



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Architettura		
ACADEMIC YEAR	2023/2024		
MASTER'S DEGREE (MSC)	ARCHITECTURE		
SUBJECT	STATICS		
TYPE OF EDUCATIONAL ACTIVITY	B		
AMBIT	50667-Analisi e progettazione strutturale per l'architettura		
CODE	06636		
SCIENTIFIC SECTOR(S)	ICAR/08		
HEAD PROFESSOR(S)	BENFRATELLO SALVATORE	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	8		
INDIVIDUAL STUDY (Hrs)	128		
COURSE ACTIVITY (Hrs)	72		
PROPAEDEUTICAL SUBJECTS	18528 - MATHEMATICS 1 AND 2 - INTEGRATED COURSE		
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	BENFRATELLO SALVATORE Monday 12:00 13:30 Ufficio al II piano della sezione strutture del Dipartimento di Ingegneria (ex DICAM). Tuesday 12:00 13:30 Ufficio al II piano della sezione strutture del Dipartimento di Ingegneria (ex DICAM). Wednesday 12:00 13:30 Ufficio al II piano della sezione strutture del Dipartimento di Ingegneria (ex DICAM). Thursday 12:00 13:30 Ufficio al II piano della sezione strutture del Dipartimento di Ingegneria (ex DICAM). Friday 12:00 13:30 Ufficio al II piano della sezione strutture del Dipartimento di Ingegneria (ex DICAM).		

DOCENTE: Prof. SALVATORE BENFRATELLO

PREREQUISITES	Basics understanding of elementary physics: equilibrium, kinematics, rigid body
LEARNING OUTCOMES	Knowledge and understanding Acquisition of the fundamental instruments for the knowledge of the behavior of statically determined structures and for their design. Applying knowledge and understanding Ability to apply the physical-matematical models through which sketching the statically determined structures in order to learn how to model and design them. Making judgements Acquiring a critical approach to independently evaluate the bearing ability of a statically determined structure. Communication skills Ability to exhibit the fundamentals for the safety evaluation of an existing statically determined structure and for the design of a new one. Learning skills Ability to recognize the critical aspects of a statically determined structure.
ASSESSMENT METHODS	The final examination consists in a written test (statically determinate structure, application to centroids and inertia moments, equilibrium of unstable structures) preparatory to oral examination. During the semester two written intermediate skill are planned to relieve the corresponding arguments (application to centroids and inertia moments, equilibrium of unstable structures) from the final written test. In order to pass the exam, i.e. to get a grade not lesser than 18/30 the student must illustrate a basic achievement of the educational objectives, that is a basic knowledge of the topics reported in the program as well as the ability to explain them. Further, the student has to demonstrate, as well in basic way, the awareness of the basic principles of bodies equilibrium, the material mechanical behavior and of the evaluation of the stress acting in a cross structural section. In order to get the maximum grade 30/30 with honors the demonstration of this awareness has to happen in excellent way. Specifically, the final grading is defined in the following way: excellent (30-30 with laude), very good (26-29), good (24-25), satisfactory (21-23), passing grade (18-20).
EDUCATIONAL OBJECTIVES	To develop an experience of structural education by the knowledge of the appropriate hypotheses and physical-matematical models through which sketching the structures. To learn the ability to identify and to design structures with critical approach.
TEACHING METHODS	Frontal lectures and excercises.
SUGGESTED BIBLIOGRAPHY	F. Giambanco, Lezioni di statica, Dario Flaccovio, EAN 9788877582294 C. Comi, L. Corradi Dell'Acqua, Introduzione alla meccanica strutturale, McGraw Hill, ISBN: 8838615411

SYLLABUS

Hrs	Frontal teaching
6	Recall of basic concepts of mathematics and phisics
6	Centroids and moments of inertia
14	Kinematics of free and constrained rigid bodies.
4	The Principle of Virtual Works for rigid bodies and its application for equilibrium conditions of systems
6	Constraints reactins, internal actions and their diagrams.
12	Continuum mechanics.
Hrs	Practice
6	Kinematics of free and constrained rigid bodies.
4	Applications of PLV for equilibrium conditions of systems
14	Evaluation of constraints reactions, of internal actions and their diagrams.