



PROFESSIONAL DEVELOPMENT COURSE

GEOTECHNICAL ENGINEERING DESIGN

A.Y. 2026/2027

Total duration	32 hours
Teaching period	April - June 2027
Total credits (CFU/ECTS)	5

Awarding Institution

University of Siena - Via Banchi di Sotto 55 - 53100 Siena (Italy)

Programme Type

Professional Development Course

Aims and Objectives

The Professional Development Course in Geotechnical Engineering Design provides advanced training in the principles and practical applications of geotechnical engineering for construction, with a particular focus on shallow foundations, deep foundations, caissons, retaining walls, diaphragm walls, soldier pile walls, slope stability analysis in both soil and rock, remediation measures for landslide-prone areas, and the effects of seismic actions on geotechnical design.

The programme is designed to provide participants with advanced theoretical knowledge and practical skills in geotechnical engineering design, with particular emphasis on foundations, earth-retaining structures, slope stability and seismic design.

Designed for engineers, geologists, architects and technical professionals, the course combines lectures with practical exercises to provide knowledge and skills that can be immediately applied in professional geotechnical design practice.

Schedule and Duration

April - June 2027

32 hours (lectures and practical exercises)

Tuition Fees

Tuition fee for the Professional Development Course: **€ 500**

The tuition fee is payable in a single instalment of € 600, to be paid at the time of enrolment, plus a € 16 electronic stamp duty, payable through the University's online enrolment procedure.

Language of instruction

Italian. A good command of the Italian language is therefore required.

Course Venue and Distance Learning

Teaching is delivered through a combination of synchronous online learning and in-person sessions at the Centre for GeoTechnologies, University of Siena, San Giovanni Valdarno (AR), Italy.

Entry Requirements

The Professional Development Course in Geotechnical Engineering Design is intended for graduates in engineering, architecture and geology wishing to deepen their knowledge and professional skills in the field of geotechnical engineering.

Applicants must hold one of the following Italian academic qualifications, or an equivalent qualification:

- Bachelor's Degrees (L)
 - Civil and Environmental Engineering (L-7 and L8)
 - Industrial Engineering (L-9 and L10)
 - Territorial, Urban, Landscape and Environmental Planning (L-21 and L7)
 - Architecture (L-17 and L4)
 - Building Sciences (L-23)
 - Agricultural and Forestry Sciences and Technologies (L-25 and L20)
 - Food Science and Technology (L-26)
 - Physical Sciences and Technologies (L-30 and L25)
 - Environmental and Natural Sciences and Technologies (L-32 and L27)
 - Geological and Earth Sciences (L-34 and L16)
- Master's Degrees (LM), Specialist Degrees (LS) and Old-System Degrees (V.O.)
 - Architecture and Building Engineering–Architecture (LM-4, Single-Cycle LM-4, LS4 and Old-System Degree)
 - Civil Engineering (LM-23, LS28 and Old-System Degree)
 - Building Systems Engineering (LM-24 and Old-System Degree)
 - Mechanical Engineering (LM-33 and LS36)
 - Environmental and Land Engineering (LM-35, LS38 and Old-System Degree)
 - Territorial, Urban and Environmental Planning (LM-48, LS54 and Old-System Degree)
 - Materials Science and Engineering (LM-53, LS61 and Old-System Degree)
 - Natural Sciences (LM-60, LS68 and Old-System Degree)
 - Forestry and Environmental Sciences and Technologies (LM-73, LS74 and Old-System Degree)
 - Geological Sciences and Technologies (LM-74, LS86 and Old-System Degree)
 - Environmental and Territorial Sciences and Technologies (LM-75, LS82 and Old-System Degree)

Applicants holding an academic qualification obtained abroad may also apply, provided that their qualification is recognised, for admission purposes only, as comparable in academic level, nature, content and academic rights to the corresponding Italian qualification required for admission to the Course.

Programme Structure

Disciplinary Area	Learning Activities	Hours	ECTS
APPLIED GEOTECHNICS FOR CONSTRUCTION		16	2
Theoretical course covering the fundamental principles of geotechnical engineering design for buildings and infrastructure. Main topics include: • soil properties and mechanical behaviour • laboratory testing and its application to geotechnical design • engineering geological model • significant geotechnical and seismic volume • seismicity and rigorous Local Seismic Response (LSR) analysis • effects of seismic actions on geotechnical structures • design criteria for shallow and deep foundations in accordance with the Italian Technical Standards for Construction (NTC) and the Eurocodes • design criteria for retaining walls, diaphragm walls, reinforced earth structures and gabions • stability of natural and man-made slopes • excavations and cohesionless soils			
PRACTICALS OF APPLIED GEOTECHNICS FOR CONSTRUCTION		16	2
Practice-oriented module focusing on real-world applications and design exercises. Main topics include: • analysis and design of foundations and retaining structures using both manual methods and dedicated software • stability assessment of soil and rock slopes • design of remediation measures for landslide-prone areas • geotechnical design simulations with particular emphasis on technical standards and engineering guidelines.			
FINAL ASSESSMENT			1
Written examination designed to assess the knowledge acquired during the course			

Contact Information

TEACHING SECRETARIAT:

Training Activities Coordination Office - e-mail master.cgt@unisi.it - Tel. +39 055.9119449

ACCOMMODATION:

CGT Residence - e-mail collegiocgt@unisi.it - Tel. +39 055.9119457