

DEPARTMENT OF
MATERIALS, ENVIRONMENTAL SCIENCES AND
ENGINEERING AND URBAN PLANNING

Via Breccie Bianche 12, 60131 Ancona (Italy)

AREA: GEOTECHNICAL ENGINEERING





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The Geotechnical Group is a group of Civil and Environmental Engineers very active in the fields of Soil Mechanics, Environmental Geotechnics and Geotechnical Engineering. Our research work on Soil Mechanics addresses the mechanical behavior of natural soils with emphasis on geologically complex soils, so much involved in landslides phenomena throughout Italy and in the design of new infrastructures. Research in Environmental Geotechnics includes studies on new geomaterials, on the safety of contaminated lands, on geotechnical stabilization and re-use of dredged materials. For all the above topics aspects of Geotechnical Engineering are addressed. These include soil-structure interaction for earth retaining structures and foundations, seismic analysis of geotechnical structures, numerical modelling of discontinuous ground, ground improvement with lime or cement, design of hydraulic barriers for contaminated land. Experimental work benefit of the soil mechanics laboratory and the environmental geotechnics laboratory. The numerical analysis for the geotechnical engineering studies is carried out by up-to-date numerical codes, 2D and 3D, with advanced constitutive models of the soil.

Research Topics and Activities

- Limit State Design and Seismic Design
- Numerical Modelling and Monitoring
- Port engineering
- Forensic engineering (Judicial support and consultancy)
- Land reclamation
- Contaminated sites
- Hydraulic barriers
- Soil improvement (soil cement mixture, lime stabilization, passive piles, jet grouting)

People

ACADEMIC STAFF

GIUSEPPE SCARPELLI	EVELINA FRATALOCCHI	FRANCESCO MAZZIERI	EVGHENIA SAKELLARIADI
IVO BELLEZZA	VIVIENE M.E. FRUZZETTI	MARTA DI SANTE	PAOLO RUGGERI

SESSIONAL LECTURER	TECHNICAL STAFF	POST-DOC. FELLOWS	PhD STUDENTS
ERIO PASQUALINI	JONATHAN DOMIZI	ANTONIO FERRETTI MIRKO FELICI	FEDERICA PASQUALINI DAVIDE BERNARDO

Laboratories

1. SOIL MECHANICS

director: **GIUSEPPE SCARPELLI**

2. ENVIROMENTAL GEOTECHNICS

director: **EVELINA FRATALOCCHI**

Teaching

Bachelor degree

Building Engineering

- Geotechnics

Civil and Environmental Eng.

- Geotechnics
- Foundations

Master degree

Building Engineering

- Foundation and earth retaining structures

Enviromental Engineering

- Enviromental Geotechnics
- Slope Stability

Civil Engineering

- Geotechnical Design
- Geotechnical Design 2
- Ground improvement
- Geotechnical Modelling

Syrs Master Degree

Building Engineering and Architecture

- Geotechnics

Professional Degree

- Building Technics and land management**
- Basics of Geotechnics



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Academic Staff



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Sessional Lecturer



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Technical Staff

Post Doctoral Fellows



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PhD Research Students



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Dr. Davide Bernardo
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1. SOIL TESTING LABORATORY

Director: PROF. GIUSEPPE SCARPELLI

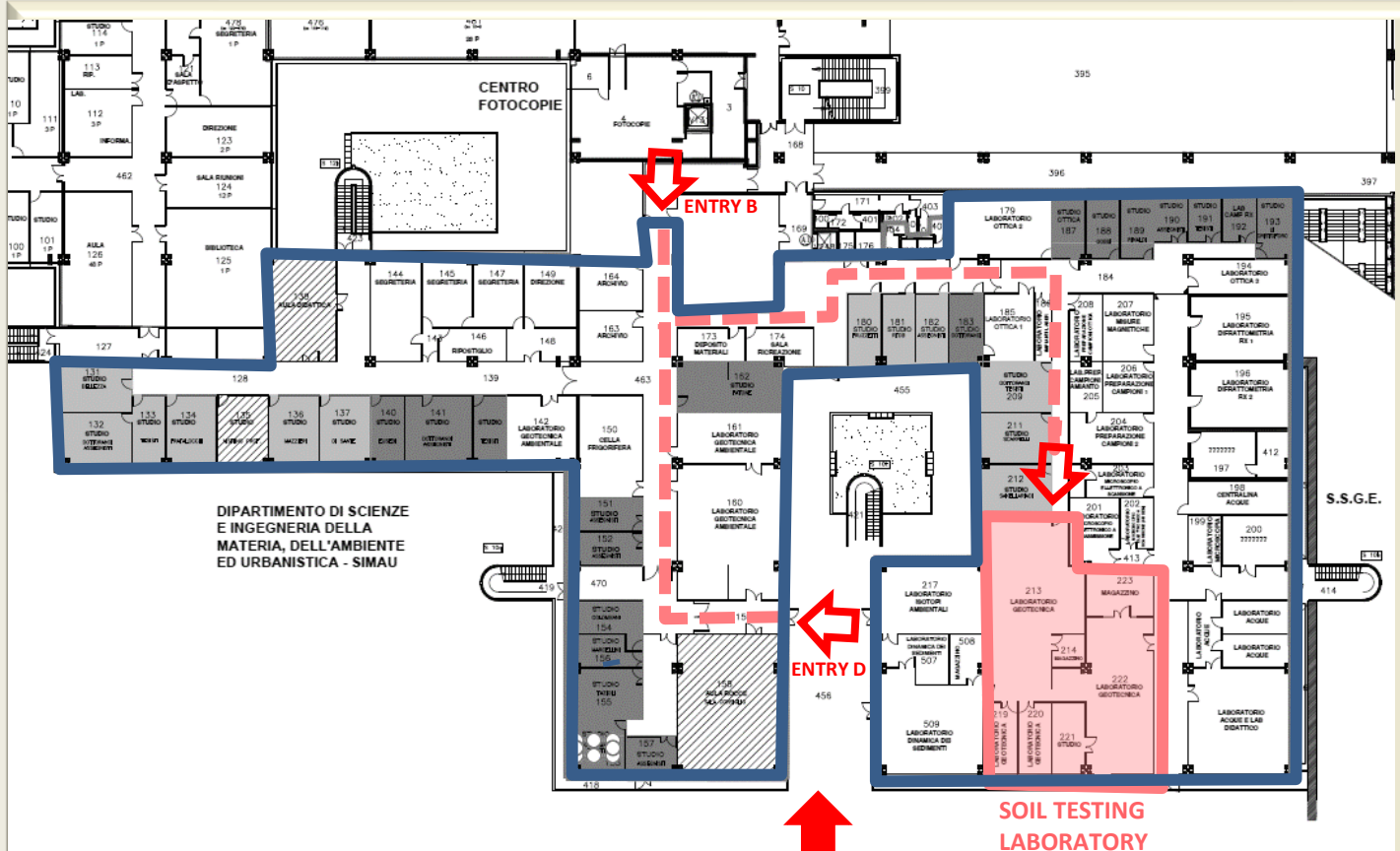
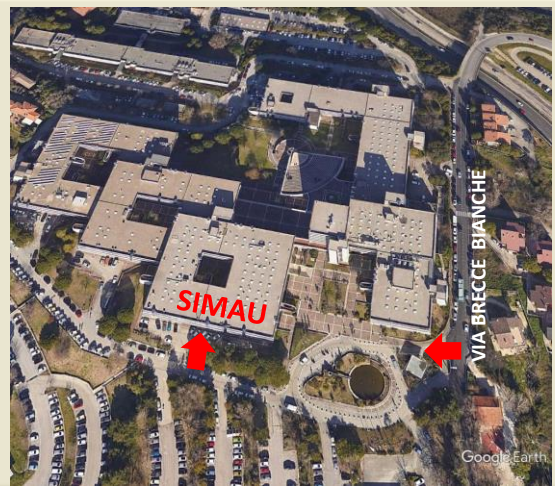
Phone +390712204421, mail: g.scarpelli@univpm.it

LOCATION: POLO BELLUSCHI-LEVEL 155

ROOMS: 213, 214, 219, 220, 221, 222, 223

Short description:

The laboratory is able to provide physical and mechanical characterization of soils by standard testing and some advanced testing. The following tests are available: determination of physical parameters and classification (moisture content, bulk and dry density, particle density, Atterberg limits, particle size distribution) incremental oedometer consolidation test (oedometer IL), constant rate of strain test (oedometer CRS), direct shear test, triaxial compression tests (TxCIU, TxCID, UU), stress path triaxial testing, compaction test (Proctor Test).





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ESTRACTOR



CONSOLIDOMETER



COMPRESSIBILITY TESTING





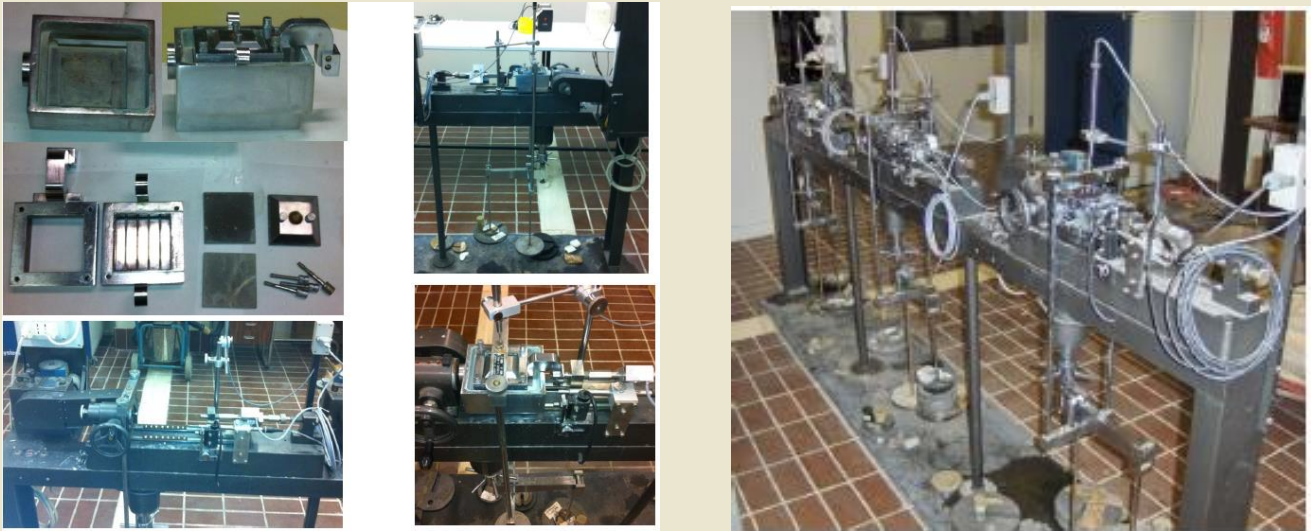
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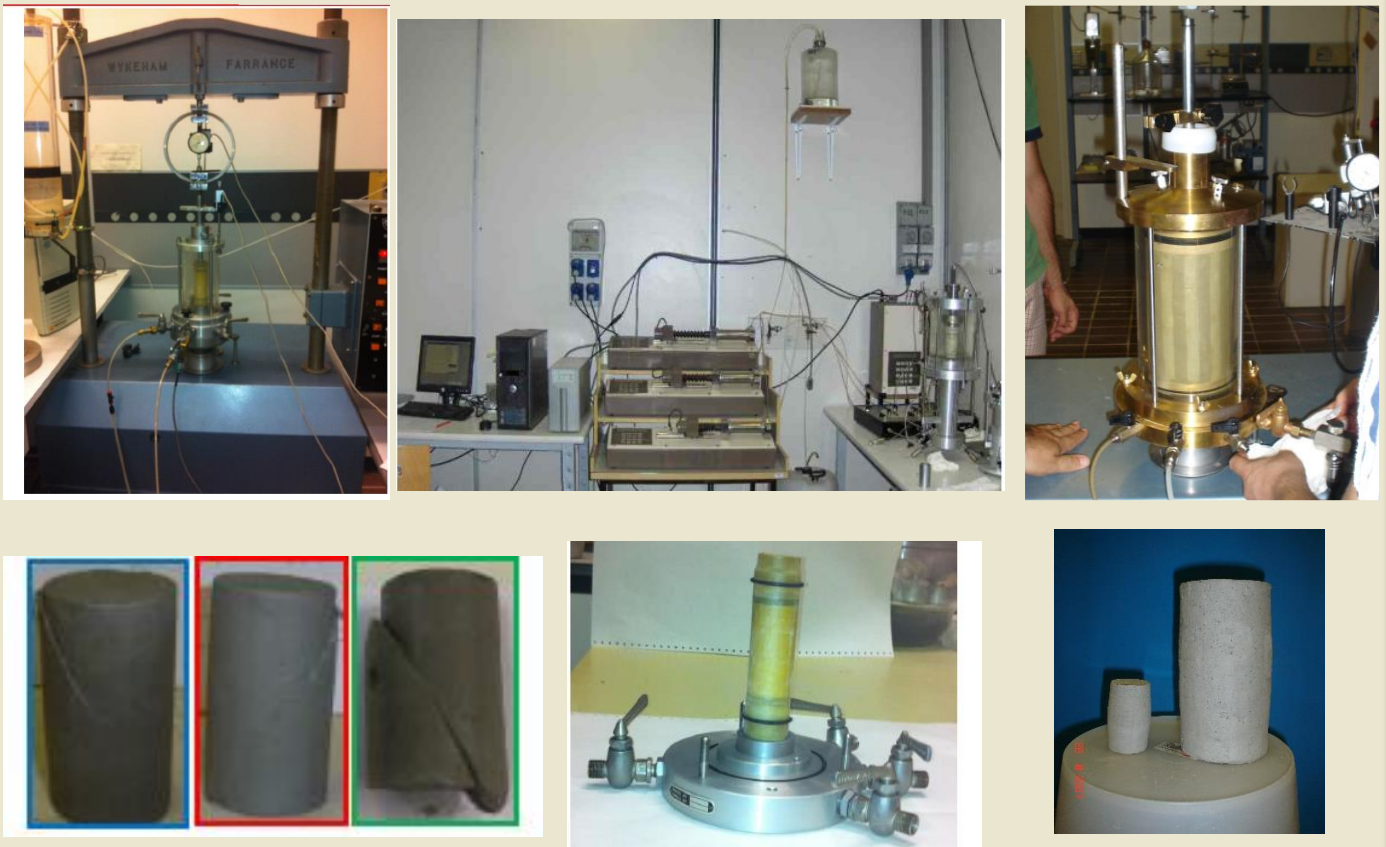
1. SOIL TESTING LABORATORY

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DIRECT SHEAR TESTING



TRIAxIAL TESTING





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2. ENVIROMENTAL TESTING LABORATORY

Director: PROF. EVELINA FRATALOCCHI

Phone +390712204793, mail: e.fratalocchi@staff.univpm.it

LOCATION: POLO BELLUSCHI

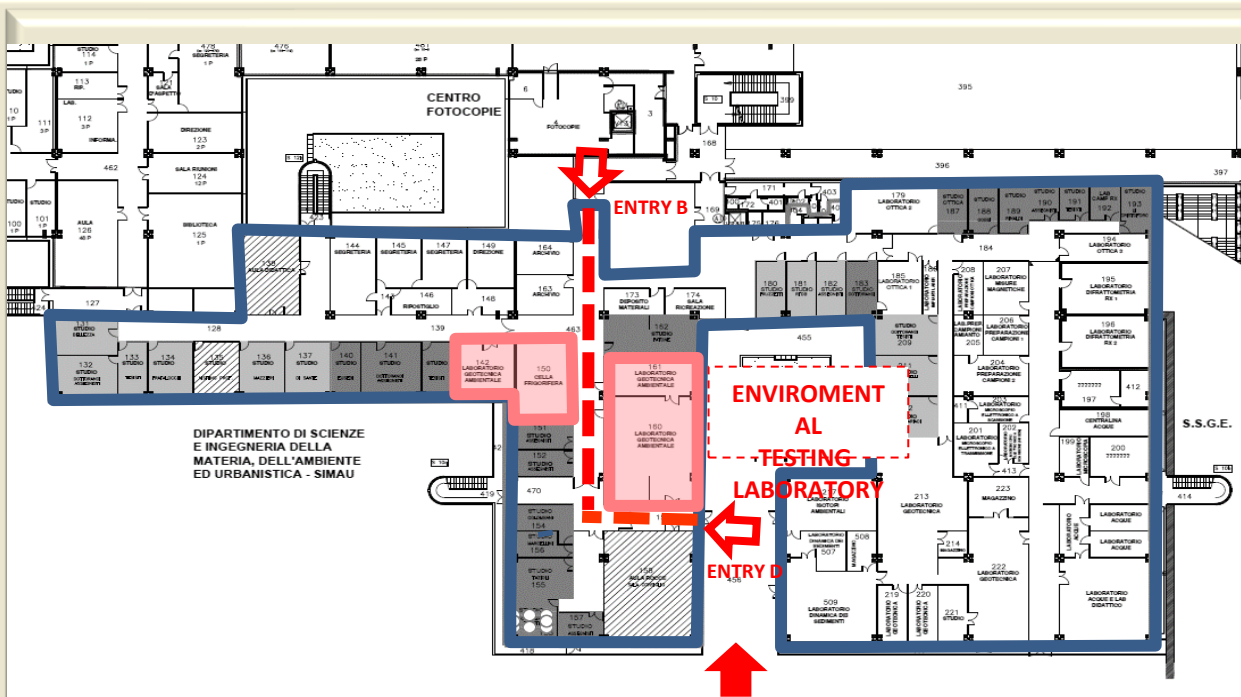
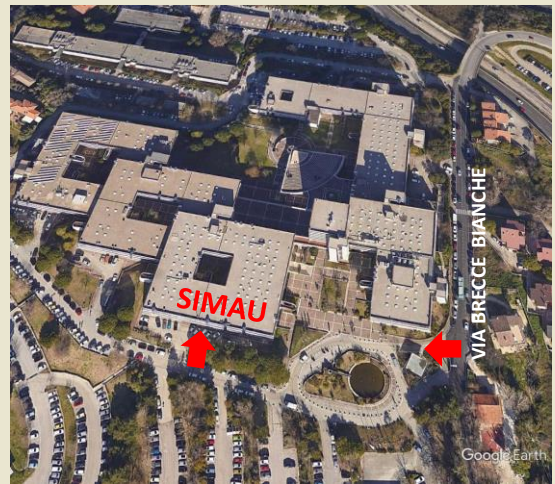
ELEVATION: 155 meters above sea level

ROOMS: 160, 161, 150, 142

Short description:

The laboratory is able to provide advanced testing for soils, amended soils and mixtures. The following tests are available: Permeability tests (rigid and flexible wall permeameters), chemical compatibility tests (bladder accumulators), oedometric and swelling tests. A new section of the laboratory has recently been equipped with apparatus allowing:

- chemico-osmotic diffusion testing (tracers and solutes)
- evaluation of structural modification of the soil skeleton occurring with amended soils or in the case of reactive solutes (Triaxial cell, BE)





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Equipment and testing facilities available:

- 9 incremental loading oedometer apparatuses
- 16 pressure controls panels for permeability testing
- 28 flexible wall permeameters
- 1 swelling pressure apparatus
- 1 consolidometer-type permeameter
- 2 rigid-wall permeameters
- 16 bladder accumulator pairs for permeability testing with liquids different than water (assessment of compatibility and migration parameters)



Flexible-wall permeameter equipped with bladder accumulator for the assessment of permeability and chemical compatibility of porous media (soils, soil-binder mixtures, cement-bentonite mixtures, geosynthetic clay liners).



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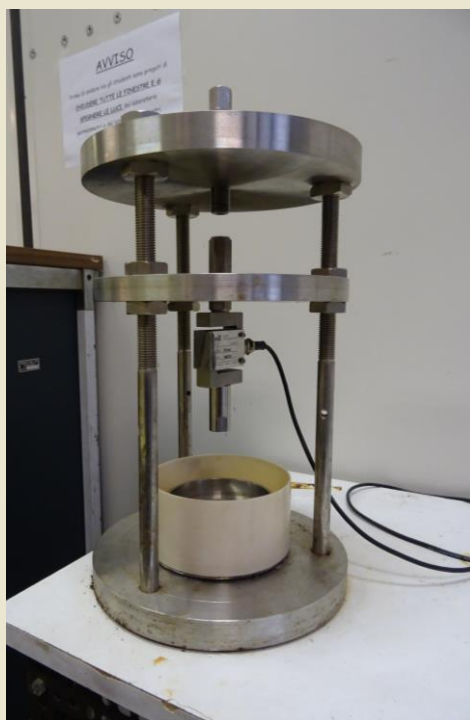
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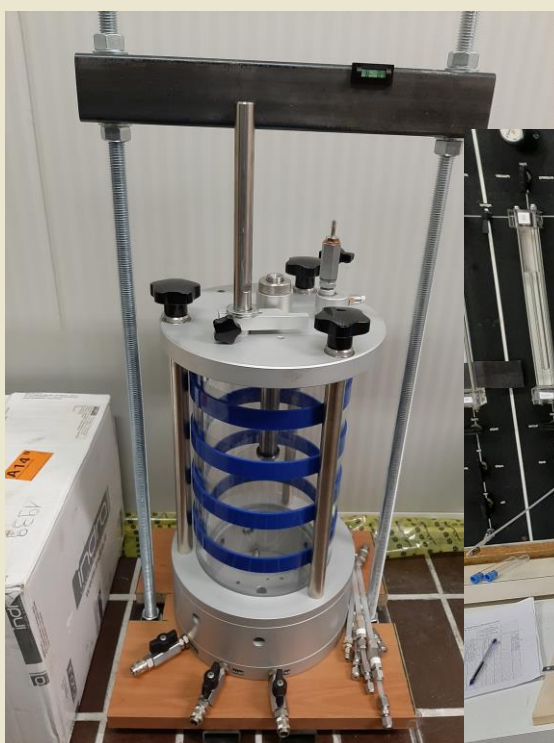
PERMEABILITY AND CHEMICAL COMPATIBILITY TEST



SWELLING TEST



TRIAxIAL CELL



CHEMICO-OSMOTIC DIFFUSION TESTING

