



# DIDACTIC REGULATION

Industrial Engineering  
Degree Class L-9

Faculty of Engineering

---

## Index

<b>DIDACTIC REGULATION FOR THE DEGREE COURSE IN INDUSTRIAL ENGINEERING</b> .....	3
Introduction and area of competence .....	3
<b>I: PURPOSES AND DIDACTIC RULES</b> .....	3
Art. 1 - Premises .....	3
Art. 2 - Structure of the Degree Course .....	3
Art. 3 - Specific formative objectives and description of the educational path.....	5
Art. 4 - Learning Results .....	6
Art. 5 - Professional profiles and sources of employment and education prospects .....	8
Art. 6 - Admission and enrolment .....	9
Art. 7 - Examinations and tests.....	10
Art 8 - Duration.....	11
Art 9 - Mobility and studying abroad .....	11
Art. 10 - Final dissertation .....	11
Art. 11 - Attainment of the Degree .....	12
<b>II - OPERATIVE RULES</b> .....	12
Art. 12 - Obligations related to frequency .....	12
Art. 13 - Enrolment to the following years, transfer and withdrawal from the studies .....	13
Art. 14 - Recognition of incoming CFU .....	13
Art. 15 - Dispositions for the students .....	13
Art. 16 - Assessment of the Didactic Activity .....	13
Art. 17 - Flexibility of the learning pathway .....	13
<b>III – FINAL AND TRANSITIONAL REGULATIONS</b> .....	14
Art. 18 – Amendments to the regulations.....	14
Art. 19 – Transitional regulations .....	14
Attachment 1: General Framework of the formative activities .....	15
Attachment 2: List of the provided formative activities and of the teachings (study plan) .....	21
Attachment 3: Regulation for the Curricular Internship .....	1
Attachment 4: Syllabus of the supplementary formative activities (OFA).....	7

# DIDACTIC REGULATION OF THE DEGREE COURSE IN INDUSTRIAL ENGINEERING

## Introduction and area of competence

1. The present Regulation shall regulate the didactic organization of the Degree Course in Industrial Engineering L-9 and, in particular, shall determine the elements required in the art. 12 of DM 270/04.
2. The present didactic Regulation of the Degree Course in Industrial Engineering L-9, pursuant to the Didactic Regulation of the University, shall be approved by the competent didactic structure by majority and shall be approved by the Technical-Supervisory Committee.

## I: PURPOSES AND DIDACTIC RULES

### Art. 1 - Premises

1. The Degree Course in Industrial Engineering L-9 (hereinafter referred to as DC) belongs to the Degree Class L-9 as provided for in D.M. 270/2004.
2. The administrative authorities of the DC shall be:
  - a. The Coordinator, a teacher appointed by decision of the Technical-Supervisory Committee and shall hold a coordinating function;
  - b. The Didactic Coordination Council, with the aim to promote and verify the quality and the uniformity of the teachings of the DC;
  - c. The Council of the DC shall be comprised of teachers who are entitled to at least one teaching;
3. The didactic rules of the DC in Industrial Engineering, along with its general framework of formative activities, shall be reported in the attachment forming part of the present Regulation (Attachments 1-4).
4. The present Regulation, pursuant to the academic Didactic Regulation, and to the other didactic regulations, shall regulate the didactic organization of the Degree Course on the elements which were not defined in the aforementioned Regulations.

## Art. 2 - Structure of the Degree Course

1. The DC belongs to the Faculty of Engineering.

The DC shall be organized in three years, shall provide for the acquisition of 180 CFU and aims to train engineers with good cultural foundations and an appropriate technical preparation allowing the insertion into the labour market, in the context of product and process industries. Upon completion of the studies, after having acquired the 180 credits the students shall be conferred the following study title: “Doctor in Industrial Engineering”. The DC aims to provide to the students basic/characterizing/supplementary knowledge and competences in all the sectors of the engineering discipline; ability to apply the acquired knowledge in various contexts; proficiency in the English language. Such knowledge and competences shall allow the admission to the Master’s Degree in Engineering and a good command of the conceptual, methodological and technical tools for the exercise of the profession of Junior Engineer.

2. The didactic rules of the Degree Course in Industrial Engineering, along with its general reference framework of formative activities, the CFU assigned to each formative activity, drawn up according to a framework defined by ministerial decree and with due regard for the requirements of ANVUR, are contained in **Attachment 1**, which forms an integral part of the present Regulation.
3. The course of study in Industrial Engineering includes formative activities groups in the following typologies:
  - a) basic formative activities;
  - b) characterizing formative activities;
  - c) supplementary formative activities;
  - d) formative activities chosen by the students;
  - e) formative activities related to the preparation of the final dissertation;
  - f) formative activities for the development of further linguistic competences, for eventual formative internships, informatics, telematic and relational abilities.
4. The course profiles of each formative activities shall be available on the website of the University, at the following “search for a member of the teaching staff” <https://www.uniecampus.it/en/students/search-for-a-member-of-teaching-staff/>

### Art. 3 - Specific formative objectives and description of the educational path

1. The main purpose of the course shall be to train engineers with good cultural foundations and a broad-spectrum technical preparation allowing them to operate in the field of civil and industrial construction, of infrastructure and local interventions with particular attention to the environmental restrictions and problems. In particular, as regards the learning path, in the first year shall be provided the basic teachings of mathematics, physics and chemistry. Added to this is the study of a foreign language, IT, applied economics and technical drawing, the universal language among the engineers. From the second year shall be implemented the characterizing and supplementary activities of civil and environmental engineering, to which shall be added some inter-disciplinary teachings. During the third year, finally, shall be provided teachings more strictly related to the professional practice, to which shall be added the optional teachings chosen by the students. During the last year, in addition, it is provided for the aspiring engineer to carry out an internship and a final dissertation.
2. The DC shall be organized in two curriculums
  - a. Energy Curriculum
  - b. Management Curriculum
  - c. Chemistry Curriculum
3. The present Regulation shall be completed with five documents attached annually prepared in the process of activation of the DC:
  - a. In **Attachment 1** shall be indicated the general framework of the formative activities;
  - b. In **Attachment 2** shall be indicated the formative activities proposed along with the list of the teachings and the study plan;
  - c. In **Attachment 3** shall be indicated the regulation on internships.
  - d. In **Attachment 4** shall be indicated the Supplementary Formative Activities Syllabus; as provided for in Article 6;
4. All the information required by the current legislation such as the formative objectives of the course of study and the activated formative activities, the list of the teachers involved in the DC, shall be published on the University website and on the Course Profile.
5. The programmes for the teachings and the other formative activities along with the calendar of the examination session and the other forms of final verification shall be published before the beginning of the academic year.

6. The formative activities autonomously chosen by the student, provided for in Article 2 paragraph 4, letter d, shall be selected among the teachings indicated in Attachment 2
7. For all the matters related to their academic career and their study plans, the students shall turn to the orientation tutor assigned to them, also known as tutor on-line (TOL). The Degree Course, in fact, shall offer an ongoing orientation and tutoring service which avails itself of the assistance of tutors selected by the University and operating in conjunction with the coordinator and the Council of the Course of Study.
8. There are no planned preparatory activities with regard to the education path.
9. The Study Plan of the Degree Course in IT and Automation Engineering provides for a curricular internship for the student, with the purpose of practicing the skills acquired in the labour market, thus completing the academic training. The curricular internship shall consist in a period of practical activity exclusively aimed at the attainment of the CFU needed for the completion of the educational path. The duration of activity of curricular internship for the students of the Degree Course in IT and Automation Engineering shall be of 150 hours, equivalent to 6 CFU. The objectives and the activities of curricular internship shall be regulated by the Regulation for the Curricular Internships for the Degree Courses in Engineering (**Attachment 3**).

#### **Art. 4 - Learning Results**

1. The graduates of the Course of Study shall demonstrate the following knowledge and competences:

##### **Knowledge and comprehension**

The graduates in Civil and Environmental Engineering shall demonstrate knowledge and abilities to understand the fundamental aspects of theory of mechanics, plant design, production and management. In particular they shall demonstrate to know and understand: the theoretical and applicative aspects of mathematics and of the other basic sciences; the theoretical and practical aspects mechanic design and production of machines and plants; the main methodologies and technologies used for planning and managing systems and for the realization of products.

### **Applying knowledge and comprehension**

The graduates in Industrial Engineering shall acquire adequate skills in order to apply the mathematic methods characteristic of Civil and Environmental Engineering in order to describe and analyze engineering problems of different nature; they shall be able to plan and develop dedicated applications according to well-known schemes, also in cooperation with other professional figures, within the industrial or public sector. The acquisition of said skills shall be evaluated through the different forms of examination, the relationship with the internship tutor and the final dissertation.

### **Making judgements**

The graduates in Industrial Engineering shall develop critical thinking and an autonomous judgement on various aspects of the subjects study, based on theoretic and practical consolidated knowledge.

The application and technical-engineering teachings in the study plan contribute to the students' training through individual and group exercises, such as projects and verifications, in order to promote their active participation, their propositional attitude, their ability to elaborate autonomously and to communicate the results of their own work. The stage and internship activities, as well as the activities assigned by the supervisor for the final dissertation are also useful for the purpose.

### **Communication Skills**

During their professional activity, especially if conducted in the industrial technology field, the engineers are required to communicate information, ideas, problems and solutions to interlocutors who may be specialized in other disciplines, or to non-specialized interlocutors. The engineers in training shall have the possibility to acquire and practice their communicative abilities, so that shall gain communication skills more than sufficient for professional purposes, regardless to their innate abilities. In the course of some highly characterizing teachings, the students are expected to carry out exercises followed by a collective discussion, in order to promote their involvement and get used to public confrontation. Even the examinations shall be carried out so as to offer a chance to exercise and test the communication skills of each student.

### **Learning skills**

The first level graduate in engineering shall have the ability to carry out further university studies with full scientific maturity and with total autonomy. In this regard, the learning abilities shall be stimulated especially passing on to the students the methodological rigor of the basic teachings, aimed at developing the inclination to a logical reasoning firmly based on the scientific method and at practicing the ability to concentrate. The organization of the courses is such as to facilitate and encourage the student to an independent learning activity, which represents a significant part of the totality of the duration of the course. The learning ability shall be evaluated also by means of self-assessment tests during the learning process. Other important didactic activities provided by the Course of Study and which contributes significantly to the ability to learn of the students are the internships, the stages, both in Italy and abroad, as well as the final dissertation.

## **Art. 5 - Professional profiles and sources of employment and education prospects**

1. The triennial education offered by the Course of Study guarantees to the students who graduated in Industrial Engineering an immediate insertion into the labour market, for various professional profiles, applying in every context the principles of mechanics, energy engineering, chemistry, management, and industrial innovation and development.
2. The degree course in Industrial Engineering makes it possible to achieve a highly practical preparation, due to the ever growing request in the industrial sector for a wide range of competences either in energy engineering, in engineering management, but mostly in production and planning engineering.
3. The graduated in industrial engineering shall pursue various different working opportunities, including not only strictly technical careers, but also jobs requiring organizational and management skills. Thanks to a wide range preparation on the fundamental subject matters, the students graduated in Industrial Engineering shall benefit from high flexibility and versatility and shall easily adapt to the evolution of the technical-productive landscape.
4. The main roles which the graduates shall carry out are the planning, the development, the supervision of the construction works, the assessment of the environmental impact , both in public and private contexts.



5. The main working environments are characterized by companies or authorities operating in the planning, production and commercialization of machines, industrial installations, chemical installations, installations for the production, transformation and distribution of energy, of industrial, technological and productive systems and processes, of equipment and instrumentation for diagnostics.

## Art. 6 - Admission and enrolment

1. The students who intend to enrol in the DC shall be in possession of a secondary school certificate or another qualification attained abroad and recognized as suitable pursuant to the current legislation.
2. Subject to the admission requirements, the DC shall provide for an initial evaluation of proficiency at Italian (morphology, syntax and lexicon) and of the basic knowledge of mathematics and physics. The possession of the aforementioned knowledge and competences evaluated with the modalities provided for in the following paragraph.
3. The knowledge and the competences provided for in the previous paragraph, shall be verified through non-selective tests. An eventual negative result of the non-selective tests on mathematics and physics shall not compromise the matriculation, the attendance to the courses and the satisfactory completion of the related examinations, without prejudice to what is provided for in paragraph 6 of the present article. Nevertheless it shall imply the attribution of additional training requirements (OFA) aimed at the fulfilment of the highlighted flaws. The contents of the OFA are listed in the syllabus provided in **Attachment 4**. If the students are recognized already acquired CFU (Art.12) related to the Area 01 – Mathematical and Information Science, from and including MAT/01 to and including MAT/09, the competences related to mathematics shall be considered appropriate. Also the recognition of the CFU related to the Area 02 – Physical Sciences, in particular from FIS/01 to FIS/05, implies the possession of knowledge and competences related to Physics.
4. The test referred to in the previous paragraph shall be carried out with the procedures provided for by the Virtual Learning Environment (VLE) of the University.
5. The (OFA) assigned to the students who failed the non-selective test provided for in the previous paragraph, shall consist in the telematic attendance to the remedial courses provided in the VLE of the University. The OFA, which shall be fulfilled within the first year of the course, provide for the successful completion of a test for each remedial course.

6. The successful completion of the remedial courses shall not imply the attribution of any formative credit.
7. There shall not be any limits to the possibility of enrolment as 'studente fuori corso', nor a maximum number of repeatable years.
8. The recognition of the CFU of the incoming students as well as the quantification of the minimum number of CFU that the students shall attain in an academic year in order to continue the course of study to another academic year, shall be established in the related Academic Regulations. The Committee for the Study Plans, appointed by the Council of the Degree Course, shall provide for the assessment of the applications for recognition of the previous academic career or of the individual courses equivalent to the teachings, which are part of the training offer of the Degree Course.

### **Art. 7 - Examinations and tests**

1. For each formative activity shall be provided an examination, upon completion of the didactic activities represented by the learning objects present in the VLE.
2. The students shall acquire the CFU attributed to a particular formative activity only passing the examination.
3. The examination and the final evaluations needed for the attainment of the title shall be 19. For the purpose of the calculation shall be considered the following formative activities:
  - a. basic;
  - b. characterizing;
  - c. supplementary;In addition to the aforementioned activities, shall be required the following formative activities:
  - d. optional;
  - e. activities related to the final dissertation;
  - f. further linguistic knowledge, eventual formative internships, IT, telematic and relational abilities.
4. The examinations shall consist in a test structured in conformity with what is provided for in the "Regulation for the implementation of the examination" and with due regard for the following rules:
  - a. The examination shall be organized so as to evaluate the knowledge, the comprehension,

and the application of the examination subjects, demonstrating the proficiency of the student in the didactic units/thematic units of the related teaching.

- b. The final evaluation shall take into account the results of the partial examinations, carried out with due regard for the Academic Regulations, in which case the teacher shall specify in the “course profile” the kind of activity, the modalities and the criteria of evaluation.
5. The professor in charge of the teaching, before the beginning of each academic year, and with due regard for the general regulation of the University, shall communicate the modalities for the examination, the assessment criteria and the possibility to carry out partial examinations. The manner in which the examination shall be carried out shall be the same for all the students with due regard for what has been established at the beginning of the academic year.
6. Any eventual partial verifications shall not replace the final examination.
7. With regard to the implementation of the examinations shall be applicable the rules provided for by the Academic Regulation.

## **Art 8 - Duration**

1. Shall be applicable the rules provided for by the Academic Regulation.

## **Art 9 - Mobility and studying abroad**

1. The Degree Course in Industrial Engineering, in line with the provisions of the University shall promote the exchange of teachers and students through international cooperation and bilateral agreements. In this regard see the indications published on the website of the University on the International Cooperation and the Erasmus Policy at the following link: <https://www.uniecampus.it/ateneo/cooperazione-internazionale/index.html>.

## **Art. 10 - Final Dissertation**

2. The final dissertation shall be written by the student with the supervision of a teacher of the Degree Course in Industrial Engineering L-9 or of an external teacher entitled to one of the teachings provided for the Master’s Degree Course in Industrial Engineering LM-33, and eventually a co-supervisor. The elaboration of the final dissertation, shall begin at least six months before the date estimated for the discussion, in order to guarantee its accuracy. The discussion of the final dissertation shall consist in the presentation of a written dissertation realized by the student under the guidance of a supervisor with due regard for and with the

procedures provided for in the related Academic Regulations.

3. The final dissertation shall focus on any subject related to one or more formative activities of the following typology:
  - a. basic;
  - b. characterizing;
  - c. supplementary;
  - d. optional

provided for in art 2 paragraph 4, among those activated in the DC and registered in the student's study plan.

4. The final dissertation shall, in exceptional circumstances, be written in a foreign language, agreed upon in advance with the supervising teacher and with the Coordinator of the DC. In this case, the student shall draft a detailed summary of the dissertation in Italian.
5. The dissertation shall refer to the following typologies:
  - a. a critical analysis of a particular research article or of a theoretical contribution;
  - b. an in-depth theoretic and/or empirical analysis of a subject related to a particular teaching or to another didactic activity;
  - c. a report on a practical experience (corroborated by theoretical and critical references).
6. The final dissertation, evaluated on the basis of well-defined parameters (such as difficulty, competence in the bibliographic research, autonomy, quality of the dissertation) shall be assigned a maximum of 6 points.

## **Art. 11 - Attainment of the Degree**

1. The student shall attain the Degree with at least 180 CFU and upon completion and discussion of the final examination (final dissertation).
2. With regard to the conditions for the admission to the final dissertation, the degree examination board, the implementation of the examination and the final grade see the Academic Regulation for the final dissertation.
3. The secretariat upon request, shall provide the graduate students with the Diploma Supplement, which shall describe the category, the level, the context, the content and the status of the studies carried out in accordance with the standard eight-point plan developed on the initiative of the European Commission, the European Council and of the UNESCO.

## **II - OPERATIVE RULES**

### **Art. 12 - Obligations related to frequency**

4. The student shall be admitted to the examination related to a determined teaching only after having implemented all the online learning objects making up the course, except for expressed and motivated waivers provided for by the teachers, who shall clarify them in their teacher's profile.
5. The DC provides for the enrolment as part-time student, for all the qualified students, pursuant to what is regulated in the Academic Regulations.

### **Art. 13 - Enrolment to the following years, transfer and withdrawal from the studies**

1. See the rules provided for in the Academic Regulations.

### **Art. 14 - Recognition of incoming CFU**

1. See the general regulations provided for by the University; along with the opinion of the DC if the aforementioned regulation shall require so.

### **Art. 15 - Dispositions for the students**

1. The DC shall apply the rules provided for by the University regulating the frequency to the formative activities, the number of the credits to be acquired for the enrolment to the following course year; the requirements for the implementation of outsourcing education, and all the actions aimed at an effective learning. In this regard see the Student Regulation, the website page on the LDs and the Erasmus Policy of the University.

### **Art. 16 - Assessment of the Didactic Activity**

1. The DC shall implement forms of assessment of the quality of the didactic activities provided for by the current legislation with the modalities and the deadlines provided for by the University's Quality Assurance Committee.

### **Art. 17 - Flexibility of the learning pathway**

1. The Degree Course in Industrial Engineering, with the collaboration of the online tutors (OT) proposes orientation and tutoring activities in relation to the individual study plan, of the optional formative activities and with regard to the implementation of the curricular internship, promoting a student-centred approach to learning focused on encouraging the assumption of an active role in the definition and in the time frame of the learning pathway. The DC shall promote a collaboration with the disciplinary tutors whom, coordinating with the teachers in charge of the course, shall have the task of supporting the preparation of the didactic materials and of the partial examinations, guaranteeing the possibility to implement flexible learning pathways. Finally, the student shall have the possibility to enrol in the DC and to take advantage of the formative offer at any time of the academic year and to carry out the examinations during the seven examination sessions, provided for in the academic calendar.

## **III - FINAL AND TRANSITIONAL REGULATIONS**

### **Art. 18 - Amendments to the Regulation**

1. Any amendment to the present Regulation shall be proposed by the Coordinator of the DC or by at least one third of the members of the Council of the DC or at least one third of the members of the Council of the DC and shall be approved by absolute majority and, successively, by the Technical Supervisory Committee.
2. In case of failure to approve the amendment, the proponent shall send a response, along with a report describing its motivations directly to the Technical Supervisory Committee.
3. The modifications to the present regulation, subject to the verification of their conformity to the Academic Regulations shall be issued by Decree of the President of the Technical Supervisory Committee.
4. Eventual legislative acts compatible with the Academic Regulation and incompatible with what is stated in the present regulation shall be applicable even in the absence of an expressed modification, but shall determine the immediate beginning of the procedure provided for in the first paragraph of the present article.
5. Eventual interpretive or applicative problems resulting from the succession of the Regulations in the course of time shall be the subject of a specific assessment on the part of the DC.

## **Art. 19 - Transitional regulations**

1. The present regulation shall be applicable from the academic year 2018/2019.

## Attachment 1: General Framework of the Formative Activities

### MANAGEMENT CV

Basic Activities						
Subject Area	Sub-subject Area	sector	CFU	Min CFU	Max CFU	Min credits reserved
Mathematics, IT and Statistics		MAT/05 Mathematical Analysis	12	18	24	
		MAT/03 Geometry	6			
		ING-INF/05 Information Processing Systems	6			
Physics and Chemistry		CHIM/07 Basics of Technological Chemistry	6	18	24	
		FIS/01 Experimental Physics	12			
<b>Total Basic Activities</b>			42			36-48
Characterizing Activities						
Subject Area	Sub-subject Area	sector	CFU	Min CFU	Max CFU	Min credits reserved
Energy Engineering		ING-IND/10 Industrial Technical Physics	9	18	27	
		ING-IND/08 Fluid Machinery	9			
Management Engineering		ING-IND/35 Management Engineering	15	15	39	
		ING-IND/17 Industrial mechanics	15			
		ING-IND/16 Technologies and manufacturing systems	9			
Mechanical Engineering		ING-IND/15 Design and methods of industrial engineering	6	24	39	
		ING-IND/13 Mechanics applied to machines	9			
		ING-IND/12 Mechanical and Thermal Measurements	9			
Chemical Engineering		ING-IND/21 Metallurgy	6	6	15	
<b>Minimum of credits reserved by the university provided for by D.M. 45:</b>						
<b>Total Characterizing Activities</b>			87			63-126



Supplementary Activities						
Supplementary Activities		ING-INF/04 Automation	6	18	18	18
		ING-IND/31 Electrotechnics	6			
		MAT/09 Operation Research	6			
<b>Total Supplementary Activities</b>			18			18-18
Other Activities						
Optional			18	18	18	
For the final dissertation (art. 10, paragraph 5, letter c)		Final Dissertation	3	3	3	
		Knowledge of at least one foreign language	3	3	3	
Further formative activities (art.10, paragraph 5, letter d)	Further linguistic knowledge	-	-	-	-	
	IT and Telematic abilities	-	-	-	-	
	Other skills for the insertion into the labour market	-	-	-	-	
	Formative intenships and orientation	Internship	9	9	9	
Minimum of credits reserved by the university provided for by D.M. 45:						
<b>Total Other Activities</b>			33			33-33

## ENERGY CV

Basic Activities						
Subject Area	Sub-subject Area	sector	CFU	min CFU	max CFU	Minimum credits reserved
Mathematic, IT and Statistics		MAT/05 Mathematical Analysis	12	18	24	
		MAT/03 Geometry	6			
		ING-INF/05 Information Elaboration Systems	6			
Physics and Chemistry		CHIM/07 Basic Chemistry Technology	6	18	24	
		FIS/01 Experimental Physics	12			
<b>Total Basic Activity</b>			42			36-48
Characterizing Activities						
Subject Area	Sub-subject Area	sector	CFU	min CFU	max CFU	Minimum credits reserved
Energy engineering		ING-IND/10 Technical Industrial Physics	18	18	27	
		ING-IND/08 Fluid Machinery	9			
Management engineering		ING-IND/35 Economic Management Engineering	6	15	39	
		ING-IND/17 Industrial mechanical installations	9			
Mechanical Engineering		ING-IND/09 Energy and environmet systems	15	24	39	
		ING-IND/15 Design and methods of industrial engineering	6			
		ING-IND/13 Mechanics applied to machines	9			
		ING-IND/12 Mechanical and Thermal measurements	9			
Chemical Engineering		ING-IND/21 Metallurgy	6	6	15	
<b>Minimum of credits reserved by the university provided for by D.M. 45</b>						
<b>Total Characterizing Activities</b>			87			63-120

Supplementary Activities						
Supplementary Activities		ING-IND/06 Fluid dynamics	6			
		ING-IND/11 Technical Environmental Physics	6	18	18	18
		ING-IND/31 Electrotechnics	6			
<b>Total Supplementary Activities</b>			18			18-18
Other Activities						
Optional			18	18	18	
For the final dissertation (art. 10, paragraph 5, letter c)		Final dissertation	3	3	3	
		Knowledge of at least one foreign language	3	3	3	
Further formative activities (art.10, paragraph 5, letter d)		-	-	-	-	
		IT and telematic abilities	-	-	-	
		Other skills for the insertion into the labour market	-	-	-	
		Formative internships and orientation	Internship	9	9	9
Minimum credits reserved by the University for the activities art. 10, paragraph 5 lett. d						
<b>Total Other Activities</b>	Further linguistic knowledge		33			33-33

**CHEMISTRY CV**

Basic Activities						
Subject Area	Sub-subject Area	sector	CFU	min CFU	max CFU	Minimum credits reserved
Mathematics, IT and Statistics		MAT/05 Mathematical Analysis	12	18	24	
		MAT/03 Geometry	6			
		ING-INF/05 Information Elaboration Systems	6			
Physics and Chemistry		CHIM/07 Basics of Chemical Technology	12	18	24	
		FIS/01 Experimental Physics	12			
<b>Total Basic Activities</b>			48			36-48
Characterizing Activities						
Subject Area	Sub-subject Area	sector	CFU	min CFU	max CFU	Minimum credits reserved
Energy Engineering		ING-IND/10 Technical Industrial Physics	9	18	27	
		ING-IND/08 Machines and fluid	9			
Management engineering		ING-IND/35 Economic Management Engineering	6	15	39	
		ING-IND/17 Industrial mechanical installations	9			
Mechanical Engineering		ING-IND/14 Mechanical Progettazione meccanica e costruzione di macchine	9	24	39	
		ING-IND/15 Design and methods of industrial engineering	6			
		ING-IND/13 Mechanics applied to machines	9			
		ING-IND/12 Mechanics and thermal measurements	9			
Chemistry Engineering		ING-IND/25 Chemical Installations	9	6	15	
		ING-IND/21 Metallurgy	6			
<b>Minimum of credits reserved by the university provided for by D.M. 45</b>						
<b>Total Characterizing Activities</b>			81			63-120

Supplementary Activities						
Supplementary Activities		ING-IND/24 Basics of Chemical Engineering	6	18	18	18
		ING-IND/22 Science and Technology of the Materials	6			
		ING-IND/31 Electrotechnics	6			
<b>Supplementary Activities</b>			18			18-18
<b>Other Activities</b>						
Optional Activities			18	18	18	
For the final dissertation (art. 10, paragraph 5, lettera c)		Final dissertation	3	3	3	
		Knowledge of at least one foreign language	3	3	3	
Further formative activities (art.10, paragraph 5, letter d)	Further linguistic knowledge	-	-	-	-	
	IT and telematic abilities	-	-	-	-	
	Other skills for the insertion into the labour market	-	-	-	-	
	Formative Internships and Orientation	Internship	9	9	9	
Minimum of credits reserved by the university for the Activities art. 10, paragraph 5 lett. d						
<b>Total Other Activities</b>			33			33-33

## Attachment 2: List of the provided formative activities and teachings (Study Plan)

### BACHELOR'S DEGREE IN INDUSTRIAL ENGINEERING- L-9 – MANAGEMENT CURRICULUM

SSD		Subject Area	Teaching	CFU
<b>1st Course Year</b>				
MAT/05	B	Mathematics, IT and Statistics	MATHEMATICAL ANALYSIS	12
CHIM/07	B	Physics and Chemistry	GENERAL CHEMISTRY	6
ING-IND/15	C	Mechanical Engineering	MECHANICAL DESIGN	6
FIS/01	B	Physics and Chemistry	PHYSICS	12
ING-INF/05	B	Mathematics, IT and Statistics	BASIS OF IT	6
MAT/03	B	Mathematics, IT and Statistics	GEOMETRY	6
L-LIN/12	AL	art. 10, paragraph 5, letter c	FOREIGN LANGUAGE	3
ING-IND/35	C	Management Engineering	BASICS OF ECONOMICS	6
<b>2nd Course Year</b>				
ING-INF/04	AF	Supplementary Activities	ANALYSIS	6
ING-IND/31	AF	Supplementary Activities	ELECTROTECHNICS	6
ING-IND/10	C	Energy Engineering	TECHNICAL PHYSICS	9
ING-IND/08	C	Energy Engineering	MACHINES AND ENERGETICAL SYSTEMS	9
ING-IND/13	C	Mechanical Engineering	APPLIED MECHANICS AND PLANNING	9
ING-IND/12	C	Mechanical Engineering	MECHANICAL AND THERMAL MEASUREMENT	9
MAT/09	AF	Supplementary Activities	OPERATIONAL RESEARCH	6
ING-IND/21	C	Chemical Engineering	TECHNOLOGY OF THE MATERIALS	6

3rd Course Year				
ING-IND/17	C	Management engineering	INDUSTRIAL LOGISTICS	6
	AL	art. 10, paragraph 5, letter c	FINAL DISSERTATION	3
ING-IND/35	C	Management Engineering	CONTROL AND MANAGEMENT SYSTEMS	9
ING-IND/17	C	Management Engineering	MECHANICAL INSTALLATIONS	9
ING-IND/16	C	Management Engineering	TECHNOLOGIES AND PRODUCTIVE SYSTEMS	9
	AL	art. 10, paragraph 5, letter d	INTERNSHIPS	9
Optional				
ING-INF/04	AL	Optional	INDUSTRIAL AUTOMATION	6
ING-IND/15	AL	Optional	COMPUTER AIDED DESIGN	6
ING-IND/14	AL	Optional	CONSTRUCTIVE ELEMENTS AND AFFIDABILITY	6
ING-IND/17	AL	Optional	QUALITY CONTROL	6
ING-IND/09	AL	Optional	INTERACTION MACHINES AND ENVIRONMENT	6
ING-IND/16	AL	Optional	PRODUCTIVE TECHNOLOGIES, TIMINGS AND METHODS	6
ING-IND/15	AL	Optional	TOOLS FOR UAV PLANNING	6
IUS/04	AL	Optional	INDUSTRIAL LAW AND INTELLECTUAL PROPERTY	6
ING-IND/35	AL	Optional	ECONOMY AND MANAGEMENT FOR THE TECHNOLOGICAL TRANSFER	6

**BACHELOR'S DEGREE IN INDUSTRIAL ENGINEERING - L-9 – ENERGY CURRICULUM**

SSD		Subject Area	Teaching	CFU
<b>1st Course Year</b>				
MAT/05	B	Mathematics, IT and Statistics	MATHEMATICAL ANALYSIS	12
CHIM/07	B	Physics and Chemistry	GENERAL CHEMISTRY	6
ING-IND/15	C	Mechanic Engineering	MECHANICAL DESIGN	6
FIS/01	B	Physics and Chemistry	PHYSICS	12
ING-INF/05	B	Mathematics, IT and Statistics	BASICS OF IT	6
MAT/03	B	Mathematics, IT and Statistics	GEOMETRY	6
L-LIN/12	AL	art. 10, paragraph 5, letter c	FOREIGN LANGUAGE	3
ING-IND/35	C	Management Engineering	BASICS OF ECONOMY	6
<b>2° Anno di Corso</b>				
ING-IND/31	AF	Supplementary Activities	ELECTROTECHNICS	6
ING-IND/11	AF	Supplementary Activities	ENERGETICS	6
ING-IND/17	C	Energy engineering	TECHNICAL PHYSICS	9
ING-IND/06	AF	Supplementary Activities	FLUID DYNAMICS	6
ING-IND/08	C	Energy engineering	MACHINES AND ENERGY SYSTEMS	9
ING-IND/13	C	Mechanical engineering	APPLIED MECHANICS AND DESIGN	9
ING-IND/12	C	Mechanical engineering	MECHANICAL AND THERMAL MEASUREMENT E	9
ING-IND/21	C	Chemical engineering	TECHNOLOGY OF THE MATERIALS	6
<b>3° Anno di Corso</b>				
ING-IND/09	C	Mechanical engineering	MANAGEMENT OF THE ENERGETIC SYSTEMS	6
ING-IND/17	C	Management engineering	MECHANICAL INSTALLATIONS	9
ING-IND/09	C	Mechanical engineering	ENERGETIC SYSTEMS PLANNING	9
	AL	art. 10, paragraph 5, letter c	FINAL DISSERTATION	3
ING-IND/10	C	Ingegneria energetica	THERMAL TECHNIQUES	9



	AL	art. 10, paragraph 5, letter d	INTERNSHIP	6
--	----	--------------------------------	------------	---

Optional				
ING-IND/15	AL	Optional	COMPUTER AIDED DESIGN	6
ING-IND/17	AL	Optional	QUALITY CONTROL	6
ING-IND/09	AL	Optional	MACHINE-ENVIRONMENT INTERACTION	6
ING-IND/08	AL	Optional	INTERNAL COMBUSTION ENGINES	6
ING-IND/10	AL	Optional	REFRIGERATION TECHNOLOGY	6
ING-INF/04	AL	Optional	INDUSTRIA AUTOMATION	6
ING-IND/15	AL	Optional	DESIGN TOOLS FOR UAV	6
IUS/04	AL	Optional	INDUSTRIAL LAW AND INTELLECTUAL PROPERTY	6
ING-IND/35	AL	Optional	ECONOMICS AND MANAGEMENT OF TECHNOLOGY TRANSFER	6

**DEGREE IN INDUSTRIAL ENGINEERING - L-9 – CHEMISTRY CURRICULUM**

SSD		Subject Area	Teaching	CFU
<b>1° Anno di Corso</b>				
MAT/05	B	Mathematics, IT and Statistics	MATHEMATICAL ANALYSIS	12
CHIM/07	B	Physics and Chemistry	GENERAL CHEMISTRY	6
ING-IND/15	C	Mechanical Engineering	MECHANICAL DESIGN	6
FIS/01	B	Fisica e chimica	PHYSICS	12
ING-INF/05	B	Mathematics, IT and Statistics	BASICS OF IT	6
MAT/03	B	Mathematics, IT and Statistics	GEOMETRY	6
L-LIN/12	AL	art. 10, paragraph 5, letter c	FOREIGN LANGUAGE	3
ING-IND/35	C	Management Engineering	BASICS OF ECONOMY	6
<b>2° Anno di Corso</b>				
ING-IND/31	AF	Supplementary Activities	ELECTOTECHNICS	6
CHIM/07	B	Physics and Chemistry	ORGANIC CHEMISTRY	6
ING-IND/17	C	Energy Engineering	TECHNICAL PHYSICS	9
ING-IND/24	AF	Supplementary Activities	TRANSPORT PHENOMENA	6
ING-IND/08	C	Mechanical Engineering	MACHINES AND ENERGY SYSTEMS	9
ING-IND/13	C	Mechanical Engineering	APPLIED MECHANICS AND PLANNING	9
ING-IND/12	C	Mechanical Engineering	MECHANICAL AND THERMAL MEASUREMENTS	9
ING-IND/21	C	Chemical Engineering	MATERIAL TECHNOLOGY	6
<b>3° Anno di Corso</b>				
ING-IND/22	AF	Supplementary Activities	INSTRUMENTAL ANALYSIS AND MATERIALS CONTROL	6
ING-IND/17	C	Management Engineering	MECHANICAL INSTALLATIONS	9
ING-IND/25	C	Chemical Engineering	CHEMICAL INSTALLATIONS	9
	AL	art. 10, paragraph 5, letter c	FINAL DISSERTATION	3
ING-IND/14	C	Mechanical engineering	MECHANICAL COMPONENTS	9
	AL	art. 10, paragraph 5, letter d	INTERNSHIP	6

<b>Optional</b>				
ING-IND/15	AL	Optional	COMPUTER AIDED DESIGN	6
ING-IND/17	AL	Optional	QUALITY CONTROL	6
ING-IND/09	AL	Optional	MACHINES-ENVIRONMENT INTERACTION	6
ING-INF/04	AL	Optional	INDUSTRIAL AUTOMATION	6
ING-IND/15	AL	Optional	DESIGN TOOLS FOR UAV	6
IUS/04	AL	Optional	INDUSTRIAL LAW AND INTELLECTUAL PROPERTY	6
ING-IND/35	AL	Optional	ECONOMY AND MANAGEMENT OF TECHNOLOGICAL TRANSFER	6

## Attachment 3: Regulation on Curricular Internship



**REGULATION ON CURRICULAR INTERNSHIP  
BACHELOR'S DEGREE COURSES AND  
MASTER'S DEGREE COURSES IN:  
CIVIL AND ENVIRONMENTAL ENGINEERING (D.M. 270/04)  
INDUSTRIAL ENGINEERING (D.M. 270/04)  
IT AND AUTOMATION ENGINEERING (D.M. 270/04)**

The Study Plan of the Bachelor's Degree Courses in Civil and Environmental Engineering (L7), Industrial Engineering (L9), IT and Automation Engineering (L8) and of the Master's Degree Courses in Civil and Environmental Engineering (LM23), Industrial Engineering (LM33), IT and Automation Engineering (LM32) of Telematic University eCampus shall give special priority to the curricular internship, with the aim to have the students experiment their skills in the labour market as an addition to their academic education. The curricular internship shall consist in a period of practical activity aimed exclusively at the attainment of the CFU needed for the successful completion of the formative path of the degree courses and shall not constitute a professionalizing internship for the purpose of the state examinations for the registration to the professional registers (Register of the Engineers).

The internship shall be carried out at public or private structures affiliated to the University, at eCampus University, at research centres of eCampus University or at other Italian or foreign Departments and Institutes of engineering disciplines, with the supervision of a didactic tutor (a member of the Internship Committee of the Faculty of Engineering of eCampus University) and of a company tutor (or a Teacher of the University) who shall guide the students during their internship period.

## **Art. 1 – PURPOSES AND ACTIVITIES OF THE INTERNSHIP**

The curricular internship, aimed at the attainment of the academic title, is intended to promote the attainment of the following formative objectives:

- a) the comprehension of the links between theory and professional practice and the integration between theoretical knowledge, acquired in the Bachelor's Degree Courses in Civil and Environmental Engineering (L7), Industrial Engineering (L9), IT and Automation Engineering (L8) and the Master's Degree in Civil and Environmental Engineering (LM23), Industrial Engineering (LM33), IT and Automation Engineering (LM32), and the concrete applications of professional practice;
- b) learning the procedures and the methodologies typical of the profession of engineer;
- c) the progressive acquisition, under the close supervision of the tutor, of competences related to the professional role, in relation to the different labour contexts in which the engineers operate.

The internship activity shall amount to 25 hours per formative credit, in accordance with the requirement of the didactic offer.

In particular:

- Bachelor's Degree Course in Civil and Environmental Engineering (L7): n° 6 CFU amounting to 150 hours.
- Bachelor's Degree Course in Industrial Engineering (L9): n° 9 CFU amounting to 225 hours.
- Bachelor's Degree Course in IT and Automation Engineering (L8): n° 6 CFU amounting to 150 hours.
- Master's Degree Course in Civil and Environmental Engineering (LM23): n° 6 CFU amounting to 150 hours.
- Master's Degree Course in Industrial Engineering (LM33): n° 3 CFU amounting to 75 hours.
- Master's Degree Course in IT and Automation Engineering (LM32): n° 3 CFU amounting to 75 hours.

In order to allow a certain variety of experiences, the interns shall carry out their practical activity:

- a) At various public or private organizations – Companies, Authorities, Associations, Institutions, Academies, Research Centres – where the following activities are performed:
  - Planning, production, implementation, design, measures and controls, diagnostics in the industrial, civil and environmental, industrial, IT fields of expertise;
  - Research activity in the industrial, civil and environmental, industrial, IT fields of expertise
- b) Within the various Courses of Study provided by the Faculties and the Research Centres of eCampus University, or by another University. In such case, the theoretical or technical-methodological internship activities shall be mainly oriented at the involvement of the interns in study and research activities, under the direct supervision of a Teacher of the Engineering Faculty.

The internship shall be programmed and follow an individual project, planned on the basis of a “training project” between intern and tutor specifying the mutual responsibilities and the respective tasks in the implementation of the project. Said individual project shall be viewed by the Internship Committee of the Faculty of Engineering of eCampus University.

The formative internship shall not be considered as an employment relationship.

La durata massima e complessiva del periodo di tirocinio è 6 mesi. Nel computo del limite sopra indicato non si tiene conto dei periodi di astensione o sospensione del tirocinio. La durata massima di 6 mesi si intende comprensiva di proroghe.

## **Art. 2 – ACCESS TO THE INTERNSHIP**

In order to begin the internship the student shall:

- Make mandatory and preventive contact with the Internship Office by email to the following address: [tirocinio.lettere@uniecampus.it](mailto:tirocinio.lettere@uniecampus.it);

- Having acquired a minimum of 100 CFU out of 180 for the I level Degree Courses, or having acquired a minimum number of 60 CFU out of 120, for the II level Degree Courses;
- If the student wishes to carry out the internship at an external authority, please note that the relationship between the University and the host structure shall be regulated by a specific agreement. In case the structure where the student wishes to carry out the internship does not have an agreement with the University, it is mandatory to stipulate it before the beginning of the internship. The students shall signal eventual structures on the basis of their formative interests, after having verified the availability; the Internship Commission reserves the right to evaluate the eventual structures proposed by the students, while it is the responsibility of the Internship Office to directly contact the host subject in order to stipulate the Agreement;
- If the students wish to carry out their internship at an eCampus research centre or at other departments and/or research centres of other Universities, in the first case they shall identify a teacher within their Degree Course and verify their willingness to follow them as a tutor; in the second case they shall identify a teacher within the Degree Course equivalent to the course attended by the student at eCampus University.

### **Art. 3 – PLACE OF INTERNSHIP**

Shall be regarded as places of internship:

- **Public and private authorities, private companies, institutions, other university departments (both Italian and foreign) who shall stipulate an agreement with eCampus University.**

For the purpose of the stipulation of an agreement with the University, said authorities shall submit to the Internship Office:

- 1) Indications inherent to the purposes and the organizational structure of the Authority (if the Authority is private, the statute of the Authority);**
- 2) Detailed indications on the operational activity and/or of research at the structure and specific indications on the formative activities performed by the interns;**
- 3) CV of the tutor.**

- **eCampus University or one of its research centres.**
- **In case the internship is carried out at one of the Faculties and Research Centres of eCampus University, the student shall have the possibility to carry out the related activities in “At Home” modality. In this modality, the activities shall be carried out also outside of the actual physical structure of eCampus University (for example at home, in public libraries, etc.), nevertheless the students required to declare in the attendance register the activities and the place where they are implemented. The aforementioned register shall be countersigned by the internal tutor who shall verify, as far as possible, the veracity of what has been declared.**

### **Art. 4 – PURPOSES AND CHARACTERISTICS OF THE TUTORS**

The tutor shall follow the student during the internship period, agreeing on the practical modalities of its implementation, making sure that the internship is carried out appropriately and participating



to the evaluation of the internship.

In the public/private entities the function of tutor shall be carried out by the personnel related to the occupational activities provided for in Art. 1, with an appropriate professional experience and capable of guaranteeing a stable relationship with the structure throughout the duration of the internship.

Within the University, shall carry out the function of tutor the teachers of the Bachelor's Degrees and the Master's Degrees and/or of the research centres.

#### **Art. 5 – RULES OF CONDUCT FOR THE INTERN**

The intern shall comply with what was agreed in the agreement between the University and the host, shall respect the disciplinary regulations, the organizational/safety/hygiene rules. During and after the internship the intern shall maintain the strictest confidence on the information acquired during the implementation of the internship.

If the host adopts a code of conduct or an internal rule, the intern shall comply with it

#### **Art. 6 – INSURANCE POLICIES**

The RC and INAIL insurance policies, necessary for the implementation of the internship, shall be at the expense of eCampus University.

#### **Art. 7 – TRAINING PROJECT**

In the Training Project shall be indicated the purpose of the internship and the modalities necessary in order to reach the target set (namely the competences that the intern wishes to attain at the end of the internship and how to achieve them).

La durata del tirocinio e le modalità di accesso ai locali aziendali sono dettagliate nel Progetto Formativo, compilato prima dell'avvio di ciascun tirocinio.

The Internship Project shall be activated **only once the Agreement has been stipulated and only once the student has communicated** all the necessary information, personal and of the authority, for the implementation of the internship.

Once the aforementioned form has been filled in, the Internship Office shall send back to the student the Training Project countersigned by the functionary of the Office, along with the documents necessary for the implementation of the internship:

- **Register of the attendances**
- **Report on the internship period** (which shall be carried out by the intern upon the completion of the internship activities);
- **Evaluation report** (which shall be carried out by the company/university tutor at the end of the internship).

Once the internship has ended, all the documents shall be emailed to the Internship Office. The

original forms shall be delivered to the Student Secretariat, along with the graduation application form.

## Attachment 4:

Syllabus of the Supplementary Formative Activities.

### SYLLABUS – MATHEMATICS

#### Sets

Sets, subsets, intersection, union, number sets (natural numbers, whole numbers, rational numbers, real numbers, complex numbers), Cartesian product.

#### Logic

Propositions, quantifiers, implications, negation, statements, formal proofs.

#### Algebra

Algebraic expressions, summations, product of a sequence, equations, equivalent equations, systems of equations, equivalent systems of equations, algebraic inequalities, equations and inequalities, absolute value equations and inequalities, irrational equations, irrational inequalities.

#### Polynomials

Monomials, polynomials, sum, product, degree, division of polynomials with one variable, Polynomial remainder theorem, zeros of polynomials in one variable, Ruffini's rule, multiplicity of zeros of a polynomial in one variable, rational zeros of polynomials with whole numbers coefficient, fundamental theorems of algebra, polynomial equations with one variable.

#### Functions and equivalence classes

Functions, image, counter image, injective functions, surjective functions, bijection, composition, inverse function, equivalence relation, equivalence class.

#### Lines and planes

Points, lines, plans, mutual position of two lines in a plane, mutual position of two planes in space, mutual position of two lines in space, position of a line with respect to a plan, sheaf of lines, sheaf of planes, cartesian coordinate system, implicit formula of a line in the plane, distance between two points, area, volume, circumference, ellipsis, hyperbola, parabola.

#### Exponentials and logarithms

Exponentials, logarithms, exponential equations, exponential inequalities, logarithmic equations, logarithmic inequalities.

#### Goniometry

Goniometric functions, goniometric formulas, inverse goniometric functions, goniometric equations, goniometric inequalities.

# OFA SYLLABUS - PHYSICS

## **Introduction**

the international system of units

## **Kinematics and dynamics of a material point**

Velocity and acceleration. Linear motion. Curvilinear motion. Newton's laws of motion. Impulse and momentum. Work. Power. Kinetic energy. Conservative force. Potential energy. Conservative principles. Elastic and inelastic collisions.

## **Kinetic theory of gases and Thermodynamics**

Perfect gases. Perfect gas law. Pressure and internal energy of gases. Temperature. Heat. Change of state. Latent heat. First law of thermodynamics. Thermodynamic transformations of perfect gas. Second law of thermodynamics. Entropy.

## **Electrostatics and electric current**

Electrical charge. Coulomb's law. Electric dipoles. Electrical field. Motion of point charges. Electrical conductor. conductors in electrostatic equilibrium. Electromagnetic induction. Electrostatic potential. Potential difference. Potential energy. Capacity of a condenser. Series and parallel capacitors. Electric current and motion of a charged particle. Ohm's Law and electrical resistance. Electromotive force and sources of electromotive force. Joule effect. Series and parallel circuits.