

General Information	
Academic subject	Materials Technology
Degree course	Science and Management of Maritime Activities
Curriculum	
ECTS credits	6
Compulsory attendance	NO
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Francesco Todaro	francesco.todaro@uniba.it	ING-IND/22

ECTS credits details	Area	SSD	ECTS/credits
Basic teaching activities	materials science and technology	ING-IND/22	6

Class schedule	
Period	Marzo-Giugno
Year	2020/2021
Type of class	-

Time management	
Hours	150
In-class study hours	48
Out-of-class study hours	102

Academic calendar	
Class begins	09/03/2021
Class ends	18/06/2021

Syllabus	
Prerequisites/requirements	-
Expected learning outcomes	The course enables students to acquire the skills to interpret the correlations between atomic/molecular structure, microstructure, macro-structure and behavior of materials. Integrating the knowledge gained in the basic sciences courses, it allows to acquire the theoretical and practical basis for understanding the major physical-chemical, morphological and mechanical characterization techniques for building materials, and for diagnosis of their degradation. The course enables students to learn the methods of production, the properties and durability of different classes of materials used in civil and environmental engineering. In order to address advanced design themes and treat the innovation and development of new products and new technological processes through the application of knowledge, the student should be able to correctly interpret the correlations between structure and properties of building materials. This will be reflected in a range of professional skills, such as: 1. the ability to choose the most suitable material for the realization of a particular structure in a given exposure environment; 2. the ability to analytically describe and

	appropriately interpret the results of laboratory tests on construction materials; 3. the ability to identify the causes of failure of a construction material working in a team with other elements involved in the study of the problem.
Contents	<ul style="list-style-type: none"> • Correlation between structure of materials and their properties. • Comparison between classes of materials. • Durability and sustainability of materials. • Chemical, physical, morphological and mechanical characterization of materials. Destructive and non-destructive testing. • Portland cement and blended cements. • Steels: general purpose, quality, welding (steel for reinforced concrete and carpentry) and structure (Fe-C diagram), production and properties. • Polymeric materials: thermoplastics, thermosets and elastomers in construction. Composite Materials.
Course program	
Bibliography	<ul style="list-style-type: none"> - M. Santocchi, F. Giusti: Tecnologia Meccanica e Studi di Fabbrica Ambrosiana, Milano. - A. Bugini, C. Giardini, R. Pacagnella, G. Restelli: Tecnologia Meccanica esercizi, Utet Libreria. - S. Kalpakjian: Manufacturing Engineering and Technology, Addison Wesley Longman Company. - W. F. Smith - Scienza e Tecnologia dei Materiali -II ED., McGraw-Hill. - Metallurgia, Walter Nicodemi, Seconda edizione, Zanichelli.
Notes	-
Teaching methods	E-learning
Assessment methods (indicate at least the type written, oral, other)	At the end of the course there will be an oral exam.
Evaluation criteria	<p>At the end of the course, the student should have acquired the following knowledge:</p> <ul style="list-style-type: none"> - metallurgical technology; - measuring instruments; - technological workings on materials; - machine tools. <p>Moreover, the student should have acquired the following skills:</p> <ul style="list-style-type: none"> - describe the physical, chemical, and mechanical properties of metals and their use; - to know how to use some measuring correctly measuring instruments; - illustrate steel production methods; - distinguish non-destructive testing on metallic materials metal materials.
Further information	-