ANNEX 1.1
DEGREE PROGRAM DIDACTIC REGULATIONS
BUILDING ENGINEERING FOR SUSTAINABILITY
CLASS L-23

School: Polytechnic and Basic Sciences School
Department: Department of Civil, Environmental and Building Engineering (DICEA)
Didactic Regulations in force since the academic year 2025-2026

STUDY PLAN

KEY

Type of Educational Activity (TAF):

A = Basic
B = Characterising
C = Related or Supplementary
D = At the student's choice
E = Final examination and language knowledge
F = Further training activities

1st Year – 1st Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Mathematical Analysis I	Math 03/A (ex Mat/05)	single	9	72	Frontal lesson	In person	A	Basic scientific training	Mandatory
Geometry and Algebra	Math02/B (ex Mat/03)	single	6	48	Frontal lesson	In person	A	Basic scientific training	Mandatory
General Physics	PHYS01/A (ex Fis/01)	single	9	72	Frontal lesson	In person	A	Basic scientific training	Mandatory

1st Year –2nd Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Mathematical Analysis II	Math 03/A (ex Mat/05)	single	9	72	Frontal lesson	In person	A	Basic scientific training	Mandatory
Drawing Lab	CEAR-10/A (ex Icar/17	single	6	48	Frontal lesson	In person	A	Training in history and representation	Mandatory
Materials Technology and Applied Chemistry	IMAT-01/A (ex ING-IND/22)	single	6	48	Frontal lesson	In person	C	Related or Supplementar y	Mandatory
English		single	3	24	Frontal lesson	In person	E	Language skills	Mandatory

1st Year –1st/2nd Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
At the student's choice		single	9	72	Frontal lesson	In person	D		At the student's choice

2nd Year –1st Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Environmental and urban effects of climate change		2	2	20	Frontal lesson	In person	F	Further training activities	Mandatory
Rational Mechanics	MATH-04/A (ex Mat/07)	single	6	48	Frontal lesson	In person	A	Basic scientific training	Mandatory
Applied Thermodynamics and Heat Transfer	IIND-07/B (ex ING-IND/11)	single	9	72	Frontal lesson	In person	B	Building and Environment	Mandatory
Computer programming and artificial intelligence for building engineer	IINF-05/A (ex ING-INF/05)	single	9	72	Frontal lesson	In person	A	Basic scientific training	Mandatory

2nd Year – 2nd Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Structural Mechanics	CEAR-06/A (ex Icar/08)	single	12	96	Frontal lesson	In person	B	Building and Environment	Mandatory
Applied Geology	GEOS-03/B (ex Geo/05)	single	6	48	Frontal lesson	In person	A	Basic scientific training	Mandatory
Eco-Sustainable Architectural Design	CEAR-09/A (ex Icar/14)	single	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
Technical Architecture	CEAR-08/A (ex Icar/10)	single	12	96	Frontal lesson	In person	B	Architecture and Urban Planning	Mandatory

3rd Year – Annual with time window									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** ***(lectures, workshops, etc.)***	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Structural Engineering	CEAR-07/A (ex Icar/09)	Tecnica delle Costr. 1 I sem. Tecnica delle Costr. 2 II sem.	12	48 48	Frontal lesson	In person	B	Building safety and protection engineering	Mandatory

3rd Year – 1st Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** ***(lectures, workshops, etc.)***	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Essentials of BIM and digital survey lab	CEAR-10/A (ex Icar/17)	single	6	48	Frontal lesson	In person	B	Architecture and Urban Planning	Mandatory
Urban Hydraulics	CEAR-01/A (ex Icar/01)	single	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
Procurement Law		single	2	20	Frontal lesson	In person	F	Further training activities	Mandatory
Technical writing		single	2	20	Frontal lesson	In person	F	Further training activities	Mandatory

3rd Year – 2nd Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** ***(lectures, workshops, etc.)***	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
Fundamentals of Urban Planning	CEAR-12/A (ex Icar/20)	single	9	72	Frontal lesson	In person	B	Architecture and Urban Planning	Mandatory
Sustainable building production technology	CEAR-08/B (ex Icar/11)	single	9	72	Frontal lesson	In person	B	Architecture and Urban Planning	Mandatory
Geotechnical Laboratory		single	3	24	Frontal lesson	In person	F	Further training activities	Mandatory
Final examen			3			In person			Mandatory

3rd Year – 1st/2nd Semester									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** ***(lectures, workshops, etc.)***	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory/ optional**
At the student's choice			9	72	Frontal lesson	In person	D		

Recommended choices for automatic approval of the Study Plan
(1ST AND 3RD YEAR)

Denominazione Insegnamento	SSD	Modulo	CFU	Ore	Tipologia Attività (lezione frontale, laboratorio ecc.)	Modalità (in presenza, a distanza)	TAF	Ambito disciplinare	Semester
Geographical Information System	CEAR-12/A (ex Icar/20)	single	9	72	Lezione frontale	In person	D	At the student's choice	1st
Urban and architectural History	CEAR-11/A (ex Icar/18)	single	9	72	Lezione frontale	In person	D	At the student's choice	1st
Elements of law for the engineer	GIUR-02/A (ex Ius/01)	single	9	72	Lezione frontale	In person	D	At the student's choice	1st
Roads and Bim for infrastructures	CEAR-03/A (ex Icar/04)	single	9	72	Lezione frontale	In person	D	At the student's choice	1st
Valuation and professional practice	CEAR-03/C (ex Icar/22)	single	9	72	Lezione frontale	In person	D	At the student's choice	2nd
Construction site organization	CEAR-08/B 8ex Icar/11)	single	9	72	Lezione frontale	In person	D	At the student's choice	2nd
Principles of Economics	IEGE-01/A (ex ING-IND/35)	single	9	72	Lezione frontale	In person	D	At the student's choice	2nd
Environmental Health Engineering	CEAR-02/A (ex Icar/03)	single	9	72	Lezione frontale	In person	D	At the student's choice	1st

List of propaedeuticities

1st YEAR	
Title Course	**Propaedeuticities**
Mathematical Analysis I	**Prerequisites:** None
Geometry and Algebra	**Prerequisites:** None
General Physic	**Prerequisites:** None
Mathematical Analysis II	**Prerequisites:** Mathematical Analysis I
Drawing Lab	**Prerequisites:** None
Materials Technology and Applied Chemistry	**Prerequisites:** None

2nd YEAR	
Title Course	**Propaedeuticities**
Rational Mechanic	**Prerequisites** Mathematical Analysis I Geometry and Algebra
Applied Thermodinamics and Heat Transfer	**Prerequisites** Mathematical Analysis I General Physic
Structural Mechanics	**Prerequisites** Mathematical Analysis I; Rational Mechanic
Eco-Sustainable Architectural Design	**Propedeuticità in ingresso:** Technical Architecture; Drawing Lab
Technical Architecture	**Prerequisites:** Drawing Lab; Materials Technology and Applied Chemistry

3rd YEAR	
Title Course	**Propaedeuticities**
Structural Engineering	**Prerequisites:** Structural Mechanics Drawing Lab
Essential of BIM and Digital Survey Lab	**Prerequisites:** Technical Architecture
Urban Hydraulics	**Prerequisites:** Mathematical Analysis II, General Physic
Sistainable Building Production Technology	**Prerequisites:** Technical Architecture
Geotechnical Lab	**Prerequisites:** Structural Mechanics

ANNEX 2.2

DEGREE PROGRAM DIDACTIC REGULATIONS

DEGREE PROGRAMME IN BUILDING ENGINEERING FOR SUSTAINABILITY [LAUREA IN INGEGNERIA EDILE PER LA SOSTENIBILITÀ]

CLASS L-23

School: Polytechnic and Basic Sciences School

Department: Department of Civil, Environmental and Building Engineering (DICEA)

Didactic Regulations in force since the academic year 2025-2026

TRAINING ACTIVITIES: TEACHING SHEETS

Course: Mathematical Analysis I	**Teaching Language:** Italian	
SSD (Subject Areas): MATH-03/A		**CREDITS:** 9
Course year: I	**Type of Educational Activity:** A	
Teaching Methods: in-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Elements of set theory. Real functions. Elements of topology. Limits of sequences and functions. Continuous functions. Differential calculus. Integral calculus. Series. Complex numbers.		
Objectives: The course aims to provide students with the basic principles of Mathematical Analysis while concentrating on differential and integral calculus for functions of one real variable. It highlights the significance of using rigorous logical reasoning in mathematics, and helps learners improve their ability to abstract, and develop specific skills that can be applied to real-world situations. A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.		
Propaedeuticities: None **Is a propaedeuticity for:** Analisi Matematica II, Meccanica Razionale, Fisica Tecnica.		
Types of examinations and other tests: The examination consists of a written and oral part. The written test comprises exercises and may also include questions related to the theoretical aspects of the course. The oral part focuses on the results proven in the lectures and the discussion of the written test.		

Course: Geometry and Algebra	**Teaching Language:** Italian	
SSD (Subject Areas): Math-02/B (formerly Mat 03)		**CREDITS:** 6
Course year: I	**Type of Educational Activity:** A	
Teaching Methods: In-person		
Contents: Understanding of the basic methodological tools needed to analyse problems related to the theory of vector spaces. These tools will enable students to understand the connections between apparently very different mathematical entities such as n-tuples, matrices and polynomials.		
Objectives: The student will acquire the basic tools of linear algebra (matrices, determinants, systems of equations) and elementary geometry (vectors, lines and planes). The goal is, on the one hand, to accustom the student to tackling formal problems using appropriate tools and correct language, and on the other hand to solve specific problems of mainly geometric type, with the classical tools of linear algebra. A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.		
Propaedeuticities: None **Is a propaedeuticity for:** Rational Mechanics		
Types of examinations and other tests: Written test followed by an oral test.		

Course: General Physics	**Teaching Language:** Italian
SSD (Subject Areas): FIS/01	**CREDITS:** 9
Course year: I	**Type of Educational Activity:** A
Teaching Methods: In-person	

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

It encompasses the skills needed to carry out experimental research, particularly those for investigating physical processes and principles of operation of instrumentation for controlling and detecting phenomena, metrology, and the processing of experimental data. Skills in this area also cover research in the field of thermodynamics.

Objectives:

The aim of the teaching is to introduce the basic concepts of Classical Mechanics, Fluids, and Thermodynamics, focusing on phenomenological and methodological aspects. The teaching aims to provide students with a conscious operational ability in solving simple exercises, with particular attention to the preparatory aspects of the Civil, Building and Environmental Engineering class.
A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities: None

Is a propaedeuticity for: Technical Physics, Urban Hydraulic

Types of examinations and other tests:

The final assessment consists of the results of two written exams. One of these exams is designed to assess the ability to solve numerical problems in a methodologically correct and rigorous manner, contributing 60% to the final grade. The other exam, based on open-ended questions, aims to evaluate the ability to describe the physical principles underlying key phenomena in classical mechanics, fluid mechanics, and thermodynamics, contributing 40% to the final grade. Additionally, a mid-term exam is scheduled halfway through the course, which is an integral part of the numerical problem-solving exam. The result of the written examination containing the numerical exercises is binding for access to the written examination with open-ended questions.

Course: Mathematical Analysis II	**Teaching Language:** Italian	
SSD (Subject Areas): MAT/05		**CREDITS:** 9
Course year: I	**Type of Educational Activity:** A	
Teaching Methods: In person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Differential and integral calculus for real functions of many real variables, ordinary differential equations.		
Objectives: Provide theoretical concepts of calculus in many variables, and conscious operational skills in view of applications. A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.		
Propaedeuticities: Analisi Matematica I **Is a propaedeuticity for:** Urban Hydraulic, Structural Mechanics		
Types of examinations and other tests: Written and oral test		

Course: Drawing Lab	**Teaching Language:** Italian	
SSD (Subject Areas): CEAR-10/A		**CREDITS:** 6
Course year: I	**Type of Educational Activity:** A	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Analysis, description and construction of drawings, images and models, as the outcomes of scalar representations of existing or designed realities, by means of the graphic language and its scientific fundamentals, in both analogue and digital environments.		
Objectives: The aim of the course is to provide students with knowledge in the field of analogue and digital representation and modelling for engineering projects. In particular, the course aims to provide notions that allow the transition from the geometric model to the construction and understanding of the completed graphic model, as a joint expression of geometric and graphic- symbolic features. The goal is also achieved through an in-depth study of the basic methodological and operational tools of Descriptive Geometry and its main methods of representation that are fundamental in the training of the engineer and in the exercise of his/her profession.		
Propaedeuticities: None **Is a propaedeuticity for:** Structural Engineering, Technical Architecture, Eco-Sustainable Architectural Design		
Types of examinations and other tests: Discussion of the graphics and related oral test.		

Course: Materials Technology and Applied Chemistry	**Teaching Language:** Italian
SSD (Subject Areas): IMAT-01/A	**CREDITS:** 6
Course year: 1	**Type of Educational Activity: C**

Teaching Methods:

in-person lessons

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Introduction to Materials Science and Technology: Classification of materials and their main characteristics. Atomic structure and microstructure. Atomic theory and chemical bonds. Ideal solids and defects in solids. Mechanical behavior of materials and main characterization tests (tensile, hardness, resilience, fatigue). Metallic materials for building: Composition and production of ferrous metal materials. Classification and designation of steels. Steel for reinforced concrete. Prestressing steels. Stainless steels. Main characteristics and applications of non-ferrous metallic materials. Binding materials: Definition and classification of binding materials. Gypsum and lime: production, characteristics and applications. Definition and history of Portland Cement. Portland cement production and its main constituents. Characteristics of Portland cement: mechanical resistance, porosity, heat of hydration. Blending cements: characteristics and fields of applications. Concrete: Definition and main constituents: water, aggregates and additives. Special concretes (selfcompacting, light, high-performance). Main degradation phenomena of reinforced concrete and related prevention techniques. Traditional
ceramic materials.

Objectives:

The course aims to give to students the basic tools for understanding the relationships between structure, microstructure and properties of materials. Through these tools, students will then be able to acquire knowledge relating to production technologies, applications and the degradation of building materials.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

Technical Architecture

Types of examinations and other tests:

Written and/or oral exam.

[the Didactic Regulations must indicate "the type ... of examinations and other tests" (Art. 12, c. 2, letter d) of Ministerial Decree 270/2004): indicate whether examination (written, oral or practical test or a combination of them)]

Course: Rational Mechanics	**Teaching Language:** Italian
SSD (Subject Areas): MATH-04/A	**CREDITS:** 6
Course year: II	**Type of Educational Activity:** A
Teaching Methods: in-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The field includes skills and research areas related to the study, from both a theoretical and an applied perspective, of Mathematical Physics, Rational Mechanics, and more generally of Dynamical Systems, using both analytical and geometric techniques. It also studies relativistic theories in their physical-mathematical aspects. The teaching skills in this field also concern all the institutional aspects of basic mathematics.	
Objectives: The aim of the course is to introduce the fundamental principles of classical mechanics and their applications in a physical-mathematical key to model, analyse and solve problems related to engineering. The course aims at providing students with basic notions of vector calculus, kinematics, geometry of masses and statics of systems of material points, rigid bodies, and composite systems. A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.	
Propaedeuticities: Geometry and Algebra, Analysis I **Is a propaedeuticity for:** Structural Mechanics	
Types of examinations and other tests: Written and oral tests	

Course:	**Teaching Language:**
Applied Thermodynamics and Heat Transfer	ITALIAN

SSD (SUBJECT AREAS):	**CREDITS:**
IIND-07/B	9

Course year: II	**Type of Educational Activity:** B

Teaching Methods:

In person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Skills relating to thermodynamic, thermokinetic analysis of energy processes and their environmental impact, principles, methodologies and technologies for sustainable energy conversion from renewable and conventional energy sources, thermophysics of buildings, technical plants for civil applications, energy diagnosis and optimization of the building-plant-territory system, air quality, passive systems and plant technologies for air conditioning and environmental well-being. It also studies thermo-fluid-dynamic phenomena, refrigeration technologies, thermotechnics, heat exchange systems and components and thermophysical properties of materials.

Objectives:

The module provides the fundamental knowledge of Applied Thermodynamics and Heat Transfer necessary to deal with engineering problems relative to energy conversion, heat exchanges and work in industrial and civil contexts as well as applications relating to air conditioning, highlighting the methodological issues and applications. At the end of the learning phase, the student will be able to carry out the analysis of systems and processes in which there are energy transformations and/or energy transfers.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

Mathematical analysis I, Physics

Is a propaedeuticity for:

None

Types of examinations and other tests:

Written and oral test.

The exam consists of an interview aimed at assessing the knowledge of the theoretical principles and analysis and synthesis methodologies presented during the lectures. The assessment will equally consider the results achieved by the student in a written test consisting of solving two numerical exercises, one in thermodynamics and one in heat transfer.

Course: Computer programming and artificial intelligence for the building engineer	**Teaching Language:** Italian
SSD (Subject Areas): IINF-05/A	**CREDITS:** 9
Course year:III	**Type of Educational Activity:** D

Teaching Methods:

in-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The sector is characterized by the set of scientific fields and scientific-disciplinary skills related to the design and implementation of information processing systems, as well as their management and use in various application contexts with methodologies and techniques specific to engineering. This area includes the theoretical foundations, methods, and technologies aimed at producing technically sound designs. These foundations, methods, and technologies particularly include aspects related to software development and systems for Artificial Intelligence, as well as those related to programming languages and software engineering

Objectives:

The course aims to provide students with the basic concepts of Python programming, the fundamental concepts of data science, and an in-depth introduction to artificial intelligence, with a particular focus on applications in civil engineering for sustainability. The course seeks to develop practical skills in programming and data analysis applied to real-world issues in the field of sustainable construction.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

Oral test

Course: Structural Mechanics	**Teaching Language:** Italian
SSD (Subject Areas): CEA 06/A	**CREDITS:**12
Course year: II	**Type of Educational Activity:** B
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Displacements and deformations of continuous media. Analysis of the stress state Relationships between the strain and stress components Elastic equilibrium equations The deformation energy The total potential energy in the research and study of equilibrium configurations Resistance criteria The beam problem. Axial Force, Bending Moment, Torsion Shear. The force method - The principle of virtual work - Compatibility equations Eulerian stability Applications and exercises	
Objectives: The fundamental theme of the Construction Science course is Continuum Mechanics, treated on a technical level with reference to elastic materials, to the point of providing all the elements indispensable for the critical vision of the behavior of generically one-dimensional structures (beams, arches, frames, trusses , etc.). A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.	
Propaedeuticities: Mathematical Analysis II, Rational Mechanics **Is a propaedeuticity for:** Structural Engineering, Fundamentals of Geotechnics	
Types of examinations and other tests: Oral tests	

Course: APPLIED GEOLOGY	**Teaching Language:** Italian
SSD (Subject Areas): GEOS-03/B	**CREDITS:** 6
Course year:II	**Type of Educational Activity: A**

Teaching Methods:

in person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Soil protection, with particular attention to landslides. Hydrogeology, concerning research of aquifers, the study of groundwater flowpaths, the assessment of vulnerability of aquifers, their management and protection from pollution. Technical characterization of rocks and soils. Finding and study of natural building materials. Geological-technical survey, geological exploration of the subsoil, thematic cartography and evaluation of environmental impact and hydrogeological risk. Study of the geological-technical model for geotechnical and civil engineering purposes

Objectives:

The course aims to convey to the student the fundamental concepts of geology, including geological processes, stratigraphy, and plate tectonics. It involves learning geological investigation methodologies, including field mapping and sampling techniques, and developing skills in interpreting geological data to define subsurface models. Furthermore, it aims to develop the ability to apply such knowledge to the research and management of natural resources (groundwater and construction materials) and risk assessment (landslides, floods, earthquakes) to properly protect the natural environment and design civil engineering works in balance with the territory, even within the context of climate change.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities: None

Is a propaedeuticity for: None

Types of examinations and other tests: Written/practical exam and oral interview

Course: Eco-Sustainable Architectural Design	**Teaching Language:** Italian	
SSD (Subject Areas): CEAR-09/A Architectural and Urban Design		**CREDITS:** 6
Course year: II	**Type of Educational Activity:** C	
Teaching Methods: in-person		

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

In the disciplinary scientific group [converges] Architectural and Urban Composition [...] with the scientific contents of the architectural project [...] in their theoretical-critical, methodological, ideational, applicative and experimental articulation. The group recognises the contemporary dimension of architectural, urban and landscape contexts as a material and immaterial, complex and stratified reality. The group [...] identifies in the project the inter-scalar and inter-disciplinary synthesis between its own knowledge and the humanistic and technical-scientific knowledge that contribute to the knowledge, interpretation and modification of the physical and social environment. The group assumes the architectural project as an intellectual and scientific product and process, an expression of the action of formal, technical and spatial experimentation, and as a peculiar tool for the training of designers [...].

The [...] training activity concerns the theoretical, critical and technical dimension of the design of architectural and urban spaces, buildings, places, landscapes and of the form of their evolution in the anthropic and natural components; it identifies the ways of intervention for the transformation of contexts and heritage; it defines the quality of the architectural project on new and existing buildings pursuing technical, formal and relational appropriateness in the tension towards beauty, experimenting with innovative principles of sustainability and compliance, in relation to the environment, economy and society.

Architectural and Urban Composition deals with: the form and space of the building and the city in relation to the needs of man, society and the environment; compositional-designing aspects related to expressive codes and techniques of ex-novo intervention and transformation of the historical and contemporary built heritage; it defines the formal, constructive and settlement characteristics and logics of the architectural figure, in full and empty spaces, in relation to the urban and natural context, to infrastructures and to the territory.

Architectural and Urban Design is an inter-scalar discipline that works on the ways of constructing the form of architecture, the city and the territory, in relation to the contemporary needs of man, society and the environment; it investigates expressive codes and intervention techniques, relating to other disciplines, from the human sciences to the technical-scientific ones.

The scientific-disciplinary contents are divided into: methodological aspects concerning the theory of design; analytical-instrumental aspects relating to the study of the distributive, typological, morphological, spatial and linguistic characteristics of architecture and the city; compositional-designing aspects, concerning the formal and settlement logic of the elements and parts in relation to the architectural figure and places, the urban and natural context, the infrastructures and the territory. The contents refer to the design of ex-novo interventions and transformation of historical and contemporary heritage, in their various constructive and technical aspects. The didactics exercises the project as experimentation and verification of the theoretical-methodological reflection on architecture and the city.

Objectives:

The course in Eco-sustainable Architectural Design is aimed at students of the Degree Course in Building Engineering and aims to provide the theoretical and methodological foundations and the essential compositional tools to correctly set up a simple architectural project and to develop the ability to correctly relate typological choices to the distribution programme and to the constructive characteristics of a building of low complexity, with particular attention to the themes of environmental sustainability, actions to combat climate change and mitigate its effects, and the circular economy.

The training objectives of the course are identified in the acquisition and ability to apply basic knowledge related to the theory, techniques and tools for the design of living spaces characterised by an elementary level of complexity. Particular attention is paid to the congruence between building typology, distribution programme and structural layout, sustainable design.

The course aims at potential transversal skills, such as autonomy of judgement, the ability to communicate and fully illustrate the project and the concepts that inform it, the awareness of one's own role as a competent professional in simple contexts, the ability to frame problems of low complexity and to address them with codified and consolidated approaches and tools.

Propaedeuticities:

Drawing Laboratory, Architectural Engineering

Is a propaedeuticity for:

None

Types of examinations and other tests:

The final examination is the presentation and critical discussion of the project exercises developed during the course, with particular reference to the design choices, the methodologies followed, and the congruence of the various technical and formal aspects.

Course:	**Teaching Language:**
Technical Architecture	Italian

SSD (Subject Areas):	**CREDITS:**
CEAR-08/A	12

Course year: II	**Type of Educational Activity:** B

Teaching Methods:

in presence

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The scientific-disciplinary contents of the teaching of Technical Architecture have as their object the built environment in its various articulations and are aimed at providing tools, methods, models, also digital, for knowledge and design, from a critical, systemic, functional, typological, technical and constructive point of view. They imply the study of issues related to the performance and impact of existing heritage and new buildings, of technological solutions at the various scales of the project, of complex systems for the identification of intervention scenarios, of processes, tools and models for the resilience and sustainability of the built environment. In particular, the contents concern: architectural techniques and building systems, also in their historical development; building construction technologies; the design, experimentation and innovation of materials, components, systems; the integral design of buildings; the analysis of performance and economic-environmental impacts of constructions; the analysis and quality control of design and works; the management of the design process of buildings.

Objectives:

The course pursues the educational objective of providing students with the basic concepts, tools and methods, both theoretical and applicative, necessary both for understanding the logic at the base of the design process and for analysing the building system, both traditional and modern, understood as a complex technological system. The contents are articulated in joint directions that aim to educating in the study of buildings, through the critical analysis of emblematic case studies of historical and modern architecture; highlighting the relationship between architecture and technology, through the decomposition of the building organism into the various classes of technological units, the material, formal and functional analysis; providing tools for the evaluation of critical approaches to demanding and performance design; introducing innovative strategies and processes for buildings, through the study of the historical evolution of the concepts of sustainability, the analysis of new generation materials and techniques and international protocols for the pursuit of global missions of sustainable development.

To this end, the course programme is structured on main themes relating to: performance and sustainable design; application of the principles of circular economy to the construction field; decomposition of the building system; construction systems; construction materials; technical elements of the load-bearing structure; technical elements of the building envelope; analysis of design levels in public procurement and the role of the figures in the construction process during the design and execution phases. The course is structured in face-to-face lectures, exercises and in-depth seminars conducted by external researchers and professionals who are experts in the field. Technological insights are developed in laboratory activities.

Propaedeuticities:

Drawing Lab, Materials Technology and Applied Chemistry

Is a propaedeuticity for:

Eco-Sustainable Architectural Design, Digital Surveying and Representation, Building Production Technology, Site Organisation

Types of examinations and other tests:

The examination consists of the evaluation of the project produced during the course and a subsequent oral and practical examination. The evaluation of the project is a prerequisite for admission to the oral examination. This test, carried out on the last day of the course through the presentation and collective discussion of the projects, accounts for 20% of the final assessment. Passing the assessment of the paper gives access to the oral and practical test covering all the topics covered in the course. The oral test is conducted individually, includes a practical part consisting of the reproduction of construction details, and accounts for 80% of the final grade.

Teaching: Structural Engineering	**Teaching language:** Italian	
SSD: CEAR 07/A		**CFU:**12 6 – Module Strucural engineering I 6 – Module Structural engineering II
Course year: III	**Type of Training Activity:** B	
Modalities: in presence		

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Structural Engineering – Module I:
Fundamentals of statics of determinate and indeterminate beams,
Fundamentals of structural reliability and safety,
Technical theory of reinforced concrete (R.C.) structures,
Technical theory of the pre-stressed reinforced concrete structures,
Structural design of a R.C.slab.

Structural Engineering – Module II:
Statics of frames structures ,
Matrix analysis of structures,
Fundamentals of design and checks of steel structures,
Winkler foundation beams,
Structural design elements.

Objectives:

Structural Engineering – Module I:

The training course aims to provide knowledge and basic methodological tools necessary to the students for the structural concept for the design of R.C. and pre-stressed R.C. elements.

Structural Engineering – Module II:
The training course aims to provide knowledge and basic methodological tools necessary to the students for the structural concept for the design of steel elements.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

Drawing Lab, Structural Mechanics

Is a propaedeuticity for:
None

Types of examinations and other tests:

Structural Engineering – Module I:
The final exam consists of a written and an oral test, during which the design projects developed in the II semester will also be discussed.

Structural Engineering – Module II:
The final exam consists of a written and an oral test, during which the design projects developed in the II semester will also be discussed.

Teaching: Essentials of BIM and digital survey lab	**Teaching Language:** Italian
SSD: CEAR-10/A	**CFU:** 6
Course year: III	**Type of Training Activity:** B
Modalities: In presence	
Content extracted from the SSD declaratory consistent with the training objectives of the course: The survey as a critical tool for the metric-formal and technological-constructive understanding of architecture and for the morphological analysis of the territory. Eidotypes, details. Hints of measurement theory and error theory. Tools, techniques and methods of indirect topographic, laser scanning and photogrammetric survey (terrestrial and aerial with the use of drones). Elements of Building Information Modeling (BIM) for integrated and parametric design, for existing and new building heritage.	
Learning objectives: To provide knowledge on the graphic and infographic language towards parametric BIM modelling and expertise on methods and tools for surveying architecture and the territory and on fundamental hardware and software for processing, visualising, presenting and communicating the state of affairs and the project.	
Input propaedeuticities: Technical Architecture **Outgoing propaedeuticities:** None	
Type of examinations and other profit-checking tests: Discussion on project activity and related evaluation of knowledge through oral interview	

Course: Urban Hydraulics Lab.	**Teaching Language:** Italian
SSD (Subject Areas): CEAR-01/A	**CREDITS:** 6
Course year: III	**Type of Educational Activity:** C

Teaching Methods:

In person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Continuum mechanics: properties of fluids; internal stresses.
Hydrostatics: indefinite and global equations of hydrostatic equilibrium; Archimedes' principle; Stevino's law; thrusts on flat and curved walls.
Fluid kinematics: conditions and regimes of fluid motion; Eulerian and Lagrangian approach.
Hydrodynamics: indefinite and global equations of continuity; Bernoulli's theorem; indefinite and global equations of hydrodynamic equilibrium; hydrodynamic thrust.
Orifice flow: outflow from weir and overflow openings; outflow reaction.

Uniform motion in pressure flows: laminar and turbulent flow flows; notes on turbulence; formulas for resistance to motion; complex systems of long pipes; pipes in series and in parallel; pipes with concentrated inlet and outlet of flow; pipes with outlet of flow along the path; load line and piezometric line; short pipes; lifting and power generation plants.
Uniform motion in free surface currents: current profile and flow scales.

Objectives:

The course aims to provide the student with basic knowledge of hydrostatics and hydrodynamics of pressure flows and free-surface flows in uniform motion. At the end of the training course, the student will be able to solve simple problems of applied hydraulics in the field of hydrostatics (thrusts exerted by liquids on the containment walls of containers), pressure flows (design and verification of the operation of pipelines), and free-surface flows (design and verification of an artificial channel in uniform motion, calculation of the flow scale).

Propaedeuticities:

Mathematical Analysis II, General Physics

Is a propaedeuticity for:

None

Types of examinations and other tests:

Oral

Course:	**Teaching Language:**
Fundamentals of Urban Planning	Italian
SSD (Subject Areas):	**CREDITS:**
CEAR-12/A	9
Course year:	**Type of Educational Activity: B**

Teaching Methods:

In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The course addresses basic themes related to the governance of transformations at the urban and territorial scale and is structured with a series of lectures, external testimonials, laboratory activities, and exercises that include simulations, in-class work, or discussions with direct student participation concerning issues and case study analyses. The course aims to provide students with the foundational knowledge of the discipline of Urban Planning, focusing on the evolutionary phases of urban settlement, the adoption of interpretative paradigms of the city, and an in-depth study of the main tools for governing territorial transformations.

A training-exercise module will cover Geographic Information Systems (GIS), representing innovative environments for the development of territorial knowledge essential for defining cognitive frameworks, management, and planning of the city and territory. The course encompasses a series of thematic contents listed below:

- The urban phenomenon and urban planning discipline: the city and territory as dynamically complex systems.
- Reading the city: General Systems Theory and the complexity paradigm.
- City interpretation: characteristics and properties of complex systems - urban subsystems.
- Governance of urban and territorial transformations: regulations. Normative tools for controlling the evolution of the urban system.
- Urban planning technique for governing urban and territorial transformations: theories, methods, and tools of governance at different territorial scales.
- Large-area planning.
- Municipal planning: structure and contents, plan documents, and Campania regional legislation.
- Techniques for drafting the Municipal Plan. Urban planning endowments and standards.
- The two levels of municipal planning: structural plan and operational plan.
- Implementative urban planning: direct and indirect urban planning initiatives; authorization titles.
- Innovative tools for urban planning.

In addition to theoretical lectures, the course includes a series of exercises aimed at drafting a plan in a GIS environment.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Objectives:

The main objective of the course is to present, in a technical way, the principles and foundations of the discipline to contribute to the development of professionals capable of supporting all activities related to the governance of transformations at the urban and territorial scale. This involves acquiring methods, techniques, and decision-making tools, with a specific focus on the urban scale.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

The examination includes an oral test to assess the assimilation of educational content, involving the presentation of the year's project.

Course: BUILDING PRODUCTION TECHNOLOGY	**Teaching Language:** Italian
SSD (Subject Areas): CEAR 08/B	**CREDITS:** 9
Course year: III	**Type of Educational Activity:** B

Teaching Methods:

In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Knowledge of the disciplines of Building Production in general allows us to train graduates who have the ability to fully understand the executive, management and organization processes of the same, but also the ability to correlate them with the design documents, orienting - where necessary - the solutions where requested and/or necessary.

The course constitutes an adequate pre-requisite for some sectors of specialization that have always characterized building sector (construction management, public works) or more recently (safety of construction sites, maintenance)

Objectives:

The course promotes the learning of the basic concepts of building production and the aspects that underline the interface with the project, considered in all its different aspects, thus contributing to multidisciplinary training as a tool for controlling project complexity.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

Technical Architecture

Is a propaedeuticity for:

None

Types of examinations and other tests:

ORAL TEST WITH DISCUSSION OF THE YEAR'S PAPER

Course: Territorial Information Systems	**Teaching Language:** Italian	
SSD (Subject Areas): CEAR-12/A		**CREDITS:** 9
Course year: I/III	**Type of Educational Activity:** D	

Teaching Methods:

in-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The scientific-disciplinary contents involve the analysis and evaluation of urban and territorial systems, examined in their environmental context and within the framework of the natural and human-induced risks they are subject to, as well as the socioeconomic variables by which they are influenced. The techniques for planning tools at all scales.

Objectives:

The main objective of the course is to provide students with not only a deeper theoretical and methodological understanding of the knowledge and complexity of urban and territorial systems, but also specific technical skills in the design and implementation of geographic information systems (GIS) to study spatial phenomena and support decision-making processes in managing urban and territorial transformations.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

The exam includes an oral test and the discussion of a project work.

Course: History of architecture and the city	**Teaching Language:** Italian
SSD (Subject Areas): CEAR-12/A	**CREDITS:** 9
Course year: I/III	**Type of Educational Activity:** D
Teaching Methods: in-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: outlines of the history of the city from the appearance of the first 'city system' to contemporary megacities through the analysis of architecture and socio-political structures; particular attention to those moments in the history of the city and architecture that allow us to delve deeper into the transformations that have led to today's urban stratifications.	
Objectives: acquisition of a method for understanding the city in relation to its architecture, historical, social and political contexts from ancient times to the contemporary. knowledge of the main historical-urban-architectural models. A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: final interview with assessment of the knowledge acquired during the course.	

Course: Elements of law for engineers	**Teaching Language:** Italian
SSD (Subject Areas): GIUR-01/A	**CREDITS:** 6
Course year: III	**Type of Educational Activity: D**

Teaching Methods:

in person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Principles of private law, obligations, contract

Objectives:

The course aims to provide the student with basic knowledge of the legal categories and institutes of private law; with a predominantly practical focus on the skills required for the engineering profession.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

oral examination

Course: Highways and Infrastructure-BIM	**Teaching Language:** Italian	
SSD (Subject Areas): CEAR-03/A		**CREDITS:** 9
Course year: III	**Type of Educational Activity:** B	
Teaching Methods: in-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: - *General matters*: planning, design, construction and operation of a highway; design levels; rules and regulations; classes of highways; - *Highway design:* driver-vehicle- highway interaction; sight distances; geometric-functional design criteria; horizontal aligment; vertical alignment; horizontal-vertical coordination; cross section; - *Intersections:* principles; classification and selection criteria; at-grade intersections (three and four legs, roundabouts); graded interchanges; - *Highway materials*: land use classification; materials and their mechanical behavior; - *Highway pavements*: Types and their design models; - *Building Information Modeling (BIM)*: regulations; user guide of dedicated calculation codes for the development of an ongoing design project exercise.		
Objectives: The teaching and training activities concerns the theories and techniques aimed at the conception, design and construction of highways. The main references of the problem addressed are functionality, driver behavior, the impact on the environment and the territory and the economic effectiveness of the treatments. Aspects related to materials, construction systems of highway pavements and specific electronic tools such as infrastructures modeling (Building Information Modeling - BIM) are also studied. Students will acquire an additional certification of skills in the use of specific electronic tools for the rationalization of design activities and related checks. The certification, within those that can be acquired later through extramoenia internships and classes provided in the Master's degree programs, will guarantee students the certification of the requirements for obtaining the BIM SPECIALIST-UNI 11337-7: 2018 qualification.		
Propaedeuticities: None **Is a propaedeuticity for:** None		
Types of examinations and other tests: Design project, written test followed by an oral test.		

Course: Real Estate Appraisals and Professional Practice	**Teaching Language:** Italian	
SSD (Subject Areas): CEAR-03/C		**CREDITS:** 9
Course year: 3	**Type of Educational Activity:** B	

Teaching Methods:

In person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The scientific-disciplinary contents concern the theoretical assumptions and methodologies for appraisal of costs, prices, rates of return on properties, investments, plants, companies, as well as for determinations of compensation, rights, tariffs, with the aim of formulating value judgments and of economic convenience in the civil, territorial and industrial fields.

Objectives:

The course aims to provide students with the theoretical knowledge and operational methodologies inherent to urban valuations, with particular reference to criteria and procedures for estimating real estate (areas and buildings), as well as the estimative problems inherent to real rights, easements legal, to expropriations for public utility and public procurement.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

Examination method: final oral exam only with award of a mark out of thirty.

Course: Construction management	**Teaching Language:** Italian
SSD (Subject Areas): CEAR-08/B – Production and management of the built environment	**CREDITS:** 9
Course year:	**Type of Educational Activity: D**
Teaching Methods: in-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Study of building production processes and their management and control techniques. In particular, he is interested in methods and technologies for building production, construction site planning and management, workplace safety, the quality of production processes, cost and time control techniques, and innovation in production processes. and organizational.	
Objectives: - Knowledge of technologies for building production - Knowledge and application of tools for planning and managing the construction site - Safety and prevention systems on the construction site - Quality management in construction - Economic and temporal control of construction processes A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: Oral test	

Course: Sanitary and Environmental Engineering	**Teaching Language:** Italian

SSD (Subject Areas): CEAR_02_A	**CREDITS:** 9

Course year: III	**Type of Educational Activity:** D

Teaching Methods:

In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The contents of the course are related to engineering aspects dealing with the protection of the equilibria of natural ecosystems and with the prevention of pollution phenomena. The contents apply to the design and the evaluation of impacts of projects and plants for solid waste treatment and disposal as well as for wastewater treatment and drinking water production.

Objectives:

The course aims to describe to the students: the criteria to be used for the implementation of strategies for environmental protection and reclamation, to be correlated with the planning and development actions for the territory; the main features of environmental systems, sources and effects of pollution, as well as prevention actions; the main parameters for the characterization of supply water and wastewater and of solid waste; the main principles and reactor configurations of the technical processes used for supply water and wastewater treatment and for solid waste treatment and disposal.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

Oral exam

ANNEX 2.2

DEGREE PROGRAM DIDACTIC REGULATIONS

DEGREE PROGRAMME IN BUILDING ENGINEERING FOR SUSTAINABILITY [LAUREA IN INGEGNERIA EDILE PER LA SOSTENIBILITÀ]

CLASS L-23

School: Polytechnic and Basic Sciences School

Department: Department of Civil, Environmental and Building Engineering (DICEA)

Didactic Regulations in force since the academic year 2025-2026

FURTHER TRAINING ACTIVITIES: TEACHING SHEETS

Course: Procurement Law	**Teaching Language:** Italian	
SSD (Subject Areas):		**CREDITS:** 2
Course year: III	**Type of Educational Activity: F**	

Teaching Methods:

in person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

Principles of private law, contract, procurement

Objectives:

The course aims to provide students with basic knowledge of private law categories, with a particular focus on contract law and an in-depth analysis of the contract for works (contracting) and its regulations, adopting a predominantly practical approach.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

The course, classified as an additional training activity, does not require passing an exam.

Course: Technical Writing for Engineering	**Teaching Language:** Italian	
SSD (Subject Areas):		**CREDITS:** 2
Course year:III	**Type of Educational Activity:** F	

Teaching Methods:

in-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The course aims to provide students with the fundamentals of technical and scientific communication, primarily focusing on technical writing.

Both methodological and practical aspects underpinning technical and scientific communication are addressed, always considering the communicator's objectives and the audience's ease of understanding.

The course is designed to illustrate various communication methods in relation to different technical communication products, such as technical-scientific reports, project reports, technical documents, scientific articles, and more.

Objectives:

The main objectives of the course are:

- Developing the ability to draft technical documents specific to building engineering and sustainability.
- Learning how to structure and present complex data and information clearly and effectively.
- Organizing communication through the simultaneous use of multiple languages.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

The course, classified as an additional training activity, does not require passing an exam.

Course: Laboratory of geotechnical engineering	**Teaching Language:** Italian
Content of the activities consistent with the training objectives of the course: Further training activities useful for job placement	**CFU:** 3
Course year: III	**Type of Training Activity:** F
Teaching Methods: in-person	
Objectives: This activity contributes to the graduate's professional training for his or her effective employment and it aims to develop, also by means of visits to the laboratory of soil mechanics and by carrying out practical activities, the ability to identify and classify soils, also considered as construction materials, and to understand the mechanical nature of multi-phase granular media, that is responsible for their peculiar behaviour.	
Propaedeuticities: Structural Mechanics **Is a propaedeuticity for:** None	
Types of examinations and other tests: aptitude, through a final oral assessment.	

Course:	**SSD (Subject Areas):**
Environmental and urban effects of climate change	CEAR-12/A e GEOS-03/B

Course year:II	**Type of Educational Activity:** F

Teaching Methods:

in-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:

The course delves into climate and paleoclimate issues in relation to the geological setting, allowing students to understand the evolution of geological processes in the environment to apply appropriate adaptation strategies to risks for soil defence and civil, building, and environmental engineering works. Additionally, the course will explore the role of cities and urban systems in the context of climate change, with a particular focus on urbanization, land-use planning, and sustainable resource management. Cities, as centres of concentrated populations and economic activities, are particularly vulnerable to the effects of climate change but also serve as key laboratories for experimenting with innovative and sustainable solutions. The integration of geological and urban planning knowledge will provide students with a systemic understanding of the causes and impacts of ongoing climate change and its complex interactions with urban systems. This will equip students with a cultural and knowledge-based
approach to the topic, grounded in scientific evidence, useful for developing the skills of a civil engineer.

Objectives:

The course, based on scientific foundations that integrate geological knowledge with urban and territorial dynamics, aims to provide students with the tools to understand both the causes and effects of ongoing climate change. Specifically, it will cover the methodologies for analyzing climate cycles in geological and historical epochs and delve into the current causes of global warming, both natural and anthropogenic, and their impacts on communities, urban settlements, and territory at global and local scales. Students will be introduced to the challenges urban systems face, such as rising temperatures, heat islands, sea-level rise, and extreme rainfall.

A part of the course will be dedicated to practical and hands-on activities, which will be conducted in the classroom, depending on the availability of rooms and the credit-to-hour ratio.

Propaedeuticities:

None

Is a propaedeuticity for:

None

Types of examinations and other tests:

The course, classified as an additional educational activity, does not require passing an examination.