Introduction to Experimental Testing in Civil and Environmental Engineering

Professor	Email	Institution
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General Information

Course Objectives:

The course is intended for all PhD students who plan to conduct experimental activities as part of their research. It will provide the necessary foundations for designing measurement setups and for developing a critical approach to interpreting results obtained from laboratory or in-situ experimental measurements.

Course Structure:

The course consists of four lectures of three hours each, for a total of 12 hours (2 credits). The first three lectures will primarily be lecture-based, but laboratory-based teaching activities and cooperative learning sessions are also planned. The final session will involve the presentation of an assignment, in which all students will participate through discussion and brainstorming.

Learning Outcomes:

By the end of the course, students will be able to design and/or correctly use a measurement setup by:

(i) selecting the most appropriate instruments based on their operating principles;

(ii) critically reasoning about how to properly perform a measurement;

(iii) interpreting test results through basic post-processing operations.

The course will be held both in person and online (the link will be provided to the enrolled students through the dedicated Excel file). The course will be delivered in English. The course will be held in Room 138 'Aula riunioni' at the Dept. of Civil and Environmental Engineering, School of Engineering, via di Santa Marta 3, Firenze, first floor, east wing. Any changes to the schedule (date, time, classroom) will be communicated with adequate notice.

Materials

Students are encouraged to bring a personal computer equipped with basic data analysis software (MATLAB, Python, R, …) for Lecture 3.

Reference literature will be provided during the course. Slides will be provided at the end of the course upon request.

Schedule

Dates	Description
07 May 2026, 2:00-5:00 p.m.	Introduction and Basic concepts on measurement errors
11 May 2026, 2:00-5:00 p.m.	Measurement technology and instrumentation
18 May 2026, 2:00-5:00 p.m.	Post-processing of measurements
26 May 2026, 2:00-5:00 p.m.	Designing an experimental campaign
	Total 12 Hours - 2 Credits

Other information

The course will be approved after the design of an experimental campaign. This will be presented and discussed in the round table discussion during the fourth lesson.

For any information www.indicee.unifi.it - dott-dicea@unifi.it