



UNIVERSITÀ  
DI PAVIA

FACULTY OF ENGINEERING

DEPARTMENT OF INDUSTRIAL AND INFORMATION  
ENGINEERING

COURSE REGULATIONS

(art. 12 - D.M. 22 October 2004 n. 270)

SECOND-CYCLE DEGREE

IN

ELECTRICAL ENGINEERING

Class LM-25

(Second Cycle Degree in Automation Engineering)

2024/2025 Academic Year

## Summary

### **PART ONE – GENERAL PROVISIONS**

---

- ART. 1 - COURSE TITLE, CLASS, DEPARTMENT AND DURATION
- ART. 2 - REGULATORY TEXTS
- ART. 3 - BODY RESPONSIBLE FOR DIDACTIC AND ORGANIZATIONAL COORDINATION
- ART. 4 - ADMINISTRATIVE SERVICES

### **PART TWO – ORGANIZATION OF COURSE ACTIVITIES**

---

- ART. 5 – ANNUAL DEGREE PROGRAMME REPORT 4
- ART. 6 – ADMISSION REQUIREMENTS 4
- ART. 7 – DIDACTIC ORGANIZATION 7
- ART. 8 – STUDY PLAN 8
- ART. 9 – JOINT-DEGREE PROGRAMMES 8
- ART. 10 – ATTENDANCE AND CURRICULAR PREREQUISITES 8
- ART. 11 – STUDENT ELECTIVE ACTIVITIES 8
- ART. 12 – INTERNSHIPS AND PLACEMENTS 9
- ART. 13 – EXAMINATIONS AND END-OF-COURSE ASSESSMENTS 9
- ART. 14 – FINAL EXAMINATION AND AWARDED OF DEGREE 11

### **PART THREE – PROVISIONS REGARDING STUDENTS’ COURSE OF STUDY**

---

- ART. 15 – CRITERIA FOR RECOGNITION OF DULY-CERTIFIED EXTRA-UNIVERSITY KNOWLEDGE AND SKILLS 13
- ART. 16 – CRITERIA FOR RECOGNITION OF CREDITS EARNED 13
- ART. 17 – CRITERIA FOR RECOGNITION OF EDUCATIONAL ACTIVITIES UNDERTAKEN AT FOREIGN UNIVERSITIES 14
- ART. 18 – ADMISSION TO SUBSEQUENT YEARS 15
- ART. 19 – CERTIFICATIONS 15

- Attachment 1 – Study plans
- Attachment 2 – List of introductory courses

## **PART ONE – GENERAL PROVISIONS**

### **Art. 1 – Course title, class, department and duration**

1. The Second-Cycle Degree (C.d.L.M.) in Electrical Engineering at the Department of Industrial and Information Engineering, coordinated by the Faculty of Engineering at the University of Pavia, belongs to the LM-25 Class of Second-Cycle Degrees in Automation Engineering under the DM (Ministerial Decree) of March 16, 2007.
2. The duration of the degree programme is two years.

### **Art. 2 – Regulatory texts**

1. In accordance with the freedom of teaching and the rights/obligations of teaching staff and students, the organisation of the teaching and the execution of the educational activities foreseen for the degree course in Computer Engineering are governed by the present Regulations, the University of Pavia Statute, the University General Regulations, the University Course Regulations, Students Career Regulations, Regulations for part-time student enrolment, Regulations for the composition and functioning of the Teaching Council, the Department of Industrial and Information Engineering Regulations and by the Faculty of Engineering Regulations.
2. The regulations detailed in the previous paragraph are published on the university website at the following addresses:
  - [Statute and Regulations of the University of Pavia](#)
  - [Regulations of the Department of Electrical, Computer and Biomedical Engineering](#)
  - [Regulations of the Faculty of Engineering](#)
3. Regarding all matters not explicitly provided for in the present Regulations, prevailing laws will apply.

### **Art. 3 – Body responsible for didactic and organizational coordination**

1. In compliance with the competences and criteria established by the Statute and Regulations detailed in art. 2, the body responsible for the degree course is the Department of Industrial and Information Engineering that has delegated the Faculty of Engineering the responsibility for didactic co-ordination, pursuant to art. 25 and 26 of the Statute. The Information Engineering Academic Advisory Board, hereafter referred to as ‘Board’, is responsible for the didactic and organisational co-ordination of the degree course, in compliance with the Department and Faculty competences and indications mentioned above, with particular reference to that detailed in art.4 regarding the composition and functioning of Academic Advisory Board.
2. The Faculty president, Department Director, President of the Academic Advisory Board, the degree course co-ordinator, the list of members of the Quality Supervision Board and the list of members of the Review Commission, are published on the Faculty of Engineering website ([Governance](#)).

### **Art. 4 - Administrative services**

1. The administrative services provided for the degree course are:
  - The Student Administration Offices (UOC Carriere studenti, UOC Immatricolazione e informastudenti, UOC Admission office), which manage all administrative affairs during the student’s university career, from entry to graduation. This includes enrolment, transfers, fees, validation of qualifications and student mobility. The offices are situated in Via Ferrata 1, Pavia; the website can be consulted at

<https://portale.unipv.it/it/ateneo/organizzazione/amministrazione/area-didattica-e-servizi-agli-studenti>;

- [The Orientation Centre \(C.OR.\)](#) that manages activities and projects to aid students in their choice of university course, provides support throughout students' university career and smoothes entry into the workplace. To this end, the Centre organises both individual and group activities, consultancy services and orientation meetings.
- [The Faculty of Engineering Administrative Office](#);
- [The Department of Industrial and Information Engineering Administration Office](#)

## PART TWO – ORGANIZATION OF DIDACTIC ACTIVITIES

### Art. 5 – Annual degree programme report

1. The Annual Degree Programme Report, taken from the Ministerial database, can be consulted at: <https://sonl.unipv.it/ava/index.php/2024SUA06419.pdf>

### Art. 6 - Admission requirements

#### **A) Requirements**

1. Admission to the Second-Cycle Degree in Industrial Automation Engineering, the procedure for which is explained below, requires that the candidate:
  - a) possess the proper educational qualification
  - b) have taken the required courses during his or her previous studies (curricular requirements)
  - c) possess the proper personal preparation
2. Students requesting transfer to the Second-Cycle Degree programme in Industrial Automation Engineering from other degree programmes at Pavia or from other universities are subject to the same admission requirements as matriculating students.

#### **B) Academic degrees**

3. To be admitted to the Second-Cycle Degree programme in Industrial Automation Engineering students must possess a five-year degree (previous regulation in D.M. 509/99), a first-cycle degree (ex D.M. 509/99 or ex D.M. 270/04), or a three-year university diploma, that is, another academic degree from abroad that is recognized by the current legislation.

#### **C) Previous courses completed by candidates**

4. In their previous academic activities (Bachelor's degree, Master's degree, or enrolment in individual university courses) students must have completed a minimum of 36 CFUs (course credits) in the general subject areas and 45 CFUs in courses in the specific scientific-disciplinary sectors (SDS) shown in the table below. The student may self-certify the satisfaction of these requirements.

Course	Scientific-disciplinary sector (SDS)	minimum number of CFUs
General	CHIM/03; CHIM/07; FIS/01; FIS/02; FIS/03; ING-INF/05; MAT/01; MAT/02; MAT/03; MAT/04; MAT/05; MAT/06; MAT/07; MAT/08; MAT/09;	36
Specialized	ING-INF/01; ING-INF/04; ING-INF/05; ING-IND/08; ING-IND/09; ING-IND/10; INGIND/12; ING-IND/13; ING-IND/31; ING-IND/32; ING-IND/33; ING-INF/07	45
<b>Total</b>		<b>81</b>

5. Graduates from foreign universities, graduates of five-year degree programmes (previous regulations in D.M. 509/99), or anyone who presents academic activities to fulfill the curricular requirements that are not recognized as belonging to a proper SDS and/or satisfy the CFU requirement, will have their previous academic activities assessed by a Committee appointed by the Board to determine whether it meets the admission requirements.
6. In order to allow graduates, whose previous coursework does not perfectly meet the required curricular requirements but who have a strong academic background and high motivation, to gain entry into the programme, the Committee appointed by the Board, taking into account the candidate's previous academic performance (as demonstrated in the appropriate documents attached to the admission request), and assessing if necessary (even through an interview) the candidate's motivation, can determine as an exception that the candidate has the proper curricular requirements for admission to the Second-Cycle Degree Programme (SCDP), subject to an examination of the appropriateness of the candidate's personal preparation (see '*Adequacy of personal preparation*' section below). In this case the Board will present a report that highlights any curricular insufficiency and indicates any courses the candidate will consequently be required to include in his or her study plan, including courses that are not indicated in the standard study plan presented in Attachment 1, up to a maximum of 12 CFUs. In any event, the existing Didactic Regulations and total number of CFUs needed to graduate (120 CFUs) must be respected. If instead the curricular insufficiency is judged incompatible with the SCDP, the Board will indicate the exams the candidate must pass prior to enrolment in individual courses in order to gain admission to the SCDP.
7. All candidates falling within clauses 6 and 7 above must request that the Board, which will rely on the appointed Committee mentioned above, assess the candidate's previous academic record in order to decide on admission to the SCDP. The request can be made in allocated time slot, even by students who have not yet graduated and, at the moment of the request, have an approved three-year study plan. The evaluation of the curricular requirements will also take into account the exams still to be undertaken that are contained in the most recently approved study plan. Any subsequent change in the study plan will require an additional evaluation.

#### **D) Adequacy of personal preparation**

8. The candidate profile for admission to the second-cycle degree course is reported in the *Requirements* section. Candidates will be deemed to be adequately prepared if they possess:
  - a) Knowledge of English to B2 level on the CEF (Common European Framework).
  - b) A solid grounding in the basics of engineering and as well as good theoretical and practical knowledge in advanced engineering disciplines.
9. Knowledge of English to B2 level may be demonstrated when registering through the presentation of one of the certificates listed in art. 19 or by presenting a higher-level certificate. In the absence of a certificate, the knowledge of the English language may be verified by the Committee, the same described in the "Requirement" section, upon documented request by the candidate and it can also be held online. Candidates able to demonstrate that they have passed a 3 CFU-level English examination or an examination held in the English language during their university career do not have to sit the assessment. No certificates are required from students from countries where English is one of the main languages and/or who hold a degree awarded by an institution where the teaching is in English; these students must provide documentation that attests to their status.
10. A solid grounding in the basics of engineering and as well as good theoretical and practical knowledge in advanced engineering disciplines will be verified by an assessment held over two sessions: the first in September-October and the second in January-February. Students

yet to graduate may participate in the personal preparation assessment provided, when sitting the assessment, they hold at least 150 CFUs. The format and topics covered in the assessment can be consulted at the faculty website (<http://webing.unipv.eu/enrollment/assessment-test/>).

11. Candidates are considered suitable and exempt from the assessment referred to in the previous paragraph, if his or her degree mark is equal to or greater than 90/110. Candidates yet to graduate and who conditionally enrol (see the subsequent section entitled *Conditional enrolment*), are automatically considered suitable and need not undergo any specific assessment if, when conditionally enrolling, their weighted average mark is greater than or equal to 23,5/30 (calculated from at least 150 CFUS). If, subsequent to conditionally enrolling under the conditions outlined above the candidate obtains a score lower than 90/110, his/her personal preparation will, nonetheless, be automatically considered satisfactory.
12. In the case of a degree awarded by a foreign university, evaluation of a solid strong understanding of the basic disciplines and a good theoretical and practical background about engineering distinct disciplines, is carried out on a case by case through an inquiry conducted by the Committee appointed by the Board on the basis of the documentation submitted by the student or eventually, through an interview, at the Commission's request

#### **E) Conditional admission**

13. Candidates who possess the curricular requirements and whose personal preparation is deemed satisfactory, under the conditions detailed in the preceding *Adequacy of candidates' personal preparation* section but who have not graduated by the usual enrolment date may conditionally enrol on the condition that this was requested within the deadline established by the university governance offices.
14. Conditional enrolment allows the student to attend lessons in the first semester but not sit examinations until fully enrolled, that is having graduated and, in any case, within the deadline established by the university governance offices. If the student fails to graduate by within the deadline established by the university governance offices enrolment on the second-cycle degree course will be forfeited and any enrolment fees will be automatically reimbursed, net of the duty stamp fee.
15. Candidates, even if not conditionally enrolled but who satisfy all the entry requirements, may enrol within the deadline established by the university governance offices by paying an additional fee.

#### **Art. 7 - Didactic organization**

1. The second-cycle degree course's educational activities allow students to acquire CFUs pursuant to prevailing laws.
2. The overall average workload undertaken in a year by a full-time student is usually set at 60 CFUs.
3. Each CFU credit corresponds to 25 hours average student workload, of which 50% is reserved to self-study or to other individual educational activities except for educational activities that involve extensive practical exercises or experiments. Didactics is organised into lessons, training exercises and practical activities. The subdivision of the didactics into the three forms described above is established by the course professor on the basis of the CFUs attributed to the course, taking the following values as averages:
  - 1 CFU = 7.5 hours of frontal lessons;
  - 1 CFU = 12.5 hours of training exercises;
  - 1 CFU = 22.5 hours of practical activities.
4. Practical didactic activities are those that involve a direct physical approach with the subject

- matter (e.g. laboratory or on-site activities, guided field trips to factories or offices and project presentations) and that require the student to commit time outside that needed for the accomplishment of the activity itself.
5. For some of the teachings offered, such as the courses on soft skills and the Sustainable Development Goals – SDG), as per the 2030 Agenda for Sustainable Development of the United Nations, by passing the exam, in addition to the registration of the related CFU, an open badge can be envisaged, a digital certificate as a proof of knowledge, competencies and abilities gained during the course. The certificate will be issued automatically after the registration of the exam and will be sent to the student's University of Pavia email address.
  6. Students are awarded the CFUs assigned to each activity by successfully completing an examination, or alternative form of assessment, to appraise the skills acquired.
  7. Credits acquired will remain valid for the duration of the course, regardless of its length, except in cases of forfeiture or withdrawal. Should the student re-enrol, the validity of any credits acquired is subject to an assessment by the Committee appointed by the Board (see Art. 14). In well-motivated cases, the obsolescence of credits relative to certain educational activities may be decided by the Teaching Council once the Faculty's Governing Board has been consulted. Students will be informed as to how to make up any credits deemed obsolete, establishing eventual assessments or tests to be taken.
  8. The course is organised into two semesters and the academic year divided into the following didactic periods:
    - a) 1<sup>st</sup> semester: at least 13 weeks of frontal teaching from the end of September/beginning of October
    - b) winter examination session: 6-7 weeks (January-February)
    - c) 2<sup>nd</sup> semester: at least 13 weeks of frontal teaching from the beginning of March
    - d) summer examination session: 6-7 weeks (June-July)
    - e) autumn examination session: 3-4 weeks (September)
  9. By May each year, the Faculty's Governing Board decides the start and end dates of the periods mentioned in the previous paragraph (calendar of didactic activities) for the successive academic year; once approved, the calendar is published on the Faculty website.
  10. For the final examination (second-cycle degree examination), 6 sessions per year are foreseen. These are usually scheduled for February, March, April, July, September, November and December. By December each year the Faculty's Governing Board will decide the date of the second-cycle degree examinations for the next year; once approved, the calendar is published on the Faculty website.
  11. Each year, by the deadline established for the compilation of the Degree Programme Report, lesson times for both semesters in the successive academic year, together with the rooms where lectures will be held and the detailed examination calendar, will be published.

## **Art. 8 - Study plans**

1. All students must present their study plan to the university by the annually-set deadline.
2. Study plans completed following the model in Appendix 1 of the present Regulations, and the recommended options connected to them (*standard study plans*), are automatically approved.
3. Each student's study plan includes compulsory activities, any optional training activities and independently chosen activities and involves the acquisition of a number of credits no less than that required to obtain the qualification.
4. Students may present an alternative study plan (*individual study plans*) on the condition that it meets the requirements established by the course regulations and the educational objectives outlined in the Degree Programme regulations. Individual study plans must be approved by the Committee appointed by the Board.

5. The inclusion of educational activities elected by the student, pursuant to art. 10, paragraph 5, letter a) of Ministerial Decree 270/04, is regulated by the subsequent art.11.
6. Students who opt to enroll part time, in accordance with art. 53 of the University Course Regulations and pursuant to art. 16 of the Students Career Regulations and the Regulations governing part-time enrolment must submit an individual study plan that is coherent with study course official duration and agreed upon by the Degree Programme Coordinator.
7. EU, equivalent and non-EU students with a study title awarded abroad will have to attend an Italian course for foreigners as part of additional linguistic knowledge. The following students are considered exempt: 1) who have been awarded an high school qualification or a first level degree in Italian in Italy; 2) who have been awarded an Italian school qualification abroad; 3) who hold an Italian language certification of at least level B1.

#### **Art. 9 – Double Degree programmes**

There are currently no Double Degree programmes for the Second-Cycle degree in Industrial Automation Engineering.

#### **Art. 10 - Attendance requirements and preparatory courses**

1. The academic plan for the Second-Cycle degree assumes the student will attend the various educational activities.
2. Lab or experimental activities may have specific attendance requirements, based on a proposal by the teachers involved which is approved by the Department Board.
3. The Teaching Council may establish pre-requisites for certain courses if considered appropriate.
4. Such preparatory courses will not be required for courses given in the same year of the programme.
5. In cases where a preparatory course is required, the student must first pass the exam for this course before taking that for the more advanced course.
6. Attachment 2 presents an outline of the required preparatory courses as determined by the Department Board.

#### **Art. 11 - Student elective activities**

1. Regarding educational activities elected by the student, pursuant to art. 10, paragraph 5, letter a) of Ministerial Decree 270/04 (type D TAF), the Teaching Council proposes a list of recommended courses or activities, however the student may choose any course (taught in Italian and English) on offer at, and accredited by, the University of Pavia provided it is coherent with the course programme.
2. Study plans that differ from those recommended must be approved by the Degree Course Coordinator. Study plans that include courses non coherent with the study course learning plan or which include more than 20% of subjects already covered during the student's previous academic career will not be approved.
3. Students may not choose study plans already taken while attending a previous university course, unless specific validation has been received for this and that such courses are considered separate from the 180 CFUs necessary for the awarding of the first-cycle degree. The competent administrative offices will verify that this regulation has been adhered to while checking students' educational background and prior to granting admission to the second-cycle degree course. In the event of the violation of the above-mentioned regulation, the student will not be allowed to sit the second-cycle degree examination and will be obliged to modify the study plan.
4. Pursuant to Art 10 paragraph 5.a of Ministerial Decree 270/2004 - c.d. "TAF D"), the inclusion, among elected courses, of nationwide and local admission courses related to the



medical field is not permitted.

5. In addition to the courses necessary for the graduation, it is possible to include a maximum of 24 CFU of extra teachings to the study plan per academic year, except for the medical area courses of nationally restricted access and the psychology area courses. The course propaedeutic rules must be in any case respected. According to art. 19 paragraph 3 lett. b) of the Student Career Regulations, those enrolled as repeating students can include a maximum of 24 CFU of extra teachings, belonging to the following academic year.

#### **Art. 12 - Internships and placements**

The Second-Cycle degree in Industrial Automation Engineering does not offer internships and placement activities.

#### **Art. 13 - Examinations and end-of-course assessments**

##### **A) General regulations**

1. All credit-earning activities have a final mark. This assessment and the official result statement will be issued by the professor in charge of the subject that may work with a committee. The committee is formed in compliance with Teaching University Rule Book.
2. The Second Cycle Degree cannot include a total of more than 12 final exams or student evaluations. The number of final exams and evaluations takes into account the fundamental educational activities, other related or supplemental activities, and elective courses. The exams (or final marks) for elective courses are counted as a single unit, even if the assigned credits entail several final exams or marks. All other educational activities (see art. 10, clause 5, sub-clauses c), d), e) of D.M. 270/2004) are not counted toward the maximum number of final exams or evaluations. There can be no more than 5 exams or evaluations for such activities, including the final mark.
3. For courses or activities involving several integrated and coordinated modules given by different teachers, the final mark is jointly determined by teachers from all the modules. The mark assessment can occur in different stages and at different times, even with regard to different parts of the programme, as long as the final mark is decided on jointly.
4. The exam sessions are distributed over the winter, summer and autumn sessions for all courses and activities, independently of the semester in which the course activity takes place.
5. The minimum number of exam sessions and the decision to add extraordinary sessions are regulated by the university's Didactic Regulations, as described in the '*Examination procedure*' section below.
6. The exams during each session are distributed based on a calendar prepared by the Department Board with the aid of the faculty administrative office.
7. The calendar of exams for all sessions and courses in the current academic year is published on the faculty website, as described in art. 7, subsection 10.
8. The publication of the calendar of exams is final, except in cases of proven justification after a written request is made to the faculty president. In any event, the exam session cannot be eliminated or, apart from exceptional cases, moved up.

##### **B) Examination procedure**

1. End-of-course assessment methods are defined by the co-ordinating professors who co-ordinate individual educational activities, adhering to the indications outlined in the successive paragraphs, as well as eventual co-ordination procedures enacted by the Faculty and/or Teaching Council.
2. The co-ordinating professor will publish the assessment methods for each educational activity

at the beginning of the academic year using the 'teaching report' available on the online [Course Catalogue](#) (also called *Syllabus*).

The information must state:

- the type of assessment (written; oral; written + oral);
  - in instances where assessments are held in two phases (e.g. written + oral), the minimum mark necessary to pass the first phase and access the second, the pre-requisites needed to pass each phase as well as the approximate weighting assigned to each individual phase in calculating the final mark.
3. Exam marks must be expressed out of 30. The CFUs are deemed to have been acquired if the mark is equal or superior to 18/30. In the event of a student obtaining 30/30, the commission may award *cum laude* honours. An 'unsatisfactory' mark, even when expressed through a mark, is not reported on the student's career record.
  4. For certain educational activities, e.g. internships or other activities included in the teaching programme and published on the *Syllabus*, as stated in the previous subsection 10, assessments may be awarded only two types of grade: 'approved'/'not approved' or 'satisfactory'/'unsatisfactory'.
  5. Any assessment where marks are attributed can only be scheduled for the session as reported in the teaching calendar. The Faculty Dean may approve a request for an extra session, beyond the mandatory ones as described in the following subsections, for motivated reasons. Other self-assessments or tests that are not assigned a mark may be held at any time during the academic year, inclusive of periods when lessons are being held.
  6. At least six exam dates, distributed over the three exam sessions (winter, summer and autumn), will be scheduled for each course. The examination dates will be open to all students, including those re-sitting. 'Exam date' refers to an examination held within an exam session which, generally, include more than one date. In the event that the examination is held in two phases, (e.g. written and oral), 'exam date' refers to the examination as a whole.
  7. Exam sessions normally include two exam dates, separated by at least 14 days. The co-ordinating professor reserves the right to set just one exam date in September; in such cases at least three dates must be scheduled for the exam session (winter or summer) that directly follows the semester in which the course has ended.
  8. Teachers of courses that are taught for two semesters or teachers of the single teaching activity (part of the two semester exam) may set a an exam in between the first and the second semester, in the January/February exam session. As outlined in the preceding paragraph 2, the co-ordinating professor must specify the weight (that cannot be nil) that the intermediate assessment has on the overall evaluation.
  9. In addition to the exam dates detailed in the preceding paragraphs, an extraordinary date will be set. This is scheduled for a period of at least 15 days (usually in March or April) and chosen by the Dean of the faculty, and may also be for the purpose of admission to the last graduation session for students of the preceding year. Only students in the second year of the second-cycle degree course may register for the extraordinary exam date.
  10. Co-ordinating professors reserve the right to schedule, at any time during the academic year, exam dates dedicated to students who have already attended the first semester of the second year of the second-cycle degree course.
  11. Extraordinary examination dates may be set for student athletes who participate in sports recognised by the Italian National Olympic Committee or by the Italian Paralympic Committee if scheduled examination dates coincide with at least national-level sports events. Documented proof of impediments to participation in scheduled examinations must be presented to the Dean of the faculty who will, together with the professor, organise an extraordinary examination session.
  12. Students who fail to pass a given exam must re-sit during the successive the exam session. Rules established by professors that limit students' opportunity to register for at least six exam

- dates during the year are invalid, as detailed in preceding paragraph 14.
13. Students reserve the right to reject any exam mark; in such cases they must re-sit during the next exam session. The rejection of an examination mark must be executed within the deadline and follow the procedure outlined by the co-ordinating professor. Once an exam mark has been accepted and officially registered, the examination may not be repeated nor can the attributed mark be modified.
  14. Students may view corrected written examination papers by following the indications provided by the co-ordinating professor.

#### **Art. 14 - Final examination and awarding of degree**

1. The second-cycle degree course in Computer Engineering is awarded following a final examination to verify that the established educational objectives have been reached.
2. The final examination, for which 24 CFUs are assigned, consists of a public discussion, before a specially appointed second-cycle degree commission, of a thesis supervised by a professor. The aim of the discussion is to evaluate the quality of the work, the candidate's overall knowledge of the subject, capacity to present rigorously and clearly, as well as provide supporting arguments of a technical, professional and/or scientific nature.
3. The thesis should consist of a theoretical, experimental or project-based work whose preparation should be proportionate to the number of CFUs assigned: 24 credits equate to 600 hours overall). The thesis should be complete, display critical and/or creative thinking, be written solely by the candidate and provide documented sources. It must develop themes that are strictly coherent with the degree programme objectives and exhibit advanced and original research or be advanced project-based work.
4. The final thesis is prepared under the guidance of a supervisor who is a member of the University of Pavia teaching staff or in charge of a teaching activity offered by the Faculty of Engineering. The role of supervisor is independent of the scientific disciplinary sector of the faculty member assigned that role, as long as the thesis topic falls within his or her competencies and scientific interests. The supervisor:
  - guides and assists the candidate in formulating and defining the content of the thesis;
  - commits to ensuring that the candidate concludes the work in a reasonable timeframe;
  - checks that the thesis is coherent in order to obtain logical and consistent results and verifies the thesis and conclusions are well written;
  - presents the candidate to the degree commission, describing the workload and duration involved in writing the thesis and, with the consensus of the commission president, supports the oral presentation.
5. Candidates may choose their supervisor from the figures detailed in the preceding paragraph 4, requesting the assignation of the thesis well in advance of the final examination and developing the work to the best of his/her ability, adhering to what has been discussed and agreed with the supervisor.
6. Once the thesis has been finished, the supervisor confirms that the workload involved in writing the thesis corresponds to the number of CFUs on offer for the final examination. The supervisor, if not a member of the degree commission, must send a brief summary of the thesis to the commission president before the graduation date. This summary should detail the time spent and effort made by the candidate in writing the thesis.
7. The degree commission is nominated by the Dean of the faculty, acting on a proposal made by the President of the Teaching Council or the Degree Programme Co-ordinator. It is composed of at least seven members of which at least four must be professors or researcher who teach classes offered by the Faculty or borrow by other university departments. Co-supervisors may participate on the commission but do not have voting rights. Normally a

commission is nominated for each exam date and, if circumstances dictate, more than one commission may be nominated. Supervisors of theses presented to the commission should, if possible, form part of the panel.

8. The commission will be headed by the professor with the most experience and highest grade. The President appoints a secretary from the commission members to take minutes.
9. There are, generally, six exam dates during the second-cycle degree academic year, organised according to the calendar that is approved annually by the faculty's Governing Board, as outlined in the preceding art. 7, paragraph 9.
10. The President of the Teaching Council or the Degree Programme Co-ordinator, if nominated by the former, as well as formulating the Commission's proposal to the Dean of the faculty, chooses an examiner for each candidate or delegates this task to the Commission president. The role of the examiner is to scrutinize the thesis in order to furnish a critical analysis of its readability and structure. The candidate has to send a digital copy to the external examiner within the deadline decided by the Administrative Office.
11. The degree result, expressed as a mark out of 110, is obtained by adding a discretionary increase to a basic mark. The overall result includes the assessment marks obtained by the candidate, with the exception of those from excess credit courses and is calculated in accordance with the methods outlined in the subsequent paragraph 12. The discretionary increase is assigned by the Commission during the examination, in adherence with the methods detailed in the subsequent paragraph 13.
12. The basic mark is the weighted average of the marks from the educational activity assessments where these are awarded a final mark, weighted by the number of credits associated to each activity. The weighted average is then reported as a mark out of 110.
13. The discretionary increase, to a maximum value of 6 points, is attributed collectively by the Commission at the end of the examination as a sum of the following three factors:
  - 0 to 2 points are awarded by the Commission for the quality of the candidate's presentation during the examination;
  - 0 to 2 points are awarded by the Commission for the quality and thoroughness of the presented text, once the examiner has been consulted.
  - 0 to 2 points are awarded by the Commission based on the supervisor's assessment of the candidate's presentation.

The three points indicated above, which may not necessarily be whole numbers, are the result of the mathematical average of the points assigned by each member of the Commission.

14. The final mark (the sum of the weighted average of assessment marks and the three discretionary increase factors) are rounded up to the closest whole number. *Cum laude* honours may be attributed only when the sum of the base mark and the discretionary increase deliberated by the Commission is equal to or exceeds 112/110. The Commission must reach a unanimous decision before awarding *cum laude* honours.
15. The faculty reserves the right to adopt a plagiarism checker tool able to highlight uncredited sections of text, that is where inverted commas have not been used or a source reference not provided for work written by others. If the faculty-established commission judges instances of plagiarism to be serious, the Teaching Council president and the Supervisor will decide whether the final examination can be taken, whether it should be annulled if already taken and whether disciplinary proceedings against the candidate should be initiated.
16. Students are allowed to prepare their thesis in a language other than Italian. For this purpose, the following conditions must be met:
  - that there is the approval of the tutor or the supervisor;
  - that the defense (and/or the thesis) be conducted in one of the main languages of the European Union (English, French, German, Spanish);
  - that an abstract written in Italian and summarizing the content of the thesis is attached;

- that the title is written in both languages, the foreign one and Italian.

The thesis defense is held in Italian, except for study courses entirely taught in English, for which it is held in English

### **PART THREE – PROVISIONS REGARDING STUDENTS’ COURSE OF STUDY**

#### **Art. 15 - Criteria for recognition of duly-certified extra-university knowledge and skills**

1. Under article 2 c. 147 of L. 286/2006 and article 14 of L. 240/2010, the Committee appointed by the Board can validate as university credits (up to 12 credits) any individually certified professional knowledge and skills, under current regulations, as well as other knowledge and skills acquired in educational activities at the post-secondary level which have been planned with the participation of a university.

The Committee appointed by the Board can also validate up to 6 credits,( constituting part of the 12 credits mentioned above) the winning of Olympic or Paralympic medals, or world championship titles, European titles or national titles in those disciplines recognized by the Italian National Olympic Committee or the Italian Paralympic Committee (under L. 240/2010, art. 14). Student participating in the Dual Career programme may apply for a maximum to 12 credits to be validated as part of the aforementioned credits in compliance with the directives from the Academic Senate.

2. The validation of acquired credits is determined by the Committee appointed by the Board on a case by case. The type of educational activity (TAF) for which credits are recognized and the number of credits (within the eventual limits provided by law) are determined based on the discipline the activity falls under, taking into account the contribution of the recognized activity to the achievement of the educational objectives of the study plan, the specific content of the activity and its possible obsolescence, as well as the time commitment (in hours) required. To this end, the request for recognition must be accompanied by all official documentation demonstrates the above aspects; the Committee appointed by the Board can undertake additional investigations that are necessary in this matter.
3. In the event that, subsequent to recognition of the acquired credits, the student’s study plan is changed to an individual study plan, the latter must be approved by the Committee appointed by the Board in conformity with the provisions of article 8.

#### **Art. 16 - Criteria for recognition of credits earned**

1. The Committee appointed by the Board decides whether or not to recognize credits earned by students who have already earned a degree from the University of Pavia or another Italian university and request at the time of admission for a reduced credit requirement for graduation. Such a request may be granted pending an evaluation and validation of the credits considered valid under clause 5 below.
2. The Committee appointed by the Board decides whether or not to recognize credits for a student whose matriculation has expired or who has left university and, at the time of re-admission, requests a reduced credit requirement for graduation. Such a request may be granted pending an evaluation and validation of the credits considered valid under clause 5 below.
3. The Committee appointed by the Board can validate credits already earned by the student from enrolment in individual courses at the University of Pavia or at other universities.
4. In the case of a transfer from another university or from another course of study at the university, the recognition of credits is decided on by the Committee appointed by the in accordance with current law, the university Didactic Regulations, and any decisions regarding the course of study taken by the faculty Executive Committee and/or Department Board.
5. Credit validation is decided on by the Committee appointed by the on a case by case

basis. The type of educational activity (TAF) for which credits are recognized and the number of credits (within the eventual limits provided by law) are determined based on the discipline the activity falls under, taking into account the contribution made by the activity to be recognized to the achievement of the educational objectives of the study plan, the specific content of the activity and its possible obsolescence, as well as the time commitment (in hours) required. To this end, the request for recognition must be accompanied by all official documentation that demonstrates the above aspects; the Committee appointed by the Board can undertake additional investigations if necessary in this matter.

6. In the event that, subsequent to recognition of the acquired credits, the student's study plan is changed to an individual study plan, the latter must be approved by the Committee appointed by the Board in conformity with the provisions of article 8.
7. When a student is transferring from a course of the same class of study, the credits validated from the same scientific sector cannot be less than 50% of the credits already gained by the student.

#### **Art. 17 - Criteria for recognition of educational activities undertaken at foreign universities**

1. Study periods carried out by students on the degree course at foreign university structures in the context of the Erasmus+ Community Programs and International Mobility Programs recognized by the University through international agreements are recognized as a training tool equivalent to that offered by the Faculty with the same student commitment and contents covered with the training course. They are also encouraged as a means of cultural exchange and integration into personal and professional training.
2. The 'Learning Agreement' (LA) is the document that defines the plan for the academic activities the student will undertake abroad in substitution of certain activities required for the Second-Cycle degree. The student must fill in this document making sure not to focus so much on following the exact same content regarding these activities as ensuring the resulting 'curriculum' is coherent with the academic objectives of the Second-Cycle degree programme.
3. For students who intend to study abroad for a period of time, the possibility of gaining recognition for the credits earned is established ahead of time by reference to the LA, which must be signed for approval by the faculty member the Department Board designates as the coordinator for study abroad. The coordinator must ensure the LA is coherent with the academic objectives of the Second-Cycle degree programme.
4. At the end of the period of study abroad, by request of the student and on the basis of the Learning Agreement and considering the student's results as properly documented by the foreign university (in the case of the Erasmus+ Programme and International Mobility Programs recognized by the University, through the 'Transcript of Records'), the Committee appointed by the Board will recognize the academic activity undertaken abroad and any associated marks.
5. The Committee appointed by the Board will proceed with recognition of the direct correspondence between one or more academic activities in the study plan and one or more activities whose credits have been earned at the foreign university.
6. If the content of the academic activities whose credits have been earned at a foreign university are consonant with the academic objectives of the Second-Cycle degree but there is no direct correspondence with any of the academic activities in the study plan, the Committee appointed by the Board, on a proposal from the coordinator, can authorize, under article 50 clause 5 of the university's Didactic Regulations, that the student present an individual study plan that respects the stated class and organization of the study plan. For each academic activity undertaken abroad, the corresponding Italian scientific disciplinary sector (if available) and the number of academic credits must be indicated.
7. For each exam taken at a foreign university which is recognized by the University of

Pavia, the Committee appointed by the Board will assign a mark that corresponds to the assessment obtained from the foreign university. When there are differing criteria for marks in the case of exchange programmes within the European Union, reference will be made to the correspondence with the European Credit Transfer System (ECTS).

- The Committee appointed by the Board recognizes studies and research undertaken abroad in preparation for the final degree exam as well as educational internships based on international agreements (for example, the Erasmus Traineeship), as long as the nature of the activity, the commitment involved and the results are documented.

#### Art. 18 - Admission to subsequent years

- Enrolment in the second year is not subject to any special conditions.

#### Art. 19 - Certifications

- The following linguistic certifications (issued as a result of an examination) are considered appropriate and automatically approved, for the purpose of proving that students have the level of English required for admission to a degree course; they also correspond to level B2 of the Common European Framework of Reference for Languages (the same kind of certificate but for higher level of knowledge will be accepted):

Ente Certificatore	Certificazione corrispondente al livello B2 del Quadro Comune Europeo di Riferimento per le Lingue
Cambridge English Language Assessment (Part of the University of Cambridge)	Cambridge English: First (FCE) and Business Vantage (BEC) Minimum score: 160 [Also English for Speakers of Other Languages (ESOL International) Level 1 B2]
Cambridge English Language Assessment (Part of the University of Cambridge)	International English Language Testing System (IELTS) Minimum score: 5.5
Cambridge English Language Assessment (Part of the University of Cambridge)	Business Language Testing Service (BULATS)* Reading/Language Knowledge Test Minimum score: 60 [not used anymore after the end of 2019 and it is called now Linguaskill Business]
Educational Testing Service (ETS)	Test of English as a Foreign Language Internet Based Test (TOEFL iBT) Minimum score: 77
Educational Testing Service (ETS)	TOEIC Listening and Reading Test: punteggio minimo 785 + TOEIC Speaking and Writing Test Minimum score: 310
English Speaking Board (ESB)	Also English for Speakers of Other Languages (ESOL International) Level 1 B2
Oxford University Press University of Oxford	Oxford Test of English B2 Minimum score: 111

<b>Pearson</b>	Pearson English Language Test ( <b>PTE Academic</b> ) Minimum score: 59
<b>Trinity College London</b>	Integrated Skills in English ( <b>ISE II</b> )** [Anche English for Speakers of Other Languages ( <b>ESOL International</b> ) Level 1 B2] **[valid only if completed on the all modules ( <b>ISE II</b> )]
<b>City &amp; Guilds</b>	Communicator <b>B2</b> *** [*** <b>until available</b> ]
<b>Duolingo</b>	Duolingo English Test: minimum score 90.
<b>Language Centre (University of Pavia)</b>	Level B2
<b>British Institute Examination Board (BIEB)</b>	Level B2

2. The suitability of certifications not included in the table shown at comma 1 or different tests held by other universities or of diploma awarded by university in English speaking countries is assessed on a case-by-case basis by the Faculty Dean who will work in collaboration with the language and, if necessary, by the expertise of the Language Centre of the University. A certificate that proves that the candidate has attended a class of the required level of English, both in Italy and abroad, but it is not completed by any of the certificates in the list above will not be accepted. Partial certificates (only Speaking & Listening or only Spoken English) are not valid.



# University of Pavia

## Study Course: ELECTRICAL ENGINEERING - 06419

Classe LM-28 Ingegneria elettrica

Regulations 2021/2022 - Course Regulations a.y. 2023/2024

### Study Plan academic year 2023/2024

#### 1° Year - academic year 2023/2024

Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
509665 - APPLIED ELECTROMAGNETISM*	12	1		X			All Year
Teaching Unit APPLIED ELECTROMAGNETISM							
509666 - NUMERICAL METHODS IN ELECTROMAGNETISM *	6				ING-IND/31	Distinctive	First Semester
509667 - OPTIMAL DESIGN IN ELECTROMAGNETISM AND ELECTROMAGNETIC ENVIRONMENTAL COMPATIBILITY *	6				ING-IND/31	Distinctive	Second Semester
509668 - ELECTRICAL SYSTEMS*	12	2		X			First Semester
Teaching Unit ELECTRICAL SYSTEMS							
509669 - ADVANCED ELECTRICAL MACHINES *	6				ING-IND/32	Distinctive	First Semester
509670 - ELECTRIC POWER SYSTEMS*	6				ING-IND/33	Distinctive	First Semester
509671 - INDUSTRIAL MEASUREMENTS AND COMMUNICATION SYSTEMS*	9	3		X			First Semester
Teaching Unit INDUSTRIAL MEASUREMENTS AND COMMUNICATION SYSTEMS							
509672 - INDUSTRIAL COMMUNICATION SYSTEMS*	3				ING-IND/32	Related/Supplementary	First Semester
509673 - INDUSTRIAL ELECTRICAL MEASUREMENTS*	6				ING-INF/07	Distinctive	First Semester
509674 - POWER ELECTRONICS*	6	4		X	ING-IND/32	Distinctive	Second Semester
509675 - DESIGN AND TECHNOLOGY OF ELECTRICAL MACHINES*	6	5		X	ING-IND/32	Distinctive	Second Semester
509676 - ENERGY MANAGEMENT*	9	6		X			Second Semester
Teaching Unit ENERGY MANAGEMENT							
508286 - PLANNING OF ENERGY CONVERSION SYSTEMS*	6				ING-IND/32	Distinctive	Second Semester
509677 - MICROGRIDS*	3				ING-IND/32	Related/Supplementary	Second Semester
<i>FREE CHOICE FROM THE UNIVERSITY COURSE OFFER</i>	6	7				<i>Optional</i>	
509079 - ENERGY MARKETS AND SUPPLY STRUCTURE*	6	7			ING-IND/32	Optional	First Semester
504115 - IMPIANTI DI ENERGIA SOLARE E DI ENERGIA DA BIOMASSE	6	7			ING-IND/32	Optional	First Semester
501062 - TERMOFISICA DELL'EDIFICIO	6	7			ING-IND/11	Optional	First Semester
504462 - PROCESS CONTROL	6	7			ING-INF/04	Optional	First Semester
504463 - ROBOT CONTROL	6	7			ING-INF/04	Optional	Second Semester
510799 - ALGORITHMS AND SYSTEMS FOR ROBOTICS	6	7			ING-INF/05	Optional	First Semester
504717 - INDUSTRIAL CONTROL	6	7			ING-INF/04	Optional	Second Semester
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	7			ING-INF/01	Optional	First Semester
510150 - MICROSENSORS, INTEGRATED MICROSYSTEMS AND MEMS*	6	7			ING-INF/07	Optional	First Semester
502156 - ACCUMULO E CONVERSIONE DI ENERGIA	6	7			CHIM/07	Optional	First Semester
509712 - SCENARI ENERGETICI	6	7			GEO/02	Optional	First Semester
503297 - IMPIANTI EOLICI*	3	7			ING-IND/03	Optional	Second Semester
504126 - IMPIANTI IDROELETTRICI*	3	7			ICAR/01	Optional	First Semester
503313 - TRAZIONE ELETTRICA*	3	7			ING-IND/31	Optional	Second Semester
509609 - MANAGEMENT OF PHOTOVOLTAIC SYSTEMS*	3	7			ING-INF/01	Optional	Second Semester
509631 - DIAGNOSTICS FOR ELECTRICAL MACHINES*	3	7			ING-IND/32	Optional	First Semester
510151 - SUSTAINABILITY MANAGEMENT	3	7			ING-IND/32	Optional	Second Semester
503356 - COMPLEMENTI DI ELETTRONICA*	3	7			ING-INF/01	Optional	Second Semester
510782 - OPTIMAL SYNTHESIS OF METAMATERIALS FOR 5G AND 6G TELECOMMUNICATIONS	3	7			ING-IND/31	Optional	Second Semester
510783 - ELECTRICAL MACHINES FOR ADVANCED APPLICATIONS	3	7			ING-IND/32	Optional	Second Semester
<b>TOT. 60 CFU</b>							

Learning activities included in the lecture schedule

2° Year - academic year 2024/2025							
Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
509678 - INDUSTRIAL DRIVES*	12	8		X			All Year
Teaching Unit INDUSTRIAL DRIVES							
504723 - ELECTRICAL DRIVES FOR INDUSTRIAL APPLICATIONS*	6				ING-IND/32	Distinctive	First Semester
510803 - ADVANCED ELECTRICAL DRIVES*	3				ING-IND/32	Related/Supplementary	Second Semester
508303 - ENERGY EFFICIENCY IN COMPRESSED AIR SYSTEMS*	3				ING-IND/32	Related/Supplementary	Second Semester
504710 - NUMERICAL METHODS IN ENGINEERING SCIENCES*	6	9			MAT/08	Related/Supplementary	First Semester
502886 - SISTEMI DINAMICI: TEORIA E METODI NUMERICI	6	9			MAT/08	Related/Supplementary	First Semester
504464 - ORGANIZATION THEORY AND DESIGN*	6	10			SECS-P/06	Related/Supplementary	Second Semester
509679 - PLANNING AND OPERATION OF POWER SYSTEMS*	6	10			ING-IND/33	Related/Supplementary	Second Semester
509680 - ELECTRIC VEHICLES*	6	10			ING-IND/32	Related/Supplementary	Second Semester
509681 - SYSTEMS AND TECHNOLOGIES FOR THE SMART GRID*	6	10			ING-IND/32	Related/Supplementary	First Semester
509079 - ENERGY MARKETS AND SUPPLY STRUCTURE*	6	10			ING-IND/32	Related/Supplementary	First Semester
504115 - IMPIANTI DI ENERGIA SOLARE E DI ENERGIA DA BIOMASSE*	6	10			ING-IND/32	Related/Supplementary	First Semester
501062 - TERMOFISICA DELL'EDIFICIO*	6	10			ING-IND/11	Related/Supplementary	First Semester
509679 - PLANNING AND OPERATION OF POWER SYSTEMS*	6	11			ING-IND/33	Related/Supplementary	Second Semester
509680 - ELECTRIC VEHICLES*	6	11			ING-IND/32	Related/Supplementary	Second Semester
509681 - SYSTEMS AND TECHNOLOGIES FOR THE SMART GRID*	6	11			ING-IND/32	Related/Supplementary	First Semester
509079 - ENERGY MARKETS AND SUPPLY STRUCTURE*	6	11			ING-IND/32	Related/Supplementary	First Semester
504464 - ORGANIZATION THEORY AND DESIGN*	6	11			SECS-P/06	Related/Supplementary	Second Semester
504115 - IMPIANTI DI ENERGIA SOLARE E DI ENERGIA DA BIOMASSE*	6	11			ING-IND/32	Related/Supplementary	First Semester
501062 - TERMOFISICA DELL'EDIFICIO*	6	11			ING-IND/11	Related/Supplementary	First Semester
504462 - PROCESS CONTROL*	6	11			ING-INF/04	Related/Supplementary	First Semester
504463 - ROBOT CONTROL	6	11			ING-INF/04	Related/Supplementary	Second Semester
510799 - ALGORITHMS AND SYSTEMS FOR ROBOTICS	6	11			ING-INF/05	Related/Supplementary	First Semester
504717 - INDUSTRIAL CONTROL*	6	11			ING-INF/04	Related/Supplementary	Second Semester
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	11			ING-INF/01	Related/Supplementary	First Semester
510150 - MICROSENSORS, INTEGRATED MICROSYSTEMS AND MEMS*	6	11			ING-INF/07	Related/Supplementary	First Semester
502156 - ACCUMULO E CONVERSIONE DI ENERGIA	6	11			CHIM/07	Related/Supplementary	First Semester
FREE CHOICE FROM THE UNIVERSITY COURSE OFFER	6	12				Optional	
509679 - PLANNING AND OPERATION OF POWER SYSTEMS*	6	12			ING-IND/33	Optional	Second Semester
509680 - ELECTRIC VEHICLES*	6	12			ING-IND/32	Optional	Second Semester
509681 - SYSTEMS AND TECHNOLOGIES FOR THE SMART GRID*	6	12			ING-IND/32	Optional	First Semester
509079 - ENERGY MARKETS AND SUPPLY STRUCTURE	6	12			ING-IND/32	Optional	First Semester
510188 - ECONOMICS OF DIGITAL MARKETS	6	12			SECS-P/06	Optional	Second Semester
504464 - ORGANIZATION THEORY AND DESIGN*	6	12			SECS-P/06	Optional	Second Semester
504115 - IMPIANTI DI ENERGIA SOLARE E DI ENERGIA DA BIOMASSE*	6	12			ING-IND/32	Optional	First Semester
509682 - HISTORY OF TECHNOLOGY	6	12			ING-IND/31	Optional	First Semester
501062 - TERMOFISICA DELL'EDIFICIO*	6	12			ING-IND/11	Optional	First Semester
504462 - PROCESS CONTROL*	6	12			ING-INF/04	Optional	First Semester
504463 - ROBOT CONTROL	6	12			ING-INF/04	Optional	Second Semester
510799 - ALGORITHMS AND SYSTEMS FOR ROBOTICS	6	12			ING-INF/05	Optional	First Semester
504717 - INDUSTRIAL CONTROL*	6	12			ING-INF/04	Optional	Second Semester
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	12			ING-INF/01	Optional	First Semester
510150 - MICROSENSORS, INTEGRATED MICROSYSTEMS AND MEMS*	6	12			ING-INF/07	Optional	First Semester
502156 - ACCUMULO E CONVERSIONE DI ENERGIA	6	12			CHIM/07	Optional	First Semester

509712 - SCENARI ENERGETICI	6	12			GEO/02	Optional	First Semester
508100 - AUTOMATED MECHANICAL SYSTEM DESIGN*	6	12			ING-IND/13	Optional	Second Semester
509683 - SAFETY IN ENGINEERING AND TECHNOLOGY*	3	12			ING-IND/31	Optional	Second Semester
503297 - IMPIANTI EOLICI*	3	12			ING-IND/03	Optional	Second Semester
504126 - IMPIANTI IDROELETTRICI*	3	12			ICAR/01	Optional	First Semester
503313 - TRAZIONE ELETTRICA*	3	12			ING-IND/31	Optional	Second Semester
509609 - MANAGEMENT OF PHOTOVOLTAIC SYSTEMS*	3	12			ING-INF/01	Optional	Second Semester
509631 - DIAGNOSTICS FOR ELECTRICAL MACHINES*	3	12			ING-IND/32	Optional	First Semester
503356 - COMPLEMENTI DI ELETTRONICA*	3	12			ING-INF/01	Optional	Second Semester
510151 - SUSTAINABILITY MANAGEMENT*	3	12			ING-IND/32	Optional	Second Semester
507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES*	3	13**			ING-IND/35	Other	Second Semester
500376 - PROGRESSO UMANO E SVILUPPO SOSTENIBILE	3	13**			SECS-P/02	Other	Second Semester
509683 - SAFETY IN ENGINEERING AND TECHNOLOGY*	3	13**			ING-IND/31	Other	Second Semester
503297 - IMPIANTI EOLICI*	3	13**			ING-IND/03	Other	Second Semester
504126 - IMPIANTI IDROELETTRICI*	3	13**			ICAR/01	Other	First Semester
503313 - TRAZIONE ELETTRICA*	3	13**			ING-IND/31	Other	Second Semester
509609 - MANAGEMENT OF PHOTOVOLTAIC SYSTEMS*	3	13**			ING-INF/01	Other	Second Semester
509631 - DIAGNOSTICS FOR ELECTRICAL MACHINES*	3	13**			ING-IND/32	Other	First Semester
503356 - COMPLEMENTI DI ELETTRONICA*	3	13**			ING-INF/01	Other	Second Semester
510151 - SUSTAINABILITY MANAGEMENT*	3	13**			ING-IND/32	Other	Second Semester
509536 - ITALIAN LANGUAGE FOR FOREIGN STUDENTS	3	13			NN	Other	First Semester
503327 - MASTER THESIS	18				PROFIN_S	Final Exam	
<b>TOT. 60 CFU</b>							

\* Learning activities included in the lecture schedule

\*\* Choose 6 CFU for choice n° 13

- [The semester assigned to each learning activity may change. Refer to the time schedule published in the faculty website for confirmation](#)
- [For more information please refer to the course catalogue](#)

# **University of Pavia**

## **Faculty of Engineering**

### **Department of Electrical, Computer and Biomedical Engineering**

Study Course: ELECTRICAL ENGINEERING  
Classe LM-28

#### *INTRODUCTORY COURSES*

There are no introductory courses for the Master Programme in Electrical Engineering