



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2017/2018
BACHELOR'S DEGREE (BSC)	ENVIRONMENTAL ENGINEERING
SUBJECT	MECHANICS OF MATERIALS AND THEORY OF STRUCTURES
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50277-Ingegneria civile
CODE	06313
SCIENTIFIC SECTOR(S)	ICAR/08
HEAD PROFESSOR(S)	PALIZZOLO LUIGI Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	144
COURSE ACTIVITY (Hrs)	81
PROPAEDEUTICAL SUBJECTS	03295 - PHYSICS 1
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	PALIZZOLO LUIGI Thursday 10:00 12:00

DOCENTE: Prof. LUIGI PALIZZOLO

PREREQUISITES	Knowledge of the following concepts and/or subjects: displacement, velocity, acceleration and related mathematical and phisic relations; derivatives and integrals of functions; kinematic of rigid systems; statical and dynamical equilibrium; virtual work principle.
LEARNING OUTCOMES	<p>Knowledge and understanding skills: aim of the course is the knowledge of the solid and structure mechanics and the comprehension of the structural conception of the more utilized structures for architectural constructions.</p> <p>Ability to apply knowledge and understanding: the knowledge of the structural mechanics and the comprehension of the structural conception must produce the ability for dimensioning and verifying structural systems. It represents a fundamental cultural and professional baggage in order to knowingly perform design and/or restoration of architectural artifacts.</p> <p>Autonomy of judgment: students must be able to associate a suitable structural model at each analyzed architectural artifact.</p> <p>Communicative skills: students must be able to expose the results of their work with logical rigor and language properties.</p> <p>Learning ability: students must be able to indipendently improve their knowledge.</p>
ASSESSMENT METHODS	Written test and oral discussion.
EDUCATIONAL OBJECTIVES	Understanding of the structural behaviour of the most usual structures for civil and industrial buildings.
TEACHING METHODS	Lecture hours, exercise sessions, visit to the laboratory of structural engineering
SUGGESTED BIBLIOGRAPHY	<p>1)Benvenuto E., La Scienza delle Costruzioni e il suo sviluppo storico, Sansoni, Firenze, 1981.</p> <p>2)Giambanco F., Lezioni di Statica, D. Flaccovio, Palermo, 1999.</p> <p>3)Polizzotto C., Scienza delle Costruzioni, Centro Stampa Siciliana, Palermo, 1980.</p> <p>4)Corradi Dell'Acqua L., Meccanica delle Strutture, Vol. I,II,III, McGraw-Hill, Milano, 2010.</p> <p>5)Viola E., Lezioni di Scienza delle Costruzioni, Pitagora, Bologna, 2003.</p> <p>6)Viola E., Esercitazioni di Scienza delle Costruzioni, Vol. I,II,III, Pitagora, Bologna, 1985.</p> <p>7)Casini P., Vasta M., Scienza delle Costruzioni, Citta' Studi edizioni, 2016.</p> <p>8)Dispense del corso.</p>

SYLLABUS

Hrs	Frontal teaching
1	Themes and purposes of mechanics of materials and structures
3	Static and kinematic of rigid bodies
2	Beam system: static classification, generalized stresses, Principle of Virtual Work
2	Geometry of areas.
6	Determination of the generalized stress function for statically determined structures
3	Elastic problem solution for statically undetermined structures
7	Stress analysis for continuous Cauchy bodies
1	Strain analysis for continuous Cauchy bodies
3	Constitutive equations: Hooke law. Linear elastic problem for continuoous bodies
3	Safety criteria: Galileo, Tresca, Von Mises
1	The De Saint Venant problem for beams
7	Analysis of beams subjected to axial force and bending moment
3	Analysis of beams subjected to shear force: Jourawski theory
3	Analysis of beams subjected to torsion
Hrs	Practice
2	Exercises related to rigid bodies
6	Exercises related to beam systems
2	Exercises related to the geometry of areas
6	Applications to the analysis of statically determined structures
1	Exercises related to the beam technical theory
6	Applications to the analysis of statically undetermined structures
2	Exercises related to the stress analysis of continuous bodies
2	Applications to structures constituted by beams subjected to axial force: the case of trusses
2	Applications for beams subjected to bending moments
3	Applications to beams subjected to axial force and bending moments
2	Applications to beams subjected to shear force
2	Applications to beams subjected to torsion

