



UNIVERSITY OF PAVIA  
FACULTY OF ENGINEERING  
DEPARTMENT OF INDUSTRIAL AND INFORMATION ENGINEERING

**DIDACTIC REGULATIONS**  
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**SECOND-CYCLE DEGREE**  
**IN**  
**INDUSTRIAL AUTOMATION ENGINEERING**  
Class LM-25  
(Second Cycle Degree in Automation Engineering)

2017/18 Academic Year

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## **PART ONE – GENERAL PROVISIONS**

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

1. The Second-Cycle Degree (C.d.L.M.) in Industrial Automation 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 respect of teaching freedom and the rights-duties of faculty and students, the didactic organization and the course activities for the Second Cycle Degree in Industrial Automation Engineering are regulated by the present document, the statutes of the University of Pavia, the general regulations of the university, the didactic regulations of the university, the student regulations, the regulations for part-time enrolment, the regulations for the composition and functioning of the Department Board, the regulations of the Department of Industrial and Information Engineering, and the regulations of the Faculty of Engineering.
2. The regulations referred to above can be viewed from the following university links:
  - <http://www.unipv.eu/site/home/ateneo/statuto-e-regolamenti.html>
  - [http://ingegneria.unipv.it/organizzazione/Regolamento\\_Facolta\\_Ingegneria.pdf](http://ingegneria.unipv.it/organizzazione/Regolamento_Facolta_Ingegneria.pdf)
  - [http://iii.unipv.it/dipartimento/REGOLAMENTO\\_DIII.pdf](http://iii.unipv.it/dipartimento/REGOLAMENTO_DIII.pdf)
3. For anything not expressly provided for in the present Regulations, the current provisions of the law apply.

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

1. Under the competences and criteria established in the Statutes and Regulations mentioned in art. 1, the structure responsible for the course of study is the Department of Industrial and Information Engineering, which has delegated to the Faculty of Engineering the responsibilities for didactic coordination provided for in art. 25 and 26 of the Statutes. The Department Board of Industrial Engineering (hereafter referred to as the Department Board) is responsible for the didactic and organizational coordination of the course of study, in respect of the competences and indications of the aforementioned Department and Faculty, with particular reference to art. 4 of the Regulations regarding the composition and functioning of the Department Board.
2. The president of the Faculty, the Department director, the president of the Department Board, the course of study coordinator, the composition of the Quality Assurance, and the composition of the review commission are indicated on the website of the Faculty of Engineering (<http://ingegneria.unipv.it/organizzazione/organi.php>).

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

1. The administrative services in support of the course of study are the following:
  - The student administration office deals with the administration of students' academic records (enrolment, transfers, fees, recognition of degrees, student mobility, etc.). The student administration office is located in Via Ferrata 1, Pavia, and its website is: <http://www.unipv.eu/site/home/ateneo/amministrazione/area-didattica-e-servizi-agli-studenti/servizio--segreteria-studenti/segreteria--di-ingegneria/articolo785.html>.

- The Center of Orientation (C.OR), which undertakes activities and promotes projects to help students in choosing their course of study and in job placement when they graduate. To this end, it organizes group and individual activities, advisory services and orientation meetings. The C.OR website is at: <http://cor.unipv.it/>.
- The administrative office of the president of the faculty, whose website is at: <http://www-3.unipv.it/ingegneria/organizzazione/sedi.php>.
- The administrative office of the Department of Industrial and Information Engineering, whose website is at: <http://iii.unipv.it/index.php?pag=dipartimento/segreteria.html>.

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

### **Art. 5 – Annual degree programme report**

1. The annual report (Scheda Unica Annuale (SUA)) on the Second-Cycle Degree programme, taken from the ministerial data bank, can be viewed at <https://sonl.unipv.it/ava/index.php/CLM Industrial Automation Engineering.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. The Department Board of Industrial Engineering appoints a special Committee charged with assessing whether the candidates satisfy the curricular and personal requirements for entry into the programme in the event these cannot be formally ascertained, as illustrated below.
3. 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**

4. 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**

5. 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/03; INF/01; ING-INF/05; MAT/02; MAT/03; MAT/05; MAT/06; MAT/07; MAT/08; MAT/09; SECS-S/02	36

Specialized	ING-IND/01; ING-IND/02; ING-IND/03; ING-IND/04; ING-IND/05; ING-IND/06; ING-IND/07; ING-IND/08; ING-IND/09; ING-IND/10; ING-IND/11; ING-IND/12; ING-IND/13; ING-IND/14; ING-IND/15; ING-IND/16; ING-IND/17; ING-IND/18; ING-IND/19; ING-IND/20; ING-IND/21; ING-IND/22; ING-IND/23; ING-IND/24; ING-IND/25; ING-IND/26; ING-IND/27; ING-IND/28; ING-IND/31; ING-IND/32; ING-IND/33; ING-IND/34; ING-IND/35; ING-INF/04; ING-INF/06; ING-INF/07; FIS/04; ICAR/08	45
<b>Total</b>		<b>81</b>

6. 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 the Committee mentioned in the “*Requirements*” section to determine whether these meet the admission requirements.
7. 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 Board (see the ‘*Requirements*’ section above), 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.
8. All candidates falling within clauses 6 and 7 above must request that the Board, which in this case will rely on the special Committee mentioned above, assess the candidate’s previous academic record in order to decide on admission to the SCDP. The request can be made at any time, 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**

9. The personal preparation required for admission to the SCDP (see ‘*Requirements*’ section above) is deemed adequate if the candidate possesses:
  - a) At least a B1-level knowledge (based on the CEF, Common European Framework) of English.
  - b) A solid knowledge of the course subjects and a good theoretical and applied preparation in the key engineering disciplines for the programme.
10. A B1-level of knowledge of English can be demonstrated at the moment of admission by the presentation of one of the recognized certificates listed in Art. 19 below or a certificate for a higher level. In the absence of such certification, English competence will be determined through an exam given by the Faculty, generally in September. Candidates who can

document they have previously passed an English certification exam corresponding to 3 CFUs during prior university studies are exempt from having to provide certification of language competence or from taking the exam. Such documentation is not required for candidates who have passed an English level test for admission to degree programmes in the Faculty of Engineering at the University of Pavia or fulfilled the additional course requirements (ACR) for English while enrolled in a degree programme in the same Faculty. Students from foreign universities can certify their knowledge of English by presenting certificates pertaining to language examinations or examinations for courses previously taken that were held in English. No certification is required for students who are citizens of countries in which English is one of the official languages and/or have obtained a degree from an institution where lessons are given in English. However, such students must present the proper documentation.

11. A thorough knowledge of the basic disciplines and a good theoretical and applied preparation in the key engineering disciplines with regard to the programme is ascertained through an exam that takes place over two sessions, the first in September/October and the second in January/February. Students who have not yet graduated may also take part in the exam to verify their level of personal preparation if, at the time of the exam, they have earned at least 150 CFUs. The exam format and topics are published on the Faculty website (<http://ingegneria.unipv.it/immatricolarsicdlm/index.php>). A candidate is also deemed to have the proper preparation if he or she passes the exam for admission to the Second-Cycle degree in Electrical Engineering.
12. The candidate is deemed to have the proper preparation, thereby exempting him or her from the exam in clause 11 above, if the final graduating mark is equal to or greater than 90/110. For students who have not yet graduated and are admitted conditionally to the programme (see the '*Conditional admission*' section below), the preparation is formally deemed appropriate without the need for a specific examination if, at the moment of conditional admission, the candidate's average mark (calculated based on at least 150 CFUs and weighted according to the number of CFUs per course) is equal to or greater than 23.5/30. If, following the conditional admission, the candidates' final graduating mark is below 90/110, the personal preparation will still be formally recognized as adequate.
13. For candidates who have degrees from foreign universities, the determination of the adequacy of the candidate's marks will occur through a review by the special Committee (see '*Requirements*' section above) on the basis of the proper equivalency of the marks from the foreign university and those pertaining to Italian degrees. The request for such a review can be presented to the Didactic Board at any time.

### **E) Conditional admission**

14. Students who have the proper curricular requirements and an adequate personal preparation as indicated in the section on '*Adequacy of personal preparation*', but who did not graduate within the normal deadline set for admission, are allowed to be admitted conditionally. Such admission must be requested within the deadline appearing in the admission notice.
15. Conditional admission allows the student to attend courses in the first semester but not to take exams until the admission becomes effective after the degree has been awarded, and in any event no later than March 1. If the student fails to graduate before March 1, admission to the Second-Degree programme is forfeited and the student automatically is refunded the admission fees, except for the payment of the stamp duty.
16. Students who, even though not admitted conditionally, have satisfied all the admission requirements can enroll by March 1 on payment of a late fee.

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

1. The courses offered by the Second Cycle Degree provide the student with university course credits (CFU) in accordance with existing laws and regulations.
2. The average yearly number of CFUs for a full-time university student is 60.
3. Each CFU corresponds to 25 hours of average coursework per student, of which 50% is reserved for personal study or other individual educational activities, except when the educational activities are highly experimental or practical in nature. There are different types of courses: lessons, supplementary lessons and practicals, each of which is subdivided as determined by the teacher on the basis of the number of credits for the course, taking as a reference the following average number of hours:
  - 1 CFU = 7.5 hours of frontal teaching
  - 1 CFU = 12.5 hours of supplementary lessons
  - 1 CFU = 22.5 hours of practicals
4. Practical activities refer to those activities which entail a direct 'physical' approach to the topics of the course (lab or field work, guided visits to facilities or companies, project illustrations, etc.) and require from the student a modest number of additional hours for development of the material presented in the activity itself.
5. The CFUs for each educational activity are earned after a student passes an exam or are awarded based on some other form of assessment of his or her preparation or acquired competencies.
6. The credits earned do not expire during the student's university studies, no matter how long this should last, except in cases where the student's enrolment has lapsed or he or she has left university. In this case, should the student decide to re-enroll the validation of the acquired credits will depend, among other things, on whether or not they are no longer pertinent, as judged by the Department Board (see article 16 below). In special and well-justified cases, the obsolescence of the academic credits for particular educational activities can be discussed by the Department Board, after it has heard the opinion of the Faculty Executive Committee. The decision regarding the obsolescence of credits will also indicate how the obsolete credits can be re-acquired and any supplementary exams the students may be required to take.
7. Courses are given on a semester basis, with the academic year divided into the following academic sessions:
  - a) first semester: at least 13 weeks of courses starting from the end of September/beginning of October
  - b) winter exam session: 6-7 weeks (January-February)
  - c) second semester: at least 13 weeks of courses starting from the beginning of March
  - d) summer exam session: 6-7 weeks (June-July)
  - e) autumn exam session: 3-4 weeks (September)
7. By May of each year the Faculty Executive Committee will determine the starting and ending dates of the periods mentioned above (academic calendar) for the following academic year; the approved calendar is then published on the Faculty website.
8. For the final degree exam (Second-Cycle exam), six sessions per year are scheduled, indicatively in February, April, July, September, November and December. Each year by the end of December the Faculty Executive Committee will determine the dates of the Second-Cycle degree examination for the next year; the approved calendar will be published on the Faculty website.
9. Each year the course schedule, rooms and a detailed calendar of exams for all the sessions for the following year will be published by the deadline for the writing of the annual degree programme report (*Scheda Unica Annuale*).

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

1. All students must present their plan of study within the deadline established by the university.
2. The study plans prepared in conformity with those indicated in Attachment 1 to the present Regulations, and with the recommended curriculum (*standard study plans*), are automatically approved.
3. A student may follow a different study plan (individual study plan) on condition it satisfies the requirements established in the annual report (*Scheda Unica Annuale*) mentioned in article 5. Individual study plans must be approved by the Department Board, which can delegate their review and approval to committees created for this purpose or to the individual teachers.
4. The inclusion of the individual study plans (see article 10, clause 5, letter a) of D.M. 270/04 is regulated by the subsequent article 11.
5. Students who opt to enroll part-time, under the conditions set forth in article 53 of the university didactic regulations and article 13 of the student regulation and the regulations for part-time student enrolment, must present for approval to the Department Board a study plan that is coherent with the length of time chosen for completing the degree programme.

### **Art. 9 - Joint-degree programmes**

There are currently no joint-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 student elective activities (see art. 10, clause 5, letter a) of D.M. 270/04 (TAF of type D), the Department Board will suggest a list of recommended courses or activities, although the student can choose any course or activity from among those offered and accredited by the University of Pavia, so long as it is coherent with the academic plan.
2. Study plans that differ from those recommended must be approved by the Teaching Council. Study plans with 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 cannot choose educational activities already completed during previous university work, unless they have received specific validation of these outside of the 180 credits necessary for the attainment of the First-Cycle degree. The competent offices will verify the correct application of this rule by students during a review of the academic record before

admission to the final second-cycle degree exam. If the student has violated this rule, he or she will not be admitted to the exam and must modify the study plan.

4. Students may not include as part of their elective activities (see art. 10 comma 5.a DM 270/2004 - c.d. "TAF D") nationally-planned closed-enrolment courses in medicine.

### **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, which is determined by specific committees that include the person in charge of the educational activity and are formed in accordance with provisions in the university's Didactic Regulations.
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**

9. The teachers of the individual educational activities define the mark assessment procedure following the guidelines presented below and any coordination activities undertaken by the faculty and/or Department Board.
10. 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*: <http://www.unipv.eu/site/en/home/study/course-catalogue.html>). 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.
11. 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.
  12. 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’.
  13. Any examination carrying a mark can only be scheduled during an exam session listed in the course calendar. Any assessment leading to a self-evaluation and that does not carry a mark can, at the discretion of the teacher, be held during lessons.
  14. There are at least six exams for each course, distributed over three sessions (winter, summer and autumn), which are open to all students (regular or repeating). ‘Exam’ means an examination that takes place during a session, which usually includes more than one exam. If the exam occurs over several stages (for example, written and oral), ‘exam’ refers to the entire group of stages.
  15. By regulation, each exam session has at least two exams, scheduled at least 14 days apart. The teacher has the faculty of scheduling only one exam in the September session; in this case, however, at least three exams must be scheduled in the session (winter or summer) immediately following the semester in which the course ends.
  16. Teachers of courses that are taught for two semesters or teachers of the single teaching activity (part of the two semester exam) may set an exam in between the first and the second semester, in the January/February exam session. With respect to the information in clause 2 above, the teacher must specify the weight, which cannot be zero, which the outcome of this intermediate exam has on the overall mark.
  17. In addition to the exams indicated in the preceding clauses, an extraordinary exam will be scheduled over a period of at least 15 days (usually March or April) as determined by the faculty president, which is also used in determining admission to the final graduation session for students enrolled in the previous academic year. Only students enrolled in the second year of the second-cycle degree may sign up for the extraordinary exam.
  18. The teacher has the prerogative of scheduling at any time of the year exams reserved for students who have attended the first semester of the second year of the second-cycle degree programme.
  19. For student-athletes in fields recognized by the Italian National Olympic Committee or by the Italian Paralympic Committee, extraordinary exams will be scheduled upon request by a student in substitution of those in the calendar when the latter are scheduled at the same time as important sporting events at the national level and higher. The event that conflicts with the scheduled exam must be documented to the faculty president, who, in agreement with the teacher, will set a date for an extraordinary exam.
  20. Students who have not passed an exam can retake it during subsequent exam dates. Teachers are not permitted to limit the possibility for the student to enroll in at least 6 exams per year, as described in clause 14 above.
  21. Students can refuse a passing mark and resit the exam. The refusal must respect the time frame and manner determined by the teacher. Once the mark is accepted and registered, the student may not resit the exam and change his or her mark.
  22. The teacher shall determine the procedure for students to see their corrected exams.

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

1. The student is awarded the second-cycle degree in Industrial Automation Engineering upon passing the final degree exam, which is aimed at verifying that the educational objectives of the Second Cycle Degree programme have been met.
2. The final exam, which earns the student an additional 24 CFUs, consists in the writing and discussion in public before a special committee of an original written thesis supervised by one or more faculty members. The discussion aims at evaluating the quality of the work, the candidate's general preparation, his mastery of the subject-matter, and his or her ability to present and discuss a technical, professional and/or scientific topic with rigor, clarity and command of the language.
3. The final thesis consists of a theoretical or experimental work, or a project, whose required time to complete is proportionate to the number of credits awarded according to the study plan (24 credits imply 600 hours of overall work). It must be thorough and contain a critical and/or creative contribution that is produced independently, and documented by, the candidate. The final thesis must develop topics specifically related to the educational objectives of the course of study and represent an advanced and original stage of research or a meaningful project in terms of its complexity.
4. The final thesis is prepared under the guidance of a supervisor, who can be a full-time or visiting professor, a researcher, or a lecturer in the faculty. 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:
  - assists the candidate as part of his or her institutional academic tasks, guiding and motivating the student in the choice and definition of the thesis content;
  - helps the student to finish his or her university studies in a reasonable period of time;
  - monitors the continuity in the development of the thesis in order to achieve a well-analyzed and well-structured result, as well as verifying the congruity between the drafting of the report and the final version of the thesis;
  - presents the candidate to the examining committee, describing the time and intensity of the effort put into the thesis, adding to its presentation if necessary, with the approval of the committee president.
5. The candidate chooses his supervisor from among the faculty indicated in clause 4 above, requesting that the thesis be assigned with advance notice with respect to the date of the final thesis presentation. The candidate will proceed with his or her work on the thesis in the best way possible with respect to his or her strategies, based on what has been discussed with and agree upon with the supervisor.
6. When the candidate has finished the thesis, the supervisor will certify, using the forms provided by the Students Office, that the thesis activity corresponds to the number of credits attributed to the final exam by the study plan. The supervisor, if he or she is not a member of the examining committee, must send the president of the committee, at least five days before the thesis defense, a short report describing the candidate's work, in which the length of time and intensity of the activity is described.
7. The examining committee is appointed by the faculty president on the proposal of the president of the Department Board or the course of study coordinator, and is composed of at least seven individuals, at least four of whom must be professors or researcher who teach classes offered by the Faculty or borrow by other university departments. Any co-supervisors who are not members of the committee can participate in its work without a voting right. By regulation, a committee must be appointed for each exam. If the circumstances so warrant, more than one committee may be appointed. It is preferable that

- the committee include the supervisors of those theses that will be examined by the committee.
8. The committee is chaired by the senior-most professor from the highest category. The president designates the secretary in charge of keeping the minutes from among the committee members.
  9. By regulation, six final exams are scheduled during the year, based on a calendar approved yearly by the faculty's executive committee, as indicated in art. 7, clause 9 above.
  10. At the time of proposing the committee to the faculty president, the president of the Department Board, or the course of study coordinator if the Board delegates one, chooses from among the committee members a co-supervisor for each candidate, or delegates this choice to the committee president. The role of the co-supervisor is to examine the candidate's thesis in order to provide a well-supported judgment on its readability and organization.
  11. The final exam mark, expressed out of 110 points, is determined by the sum of a base mark and an incremental one. The base mark takes into account the candidate's final course marks, excluding those for extra activities, and is calculated based on the procedure set forth in clause 12 below. The incremental mark is awarded by the commission during the final exam based on the procedure set forth in clause 13 below.
  12. The base mark is calculated from the weighted average of the marks on exams for academic activities that call for a final mark; the weight is based on the number of credits for each activity. The weighted average is then converted to a scale of 1-110.
  13. The increment (up to a maximum of 6 points) is jointly decided on by the committee at the end of the exam and is the sum of the following three items:
    - from 0 to 2 points for the quality of the candidate's presentation during the final exam;
    - from 0 to 2 points for the quality and thoroughness of the written thesis, after hearing the opinion of the co-supervisor
    - from 0 to 2 points after taking account of the supervisor's opinion of the presentation.The three increments mentioned above (which can also include partial scores) are derived from the arithmetical average of the points awarded by each committee member.
  14. The final mark (the sum of the base mark and of the three incremental items) is rounded to the nearest whole number. *Cum laude* is awarded only when the sum of the base mark and the increment previously decided on by the committee is equal to at least 112/110. The awarding of *cum laude* requires the unanimous agreement of the committee.
  15. The faculty reserves the right to adopt 'anti-plagiarism' computer tools to uncover any parts of the written thesis copied from the writings of others without the use of inverted commas and a reference to the source. In the event serious plagiarism is discovered by a committee made up of the faculty president, the president of the Department Board and the supervisor, the candidate will not be allowed to take the final degree examination, and disciplinary proceedings will be undertaken. In the event the finding comes after the candidate has presented his thesis defense, all necessary actions will be undertaken to correct the situation.
  16. The thesis can be written in Italian or English and, when authorized by the supervisor, in one of the main European Union languages (French, German and Spanish). If the thesis is written in a foreign language, the student must provide a summary in Italian and the title in Italian on the front page. The thesis discussion can be done in either Italian or 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 Department 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 Department 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).
2. The validation of acquired credits is determined by the Department Board on a case by case basis after an examination by one of more teachers nominated for this purpose by the Board itself. 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 teachers delegated by the Department Board can undertake additional investigations they may deem 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 Department Board in conformity with the provisions of article 8.

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

1. The Department 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 Department 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 Department 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 Department Board 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 Department Board on a case by case basis after an examination by one or more faculty members appointed by the Board for that purpose. 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 teachers delegated by the Department Board can undertake additional investigations they may deem 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 Department Board in conformity with the provisions of article 8.

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

1. Studies undertaken at foreign universities by students from the Second-Cycle degree programme (in accordance with international agreements, such as the European Erasmus+ programme or other agreements stipulated by the university) are recognized as an activity providing a similar academic experience as that offered by the faculty, on condition they involve the same student commitment and are consonant with the Department's study plan. Such programmes are also promoted as a means of cultural exchange and to provide an additional aspect to the student's personal and professional preparation as he or she works toward earning a degree.
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, through the 'Transcript of Records'), the Department Board will recognize the academic activity undertaken abroad and any associated marks.
5. The Department 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 Department 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 Department 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). Based on statistical criteria regarding the distribution of marks at the Faculty of Engineering at the University of Pavia, the following equivalences will be applied:

ECTS Mark	Recognized Mark
A	30/30
B	28/30
C	25/30
D	22/30
E	18/30
FX	-
F	-

8. The Didactic 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**

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

#### **Art. 19 - Certifications**

1. In order to demonstrate a B1-level knowledge of English (as defined by the Common European Framework of reference established by the European Council), which is required for admission to the second-cycle degree programme, the following language certifications corresponding to a B1 level are deemed appropriate and automatically approved:

<b>CERTIFICATION BODIES</b>	<b>CERTIFICATE CORRESPONDING TO A B1 LEVEL</b>
Cambridge English Language Assessment (Part of the University of Cambridge)	Cambridge English: Preliminary (PET)
Cambridge English Language Assessment (Part of the University of Cambridge)	International English Language Testing System (IELTS): minimum mark of 4.5
Cambridge English Language Assessment (Part of the University of Cambridge)	Business Language Testing Service (BULATS) Reading/Language Knowledge Test: minimum mark of 40
Educational Testing Service (ETS)	Test of English as a Foreign Language Internet Based Test (TOEFL iBT): minimum mark of 57
Educational Testing Service (ETS)	TOEIC Listening and Reading Test: minimum mark 550 + TOEIC Speaking and Writing Test: minimum mark 240
Trinity College London	Integrated Skills in English (ISE I)
City & Guilds	Achiever B1
Pearson	English for Speakers of Other Languages (ESOL) Entry Level 3 B1

2. The acceptance of other certifications demonstrating a B1-level knowledge of English is

evaluated on a case by case basis by the faculty president. In examining each case, the president will confer with the faculty member for English and, if necessary, the university language center.

## University of Pavia

## Study Course: INDUSTRIAL AUTOMATION ENGINEERING - 06417

## Classe LM-32 Ingegneria informatica

## Regulations 2015/2016 - Course Regulations a.y. 2017/2018

## Study Plan academic year 2017/2018

To be submitted online from 21st October to 10th November only if already enrolled

STUDENT NUMBER N. .... SURNAME- NAME .....

## TRACK 01 - ROBOTICS AND MECHATRONICS

## 1° Year - academic year 2017/2018

Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
500543 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI	12	1					All Year
Teaching Units							
502522 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI A	6				ING-INF/04	Distinctive	First Semester
502594 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI B	6				ING-INF/04	Distinctive	Second Semester
504714 - PROCESS CONTROL AND ROBOTICS	12	1					All Year
Teaching Units							
504462 - PROCESS CONTROL	6				ING-INF/04	Distinctive	First Semester
504463 - ROBOT CONTROL	6				ING-INF/04	Distinctive	Second Semester
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	2		X	ING-INF/01	Related/Supplementary	First Semester
504715 - ADVANCED AUTOMATION AND CONTROL	9	3		X	ING-INF/04	Distinctive	All Year
SCelta LIBERA IN OFFERTA DI ATENEO	6	4				Optional	
502522 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI A**	6	4			ING-INF/04	Optional	First Semester
507219 - LOGISTICS MANAGEMENT	6	4			ING-IND/17	Optional	First Semester
504462 - PROCESS CONTROL**	6	4			ING-INF/04	Optional	First Semester
500544 - ELETTRONICA	6	4			ING-INF/01	Optional	First Semester

504062 - CONVERSIONE STATICA DELL'ENERGIA	6	4			ING-INF/01	Optional	First Semester
507282 - MECCATRONICA	6	4			ING-INF/01	Optional	First Semester
502975 - PROGETTO DI SISTEMI DIGITALI	6	4			ING-INF/01	Optional	First Semester
504063 - COMPLEMENTI DI MECCANICA APPLICATA	6	4			ING-IND/13	Optional	First Semester
507215 - STRATEGIC MANAGEMENT AND BUSINESS PLANNING	6	4			SECS-P/08	Optional	First Semester
502862 - MODELLI COSTITUTIVI DEI MATERIALI	6	4			ICAR/08	Optional	First Semester
508100 - AUTOMATED MECHANICAL SYSTEM DESIGN	6	5		X	ING-IND/13	Distinctive	Second Semester
504716 - INDUSTRIAL INFORMATICS AND EMBEDDED SYSTEMS	6	6		X	ING-INF/05	Related/Supplementary	Second Semester
504717 - INDUSTRIAL CONTROL	6	7		X	ING-INF/04	Distinctive	Second Semester
FREE CHOICE FROM THE UNIVERSITY COURSE OFFER	6	8				Optional	
504708 - ECONOMICS FOR THE DIGITAL SOCIETY	6	8			SECS-P/06	Optional	Second Semester
504464 - ORGANIZATION THEORY AND DESIGN	6	8			SECS-P/06	Optional	Second Semester
502594 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI B**	6	8			ING-INF/04	Optional	Second Semester
504463 - ROBOT CONTROL**	6	8			ING-INF/04	Optional	Second Semester
503135 - SISTEMI E COMPONENTI PER L'AUTOMAZIONE	6	8			ING-IND/32	Optional	Second Semester
502861 - ELEMENTI DI MECCANICA COMPUTAZIONALE	6	8			ICAR/08	Optional	Second Semester
504989 - NONLINEAR COMPUTATIONAL MECHANICS	6	8			ICAR/08	Optional	Second Semester
<b>TOT. 57 CFU</b>							

\*\* Do not choose this exam if you have already chosen "Process Control and Robotics" as choice n°1

\*\* Do not choose this exam if you have already chosen "IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI" as choice n°1

## 2° Year - academic year 2018/2019

Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
504719 - ROBOTICS	6	9		X	ING-INF/05	Related/Supplementary	First Semester
507217 - AUTOMATION AND COMMUNICATION IN INDUSTRIAL SYSTEMS	6	10		X	ING-IND/32	Distinctive	First Semester
504723 - ELECTRICAL DRIVES FOR INDUSTRIAL APPLICATIONS	12	11		X	ING-IND/32	Distinctive	First Semester
507214 - WIRED AND WIRELESS COMMUNICATION SYSTEMS	6	12		X	ING-INF/03	Related/Supplementary	First Semester

507216 - LEAN PRODUCTION	6	13			ING-IND/17	Related/Supplementary	First Semester
507219 - LOGISTICS MANAGEMENT	6	13			ING-IND/17	Related/Supplementary	First Semester
501246 - ETICA AMBIENTALE	3	14			ICAR/03	Other	First Semester
507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES	3	14			ING-IND/35	Other	First Semester
500376 - PROGRESSO UMANO E SVILUPPO SOSTENIBILE	3	14			SECS-P/01	Other	First Semester
503313 - TRAZIONE ELETTRICA	3	14			ING-IND/31	Other	First Semester
503327 - MASTER THESIS	24	15			PROFIN_S	Final Exam	
<b>TOT. 63 CFU</b>							

## TRACK 02 - INDUSTRIAL TECHNOLOGIES AND MANAGEMENT

### 1° Year - academic year 2017/2018

Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
500543 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI	12	1					All Year
Teaching Units							
502522 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI A	6				ING-INF/04	Distinctive	First Semester
502594 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI B	6				ING-INF/04	Distinctive	Second Semester
504714 - PROCESS CONTROL AND ROBOTICS	12	1					All Year
Teaching Units							
504462 - PROCESS CONTROL	6				ING-INF/04	Distinctive	First Semester
504463 - ROBOT CONTROL	6				ING-INF/04	Distinctive	Second Semester
507215 - STRATEGIC MANAGEMENT AND BUSINESS PLANNING	6	2		X	SECS-P/08	Related/Supplementary	First Semester
504715 - ADVANCED AUTOMATION AND CONTROL	9	3		X	ING-INF/04	Distinctive	All Year
FREE CHOICE FROM THE UNIVERSITY COURSE OFFER	6	4				Optional	
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	4			ING-INF/01	Optional	First Semester
502522 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI A**	6	4			ING-INF/04	Optional	First Semester
502594 - IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI B**	6	4			ING-INF/04	Optional	Second Semester
504463 - ROBOT CONTROL**	6	4			ING-INF/04	Optional	Second Semester

504462 - PROCESS CONTROL**	6	4			ING-INF/04	Optional	First Semester
500544 - ELETTRONICA	6	4			ING-INF/01	Optional	First Semester
504062 - CONVERSIONE STATICA DELL'ENERGIA	6	4			ING-INF/01	Optional	First Semester
507282 - MECCATRONICA	6	4			ING-INF/01	Optional	First Semester
502975 - PROGETTO DI SISTEMI DIGITALI	6	4			ING-INF/01	Optional	First Semester
504063 - COMPLEMENTI DI MECCANICA APPLICATA	6	4			ING-IND/13	Optional	First Semester
508100 - AUTOMATED MECHANICAL SYSTEM DESIGN	6	5		X	ING-IND/13	Distinctive	Second Semester
504716 - INDUSTRIAL INFORMATICS AND EMBEDDED SYSTEMS	6	6		X	ING-INF/05	Related/Supplementary	Second Semester
504717 - INDUSTRIAL CONTROL	6	7		X	ING-INF/04	Distinctive	Second Semester
504708 - ECONOMICS FOR THE DIGITAL SOCIETY	6	8			SECS-P/06	Optional	Second Semester
504464 - ORGANIZATION THEORY AND DESIGN	6	8			SECS-P/06	Related/Supplementary	Second Semester
<b>TOT. 57 CFU</b>							

\*\* Do not choose this exam if you have already chosen "Process Control and Robotics" as choice n°1

\*\* Do not choose this exam if you have already chosen "IDENTIFICAZIONE DEI MODELLI E ANALISI DEI DATI" as choice n°1

## 2° Year - academic year 2018/2019

Learning Activity	CFU	N°	N° (ind.)	Compulsory	Scientific Area	Type of learning activity	Period
504719 - ROBOTICS	6	9		X	ING-INF/05	Related/Supplementary	First Semester
504723 - ELECTRICAL DRIVES FOR INDUSTRIAL APPLICATIONS	12	10		X	ING-IND/32	Distinctive	First Semester
507219 - LOGISTICS MANAGEMENT	6	11		X	ING-IND/17	Related/Supplementary	First Semester
507216 - LEAN PRODUCTION	6	12		X	ING-IND/17	Related/Supplementary	First Semester
SCelta LIBERA IN OFFERTA DI ATENEO	6	4				Optional	
504462 - PROCESS CONTROL	6	13			ING-INF/04	Optional	First Semester
504061 - ELETTRONICA	6	13			ING-INF/01	Optional	First Semester
504062 - CONVERSIONE STATICA DELL'ENERGIA	6	13			ING-INF/01	Optional	First Semester
507282 - MECCATRONICA	6	13			ING-INF/01	Optional	First Semester

502975 - PROGETTO DI SISTEMI DIGITALI	6	13			ING-INF/01	Optional	First Semester
504063 - COMPLEMENTI DI MECCANICA APPLICATA	6	13			ING-IND/13	Optional	First Semester
507214 - WIRED AND WIRELESS COMMUNICATION SYSTEMS	6	13			ING-INF/03	Optional	First Semester
507218 - ELECTRONICS FOR INDUSTRIAL MEASUREMENTS	6	13			ING-INF/01	Optional	First Semester
501246 - ETICA AMBIENTALE	3	14			ICAR/03	Other	Second Semester
507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES	3	14			ING-IND/35	Other	Second Semester
500376 - PROGRESSO UMANO E SVILUPPO SOSTENIBILE	3	14			SECS-P/01	Other	Second Semester
503313 - TRAZIONE ELETTRICA	3	14			ING-IND/31	Other	Second Semester
503327 - MASTER THESIS	24	15			PROFIN_S	Final Exam	
<b>TOT. 63 CFU</b>							

Date .....

Signature .....

**Variations on the study plan will not be approved unless they are justified by important reasons. If you wish to make different choices from the one provided, the study plan is individual. (WRITE THE NEW NAME OF EXAM IN THE COLORED BOX AND DRAW A LINE ON THE EXAM YOU WISH TO CHANGE. WRITE THE NUMBER OF CHOICE THE EXAM REFERS TO IN THE COLORED BOX)**

**It is required to add a revenue stamp of 16€ to the form and the study plan will be submitted to the qualified Teaching Council**

**Approved by the Teaching Council of .....**

**THIS STUDY PLAN IS WRITTEN IN COMPLIANCE TO THE STUDY COURSE REGULATIONS AND TO THE STUDENT ENROLLMENT CLASS ("SCHEDA RAD")**

**HEAD OF THE TEACHING COUNCIL SIGNATURE .....**

# **University of Pavia**

## **Faculty of Engineering**

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

Study Course: COMPUTER ENGINEERING  
Classe LM-32

#### ***INTRODUCTORY COURSES***

There are no introductory courses for the Master Programme in Industrial Automation  
Engineering