

**Course offered for the PhD program  
in Civil, Chemical and Environmental Engineering  
a.y. 2024/2025 (XL cycle)**

(course is open for participation of students from other PhD cycles or programs)

**1. Title**

Innovative solid-liquid extraction techniques and plants

**2. Course Description**

The course aims to provide notions to the PhD students on innovative processes for solid-liquid extraction.

The course will include the following topics:

- Conventional solid-liquid extraction, pre-treatments and post-processing;
- Extraction kinetics, fundamentals and limitations;
- Principles of green chemistry;
- Non-conventional extraction techniques (microwave-assisted extractions, Ultrasound-assisted extraction, high pressure and temperature-assisted extraction, etc.);
- Case studies on valorization of agro-industrial waste by non-conventional extraction techniques.

**3. Course Organization**

The course, organized into a single module, will consist of classroom and laboratory lessons.

**4. Teacher**

The course teachers will be Professor Patrizia Perego and Dr. Margherita Pettinato.

**5. Duration and credits**

The course (15 hours) will consist of 5 lessons, 3 hours each, for a total of 3 credits.

**6. Activation mode and teaching period**

The course will be held yearly if at least two students will be registered by simple contact with the teacher by email. The course will be held during the period May-June 2025. The exact dates of the lessons will be confirmed about one month before the beginning of the course.

**7. Deadline for registration**

Registration to the course must be made before February 2025. Students are requested to inform the teachers by e-mail: [p.perego@unige.it](mailto:p.perego@unige.it); [margherita.pettinato@unige.it](mailto:margherita.pettinato@unige.it) about their registration.

**8. Final exam**

The examination test will consist of a final project developed on a topic defined with the teachers.