

Training Project
PhD Program in Energy and Environmental Engineering Science

The PhD Board approves for each doctoral student the training project.

The doctoral student's training project consists of:

a) the development, under the guidance of the Supervisor, of an individual research program referring to a specific disciplinary area among those on which the doctoral program is focused. These areas involve areas of expertise such as: Eco-sustainable plants and processes for energy production; Materials for energy and/or environmental applications; Science and technology of catalysis; Energy transport, conversion, storage and distribution systems; Safety of processes, structures, environment; Chemical technologies and processes for environment and energy; Transport of matter, momentum and energy; Intersectoral security for disaster risk reduction and resilience. The Ph.D. thus has a distinctly multidisciplinary vocation that allows it to encapsulate a rich basket of environment- and energy-related and high-impact topics in a single program (e.g., risk and resilience at the regional level, waste and pollutant treatment at the national level). Another distinctive aspect of the PhD is the strong interaction that is pursued and ensured between process engineering (energy, environmental, chemical, and materials) with basic sciences (physics and continuum mechanics, in particular).

b) attending doctoral level educational activities complementary to research not less than 20 CFU. The recognition of CFUs, which can be acquired by attending lectures and other educational activities, is carried out by the Board of Teachers, which authorizes the attendance and evaluates the outcomes. The teaching activities, which can also be organized jointly among several Courses, also include training activities aimed at supporting research activities and providing tools to outline the professional identity of future PhDs.

The PhD Program in Energy and Environmental Engineering Science requires:

At least 15 CFU	<ul style="list-style-type: none">- with the doctoral student's attendance (and passing of the required final examinations) of specialized courses in the relevant area and discipline, chosen from those scheduled annually by the doctoral course's faculty. The doctoral student's study manifesto highlights the courses scheduled for the academic year with an indication of the CFUs awarded. The courses provided within the doctoral program, their schedules with indication of the CFUs attributed and the planned final exams, which may differ from course to course, are also available year by year on the doctoral website at the following link: https://phd.diegm.uniud.it/ees-phd-activities.- by attending (and passing any final tests) specialized courses in the relevant area and discipline organized by other universities/research institutions/companies. The Board of Teachers evaluates the suitability of these activities with respect to the student's training and research objectives and determines the number of credits to be awarded. The Course also participates in two "Virtual Doctoral Schools" initiatives (organized respectively by the PhD Net in Industrial System Engineering and by the Italian Association of Fluid Machines and Systems for Energy and the Environment - AIMSEA) certifying the acquisition of CFUs in teachings delivered (in-person or remotely) by university professors within these schools.- by attending short seminars (up to 2 hours, 0.25 CFU) offered by the doctoral program. Scheduling of seminars is done monthly and students are informed by e-mail about the seminar schedule and program and through the "news" section of the website (https://phd.diegm.uniud.it/ees-phd-news/).
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	<ul style="list-style-type: none"> - with participation in weekly Courses and Workshops (up to 4 CFU) organized by the University of Udine or other Universities and Institutions (e.g., CISM) and reported via e-mail or through the website. - with participation in Conferences that are in line with the student's research project (1 CFU per day of Conference + 1 additional CFU for the possible presentation of a contribution by the Doctoral student) and that will be identified by the PhD Board also on the recommendation of the Professors supervising the Doctoral student's educational project. - Summary of CFUs recognized by type of activity organized by the PhD Board: 6-8h courses offered for Ph.D. with final verification (up to 1 CFU) Seminars, 1-2 hours (up to 0.25 CFU) Weekly courses and workshops /summer schools (up to 4 CFU) One-day courses or conferences (up to 1 CFU) Conferences where the doctoral student presents his/her work (1 CFU per conference day + 1 CFU for the presentation up to a maximum of 4 CFU)
At least 5 CFU	<ul style="list-style-type: none"> - by attending (and passing the final tests, if any) cross-curricular courses/seminars, chosen from those scheduled annually by the University in the areas of Research, Career Development, Communication, Enterprise. The courses scheduled for the current year, with an indication of the CFUs awarded, are available at the link https://www.uniud.it/it/ricerca/bacheca-ricercatori/iniziativa-ricerca - with attendance (and passing the final tests, if any) of courses/seminars/conferences organized by the University. The PhD Board evaluates the suitability of these activities with respect to the student's training and research objectives and determines the number of credits to be awarded. - by attending (and passing the final tests, if any) cross-curricular courses organized by other universities/research institutions/companies. The PhD Board evaluates the suitability of these activities with respect to the student's training and research objectives and determines the number of credits to be awarded. - Regarding the attendance of the English for Academic Purposes (EAP, 5CFU) course, belonging to the Mobility area, the student is exempt if he/she already holds a valid English language certification of C1 level or higher. The student must still acquire the 5 CFUs by taking one or more courses from any of the areas offered by ARIC.

The individual research program concludes with the writing of the thesis. The thesis, written in English or Italian, must contribute to the advancement of knowledge or methodologies in the chosen field of inquiry.

The PhD Board annually evaluates the training and research activities carried out by individual doctoral students for the purpose of admission to the following year and the thesis evaluation stage. In particular, an important time for reviewing the progress of activities is the Doctoral Week, organized annually in October. During the Doctoral Week, 1st year doctoral students are called upon to present in oral form the status of their research project and the activities planned for the following years, 2nd year doctoral students are called upon to present in mixed form (oral and poster) the status of their research project and the activities planned during the last year of their doctoral program, 3rd year doctoral students in are

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called upon to present in oral form (and in a manner typical of a conference contribution) the results of their research project. In this way, doctoral students are given the opportunity to hone their scientific communication skills.