

Training Guidelines for PhD Students in Industrial Engineering

Updated November 2025 – Approved by the Board of Supervisors on 11/11/2025

In accordance with AVA3 Guidelines (ANVUR) and DM 226/2021

1. Duration of the Program and Credits

The PhD Course in Industrial Engineering has a duration of **three years**, corresponding to a total of **180 CFU¹**, in accordance with AVA3 Guidelines and DM 226/2021.

The total workload corresponds to **60 CFU per year**, combining research and training activities.

In the PhD program in Industrial Engineering, one CFU corresponds twenty-five hours of work (**1 CFU = 25 hours**), consisting in 5 hours of lectures and 20 hours of individual study/ applicative work. Within this framework, each student must acquire:

- **at least 16 CFU** (equivalent to 80 hours of lectures + 320 hours of personal study/applicative work) **through courses** and,
- attend **at least three seminars** during the PhD program.

The training component represents approximately 8–10% of the overall doctoral workload, highlighting that the primary activity of the PhD program (around 90%) is dedicated to research.

2. Courses offered by the Doctoral Program in Industrial Engineering

A course is defined as a structured teaching activity, taught in Italian or English, with a minimum duration of 5 hours of frontal teaching and 20 hours of study, corresponding to 1 CFU.

Each course must be attended **by a minimum of 2 students**.

Each course **must include a final evaluation** (exam or equivalent assessment) for credit assignment.

Courses may be offered by the Doctoral Program in Industrial Engineering (CDII), by other PhD Programs within the University of Padova, or by other national or international universities.

Courses taken at other PhD Programs are recognized following the credit attribution system adopted by the hosting Program.

Courses belonging to Bachelor's or Master's Degree programs (Laurea or Laurea Magistrale) are not eligible for recognition, even if not previously attended by the student.

The annual Course Plan defines, for each course, the topic, lecturer(s), duration, evaluation method, and number of credits, enabling each student to select **at least 10 CFU** in agreement with their research topic and Supervisor's approval.

3. Seminars

A seminar is defined as a short teaching activity (typically 1–5 hours), **with no final evaluation**.

Each seminar is credited at a rate of 1/25 CFU per hour (for example, a 2.5-hour seminar corresponds to 0.1 CFU).

Each student must attend **at least three seminars** during the PhD program.

It is recommended that seminars have a gross duration of at least 5 hours or multiples of 5.

Seminars may cover specific research topics, transversal skills, or methodological themes, and can be organized by the PhD Program, by DII, or by other research institutions.

¹ In the Italian university system, academic credits are referred to as **CFU (Crediti Formativi Universitari)**. This is the national credit system used to measure student workload. The **ECTS (European Credit Transfer and Accumulation System)** is the standardized credit system adopted across Europe to facilitate the recognition of study periods and qualifications between different countries, often used in programs like Erasmus+. The Italian CFU system was designed to be fully compatible with the European standard. Therefore, there is a direct equivalence **1 CFU = 1 ECTS**. Both systems measure the total student workload (including lectures, seminars, practical work, and private study) required to complete a course unit.

3. Summers/Winter schools

Summer and Winter Schools are intensive short-term training programs for PhD students, typically organized by universities, research centers, or international networks, and aimed at providing advanced scientific, methodological, or transversal skills related to the student's research area.

Attendance at Summer or Winter Schools may be recognized with the same rate (1/25 CFU per hour).

One day of attendance corresponds to 10 hours (0.4 CFU).

An official participation certificate is required.

4. The Training Plan of the PhD Student

The individual Training Plan (Progetto formativo) defines the student's research topic, the distribution of research activities, and the courses and seminars to be attended.

The Training Plan must be approved by the Board of Supervisors **within the fourth month after enrolment** and updated annually.

It must include **at least 16 CFU over the three years**, within the total 180 CFU of the doctoral program, of which:

- **at least 10 CFU** must be achieved attending courses offered by the Doctoral Program in Industrial Engineering;
- **at least three seminars** must be attended during the PhD program.

Courses taken at other PhD Programs (within or outside UNIPD) can be included, provided that the credit conversion follows the system of the offering program and that both the Supervisor and the Executive Board approve their inclusion.

Courses belonging to Bachelor's or Master's Degree programs cannot be included under any circumstance, as required by AVA3 guidelines (D.PHD.1.3).

At least 12 CFU should be achieved by the end of the second year.

5. Certification and Attribution of Credits

All training activities included in the Training Plan must include an assessment if applicable.

Credits are attributed as follows:

- Courses offered by CDII: 1 CFU = 5 hours of lectures + 20 hours of study.
- Courses offered by other PhD Programs (UNIPD or external): credit recognition follows the system adopted by the hosting Program.
- Seminars: 1/25 CFU per hour (no exam).
- Summer/Winter Schools: 1 CFU every 25 hours (≈ 0.4 CFU/day), up to a maximum of 2 CFU.
- Courses organized by professional associations or research institutions: 1 CFU every 25 hours, subject to Board approval.

A student can obtain up to 6 CFU from Master or Specialization School courses, provided they are coherent with the training plan and approved by the Supervisor.

Courses from Bachelor's or Master's programs are not admissible.

Distinction between types of activities:

- Course: includes a final evaluation and may grant full CFU.
- Seminar: no final evaluation and may grant fractional CFU (1/25 CFU per hour).

6. Criteria and Timing of Evaluation

Doctoral student assessment takes place every year and at the end of the program to authorize admission to the following year or to the thesis defense.

The procedures are established by the Board of Supervisors/Executive Board, in accordance with the University Regulation (art. 22) and AVA3 Guidelines.

Each PhD student must submit a written report (annual report) and give a presentation every year and must submit a final report at the end of the third year.

The assessment deadlines are as follows:

- 1) End of the first year: submit the annual report describing research and training activities; give a presentation on ongoing research topics.
- 2) End of the second year: submit the second annual report; give a presentation on research progress.
- 3) End of the third year: submit the third annual report; give a presentation summarizing the results achieved.
- 4) End of the PhD: submit the final report describing all research and training activities (including a summary video if requested).

The Secretariat communicates all official deadlines.

Annual presentations are evaluated by a committee of three members, including the Curriculum Contact Person (Referente di Curriculum) and two members of the Board of Supervisors.

Evaluation criteria include:

- Methodological rigor (questionable / fair / good / very good / excellent)
- Organization and management of the research activities (questionable / fair / good / very good / excellent)
- Quality of presentation (questionable / fair / good / very good / excellent)
- Quality of the video about the research activities (questionable / fair / good / very good / excellent)

The evaluation process considers both the scientific progress and the completion of the individual Training Plan, including the achievement of the minimum 16 CFU.

Compliance with AVA3 (D.PHD.2) is verified, ensuring that the total workload corresponds to 180 CFU (≈4,500 hours over three years).

The main criteria remain the quality, originality, and innovation of the research results, as well as the student's ability to conduct independent research and manage resources.

7. External Activities

Each PhD student may be authorized by the Executive Committee to carry out external activities in accordance with DM 226/2021.

Such activities **are not counted within the 16 CFU** training requirement but are included in the overall 180 CFU total of the PhD Program.

All external activities must be previously authorized by the Executive Board.

Appendix – Recommended Organization of Teaching Activities

Type of Activity	Typical Duration (hours)	Credit Conversion	Recognition Conditions	Constraints
Specialized course (CDII)	≥5 h	1 CFU per 25 h	Final evaluation required	min 10 CFU offered by the Doctoral Program in Industrial Engineering.
Course from another PhD Program (UNIPD or external)	variable	As per hosting Program	Supervisor and Board approval	-

Summer/Winter School	10 h/day	0.4 CFU/day	Participation certificate required	-
Course from Master/Specialization School	variable	As assigned by source Program	Supervisor approval	-
Course by professional body or research center	variable	Up to 1 CFU/25 h	Board approval required	-
Seminar	1–5 h	1/25 CFU per hour	No exam required	min. 3 during the PhD program

Appendix B – Example of Recommended Distribution of the 180 CFU over the Three PhD Years

Type of Activity	Training activities	Other activities	Research	Total
Year 1	40	10	10	60
Year 2	10	10	40	60
Year 3	0	0	60	60
				180