



UNIVERSITÀ
DI PAVIA

FACULTY OF ENGINEERING

DEPARTMENT OF INDUSTRIAL AND INFORMATION
ENGINEERING

COURSE REGULATIONS

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SECOND CYCLE DEGREE

IN

ELECTRONIC ENGINEERING

Class LM-29

(Second Cycle Degree in Electronic Engineering)

2020/2021 Academic Year

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PART ONE – GENERAL PROVISIONS

Art. 1 - Name, class, department and duration

1. The Masters degree course (C.d.L.M.) in Electronic Engineering, initiated by the Department of Industrial and Information Engineering and co-ordinated by the University of Pavia's Faculty of Engineering, is part of the LM-29 class of the Masters degree courses in Electronic Engineering provided for by Ministerial Decree of 16 March 2007.
2. The Masters degree course duration 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 Electronic Engineering are governed by the present Regulations, the University of Pavia Statute, the University General Regulations, the University Course Regulations, Student 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:
 - <https://web.unipv.it/ateneo/statuto-regolamenti/>
 - http://iii.unipv.it/dipartimento/REGOLAMENTO_DIII.pdf
 - http://webing.unipv.eu/wp-content/uploads/2020/03/Regolamento_Ingegneria_2018-1.pdf
3. Regarding all matters not explicitly provided for in the present Regulations, prevailing laws will apply.

Art. 3 - Body responsible for didactic and organisational co-ordination

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 Teaching Council, hereafter referred to as 'Teaching Council', 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 Teaching Councils.
2. The Faculty president, Department Director, President of the Teaching Council, the degree course co-ordinator, the composition of the Quality Supervision Board and the composition of the Review Commission, are indicated on the Faculty of Engineering website (<http://webing.unipv.eu/governance/>)

Art. 4 – Administrative services

1. The administrative services provided for the degree course are:
 - The Student Administration Office, which manages 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: <http://wcm-3.unipv.it/site/home/ateneo/amministrazione/area-didattica-e-servizi-agli-studenti/servizio--segreterie-studenti.html>

- 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. Their website can be viewed at: <http://www-orientamento.unipv.it/>
- The Administration office; the website can be consulted at: <http://webing.unipv.eu/home/contacts/>
- The Department of Industrial and Information Engineering Administration Office; the website can be consulted at: <http://iii.unipv.it/index.php?pag=dipartimento/segreteria.html>

PART TWO – ORGANISATION 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/2020SUA06416.pdf>

Art. 6 – Admission requirements

A) Requirements

1. Pre-requisites for admission to the Degree Course in Electronic Engineering, as specified in subsequent paragraphs, regard the following three aspects:
 - a) qualification held;
 - b) knowledge acquired (curricular requirements);
 - c) personal background.
2. The Information Engineering Teaching Council will set up a dedicated commission to evaluate candidates' suitability for enrolment, assessing curricular requirements and personal background in instances where a mandatory verification cannot be carried out, as illustrated in the subsequent paragraphs.
3. Students who ask to switch or transfer to the Degree Course in Electronic Engineering, from other University of Pavia second-cycle degree courses, or from other universities, are subject to the same entry criteria as candidates who enrol.

B) Qualifications

4. For admission to the Degree Course in Electronic Engineering, students must hold a five-year degree (under former Ministerial Decree 509/99) or three-year degree (ex Ministerial Decree 509/99 or ex Ministerial Decree 270/04), a three-year university diploma or a qualification gained overseas and recognised as valid in adherence with current legislation.

C) Knowledge acquired

5. Students making applications must have acquired a minimum of 36 basic university credits (CFUs), through degree courses, university Masters courses or through enrolling for stand-alone university courses, and 45 CFUs in advanced educational activities related to their specific Scientific Disciplinary Sector (SDS) reported in the table below. Students may self-certify possession of these pre-requisites.

| Educational activity | Scientific-disciplinary sectors | Minimum number of CFUs |
|----------------------|--|------------------------|
| Basic | 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 |

| | | |
|--------------|--|-----------|
| Advanced | INF/01; ING-IND/13; ING-IND/16; ING-IND/17; ING-IND/31; ING-IND/32; ING-IND/34; ING-IND/35; ING-INF/01; ING-INF/02; ING-INF/03; ING-INF/04; ING-INF/05; ING-INF/06; ING-INF/07 | 45 |
| Total | | 81 |

6. The Commission referred to in the preceding *Requirements* section will assess the academic backgrounds of graduates from foreign universities, graduates of five-year degree courses (under former Ministerial Decree 509/99), or other candidates, in order to validate their curricular requirements, assessing any educational activities not clearly defined by SDS and/or number of CFUs.
7. In order to allow highly skilled and/or motivated graduates whose university backgrounds do not strictly meet the required curricular pre-requisites to be admitted, the Commission referred to in the preceding *Requirements* section may, having taken into consideration the candidate's achievements (certified by means of documentation to be attached to the application) and, possibly, through interview, evaluate his/her motivations. The Commission may decide, in derogation, that the curricular requirements for admission to the degree course have been met, on the condition that the candidate satisfies the personal preparation criteria detailed in the successive *Adequacy of candidates' personal preparation* section. In such cases, the Commission will produce a report in which it details any eventual deficiencies as well as conditions to which the candidate must conform in the formulation of the study plan, including courses that may not be included in the standard study plan reported in Appendix 2 and up to a maximum of 12 CFUs. In all instances, the prevailing Degree Course Programme will be respected as will the total number of CFUs needed in order to obtain the qualification (120 CFUs).
In cases where the curricular pre-requisites are deemed incompatible with the degree course programme, the Commission indicates the examinations that the candidate should pass, by registering for individual courses, in order to be admitted to the degree course.
8. All candidates who, upon enrolment, fall under the categories detailed in the preceding paragraphs 6 and 7 should contact the Teaching Council which, in turn, will refer to the above-mentioned Commission in order to evaluate the educational knowledge acquired in order to be considered for admission to the degree course. This request may be made at any time, even by students who have yet to graduate and who have a three-year study plan already approved at the time of making the evaluation request. The evaluation of curricular requirements also takes into account examinations yet to be taken but included in the final approved study plan. Any eventual modifications to the study will require a new evaluation request to be made.

D) Adequacy of candidates' personal preparation

9. 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.
10. 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.

11. 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/>).
12. 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 92/110. 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 24/30 (calculated from at least 150 CFUS). If, subsequent to conditionally enrolling under the conditions outlined above the candidate obtains a score lower than 92/110, his/her personal preparation will, nonetheless, be automatically considered satisfactory.
13. The result of degrees awarded in a foreign country will be investigated by the Commission referred to in the preceding *Requirements* section. The Commission will evaluate, on a case-by-case basis, the final degree mark in order to establish its Italian equivalent. Requests for an evaluation of this type may be presented to the Teaching Council at any time.

E) Conditional enrolment

14. 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.
15. 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 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.
16. 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 organisation

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. Students are awarded the CFUs assigned to each activity by successfully completing an examination, or alternative form of assessment, to appraise the skills acquired.
 6. 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 accrued is subject to an assessment by the Teaching Council (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.
 7. The course is organised into two semesters and the academic year divided into the following didactic periods:
 - a) 1st 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) 2nd 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)
 8. 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.
 9. For the final examination (second-cycle degree examination), 6 sessions per year are foreseen. These are usually scheduled for February, 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.
 10. 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.
 11. Students are given the opportunity upon enrolment to choose LM+ (Laurea Magistrale Plus), as part of a project in collaboration with partner firms/institutions disciplined by a specific agreement. Students taking part in the LM+ will be involved, starting from their second year, in a two semester learning activity with partner firms/institutions in order to gain specific and coherent professional competences. Partner firms/institutions and learning activity projects will be advertised during the year. Meeting will also be organized to allow interested students to access more specific information.
 12. Interested students can enrol choosing LM+ option. The Teaching Council of the Department of Electrical, Computer and Biomedical Engineering will select a number of students from all the applicants depending on how many opportunities are offered by the partner firms/institutions. The selection will be based on the candidate's curriculum and on an interview. In order to evaluate the candidates, the Teaching Council may request an opinion from the area committee, composed of representatives from the university of Pavia and of partner firms/institutions.
 13. As part of the LM+ project, students can extend the standard duration of the study course up to three academic year of which 2 semesters are spent in one of the partner

firms/institutions. In order to use this opportunity the student has to enroll at the second year choosing the part-time option following the rules of the "Regolamento di Ateneo".

14. During the time spent in the firm, the student will be monitored by a tutor from the partner firm/institution and a tutor from the university. The tutors will interact in order to check the progresses made by the student towards the final goals. There will be two evaluation moments: an intermediate and a final. During his/her time in the firm/institution the student will get a reimbursement of expenses.
15. Student enrolled to LM+ will acquire credits for the time and experience spent with the partner firm/institution as free choice credits, other activities and final thesis (Master Thesis). Eventually also as extra credits, as described in the following articles of this course regulation book.

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 2 of the present Regulations, and the recommended options connected to them (*standard study plans*), are automatically approved.
3. 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 Teaching Council who may delegate a commission, or member of the co-ordinating teaching staff, to examine and/or approve the study plan.
4. 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.
5. Students who opt to enrol part time, in accordance with art. 53 of the University Course Regulations and pursuant to art. 13 of the Student Regulations and the Regulations governing part-time enrolment, must present, for the approval of the Teaching Council, a study plan that is coherent with the duration chosen for the degree course.
6. LM+ students may extend the standard duration of the study course up to 3 academic year of which 2 semesters are going to be dedicated to the learning activities with the partner firm (these activities may take place abroad). In order to apply for the extension, the LM+ student has to apply for the part-time status following the University administrative rules.
7. LM+ student and the study course coordinator have to agree on a study plan for the project that has to be carried out with the partner firm; the study plan has to be signed by the study course coordinator.

Art. 9 - Joint degree programmes

The second-cycle degree course in Electronic Engineering has activated the following double degree programme:

- National Taipei University of Technology, (Taipei, TAIWAN);

Art. 10 - Attendance and curricular pre-requisites

1. Students are expected to attend all second-cycle degree course programmes.
2. Specific attendance assessments may be introduced for laboratory or experiment-based activities, upon the suggestion of co-ordinating professor; these must be approved by the Teaching Council.
3. The Teaching Council may establish pre-requisites for certain courses if considered appropriate.
4. Pre-requisites may not be established for courses run in the same academic year.

5. In cases where pre-requisites exist, students may not sit an examination under curricular pre-requisite conditions until the preparatory examination related to the course has been passed.
6. The pre-requisites established by the Teaching Council are outlined in Appendix 3.

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 in 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 Teaching Council that may appoint individual teachers or a committee with the task to examine and approve this kind of study plans. 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 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. It is possible to add a maximum to 24 credits for extra learning activities.
6. A maximum of 12 credits will be recognized as free choice learning activities for LM+ students.
7. The Teaching Council may approve the registration of the learning activities completed with the partner firms as extra credits; the number of credits will be counted following the rules of the university rulebook (art. 19, comma 5, lettera c) and counting the hours, beyond the curricular hours, as certified and recognized by the tutor and the Teaching Council.

Art. 12 – Internships and placements

No internships or placements are foreseen for the second-cycle degree course in Electronic Engineering.

Art. 13 – Examinations and end-of-course assessments

A) General regulations

1. All activities that offer CFUs conclude with a 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. The Faculty Dean will decide if a committee is necessary to complete the assessment.
2. The second-cycle degree course may have no more than 12 end-of-course assessments or examinations. This includes specialist educational activities, extra-curricular or related activities and those elected by the student. Examinations (or end-of-course assessments) related to elected courses are considered as corresponding to a single unit, even when the credits assigned require more than one examination or end-of-course assessment. The

activities that fall under letters c), d), e) of paragraph 5, art. 10 of Ministerial Decree 270/2004 are not included in the calculation of examinations and end-of-course assessments; the tests foreseen for such activities should not, in any event, exceed 5, comprehensive of the final examination for the awarding of the degree.

3. For courses divided into integrated modules, taught by a team of staff, the end-of-course evaluation is decided by the teaching team. Assessments may be held separately, including those relative to distinct sections of the programme and sat at different times, provided the final overall assessment decision is made collectively.
4. Exam dates for all courses, regardless of the semester in which the course was run, the exam dates will be distributed across the three examination sessions: winter, summer and autumn.
5. The minimum number of exam sessions, and the setting of extraordinary exam dates, respecting the general regulations outlined in the University Course Regulations, is governed by the subsequent *Assessment methods* section.
6. The distribution of exam dates across different sessions is made in respecting a calendar co-ordinated by the Teaching Council with the support of the Administration Office.
7. The exam calendar of all sessions and courses held during the academic year is published on the faculty website within the terms outlined in art. 7, subsection 10.
8. Modifications cannot be made once the exam calendar has been published except in cases of proven necessity that must be supported by written documentation and addressed to the Dean of the faculty. In any event, the session cannot be withdrawn or, except in extraordinary circumstances, brought forward.

B) Assessment methods

9. 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.
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-4.unipv.it/offertaformativa/portale/ricerca_insegnamenti.php?lingua=2). 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 assessment where marks are attributed can only be scheduled for the session as reported in the teaching calendar. The Faculty Dean may approved 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.

14. 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.
15. 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.
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 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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.
22. 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 Electronic 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 writing of the thesis must be supervised by a tenured or untenured professor or researcher from the Faculty or by a course lecturer. The supervisor's SDS is unimportant, provided the subject of the thesis falls within his/her competences and scope of scientific interest. 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. This is done by completing the form provided by the Student Administration office. The supervisor, if not a member of the degree commission, must send a brief summary of the thesis to the commission president at least five days 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.13, paragraph 14.
 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. The degree thesis can be written in Italian or in English and, provided the supervisor approves, in one of the main European Union languages (French, German or Spanish). If the thesis is written in a language other than Italian, a summary in Italian must be included and the Italian translation of the title must appear on the cover.

PART THREE – PROVISIONS REGARDING STUDENTS' COURSE OF STUDY

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

1. Pursuant to Art. 2 para. 147 of L. 286/2006 and Art. 14 of L. 240/2010, the Teaching Council may validate, for a total number of credits not superior to 12, individually-certified professional skills and knowledge, pursuant to existing applicable regulations, as well as other skills and knowledge acquired during post-secondary school training whose planning involved the participation of a university.

The Teaching Council may also validate, for a total number of credits not superior to 6 (of the 12 mentioned above), the awarding of an Olympic or Paralympic medal or World, European or National title in a discipline recognised by the Italian National Olympic Committee or by the Italian Paralympic Committee (pursuant to L. 240/2010, Art. 14).
2. The validation of acquired credits is deliberated by the Teaching Council on a case-by-case basis, based on an investigation conducted by one or more teaching staff delegated by the Council. The type of activity (TAF) to which credits to be recognised are attributed is established based on disciplinary-related criteria. In any event, their number is always within the legal limits, where relevant. These take into account the contribution of the activity to be validated in the attainment of the Course of Study's educational objectives, its specific content, and any eventual obsolescence, as well as the time commitment required. To this end, recognition of knowledge and skills must be supported by official documentation

except for the elements referred to above; the teaching staff delegated to the investigation by the Teaching Council may implement further verifications if deemed opportune.

3. If, following the validation of acquired credits, the student selects an individual study plan, this must be approved by the Teaching Council, in accordance with the conditions established in art. 8.

Art. 16 – Criteria for the recognition of duly-acquired credits

1. The Teaching Council will debate the educational history of students who have been awarded a qualification at the University of Pavia or from another Italian university and who requests, upon enrolment, a shortening of the study plan. This may be granted subject to validation and the recognition of educational credits deemed valid, pursuant to the successive paragraph 5.
2. The Teaching Council will debate the recognition of educational histories interrupted owing to withdrawal or forfeiture of students who request, upon re-enrolment, a shortening of the study plan. This may be granted subject to validation and the recognition of educational credits deemed valid, pursuant to the successive paragraph 5.
3. The Teaching Council may validate credits acquired by the student following enrolment on individual courses at the University of Pavia or at other universities.
4. In the event that the candidate transfers from another university, or moves from another University of Pavia course, the recognition of credits will be decided by the Teaching Council in adherence with prevailing laws, the University of Pavia's Course Regulations and following a Governing Board and/or Teaching Council debate.
5. The validation of acquired credits is deliberated by the Teaching Council on a case-by-case basis, based on an investigation conducted by one or more teaching staff delegated by the Council. The type of activity (TAF) to which credits to be recognised are attributed, and their number, is, in any event, within the legal limits where relevant, and established based on disciplinary-related criteria. These take into account the contribution of the activity to be validated in the attainment of the Course of Study's educational objectives, its specific content, and any eventual obsolescence, as well as the time commitment required. To this end, recognition of knowledge and skills must be supported by official documentation except for the elements referred to above; the teaching staff delegated to the investigation by Teaching Council may implement further verifications if deemed opportune.
6. If, following the validation of acquired credits, the student selects an individual study plan, this must be approved by the Teaching Council, in accordance with the conditions established in art. 8.

Art. 17 – Criteria for recognition of educational activities undertaken at foreign universities

1. Educational activities undertaken by second-cycle degree students who have spent a period of study at a foreign university that is part of an international agreement (e.g. the Erasmus programme or similar convention stipulated by the university) are recognised as being on a par with those offered by the University of Pavia, provided the workload and content is coherent with the Course of Study. Such exchanges are encouraged as a positive means of cultural exchange and integration, enhancing candidates' personal and professional profile in attaining the degree.
2. The "Learning Agreement" (LA) is the document that defines the foreign educational activities to be attended in substitution of those offered by the University of Pavia's Course of Study; students must complete the document, ensuring an 'overall' coherence with the Course of Study's objectives rather than searching for identical course content.
3. For students intending to study at a foreign university, the possibility for credits to be recognised is established prior to leaving using the LA. This must be signed by a member of the teaching staff nominated by the Teaching Council as the supervisor for foreign studies.

This figure is responsible for ensuring that the LA is coherent with the degree Course of Study objectives.

4. At the end of the period of foreign study, the Teaching Council evaluates the educational activities undertaken abroad and votes on their recognition. This process is initiated upon request of the student and based on documented marks awarded by the foreign institution (using the ‘Transcript of Records’ in the case of the Erasmus Programme).
5. The Teaching Council proceeds with direct correspondence validation between one or more activities from the Course of Study and one or more educational activities for CFUs acquired at the foreign university.
6. In the event that the CFUs acquired at a foreign university includes content that is related to the educational objectives of the degree Course of Study but do not directly correspond with any of the educational activities present in the Study Plan, the Teaching Council, acting on the Supervisor’s advice, may authorise, pursuant to art. 50, paragraph 5 of the Course Regulations, the student to present an Individual Study Plan, in compliance with the declaration of the Course of Study class and regulations. For each educational activity undertaken abroad, any eventual corresponding Scientific Disciplinary Sector must be indicated as well as the relative number of CFUs.
7. For each examination taken at a foreign university, the Teaching Council will assign a mark that corresponds to the score awarded abroad. Given the existence of different marking criteria, CFUs will be adopted as a reference. Based on a statistical distribution criteria of marks awarded by the University of Pavia’s Faculty of Engineering, the following marks equivalents have been established:

| CFU mark | Validated mark |
|----------|----------------|
| A | 30/30 |
| B | 28/30 |
| C | 25/30 |
| D | 22/30 |
| E | 18/30 |
| FX | - |
| F | - |

8. Study and research undertaken abroad in preparation for the final examination, or internships that are part of international agreements (e.g. Erasmus placements) are recognised by the Teaching Council provided the methods and workload are coherent and the marks documented.

Art. 18 – Admission to subsequent years

1. Enrolment to the second year is not subject to any conditions related to the number of credits to be acquired.

Art. 19 - Certifications

1. 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 |
| Pearson | Pearson English Language Test (PTE Academic) Minimum score: 59 |
| Trinity College London | Integrated Skills in English (ISE II)** [Anche English for Speakers of Other Languages (ESOL International) Level 1 B2] **[valid only if completed on the all modules (ISE II)] |
| City & Guilds | Communicator B2 *** [*** until available] |

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
3. Attachment 1 Study Plan

University of Pavia

Study Course: ELECTRONIC ENGINEERING - 06416

Classe LM-29 Ingegneria elettronica

Regulations 2013/2014 - Course Regulations a.y. 2020/2021

Study Plan academic year 2020/2021

To be submitted online from 1st October 2020 to 30 October 2020 (enrolled student only)

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

Track 01 - MICROELECTRONICS

1° Year - academic year 2020/2021

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|--|-----|----|-----------|------------|-----------------|---------------------------|-----------------|
| 504434 - ADVANCED MATHEMATICAL METHODS FOR ENGINEERS | 9 | 1 | | X | MAT/05 | Related/Supplementary | First Semester |
| 504439 - RF MICROELECTRONICS | 9 | 2 | | X | ING-INF/01 | Distinctive | Second Semester |
| 505002 - ELECTRONIC INSTRUMENTATION AND TECHNOLOGIES | 9 | 3 | | X | ING-INF/01 | Distinctive | First Semester |
| 507294 - INTRODUCTION TO QUANTUM MECHANICS | 3 | 4 | | X | FIS/03 | Related/Supplementary | First Semester |
| 504437 - MICROWAVES | 9 | 5 | | X | ING-INF/02 | Distinctive | Second Semester |
| 504990 - INTEGRATED CIRCUIT DEVICES | 9 | 6 | | X | ING-INF/01 | Distinctive | Second Semester |
| 504440 - DIGITAL IC DESIGN | 6 | 7 | | X | ING-INF/01 | Distinctive | Second Semester |
| 504435 - ANALOG INTEGRATED CIRCUITS | 9 | 8 | | X | ING-INF/01 | Distinctive | First Semester |
| | | | | | | | |
| | | | | | | | |
| TOT. 63 CFU | | | | | | | |

2° Year - academic year 2021/2022

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|--|-----|----|-----------|------------|-----------------|---------------------------|----------------|
| 509352 - INTEGRATED POWER MANAGEMENT | 6 | 9 | | | ING-INF/01 | Distinctive | First Semester |
| 504444 - ANTENNAS | 6 | 9 | | | ING-INF/02 | Distinctive | First Semester |
| 505021 - ELECTRO-OPTICAL INSTRUMENTATION | 6 | 9 | | | ING-INF/01 | Distinctive | First Semester |

| | | | | | | | |
|--|----|------|--|---|------------|-----------------------|------------------|
| 505003 - VLSI ANALOG-DIGITAL INTERFACE ICS | 6 | 10 | | X | ING-INF/01 | Related/Supplementary | First Semester |
| 502993 - MICROSENSORI, MICROSISTEMI INTEGRATI E MEMS | 6 | 11 | | | ING-INF/01 | Related/Supplementary | First Semester |
| 503116 - DIGITAL SIGNAL PROCESSING | 6 | 11 | | | ING-INF/03 | Related/Supplementary | First Semester |
| FREE CHOICE FROM THE UNIVERSITY COURSE OFFER | 12 | 12* | | | | Optional | |
| 509352 - INTEGRATED POWER MANAGEMENT | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 504998 - DIGITAL COMMUNICATIONS | 6 | 12* | | | ING-INF/03 | Optional | Second Semester |
| 505021 - ELECTRO-OPTICAL INSTRUMENTATION | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 504717 - INDUSTRIAL CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 507288 - INTERNET AND MULTIMEDIA | 6 | 12* | | | ING-INF/03 | Optional | First Semester |
| 502993 - MICROSENSORI, MICROSISTEMI INTEGRATI E MEMS | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 505006 - MICROWAVE MEASUREMENTS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 504464 - ORGANIZATION THEORY AND DESIGN | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 504462 - PROCESS CONTROL | 6 | 12* | | | ING-INF/04 | Optional | First Semester |
| 504993 - QUANTUM ELECTRONICS | 6 | 12* | | | FIS/03 | Optional | First Semester |
| 505000 - RADAR REMOTE SENSING | 6 | 12* | | | ING-INF/02 | Optional | Second Semester |
| 504463 - ROBOT CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 505017 - SATELLITE AND SPACE SYSTEMS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 505012 - LASER SAFETY | 6 | 12* | | | FIS/03 | Optional | First Semester |
| 503188 - STRUMENTAZIONE BIOMEDICA LM | 6 | 12* | | | ING-INF/06 | Optional | First Semester |
| 504708 - ECONOMICS FOR THE DIGITAL SOCIETY | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 508744 - BIOELETTROMAGNETISMO APPLICATO | 6 | 12 * | | | ING-INF/02 | Optional | Secondo Semestre |
| 509037 - HARDWARE SOFTWARE CODESIGN | 6 | 12 * | | | ING-INF/05 | Optional | Second Semester |
| 508087 - ATTIVITA' FORMATIVA IN AZIENDA | 12 | 12** | | | NN | Optional | |
| 505013 - ADVANCED TOPICS IN MICROWAVE TECHNOLOGIES | 3 | 13* | | | ING-INF/02 | Other | All Year |
| 501246 - ETICA AMBIENTALE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 509350 - ETICA PER LA PROGETTAZIONE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 509379 - INDUSTRIAL TOPICS IN MICROELECTRONICS AND PHOTONICS | 3 | 13* | | | ING-INF/01 | Other | All Year |
| 507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES | 3 | 13* | | | ING-IND/35 | Other | Second Semester |

| | | | | | | | |
|--|----|------|--|---|----------|------------|--|
| 504725 - OTHER ACTIVITIES | 3 | 13** | | | NN | Other | |
| 503327 - MASTER THESIS | 24 | | | X | PROFIN_S | Final Exam | |
| | | | | | | | |
| TOT. 57 CFU | | | | | | | |
| *Choose a total of 12 CFU for choice n°12; choose 3 CFU for choice n°13; **only LMPlus Students may choose these activities | | | | | | | |

TRACK 02 - PHOTONICS

1° Year - academic year 2020/2021

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|---|-----|----|-----------|------------|-----------------|---------------------------|-----------------|
| 504434 - ADVANCED MATHEMATICAL METHODS FOR ENGINEERS | 9 | 1 | | X | MAT/05 | Related/Supplementary | First Semester |
| 504992 - OPTOELECTRONIC DEVICES | 9 | 2 | | X | ING-INF/01 | Distinctive | First Semester |
| 508745 - INTRODUCTION TO QUANTUM MECHANICS AND QUANTUM TECHNOLOGIES | 6 | 3 | | X | FIS/03 | Related/Supplementary | First Semester |
| 504993 - QUANTUM ELECTRONICS | 6 | 4 | | X | FIS/03 | Related/Supplementary | First Semester |
| 504437 - MICROWAVES | 9 | 5 | | X | ING-INF/02 | Distinctive | Second Semester |
| 504994 - OPTICAL COMMUNICATIONS | 9 | 6 | | X | ING-INF/01 | Distinctive | Second Semester |
| 504996 - NONLINEAR OPTICS | 6 | 7 | | X | FIS/03 | Related/Supplementary | Second Semester |
| 504998 - DIGITAL COMMUNICATIONS | 6 | 8 | | X | ING-INF/03 | Related/Supplementary | Second Semester |
| | | | | | | | |
| TOT. 60 CFU | | | | | | | |

2° Year - academic year 2021/2022

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|--|-----|-----|-----------|------------|-----------------|---------------------------|-----------------|
| 505021 - ELECTRO-OPTICAL INSTRUMENTATION | 6 | 9 | | X | ING-INF/01 | Distinctive | First Semester |
| 505015 - INDUSTRIAL LASER DESIGN | 6 | 10 | | X | ING-INF/01 | Distinctive | First Semester |
| 504999 - ANTENNAS AND PROPAGATION | 9 | 11 | | X | ING-INF/02 | Distinctive | First Semester |
| FREE CHOICE FROM THE UNIVERSITY COURSE OFFER | 12 | 12* | | | | Optional | |
| 504717 - INDUSTRIAL CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 507288 - INTERNET AND MULTIMEDIA | 6 | 12* | | | ING-INF/03 | Optional | First Semester |
| 502993 - MICROSENSORI, MICROSISTEMI INTEGRATI E MEMS | 6 | 12* | | | ING-INF/01 | Optional | First Semester |

| | | | | | | | |
|--|----|------|--|---|------------|------------|------------------|
| 505006 - MICROWAVE MEASUREMENTS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 502987 - OPTOELETTRONICA BIOMEDICA | 6 | 12* | | | ING-INF/01 | Optional | Second Semester |
| 504464 - ORGANIZATION THEORY AND DESIGN | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 504462 - PROCESS CONTROL | 6 | 12* | | | ING-INF/04 | Optional | First Semester |
| 505000 - RADAR REMOTE SENSING | 6 | 12* | | | ING-INF/02 | Optional | Second Semester |
| 504463 - ROBOT CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 505017 - SATELLITE AND SPACE SYSTEMS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 505012 - LASER SAFETY | 6 | 12* | | | FIS/03 | Optional | First Semester |
| 503188 - STRUMENTAZIONE BIOMEDICA LM | 6 | 12* | | | ING-INF/06 | Optional | First Semester |
| 505003 - VLSI ANALOG-DIGITAL INTERFACE ICS | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 504708 - ECONOMICS FOR THE DIGITAL SOCIETY | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 508744 - BIOELETTRROMAGNETISMO APPLICATO | 6 | 12 * | | | ING-INF/02 | Optional | Secondo Semestre |
| 508087 - ATTIVITA' FORMATIVA IN AZIENDA | 12 | 12** | | | NN | Optional | |
| 505013 - ADVANCED TOPICS IN MICROWAVE TECHNOLOGIES | 3 | 13* | | | ING-INF/02 | Other | All Year |
| 509379 - INDUSTRIAL TOPICS IN MICROELECTRONICS AND PHOTONICS | 3 | 13* | | | ING-INF/01 | Other | All Year |
| 501246 - ETICA AMBIENTALE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 509350 - ETICA PER LA PROGETTAZIONE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES | 3 | 13* | | | ING-IND/35 | Other | Second Semester |
| 504725 - OTHER ACTIVITIES | 3 | 13** | | | NN | Other | |
| 503327 - MASTER THESIS | 24 | | | X | PROFIN_S | Final Exam | |
| | | | | | | | |
| | | | | | | | |
| TOT. 60 CFU | | | | | | | |

*Choose a total of 12 CFU for choice n°12; choose 3 CFU for choice n°13; **only LMPlus Students may choose these activities

TRACK 03 - SPACE COMMUNICATION AND SENSING

1° Year - academic year 2020/2021

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|--|-----|----|-----------|------------|-----------------|---------------------------|----------------|
| 504434 - ADVANCED MATHEMATICAL METHODS FOR ENGINEERS | 9 | 1 | | X | MAT/05 | Related/Supplementary | First Semester |

| | | | | | | | |
|---|---|---|--|---|------------|-----------------------|-----------------|
| 505018 - SATELLITE DATA ANALYSIS | 9 | 2 | | X | ING-INF/03 | Related/Supplementary | First Semester |
| 504993 - QUANTUM ELECTRONICS | 6 | 3 | | | FIS/03 | Related/Supplementary | First Semester |
| 508745 - INTRODUCTION TO QUANTUM MECHANICS AND QUANTUM TECHNOLOGIES | 6 | 3 | | | FIS/03 | Related/Supplementary | First Semester |
| 504999 - ANTENNAS AND PROPAGATION | 9 | 4 | | X | ING-INF/02 | Distinctive | First Semester |
| 504437 - MICROWAVES | 9 | 5 | | X | ING-INF/02 | Distinctive | Second Semester |
| 504994 - OPTICAL COMMUNICATIONS | 9 | 6 | | | ING-INF/01 | Distinctive | Second Semester |
| 504439 - RF MICROELECTRONICS | 9 | 6 | | | ING-INF/01 | Distinctive | Second Semester |
| 505000 - RADAR REMOTE SENSING | 6 | 7 | | X | ING-INF/02 | Distinctive | Second Semester |
| 504998 - DIGITAL COMMUNICATIONS | 6 | 8 | | X | ING-INF/03 | Related/Supplementary | Second Semester |
| | | | | | | | |
| | | | | | | | |
| TOT. 63 CFU | | | | | | | |

2° Year - academic year 2021/2022

| Learning Activity | CFU | N° | N° (ind.) | Compulsory | Scientific Area | Type of learning activity | Period |
|--|-----|-----|-----------|------------|-----------------|---------------------------|-----------------|
| 505021 - ELECTRO-OPTICAL INSTRUMENTATION | 6 | 9 | | | ING-INF/01 | Distinctive | First Semester |
| 505017 - SATELLITE AND SPACE SYSTEMS | 6 | 9 | | | ING-INF/02 | Distinctive | First Semester |
| 505006 - MICROWAVE MEASUREMENTS | 6 | 10 | | X | ING-INF/02 | Distinctive | First Semester |
| 503116 - DIGITAL SIGNAL PROCESSING | 6 | 11 | | X | ING-INF/03 | Related/Supplementary | First Semester |
| FREE CHOICE FROM THE UNIVERSITY COURSE OFFER | 12 | 12* | | | | Optional | |
| 505021 - ELECTRO-OPTICAL INSTRUMENTATION | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 504717 - INDUSTRIAL CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 507288 - INTERNET AND MULTIMEDIA | 6 | 12* | | | ING-INF/03 | Optional | First Semester |
| 502993 - MICROSENSORI, MICROSISTEMI INTEGRATI E MEMS | 6 | 12* | | | ING-INF/01 | Optional | First Semester |
| 505006 - MICROWAVE MEASUREMENTS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 504464 - ORGANIZATION THEORY AND DESIGN | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 504462 - PROCESS CONTROL | 6 | 12* | | | ING-INF/04 | Optional | First Semester |
| 504993 - QUANTUM ELECTRONICS | 6 | 12* | | | FIS/03 | Optional | First Semester |
| 505000 - RADAR REMOTE SENSING | 6 | 12* | | | ING-INF/02 | Optional | Second Semester |

| | | | | | | | |
|---|----|------|--|---|------------|------------|------------------|
| 504463 - ROBOT CONTROL | 6 | 12* | | | ING-INF/04 | Optional | Second Semester |
| 505017 - SATELLITE AND SPACE SYSTEMS | 6 | 12* | | | ING-INF/02 | Optional | First Semester |
| 508745 - INTRODUCTION TO QUANTUM MECHANICS AND QUANTUM TECHNOLOGIES | 6 | 12* | | | FIS/03 | Optional | |
| 505012 - LASER SAFETY | 6 | 12* | | | FIS/03 | Optional | First Semester |
| 503188 - STRUMENTAZIONE BIOMEDICA LM | 6 | 12* | | | ING-INF/06 | Optional | First Semester |
| 504708 - ECONOMICS FOR THE DIGITAL SOCIETY | 6 | 12* | | | SECS-P/06 | Optional | Second Semester |
| 508744 - BIOELETTROMAGNETISMO APPLICATO | 6 | 12 * | | | ING-INF/02 | Optional | Secondo Semestre |
| 508087 - ATTIVITA' FORMATIVA IN AZIENDA | 12 | 12** | | | NN | Optional | |
| 505013 - ADVANCED TOPICS IN MICROWAVE TECHNOLOGIES | 3 | 13* | | | ING-INF/02 | Other | All Year |
| 509379 - INDUSTRIAL TOPICS IN MICROELECTRONICS AND PHOTONICS | 3 | 13* | | | ING-INF/01 | Other | All Year |
| 501246 - ETICA AMBIENTALE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 509350- ETICA PER LA PROGETTAZIONE | 3 | 13* | | | SECS-P/13 | Other | Second Semester |
| 507220 - PLANNING, MANAGEMENT AND SUPPLY OF GOODS AND SERVICES | 3 | 13* | | | ING-IND/35 | Other | Second Semester |
| 504725 - OTHER ACTIVITIES | 3 | 13** | | | NN | Other | |
| 503327 - MASTER THESIS | 24 | | | X | PROFIN_S | Final Exam | |
| | | | | | | | |
| | | | | | | | |
| TOT. 57 CFU | | | | | | | |

*Choose a total of 12 CFU for choice n°12; choose 3 CFU for choice n°13; **only LMPlus Students may choose these activities

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: ELECTRONIC ENGINEERING

Classe LM-32

INTRODUCTORY COURSES

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