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CIVIL AND ENVIRONMENTAL ENGINEERING

DOCTORAL PROGRAM 2025-2026

Silvia Meniconi is Full Professor of Hydraulics at the Department of Civil and Environmental Engineering of the University of Perugia. She holds a Ph.D. in Civil Engineering and her research focuses on transient flows, leak detection, and monitoring of water systems. She has coordinated several national and international research projects in hydraulic engineering.

Caterina Capponi is Associate Professor of Hydraulics at the Department of Civil and Environmental Engineering of the University of Perugia. She holds a Ph.D. in Civil Engineering and her research focuses on hydraulic transients, leak detection, and monitoring of water systems. She coordinates national and international research projects on infrastructure and anomaly detection.

WAVE-BASED DEFECT DETECTION IN PRESSURIZED PIPELINES

Instructor

Silvia Meniconi, Ph.D., Full Professor, University of Perugia
Caterina Capponi, Ph.D., Associate Professor, University of Perugia

Course description

This course provides an in-depth exploration of wave-based methods for detecting defects in pressurized pipelines. These pipelines are critical components in water supply, industries such as oil and gas, and chemical processing. Ensuring their integrity is paramount to prevent leaks, bursts and potential environmental hazards.

Course objectives

- 1. Introduction to defect detection methods: Understand their applications, benefits and limitations.
- 2.Wave propagation principles: Learn the basic principles of wave propagation in water.

3.Signal Processing: Study the signal processing methods used to interpret wave signals and identify key indicators of defects such as leaks, partial blockages and wall deterioration.

4. Instrumentation and Equipment: Learn about the latest instrumentation and equipment used in wave-based testing, including pressure transducers, data acquisition systems, and analysis software.

5.Practical Applications: Participate in hands-on sessions to apply theoretical knowledge to real-world scenarios, using laboratory equipment to detect and analyze defects in pipelines.

Location

Campus of Engineering
University of Perugia Via G. Duranti, 93 - Perugia

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TO JOIN!

Course Schedule (12 hours, 2 CFU)

01/09/2026	10:30-13:30	Room 17
02/09/2026	9:30-12:30	Room 17
03/09/2026	9:30-12:30	Room 17
04/09/2026	9:30-12:30	Room 17

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