP 03 301	Initiation internship
				3	3		GP 04 301	Perfection Internship
				24	24		Gp 05 201	Graduation project
	Total		**60**	**60**	**60**			