



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2023/2024
BACHELOR'S DEGREE (BSC)	BUILDING ENGINEERING, INNOVATION AND RETROFITTING
SUBJECT	BUILDING TECHNIQUES FOR EXISTING BUILDING ASSETS
TYPE OF EDUCATIONAL ACTIVITY	C
AMBIT	10685-Attività formative affini o integrative
CODE	23170
SCIENTIFIC SECTOR(S)	ICAR/10
HEAD PROFESSOR(S)	VINCI CALOGERO      Professore Associato      Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<b>VINCI CALOGERO</b> Tuesday    15:00    17:00    Dipartimento di Architettura - Edificio 8 - 2° piano - Stanza 40 Thursday    15:00    17:00    Dipartimento di Architettura - Edificio 8 - 2° piano - Stanza 40

<b>PREREQUISITES</b>	<p>The teaching prerequisites of "TECNICHE COSTRUTTIVE DEL PATRIMONIO EDILIZIO ESISTENTE" refer to a sufficient general knowledge, such as that acquired at the conclusion of the high school educational cycle "with particular reference to the historic, social and institutional scope, supported by ability to work on written texts of various kinds (artistic, literary, sociological, philosophical, etc.), and attitudes for logical and abstract reasoning both in mathematics and language".</p>
<b>LEARNING OUTCOMES</b>	<p>At the end of the course the student will have a wealth of conceptual, methodological and operational knowledge that will allow him to decode a building, with particular reference to pre-modern heritage. In particular, she/he will acquire the awareness that knowledge of traditional materials and construction techniques is one of the essential prerequisites for the conservation and restoration project.</p> <p><b>KNOWLEDGE</b> The student will acquire knowledge about the materials (characteristics, production, processing, installation), the components, systems and construction principles that inform the built heritage.</p> <p><b>ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING</b> The student will be able to structure and support arguments on the topics covered during the course and to decode a building or a building component, with particular reference to the local building tradition, in terms of recognition of the materials used, construction system, static principles applied, relationship between the specific case examined with the constructed context.</p> <p><b>AUTONOMY OF JUDGMENT</b> At the end of the course, the student will have developed a specific critical ability in the identification, interpretation and understanding - with respect to the built heritage - of data useful to define those identity characters, from a constructive point of view; this analytical approach, at the basis of the subsequent phases of the recovery and enhancement project, investigated in the teachings of the following years, allows to place apparently episodic elements in a wider geographical and chronological reference framework. This will also lead to a broader vision of the specific professional profile with respect to the plurality of skills that are required to face the issues of planning the interventions on the building heritage in an integrated form.</p> <p><b>COMMUNICATION SKILLS</b> During the lectures, exercises and seminar activities, the student is asked to:</p> <ul style="list-style-type: none"> <li>• interact with his/her interlocutors (colleagues, teachers) to develop his/her skills for discussion on general and specific issues;</li> <li>• adopt from time to time the communication tools deemed most effective in a modern interpretation of his future profession as an architect.</li> </ul> <p><b>LEARNING ABILITY</b> During the course, the student will be able to develop learning skills useful in relating the topics covered with previous teachings and with those foreseen in the course of studies in the following years.</p>
<b>ASSESSMENT METHODS</b>	<p>The final exam will consist of an individual interview, during which a discussion will be conducted on the exercises carried out during teaching and an oral test on the topics covered. The oral examination consists of an interview, aimed at ascertaining the acquisition of skills and knowledge on the topics of the program through at least four questions related to the recommended texts, the teaching material provided, the exercises. The final assessment of the exam will be expressed in thirtieths.</p> <p><b>CRITERIA ADOPTED FOR EVALUATION:</b> The exam will be aimed at assessing the knowledge and understanding of the topics, the ownership of language, the analytical and synthesis capacity, through:</p> <ul style="list-style-type: none"> <li>• the discussion of the course content carried out during lectures and seminars, with particular attention to the level of knowledge achieved, the processing skills and the possession of an adequate exhibition capacity;</li> <li>• presentation and discussion, with adequate language properties, of the exercise developed during the course; description of all its parts independently, demonstrating that it is able to carry the course content into the practical aspects of the assigned exercise.</li> </ul> <p>The criteria for defining the assessment thresholds are as follows. Excellent (30-30L): excellent knowledge of the topics, excellent language properties, excellent analytical and synthesis ability. Very good (27-29): very good command of topics; full ownership of language; very good analytical and synthesis ability. Good (24-26): Basic knowledge of the main topics; fair language property; good analytical and synthetic ability, although with some uncertainty. More than enough (21-23): The student does not have full mastery of the main topics of the program but has limited knowledge of it; satisfactory the property of language, limited the analytical and synthesis capacity. Sufficient (18-20): The student has minimum basic knowledge of the main topics of the program and technical language, sufficient analytical and synthesis ability. Insufficient: The student does not have minimum acceptable knowledge of the</p>

	main topics of the program and technical language; insufficient analytical and synthesis ability of the treated topics emerges.
<b>EDUCATIONAL OBJECTIVES</b>	<p>Educational objectives of the teaching are:</p> <ul style="list-style-type: none"> <li>• the acquisition of adequate knowledge for the analysis and characterization of the built heritage, preparatory to the recovery, restoration and enhancement project;</li> <li>• contribute to the basic and preparatory training of students, for the definition of a professional figure, capable of dealing with specificities and managing problems relating to the existing built heritage (through the study of materials and construction techniques traditional, historical-critical analysis of the construction process, non-instrumental diagnostics for performance evaluation)</li> </ul>
<b>TEACHING METHODS</b>	The teaching "TECNICHE COSTRUTTIVE DEL PATRIMONIO EDILIZIO ESISTENTE" is mainly delivered with lectures with the support of illustrated presentations. There will be exercises aimed at deepening specific topics and developing the ability to decode and represent technical elements of historical construction. Seminars and educational visits will allow students to deal directly with issues related to professional practice and the multidisciplinary nature of the recovery yard.
<b>SUGGESTED BIBLIOGRAPHY</b>	<p>Menicali U., I materiali dell'edilizia storica: tecnologia ed impiego dei materiali tradizionali, La Nuova Italia scientifica, Roma, 1992.</p> <p>Di Pasquale S., L'arte del costruire. Tra conoscenza e scienza, Marsilio, Venezia, 1996.</p>

## SYLLABUS

Hrs	Frontal teaching
2	Materials widely used in historic building (natural and artificial stone, wood, mortar, plaster and stucco, metal, glass, ...), with particular reference to the architecture of Sicily.
2	Extraction systems in quarry, processing systems and formats, identifying specific cases in parts of the historic buildings.
2	The artificial stone. Brick: production systems, used in the old site.
2	Building mortars, plasters and stucco: the material and the methods' packaging.
2	The wood and its use in architecture. The material, technical features.
2	The iron in construction and steel structures: material (iron, steel and cast iron) and features.
2	Evolution of building techniques (processing and packaging systems, mode 'of use and installation, replacement and / or integration, ...), understanding and knowledge of technical terminology, advancement and improvement of technologies, through the testing of materials and construction techniques held over the centuries "innovative". Treatises, manuals and construction technique. Architecture and ways of building through the direct and indirect sources.
2	Evolution of the construction process: the project and the protagonists of the historical building construction; the new construction and the reconfiguration project, extension; transformations and changes, and related change of traditional building character, integration and compatibility between the old and new building systems; integrations and material replacements.
2	Geometry and construction of arches and vaults.
4	Use of natural and artificial stone and various construction techniques in monuments from different historical periods: walls.
2	The wood and its use in architecture. Structural elements construction techniques: foundation piles, columns and pillars, beams, lintels, masonry timbered ceilings, trusses, furniture finishing and completion: light dividers, vaulted ceilings and floor.
2	The iron in construction and steel structures: construction systems (floors, pillars, trusses, arches, roofs, etc.). The nineteenth century and the discovery of architecture iron-vitreous; review of cases and building techniques.
2	Reinforced concrete: the first experiments in architecture.
Hrs	Practice
12	Exercises: methods for assessing the quality of historical masonry.
Hrs	Workshops
20	The laboratory activities include the material-constructive analysis of case studies aimed at the compatible recovery of the minor and valuable building heritage.