UNIVERSITÀ
DI PAVIA

FACULTY OF ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE

COURSE REGULATIONS
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SECOND CYCLE DEGREE IN COMPUTATIONAL AND MODELLING ENGINEERING FOR MATERIALS, STRUCTURES AND SUSTAINABLE TECHNOLOGIES

Class LM-44

(Mathematical and Physical Modelling for Engineering)

2026/2027 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 Computational and modelling engineering for materials, structures and sustainable technologies, initiated by the Department of Civil Engineering and Architecture and co-ordinated by the University of Pavia's Faculty of Engineering, is part of the LM-44 class of the Master's degree courses in Mathematical and Physical Modelling for Engineering provided for by Ministerial Decree n. 1649 of 19 December 2023.
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 Environmental Engineering are governed by the present Regulations, the University of Pavia Statute, the University General Regulations, the University Course Regulations, Students Career Regulations, Regulations for part-time student enrolment, Regulations for the composition and functioning of the Teaching Council, the Department of Civil Engineering and Architecture Regulations and by the Faculty of Engineering Regulations.
2. The regulations detailed in the previous paragraph are published on the university website at the following addresses:
   - Statute and Regulations of the University of Pavia
   - Regulations of the Department of Civil Engineering and Architecture
   - Regulations of the Faculty of Engineering
3. Regarding all matters not explicitly provided for in the present Regulations, prevailing laws will apply.

Art. 3 - Body responsible for didactic and 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 Civil Engineering and Architecture that has delegated the Faculty of Engineering the responsibility for didactic co-ordination, pursuant to art. 25 and 26 of the Statute. The Information Engineering Academic Advisory Board, hereafter referred to as 'Board', is responsible for the didactic and organisational co-ordination of the degree course, in compliance with the Department and Faculty competences and indications mentioned above, with particular reference to that detailed in art.4 regarding the composition and functioning of Academic Advisory Board.
2. The Faculty president, Department Director, President of the Academic Advisory Board, the degree course co-ordinator, the list of members of the Quality Supervision Board and the list of members of the Review Commission, are published on the Faculty of Engineering website (Governance).

Art. 4 – Administrative services

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

consulted at https://portale.unipv.it/it/ateneo/organizzazione/amministrazione/area-didattica-e-servizi-agli-studenti

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

PART TWO – ORGANISATION OF DIDACTIC ACTIVITIES

Art. 5 - The 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/2026SUA06431.pdf

Art. 6 – Admission requirements

A) Requirements

1. Pre-requisites for admission to the Degree Course in Computational and modelling engineering for materials, structures and sustainable technologies, as specified in subsequent paragraphs, regard the following three aspects:
   a) qualification held;
   b) knowledge acquired (curricular requirements);
   c) personal background.
2. Students who ask to switch or transfer to the Degree Course in Computational and modelling engineering for materials, structures and sustainable technologies, 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

3. Admission to the Master's Degree programme requires a Bachelor's degree (under Ministerial Decree No. 509/99 or No. 270/04) in one of the following degree classes:
   - Civil and Environmental Engineering: L-7 Civil and Environmental Engineering;
   - Information Engineering: L-8 Information Engineering;
   - Industrial Engineering: L-9 Industrial Engineering.

A three-year university diploma, a five-year university degree awarded under the system in force prior to Ministerial Decree No. 509/99, or another qualification obtained abroad may also be recognised, provided it is deemed suitable in accordance with applicable legislation.

C) Knowledge acquired

4. During their previous academic studies (Bachelor's and Master's degree programmes or through enrolment in individual university courses), students must have earned the minimum number of ECTS credits in basic and core learning activities, as specified in the table below. Compliance with these requirements may be self-certified.

Educational activities	Scientific-disciplinary sectors	Minimum number of credits (CFUs)
Basic	MATH-03/A; MATH-05/A; PHYS-03/A	36

Specific	CEAR-01/A; CEAR-01/B; CEAR-05/A; CEAR-06/A; CEAR-07/A; IIND-01/F; IIND-07/A; IIND-07/B; IIND-02/A; IIND-03/A; IIND-04/A; IIND-05/A; IIND-03/C; IMAT-01/A; ICHI-01/A; ICHI-01/B; IIET-01/A; IIND-08/A; IIND-08/B; IBIO-01/A; IEGE-01/A; IINF-04/A; IINF-05/A; IMIS-01/B; INFO-01/A	45
Total		**81**

5. The Committee appointed by the Board 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.
6. 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 Committee appointed by the Board 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 1 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.
7. All candidates who, upon enrolment, fall under the categories detailed in the preceding paragraphs 5 and 6 should contact the Academic Advisory board which, in turn, will refer to the above-mentioned Committee in order to evaluate the educational knowledge acquired in order to be considered for admission to the degree course. This request may be made in allocated slots, 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

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

10. Non-EU international students are also required to have knowledge of the Italian language. They must demonstrate Italian language proficiency at B2 level by submitting an appropriate language certificate or passing a language test organised by the University. Further information is available at the following link: https://portale.unipv.it/it/didattica/corsi-di-laurea/ammissioni/iscriversi-ad-un-corso-di-studio-con-titolo-conseguito-allestero.
11. A solid grounding in the basics of engineering 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 90/110. Candidates yet to graduate and who conditionally enrol (see the subsequent section entitled *Conditional enrolment*), are automatically considered suitable and need not undergo any specific assessment if, when conditionally enrolling, their weighted average mark is greater than or equal to 23,5/30 (calculated from at least 150 CFUS). If, subsequent to conditionally enrolling under the conditions outlined above the candidate obtains a score lower than 90/110, his/her personal preparation will, nonetheless, be automatically considered satisfactory.
13. In the case of a degree awarded by a foreign university, evaluation of a solid strong understanding of the basic disciplines and a good theoretical and practical background about engineering distinctive disciplines, is carried out on a case by case through an inquiry conducted by the Committee appointed by the Board on the basis of the documentation submitted by the student or eventually, through an interview, at the Commission's request

E) Conditional 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 as foreseen by the Student careers Regulation.
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. For some of the teachings offered, such as the courses on soft skills and the Sustainable Development Goals – SDG), as per the 2030 Agenda for Sustainable Development of the United Nations,: by passing the exam, in addition to the registration of the related CFU, an open badge can be envisaged, a digital certificate as a proof of knowledge, competencies and abilities gained during the course. The certificate will be issued automatically after the registration of the exam and will be sent to the student's University of Pavia email address.
6. Students are awarded the CFUs assigned to each activity by successfully completing an examination, or alternative form of assessment, to appraise the skills acquired.
7. Credits acquired will remain valid for the duration of the course, regardless of its length, except in cases of forfeiture or withdrawal. Should the student re-enrol, the validity of any credits acquired is subject to an assessment by the Committee appointed by the Board (see Art. 14). In well-motivated cases, the obsolescence of credits relative to certain educational activities may be decided by the Teaching Council once the Faculty's Governing Board has been consulted. Students will be informed as to how to make up any credits deemed obsolete, establishing eventual assessments or tests to be taken.
8. The course is organised into two semesters and the academic year divided into the following didactic periods:
   a) 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)
9. By May each year, the Faculty's Governing Board decides the start and end dates of the periods mentioned in the previous paragraph (calendar of didactic activities) for the successive academic year; once approved, the calendar is published on the Faculty website.
10. For the final examination (second-cycle degree examination), 6 sessions per year are foreseen. These are usually scheduled for February, March, April, July, September, November and December. By December each year the Faculty's Governing Board will decide the date of the second-cycle degree examinations for the next year; once approved, the calendar is published on the Faculty website.
11. Each year, by the deadline established for the compilation of the Degree Programme Report, lesson times for both semesters in the successive academic year, together with the rooms where lectures will be held and the detailed examination calendar, will be published.

Art. 8 – Study plans

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

outlined in the Degree Programme regulations. Individual study plans must be approved by the Committee appointed by the Board.

5. The inclusion of educational activities elected by the student, pursuant to art. 10, paragraph 5, letter a) of Ministerial Decree 270/04, is regulated by the subsequent art.11.
6. Students who opt to enroll part time, in accordance with art. 50 of the University Course Regulations and pursuant to art. 16 of the Students Career Regulations and the Regulations governing part-time enrolment must submit an individual study plan that is coherent with study course official duration and agreed upon by the Degree Programme Coordinator.
7. Students holding a qualification obtained outside of Italy (EU students and non-EU students residing in Italy or abroad) are required to include in their study plan the course "Italian Language for Foreign Students" (3 ECTS), unless they can demonstrate adequate proficiency in Italian by submitting one of the following documents:
    1) a lower or upper secondary school diploma, or a bachelor's degree obtained in Italian from an Italian institution;
    2) a diploma issued by an Italian school abroad;
    3) an Italian language certification of at least B1 level, recognized as valid by the relevant University offices.

   Any additional requests for exemption from the Italian language course shall be assessed by the Degree program and submitted for approval to the relevant Department Board.

   Students who submit one of the above documents and are therefore exempt from the Italian language course must include in their study plan another 3 ECTS activity, as students holding a qualification obtained in Italy.

Art. 9 – Double Degree programmes

There are currently no Double Degree programmes for the Second-Cycle degree in Computational and modelling engineering for materials, structures and sustainable technologies.

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. The existence of prerequisites is indicated in the course description published on the Faculty website.
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 2.

Art. 11 – Student elective activities

1. Regarding educational activities elected by the student, pursuant to art. 10, paragraph 5, letter of Ministerial Decree 270/04 (type D TAF), the Teaching Council proposes a list of recommended courses or activities, however the student may choose any course (taught in Italian and English) on offer at, and accredited by, the University of Pavia provided it is coherent with the course programme.
2. Study plans that differ from those recommended must be approved by the Degree Course Coordinator. Study plans that include courses not coherent with the study course learning plan or which include more than 20% of subjects already covered during the student's previous

academic career will not be approved.

3. Students may not choose study plans already taken while attending a previous university course, unless specific validation has been received for this and that such courses are considered separate from the 180 CFUs necessary for the awarding of the first-cycle degree. The competent administrative offices will verify that this regulation has been adhered to while checking students' educational background and prior to granting admission to the second-cycle degree course. In the event of the violation of the above-mentioned regulation, the student will not be allowed to sit the second-cycle degree examination and will be obliged to modify the study plan.
4. Pursuant to Art 10 paragraph 5.a of Ministerial Decree 270/2004 - c.d. "TAF D"), the inclusion, among elected courses, of nationwide and local admission courses related to the medical field is not permitted.
5. In addition to the courses necessary for the graduation, it is possible to include a maximum of 24 CFU of extra teachings to the study plan per academic year, except for the medical area courses of nationally restricted access and the psychology area courses. The course propaedeutic rules must be in any case respected. According to art. 19 paragraph 3 lett. b) of the Student Career Regulations, those enrolled as repeating students can include a maximum of 24 CFU of extra teachings, belonging to the following academic year.

Art. 12 – Internships and placements

No internships or placements are foreseen for the second-cycle degree course in Environmental 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 the 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 respect of 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 8.

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*). 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 approve a request for an extra session, beyond the mandatory ones as described in the following subsections, for motivated reasons. Other self-assessments or tests that are not assigned a mark may be held at any time during the academic year, inclusive of periods when lessons are being held.
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, includes 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 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 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 Computational and modelling engineering for materials, structures and sustainable technologies is awarded following a final examination to verify that the established educational objectives have been reached.
2. The final examination, for which 21 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: 21 credits equate to 525 hours overall. The thesis should be complete, display critical and/or creative thinking, be written solely by the candidate and provide documented sources. It must develop themes that are strictly coherent with the degree programme objectives and exhibit advanced and original research or be advanced project-based work.
4. The final thesis is prepared under the guidance of a supervisor who is a member of the University of Pavia teaching staff or in charge of a teaching activity offered by the Faculty of Engineering. The role of supervisor is independent of the scientific disciplinary sector of the faculty member assigned that role, as long as the thesis topic falls within his or her competencies and scientific interests. The supervisor:
   - guides and assists the candidate in formulating and defining the content of the thesis;
   - commits to ensuring that the candidate concludes the work in a reasonable timeframe;
   - checks that the thesis is coherent in order to obtain logical and consistent results and verifies the thesis and conclusions are well written;
   - presents the candidate to the degree commission, describing the workload and duration involved in writing the thesis and, with the consensus of the commission president, supports the oral presentation.
5. Candidates may choose their supervisor from the figures detailed in the preceding paragraph 4, requesting the assignment of the thesis well in advance of the final examination and developing the work to the best of his/her ability, adhering to what has been discussed and agreed with the supervisor.

6. Once the thesis has been finished, the supervisor confirms that the workload involved in writing the thesis corresponds to the number of CFUs on offer for the final examination. The supervisor, if not a member of the degree commission, must send a brief summary of the thesis to the commission president before the graduation date. This summary should detail the time spent and effort made by the candidate in writing the thesis.
7. The degree commission is nominated by the Dean of the faculty, acting on a proposal made by the President of the Teaching Council or the Degree Programme Co-ordinator. It is composed of at least seven members of which at least four must be professors or researchers who teach classes offered by the Faculty or borrowed by other university departments. Co-supervisors may participate on the commission but do not have voting rights. Normally a commission is nominated for each exam date and, if circumstances dictate, more than one commission may be nominated. Supervisors of theses presented to the commission should, if possible, form part of the panel.
8. The commission will be headed by the professor with the most experience and highest grade. The President appoints a secretary from the commission members to take minutes.
9. There are, generally, six exam dates during the second-cycle degree academic year, organised according to the calendar that is approved annually by the faculty's Governing Board, as outlined in the preceding art. 7, paragraph 9.
10. The President of the Teaching Council or the Degree Programme Co-ordinator, if nominated by the former, as well as formulating the Commission's proposal to the Dean of the faculty, chooses an examiner for each candidate or delegates this task to the Commission president. The role of the examiner is to scrutinize the thesis in order to furnish a critical analysis of its readability and structure. The candidate has to send a digital copy to the external examiner within the deadline decided by the Administrative Office.
11. The degree result, expressed as a mark out of 110, is obtained by adding a discretionary increase to a basic mark. The overall result includes the assessment marks obtained by the candidate, with the exception of those from excess credit courses and is calculated in accordance with the methods outlined in the subsequent paragraph 12. The discretionary increase is assigned by the Commission during the examination, in adherence with the methods detailed in the subsequent paragraph 13.
12. The basic mark is the weighted average of the marks from the educational activity assessments where these are awarded a final mark, weighted by the number of credits associated with each activity. The weighted average is then reported as a mark out of 110.
13. The discretionary increase, to a maximum value of 6 points, is attributed collectively by the Commission at the end of the examination as a sum of the following three factors:
    - 0 to 2 points are awarded by the Commission for the quality of the candidate's presentation during the examination;
    - 0 to 2 points are awarded by the Commission for the quality and thoroughness of the presented text, once the examiner has been consulted.
    - 0 to 2 points are awarded by the Commission based on the supervisor's assessment of the candidate's presentation.

    The three points indicated above, which may not necessarily be whole numbers, are the result of the mathematical average of the points assigned by each member of the Commission.
14. The final mark (the sum of the weighted average of assessment marks and the three discretionary increase factors) are rounded up to the closest whole number. *Cum laude* honours may be attributed only when the sum of the base mark and the discretionary increase deliberated by the Commission is equal to or exceeds 112/110. The Commission must reach a unanimous decision before awarding *cum laude* honours.
15. The faculty reserves the right to adopt a plagiarism checker tool able to highlight uncredited sections of text, that is where inverted commas have not been used or a source reference not provided for work written by others. If the faculty-established commission judges instances

of plagiarism to be serious, the Teaching Council president and the Supervisor will decide whether the final examination can be taken, whether it should be annulled if already taken and whether disciplinary proceedings against the candidate should be initiated.

16. Students are allowed to prepare their thesis in a language other than Italian. For this purpose, the following conditions must be met:
    - that there is the approval of the tutor or the supervisor;
    - that the defense (and/or the thesis) be conducted in one of the main languages of the European Union (English, French, German, Spanish);
    - that an abstract written in Italian and summarizing the content of the thesis is attached;
    - that the title is written in both languages, the foreign one and Italian. The thesis defense is held in Italian, except for study courses entirely taught in English, for which it is held in English.

PART THREE – PROVISIONS REGARDING STUDENTS' COURSE OF STUDY

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

1. Pursuant to Art. 3 of the Ministerial Decree n. 931 of 4 July 2024, the Committee appointed by the Board may validate, for a total number of credits not superior to 24, 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 Committee appointed by the Board may also validate, for a total number of credits not superior to 6 (of the 24 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. Students participating in the Dual Career programme may apply for a maximum of 12 credits to be validated in compliance with the directives from the Academic Senate.
2. The validation of acquired credits is deliberated by the Committee appointed by the Board on a case-by-case basis. 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; a Committee appointed by the Board 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 Committee appointed by the Board, in accordance with the conditions established in art. 8.

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

1. The Committee appointed by the Board 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 Committee appointed by the Board 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 Committee appointed by the Board may validate credits acquired by the student following

enrollment on individual courses at the University of Pavia or at other universities.

4. It is also possible to acquire training credits at other Italian universities on the basis of agreements stipulated between the institutions involved, in accordance with current legislation.
5. 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 Committee appointed by the Board in adherence with prevailing laws, the University of Pavia's Course Regulations and following a Governing Board and/or Teaching Council debate.
6. The validation of acquired credits is deliberated by the Committee appointed by the Board on a case-by-case basis. 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 Committee appointed by the Board may implement further verifications if deemed opportune. Exclusively in the event that a student transfer takes place between degree programs belonging to the same degree classification, the portion of credits directly recognized to the student within the same academic discipline (SSD) cannot be less than 50 percent of those already earned.
7. If, following the validation of acquired credits, the student selects an individual study plan, this must be approved by the Committee appointed by the Board, in accordance with the conditions established in art. 8.
8. When a student is transferring from a course of the same class of study, the credits validated from the same scientific sector cannot be less than 50% of the credits already gained by the student.

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

1. Study periods carried out by students on the degree course at Italian or foreign university structures in the context of the Erasmus+ Community Programs and Mobility Programs recognized by the University through partnerships and agreements are recognized as a training tool equivalent to that offered by the Faculty with the same student commitment and contents covered with the training course. They are also encouraged as a means of cultural exchange and integration into personal and professional training.
2. The "Learning Agreement" (LA) is the document that defines the foreign educational activities to be attended in compliance with what is suggested by the relevant announcements and 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 (or at an affiliated Italian university in the case of Italian Erasmus), 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 Academic Advisory Board as the supervisor for studies carried out during mobility periods. 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 study abroad, by request of the student and on the basis of the Learning Agreement and considering the student's results as properly documented by the foreign university (in the case of the Erasmus+ Programme and International Mobility Programs recognized by the University through international agreements, through the 'Transcript of Records'), or by the Italian host university, the Committee appointed by the

Board will recognize the academic activity undertaken abroad and any associated marks.

5. The Committee appointed by the Board 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 host university.
6. In the event that the CFUs acquired during the mobility period include 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 Committee appointed by the Board, 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, any eventual corresponding Scientific Disciplinary Sector must be indicated as well as the relative number of CFUs.
7. For each exam taken during the mobility period which is recognized by the University of Pavia, the Committee appointed by the Board will assign a mark that corresponds to the assessment obtained during the mobility period. 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).
8. The Committee appointed by the Board recognizes studies and research undertaken during the mobility period 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 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: minimum score 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]**
Language Centre (University of Pavia)	Level B2
British Institute Examination Board (BIEB)	Level B2

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

UNIVERSITÀ DI PAVIA

DIPARTIMENTO DI INGEGNERIA CIVILE E ARCHITETTURA

DEPARTMENT OF INGEGNERIA CIVILE E ARCHITETTURA

Corso di Laurea Magistrale in

Master's Degree in

INGEGNERIA COMPUTAZIONALE E MODELLISTICA PER MATERIALI, STRUTTURE E TECNOLOGIE SOSTENIBILI

PIANO DI STUDI PER GLI ISCRITTI AL 1° ANNO- DM270/'04

ANNO ACCADEMICO 2026/2027

STUDY PLAN FOR STUDENTS ENROLLED IN 1°YEAR – DM 270/04

ACADEMIC YEAR 2026/2027

La/Il sottoscritta/o / *The undersigned*,

Matricola / *Matriculation number* ……

Cognome / *Surname*.....…… Nome / *Name*……

Nata/o a / *Born in (city)* ……..…..…… Prov./ *State* …… il / *on* ……

Residente in / *Resident in (city)*…… Prov./ *State* ……

CAP / *Postal code* …… Via o Piazza / *Street name* ……..……

Corso di Laurea Magistrale in INGEGNERIA COMPUTAZIONALE E MODELLISTICA PER MATERIALI, STRUTTURE E TECNOLOGIE SOSTENIBILI

Master Degree's in INGEGNERIA COMPUTAZIONALE E MODELLISTICA PER MATERIALI, STRUTTURE E TECNOLOGIE SOSTENIBILI

prevede i seguenti percorsi/ *includes the following tracks:*

- **TRACK 04 - MODELING AND SIMULATION IN ENGINEERING**
- **PERCORSO 05 - INGEGNERIA COMPUTAZIONALE E MODELLISTICA**

Gli studenti che intendono effettuare scelte diverse che si discostano dal modello di piano di studi che segue presenteranno un piano di studi individuale (per il quale è prevista una marca da bollo da euro 16,00 che verrà generata dagli uffici). Maggiori informazioni sono disponibili sulla pagina dedicata

https://portale.unipv.it/it/didattica/corsi-di-laurea/studiare/piani-di-studio nella sezione Eccezioni: il piano cartaceo.

Students who wish to make choices not provided by the following form should submit an individual study plan (in this case administrative offices will generate a fee of €16 for an extra revenue stamp). More information is available at the dedicated webpage: https://portale.unipv.it/it/didattica/corsi-di-laurea/studiare/piani-di-studio in the section "Exceptions: Study plan submitted in paper form".

APPROVATO NELLA RIUNIONE DEL CONSIGLIO DIDATTICO/CONSIGLIO DI DIPARTIMENTO DEL / *Approved in the session of the Teaching Council/Department Council on* .....

SI DICHIARA LA CONFORMITA' DEL PIANO INDIVIDUALE ALL'ORDINAMENTO DIDATTICO DEL CORSO DI STUDIO IN RELAZIONE ALLA COORTE DI APPARTENENZA DELLO STUDENTE (SCHEDA RAD). / *It is declared that the individual plan follows the course regulations depending on the student's year of enrollment (RAD form).*

FIRMA DEL REFERENTE DEL CORSO DI LAUREA MAGISTRALE/ *Signature of the Program Coordinator*

.....

TRACK 04 - MODELING AND SIMULATION IN ENGINEERING

1° year – academic year 2026/2027 - 60 CFU

Attività formativa *Courses*		CFU *CFU*	Vecchio Settore Scientifico *Old Disciplinary Sector*	Nuovo Settore Scientifico *New Disciplinary Sector*	TAF/Ambito *TAF/Teaching Field*	Tipo Insegnamento *Course Type*
512118 - NUMERICAL ANALYSIS		12				Compulsory
Teaching units of NUMERICAL ANALYSIS						
	504710 - NUMERICAL METHODS IN ENGINEERING SCIENCES	*6*	*MAT/08*	*MATH-05/A*	*Distinctive/Discipline matematiche, fisiche e informatiche*	*Compulsory*
	508171 - APPLIED MATHEMATICS	*6*	*MAT/08*	*MATH-05/A*	*Distinctive/Discipline matematiche, fisiche e informatiche*	*Compulsory*
512119 - MECHANICS OF MATERIALS		12				Compulsory
Teaching units of MECHANICS OF MATERIALS						
	512120 - SOLIDS AND STRUCTURAL MECHANICS	*6*	*ICAR/08*	*CEAR-06/A*	*Distinctive/Discipline ingegneristiche*	*Compulsory*
	512121 - MATERIAL CONSTITUTIVE MODELING	*6*	*ICAR/08*	*CEAR-06/A*	*Distinctive/Discipline ingegneristiche*	*Compulsory*
Un insegnamento tra:						
510820 - MODELLI CINETICI E APPLICAZIONI		6	MAT/07	MATH-04/A	Distinctive/Discipline matematiche, fisiche e informatiche	Elective
502886 - SISTEMI DINAMICI: TEORIA E METODI NUMERICI		6	MAT/08	MATH-05/A	Distinctive/Discipline matematiche, fisiche e informatiche	Elective
512122 - EXPERIMENTAL MECHANICS		6	ICAR/08	CEAR-06/A	Distinctive/Discipline ingegneristiche	Elective
512132 - CONTINUUM FLUID MECHANICS		6	ICAR/01	CEAR-01/A	Distinctive/Discipline ingegneristiche	Elective
510089 - CHEMISTRY AND PHYSICS OF MATERIALS		12				Compulsory
Teaching units of CHEMISTRY AND PHYSICS OF MATERIALS						
	510088 - CHEMISTRY OF MATERIALS	*6*	*CHIM/02*	*CHEM-02/A*	*Related/Supplementary/Affine/Integrativa*	*Compulsory*
	510058 - PHYSICS OF MATERIALS	*6*	*FIS/03*	*PHYS-03/A*	*Distinctive/Discipline matematiche, fisiche e informatiche*	*Compulsory*
508175 - COMPUTATIONAL MECHANICS		6	ICAR/08	CEAR-06/A	Distinctive/ Discipline ingegneristiche	Compulsory
512123 - INDUSTRIAL NUMERICAL SIMULATIONS		6	ICAR/08	CEAR-06/A	Distinctive/ Discipline ingegneristiche	Compulsory

2° year – academic year 2027/2028 - 60 CFU

Attività formativa *Courses*	**CFU** *CFU*	**Vecchio Settore Scientifico** *Old Disciplinary Sector*	**Nuovo Settore Scientifico** *New Disciplinary Sector*	**TAF/Ambito** *TAF/Teaching Field*	**Tipo Insegnamento** *Course Type*
512124 - ADVANCED INDUSTRIAL NUMERICAL SIMULATIONS	6	ICAR/08	CEAR-06/A	*Related/Supplementary/Affine/Integrativa*	Compulsory
504989 - NONLINEAR COMPUTATIONAL MECHANICS	6	ICAR/08	CEAR-06/A	Caratterizzante/Discipline ingegneristiche	Compulsory
Un insegnamento tra:					
510062 - MANIFATTURA ADDITIVA	6	ING-IND/16	IIND-04/A	*Related/Supplementary/Affine/Integrativa*	Elective
511393 - ADDITIVE MANUFACTURING OF LIVING MATERIALS	6	ING-IND/34	IBIO-01/A	*Related/Supplementary/Affine/Integrativa*	Elective
510065 - MECHANOBIOLOGY AND PHARMACEUTICAL RESEARCH	6	ING-IND/34	IBIO-01/A	*Related/Supplementary/Affine/Integrativa*	Elective
512130 - MECCANICA DEI FLUIDI APPLICATA	6	ING-IND/34	IBIO-01/A	*Related/Supplementary/Affine/Integrativa*	Elective
506585 - TECNICHE DI CARATTERIZZAZIONE DEI MATERIALI	6	CHIM/02	CHEM-02/A	*Related/Supplementary/Affine/Integrativa*	Elective
511394 - THERMAL MANAGEMENT FOR INDUSTRIAL AND SPACE APPLICATION	6	ING-IND/10	IIND-07/A	*Related/Supplementary/Affine/Integrativa*	Elective
SCELTA LIBERA IN OFFERTA DIDATTICA DI ATENEO	12				Elective
510066 - LABORATORIO PROGETTUALE	12	NN	NN	Optional/A scelta dello studente	Elective
509895 - NUMERICAL OPTIMIZATION AND DATA SCIENCE	6	MAT/09	MATH-06/A	Optional/A scelta dello studente	Elective
509005 - OPTIMIZATION MODELS AND ALGORITHMS FOR DATA SCIENCE	6	MAT/09	MATH-06/A	Optional/A scelta dello studente	Elective
506582 - CHIMICA FISICA DEI METALLI E DEI CERAMICI	6	CHIM/02	CHEM-02/A	Optional/A scelta dello studente	Elective
502137 - CHIMICA E TECNOLOGIE DEI POLIMERI	6	CHIM/06	CHEM-05/A	Optional/A scelta dello studente	Elective
Un insegnamento tra:					
509536 - ITALIAN LANGUAGE FOR FOREIGN STUDENTS*	3	NN	NN	Other/Ulteriori conoscenze utili per l'inserimento nel mondo del lavoro	Elective
507325 - LABORATORIO DI LINGUA INGLESE	3	L-LIN/12	ANGL-01/C	Other/Ulteriori conoscenze utili per l'inserimento nel mondo del lavoro	Elective
503327 - MASTER THESIS	21	PROFIN_S	PROFIN_S	Final Exam/Per la prova finale	Compulsory

***Students with a non-Italian qualification must choose "Italian Language for Foreign Student"**

PERCORSO 05 - INGEGNERIA COMPUTAZIONALE E MODELLISTICA

1° Anno - anno accademico 2026/2027 - 60 CFU

Attività formativa		CFU	Vecchio Settore	Nuovo Settore	TAF/Ambito	Tipo Insegnamento
510090 - METODI DI ANALISI MATEMATICA E NUMERICA		12				Obbligatorio
Unità Didattiche di METODI DI ANALISI MATEMATICA E NUMERICA						
	502939 - COMPLEMENTI DI ANALISI MATEMATICA	*6*	*MAT/05*	*MATH-03/A*	*Caratterizzante/ Discipline matematiche, fisiche e informatiche*	*Obbligatorio*
	502234 - MODELLISTICA NUMERICA	*6*	*MAT/08*	*MATH-05/A*	*Caratterizzante/ Discipline matematiche, fisiche e informatiche*	*Obbligatorio*
512119 - MECHANICS OF MATERIALS		12				Obbligatorio
Teaching units of MECHANICS OF MATERIALS						
	512120 - SOLIDS AND STRUCTURAL MECHANICS	*6*	*ICAR/08*	*CEAR-06/A*	*Caratterizzante/ Discipline ingegneristiche*	*Obbligatorio*
	512121 - MATERIAL CONSTITUTIVE MODELING	*6*	*ICAR/08*	*CEAR-06/A*	*Caratterizzante/ Discipline ingegneristiche*	*Obbligatorio*
502886 - SISTEMI DINAMICI: TEORIA E METODI NUMERICI		6	MAT/08	MATH-05/A	Caratterizzante/ Discipline matematiche, fisiche e informatiche	Obbligatorio
502473 - MECCANICA DEI FLUIDI		6	ICAR/01	CEAR-01/A	Caratterizzante/ Discipline ingegneristiche	Obbligatorio
510089 - CHEMISTRY AND PHYSICS OF MATERIALS		12				Obbligatorio
	Unità Didattiche CHEMISTRY AND PHYSICS OF MATERIALS					*Obbligatorio*
	510088 - CHEMISTRY OF MATERIALS	*6*	*CHIM/02*	*CHEM-02/A*	*Affine/Integrativa/Affine/Integrativa*	*Obbligatorio*
	510058 - PHYSICS OF MATERIALS	*6*	*FIS/03*	*PHYS-03/A*	*Caratterizzante/ Discipline matematiche, fisiche e informatiche*	*Obbligatorio*
502861 - ELEMENTI DI MECCANICA COMPUTAZIONALE		6	ICAR/08	CEAR-06/A	Caratterizzante/ Discipline ingegneristiche	Obbligatorio
512123 - INDUSTRIAL NUMERICAL SIMULATIONS		6	ICAR/08	CEAR-06/A	Caratterizzante/ Discipline ingegneristiche	Obbligatorio

2° Anno - anno accademico 2027/2028 - 60 CFU

Attività formativa	CFU	Vecchio Settore	Nuovo Settore	TAF/Ambito	Tipo Insegnamento
512124 - ADVANCED INDUSTRIAL NUMERICAL SIMULATIONS	6	ICAR/08	CEAR-06/A	Affine/Integrativa/Affine/Integrativa	Obbligatorio
504989 - NONLINEAR COMPUTATIONAL MECHANICS	6	ICAR/08	CEAR-06/A	Caratterizzante/ Discipline ingegneristiche	Obbligatorio
Un insegnamento tra: 510062 - MANIFATTURA ADDITIVA	6	ING-	IIND-04/A	Affine/Integrativ	A scelta

		IND/16		a/Affine/Integrativa	
510065 - MECHANOBIOLOGY AND PHARMACEUTICAL RESEARCH	6	ING-IND/34	IBIO-01/A	Affine/Integrativa/Affine/Integrativa	A scelta
512130 - MECCANICA DEI FLUIDI APPLICATA	6	ING-IND/34	IBIO-01/A	Affine/Integrativa/Affine/Integrativa	A scelta
511393 - ADDITIVE MANUFACTURING OF LIVING MATERIALS	6	ING-IND/34	IBIO-01/A	Affine/Integrativa/Affine/Integrativa	A scelta
506585 - TECNICHE DI CARATTERIZZAZIONE DEI MATERIALI	6	CHIM/02	CHEM-02/A	Affine/Integrativa/Affine/Integrativa	A scelta
SCELTA LIBERA IN OFFERTA DIDATTICA DI ATENEO	12				A scelta
510066 - LABORATORIO PROGETTUALE	12	NN	NN	A scelta dello studente/A scelta dello studente	A scelta
509895 - NUMERICAL OPTIMIZATION AND DATA SCIENCE	6	MAT/09	MATH-06/A	A scelta dello studente/A scelta dello studente	A scelta
509005 - OPTIMIZATION MODELS AND ALGORITHMS FOR DATA SCIENCE	6	MAT/09	MATH-06/A	A scelta dello studente/A scelta dello studente	A scelta
506582 - CHIMICA FISICA DEI METALLI E DEI CERAMICI	6	CHIM/02	CHEM-02/A	A scelta dello studente/A scelta dello studente	A scelta
502137 - CHIMICA E TECNOLOGIE DEI POLIMERI	6	CHIM/06	CHEM-05/A	A scelta dello studente/A scelta dello studente	A scelta
511394 - THERMAL MANAGEMENT FOR INDUSTRIAL AND SPACE APPLICATION	6	ING-IND/10	IIND-07/A	A scelta dello studente/A scelta dello studente	A scelta
507325 - LABORATORIO DI LINGUA INGLESE	3	L-LIN/12	ANGL-01/C	Altro/Ulteriori conoscenze utili per l'inserimento nel mondo del lavoro	Obbligatorio
500000 - PROVA FINALE	21	PROFIN_S	PROFIN_S	Prova Finale/Per la prova finale	Obbligatorio

EVENTUALI ESAMI IN SOVRANNUMERO (MAX 24 CFU)

ATTIVITÀ FORMATIVA	CFU	SETTORE	TAF/AMBITO	ANNO

Catalogo degli insegnamenti

Courses Catalogue

Data / *Date*..... Firma dello studente / *Student's signature*.....

University of Pavia

Faculty of Engineering

Department of Civil Engineering and Architecture

Study Course: COMPUTATIONAL AND MODELLING ENGINEERING FOR MATERIALS, STRUCTURES AND SUSTAINABLE TECHNOLOGIES

Classe LM-44

INTRODUCTORY COURSES

There are no introductory courses for the Master Programme in Computational and modelling engineering for materials, structures and sustainable technologies.