



PROGRAMME

II Level Master in

Geotechnical Design (Progettazione Geotecnica)

1	Academic Year	2022-2023
2	Director	Prof. Eng. Salvatore Miliziano
3	Board	Prof. Eng. Salvatore Miliziano Prof. Eng. Augusto Desideri Prof. Eng. Sebastiano Rampello Prof. Eng. Giuseppe Lanzo Prof. Eng. Paolo de Girolamo Dott. Eng. Enzo Fontanella
5	Start date	01/02/2023
6	Programme	<p>This is a 1-year master. Lectures will be held from Monday to Friday according to the calendar below: The course is divided into three periods:</p> <p>First period (February - March 2023) Module 1: Geotechnical characterization of soils and Geotechnical characterization of rocks (8 ECTs) Module 2: Geotechnical modeling (6 ECTs). April 2023: Intermediate exam</p> <p>Second period (May-September 2023): Module 3: Design of foundations (6 ECTs) Module 4: Design of tunnels and underground works (12 ECTs) Module 5: Design of landslide slope stabilization (6 ECTs). October 2023: Intermediate exam</p> <p>Third period (November 2023 - January 2024): Internship, final exam and Master degree award ceremony</p>
8	Entry Requirements	A first cycle degree in one of the following: - Civil engineering 28/S; LM-23



		<ul style="list-style-type: none">- Land and environment engineering 38/S; LM-35- Building systems engineering LM-24- Building Engineering – Architecture LM-4 <p>The holders of a degree obtained in Italy according to the system prior to the university reform of the D.M. 509/99 can also access the Master and is equivalent to one of the aforementioned classes.</p> <p>For non-Italian candidates their degree must be the equivalent of a second cycle degree.</p>
9	Selection test (foreseen)	Prevista
10	Venue	Facoltà di Ingegneria Civile e Industriale Via Eudossiana, 18 - 00184
11	Internship	Three months (November 2023 to January 2024)
12	Attendance (In person from Monday to Friday)	in presenza infrasettimanale
13	External financing, exemptions, concessions, or quota reductions	<p>Si</p> <p>Tuition fees: € 4.000,00. For this edition of the master tuition fees are completely covered by our partner companies and societies for the first 15 successful applicants. From the letters of intent received, the partner companies of the Master have undertaken to fund a total number of 24 students, more than the maximum number of admitted participants.</p> <p>At the end of the selections, the Director can request an increase in the number of participants.</p> <p>Construction firms</p> <ul style="list-style-type: none">- Supporters and n° of scholarships- Webuild n. 8 (https://www.webuildgroup.com/it)- Ghella n. 3 (https://www.ghella.com/it)- Amplia Infrastruc n. 3 (https://www.pavimental.it/)- Pizzarotti n. 1 (https://www.pizzarotti.it/)- Trevi n. 1 (https://www.trevispa.com/it/)- Maccaferri n. 1 (https://www.maccaferri.com/it/)- Cmbcarpi n. 1 (https://www.cmbcarpi.com/)- BBT n. 1 (https://www.bbt-se.com/it/)



		Engineering firms and research bodies: <ul style="list-style-type: none">- Rock Soil n. 1 (https://www.rocksoil.com/)- SWS-Systra n. 1 (https://www.swsglobal.com/)- GDG n. 1 (https://www.geotechnicaldesigngroup.it/)- Tecne n. 1 (https://www.autostrade.it/it/tecne)- GEEG n. 1 (https://www.geeg.it/)
14	Contacts	Dipartimento di Ingegneria Strutturale e Geotecnica, via Eudossiana, 18 - Roma - area Geotecnica Telephone: +39 (0)6 44585947 +39 3351298229 e-mail: masterprogeo@uniroma1.it

Programme

The programme is drawn up considering that frontal teaching and other forms of guided study or interactive teaching must be provided for a duration of no less than 300 hours over 8 months. The master is taught in English.

Topic	Goals	Faculty	Scientific sector (SSD)	CFU	Tipologia	Exam
Module 1: Geotechnical characterization of soils and rocks (8 ECTs)	This module will help build on the knowledge previously acquired during the candidate's university studies and will develop the following topics: methods to carry out geotechnical tests on site and in the laboratory and how to interpret the results; criteria to select the most appropriate methods for the type of test to be carried out according to the specific application in question; geotechnical characterization. Successful candidates, assisted by a tutor, will perform tests in the laboratory and assist in their execution on-site as well develop exercises aimed at the geotechnical characterization of a site. Generally, the site used for the development of the geotechnical model and the relative geotechnical characterization of soils is that used to develop the individual projects.	Dr. Eng. Enzo Fontanella and assistant	ICAR-07	8	Lectures, Exercises, Seminars	Prevista Oral exam at the end of the first cycle in April 2023.

<p>Module 2: Geotechnical modeling (6 ECTs)</p>	<p>The module will consolidate and build on the knowledge accrued during the candidate's university career. The following topics will be developed: constitutive models that can be used in modeling; criteria to select the constitutive models and perform laboratory tests aimed at their calibration, strategies for solving specific finite problems, numerical methods, etc. Candidates will also tackle modeling of specific finite boundary value problems including the use of numerical analyses.</p>	<p>Prof. Eng. Salvatore Miliziano and assistant</p>	<p>ICAR-07</p>	<p>6</p>	<p>Lectures, Exercises, Seminars</p>	<p>Prevista Oral exam at the end of the first cycle in April 2023.</p>
<p>Module 3: Design of foundations (6 ECTs)</p>	<p>Essential aspects for a correct design are covered: technological and construction aspects, fields of use, limits of applicability, design criteria, verification and testing, regulatory aspects and design standards, technical specifications, costs, etc. Topics related to soil-structure interaction, the analysis of mixed foundations, compensated foundations are explored. Teaching takes place in parallel with the development of selected design topics under the supervision of the teaching faculty and tutors.</p>	<p>Prof. Eng. Sebastiano Rampello and Prof. Eng. Giuseppe Lanzo and assistant</p>	<p>ICAR-07</p>	<p>6</p>	<p>Lectures, Exercises, Seminars</p>	<p>Prevista Oral exam and discussion at the end of the second cycle in October 2023.</p>
<p>Module 4: Design of tunnels and underground works (12 ECTs)</p>	<p>Contents covered include technological and construction aspects, fields of use, limits of applicability, design criteria, verification and testing, regulatory aspects and design standards, technical specifications, costs, etc.</p>	<p>Prof. Eng. Salvatore Miliziano</p>	<p>ICAR-07</p>	<p>12</p>	<p>Lezioni, Esercizi, Seminari</p>	<p>Prevista Oral exam and discussion at the end of the second cycle</p>

	Topics related to soil-structure interaction, analysis of the effects induced on pre-existing structures, numerical modeling of excavation and consolidation processes, etc. are explored. Candidates will put into practice, under the supervision of faculty and tutors, content acquired during the by developing a project for a tunnel or underground work.					in October 2023.
Module 5: Design of landslide slope stabilization (6 ECTs)	Indispensable aspects for a correct design are covered, such as design criteria, verification and testing, regulatory aspects and design standards, technical specifications, costs, etc. of landslide stabilization works. Particular attention is paid to technological and construction aspects, the fields of use, the limits of applicability, interventions and works aimed at stabilizing and securing landslides. Modeling of the different systems that can be used for the improvement of stability conditions are also studied. Candidates will tackle a real case planning of stabilization interventions, under the supervision of faculty and tutors.	Prof. Eng. Augusto Desideri and assistant	ICAR-07	6	Lezioni, Esercitazioni, Seminari	Prevista Oral exam and discussion at the end of the second cycle in October 2023.
Internship	The internship will provide candidates with an initial work experience in firms, construction companies, design companies, largely selected from the supporters of the master and which for the current year promote topics related to the training goals of the master, putting into practice skills learnt in the classroom.		SSD not applicable	8		Internships are usually held in the offices, premises and construction sites of public bodies and private companies that support the Master.

	Normally, during the internship, students carry out design activities in the office, support site managers or site construction managers and control and verify design documents drawn up by third parties.			Assignations will take place by March 2023 and the venue where the internship is to be carried out by September 2023.
Other teaching activities	<p>Frontal teaching is integrated with 6 short courses on specific topics that last between 10 and 20 hours and which guarantee 1 or 2 ECTs, respectively.</p> <p>Furthermore, teaching is integrated with seminars on specific topics which usually last 3 hours and which do not give ECTs. The seminars are held by professional experts generally from the institutions, businesses and companies that support the Master in various capacities. The contents of the seminars are agreed with the faculty responsible for the various teaching modules and with the Master Director.</p> <p>Technical visits to construction sites of civil engineering works and educational trips will also be organized.</p>	SSD not applicable	10	<p>Short Courses</p> <ul style="list-style-type: none"> - Earthquake geotechnics - Geotechnical engineering of dams - Geotechnical maritime works - Rocks and soils improvement - Risk and Project Management - Geotechnical monitoring <p>Main Seminars</p> <ul style="list-style-type: none"> - Mechanized excavation of tunnels and choice of TBMs (SeliOverseas) - Design and construction of tunnels with traditional techniques (RockSoil) - Special techniques for the excavation of tunnels (cellular arch, pre-cut, etc.) and large section tunnels (RockSoil) - Technologies for the construction of piles and diaphragms (hydro-mill) (Trevi) - Soil improvement techniques (KELLER)

				<p>Major geotechnical case studies (held by professors from international university). Technical seminars held by experts identified among the companies supporting the master. Final lecture by a university professor as part of the closing ceremony of the master and the awarding of diplomas.</p>
Final exam	The thesis develops the topic of the internship and is comprised of a written and oral presentation.	SSD not applicable	4	The final exam consists in the discussion of the master thesis that develops the topic followed as interns. The final paper is presented and discussed before the Examination Board, appointed by the Department Council with at least three members.
TOTAL ECTS			60	