



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2021/2022
MASTER'S DEGREE (MSC)	CIVIL ENGINEERING
SUBJECT	BUILDINGS EXPERIMENTATION., TESTING AND CONTROL
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50353-Ingegneria civile
CODE	13777
SCIENTIFIC SECTOR(S)	ICAR/09
HEAD PROFESSOR(S)	CAMPIONE GIUSEPPE    Professore Ordinario    Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<b>CAMPIONE GIUSEPPE</b> Monday    9:00    11:00    Stanza docente, presso Dipartimento Ingegneria- Area strutture, secondo piano

DOCENTE: Prof. GIUSEPPE CAMPIONE

<b>PREREQUISITES</b>	Knowledge of limit state theory, behaviour of reinforced concrete structures, theory of beam.
<b>LEARNING OUTCOMES</b>	<p>Knowledge and ability of knowledge:</p> <p>Knowledge of the necessary path for the verification and testing of load-bearing elements of existing structures through non-destructive tests and load tests. Identification of the main critical issues in the testing of reinforced concrete, masonry and steel structures.</p> <p>Ability to apply knowledge and understanding:</p> <p>Identification of the structural elements and identification of the main ones testing and verification techniques for structural elements in reinforced concrete and steel.</p> <p>Application of technical regulations in the design of structural elements and ability to apply security checks and correct strategies</p> <p>Design.</p> <p>Autonomy of judgment:</p> <p>Evaluation of the necessary 'implementation of appropriate design choices based on the needs of the client and in progress to current regulations, not neglecting the principles of cost effectiveness' of design solutions.</p> <p>Communication skills:</p> <p>Ability to describe and not to hypothesize the evaluations about the testing of the structures. Ability to express, in a critical way, evaluations on the state of fact on the basis of in situ tests.</p> <p>Interview capacity with competent bodies in the field of structural design.</p> <p>Learning capacity:</p> <p>Ability to interpret and apply structural design instructions of manufactured in reinforced concrete and steel. Possibility to apply methods of classical structural analysis in the elastic field and in the plastic field aimed at the structural verification of the limit states, in order to critically interpret the testing tests on the structures.</p>
<b>ASSESSMENT METHODS</b>	Oral examination and an in progress test. The interview is aimed at determining the student's ability to process the knowledge gained by using them to solve problems and the ability to express the teaching content using a technically correct language. The evaluation is expressed in thirty with possible praise, according to the diagram in the bulletin board at the bottom of the site of the study site under "Assessment Methods".
<b>EDUCATIONAL OBJECTIVES</b>	The student, at the end of the course, will have acquired the ability to learn and keep abreast of the test methods for different structural materials and innovative types.
<b>TEACHING METHODS</b>	Lectures, class exercises and individual exercises in the laboratory for testing materials and structures.
<b>SUGGESTED BIBLIOGRAPHY</b>	Barbarito, B. "Collaudo e risanamento strutturale, Utet, Torino, 1998. Mastrodicasa, S. "Dissesti statici delle strutture edilizi", Hoepli, Milano, 2004. Lombardo S. e Mortellaro F. Collaudo statico delle strutture. Dario Flaccovio editore, 1999. Può essere utilizzate qualsiasi edizione dei libri di testo

## SYLLABUS

Hrs	Frontal teaching
7	Metrology, measuring apparatus main types of strain gauges, inclinometers, transmission of information. Precision, reliability, repeatability, the size of the measures, thermal influences on the measures.
7	Non-destructive Control Methodologies: hammer, pull-out, Windsor probe, sonic and ultrasonic methods, tomography, flat jacks, dynamic characterization tests, radiography, thermography, endoscopy, pacometer, carbonation depth, measurement of chloride ions, tomography computerized axial, monitoring, recording information.
7	Processing for probabilistic way of experimental tests of the data. structural design: analysis of the main structural types of structures a.c. and c.a.p, steel, static behavior of vaults, domes, arches, walls. Diagnostic Masonry structures: injuries and instability, disturbing causes, foundation settlement, congruences isostatic and isodynamic curves, lines of force, cracking paintings. Concrete structures: classification of the damage, causes of decay and structural movements
7	The examination of the testing documentation, design and structure. Load tests: choice of the members to be tested, conventional cargo gear, intensity of loads, conducted the tests, presentation and interpretation of results, forms. dynamic characterization of the structures.
Hrs	Practice
24	<ul style="list-style-type: none"><li>• Visits to construction sites</li><li>• Laboratory DICAM and application tools</li></ul>