



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Architettura
ACADEMIC YEAR	2022/2023
BACHELOR'S DEGREE (BSC)	INDUSTRIAL DESIGN
SUBJECT	MATHEMATICS
TYPE OF EDUCATIONAL ACTIVITY	A
AMBIT	50237-Formazione scientifica
CODE	04872
SCIENTIFIC SECTOR(S)	MAT/05
HEAD PROFESSOR(S)	MARRAFFA VALERIA      Professore Associato      Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	8
INDIVIDUAL STUDY (Hrs)	136
COURSE ACTIVITY (Hrs)	64
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<b>MARRAFFA VALERIA</b> Monday    10:30    12:30    Dipartimento di Matematica e Informatica, Via Archirafi 34, studio n.221

**DOCENTE:** Prof.ssa VALERIA MARRAFFA

<b>PREREQUISITES</b>	Basic mathematical knowledge: arithmetic (operations with natural, integer, rational and real numbers); algebra (algebraic equations and disequations of first and second degree); real variable functions (elementary functions: powers, roots, exponentials, logarithms and their properties); Trigonometry elements (Distinction between degree and radian, definition of sine, cosine, tangent of an angle and their values for known angles).
<b>LEARNING OUTCOMES</b>	Knowledge and understanding: The course, together with a cultural training goal aimed at developing logical rigor and critical abilities, aims to provide students with the basic concepts, tools and methods of mathematical analysis, geometry and linear algebra useful for interest applications. Ability to apply knowledge and understanding: Ability to understand and apply the potentialities of mathematical tools for formalizing problems and building mathematical models; ability to apply theoretical concepts and the theoretical lessons learned theorem for problem solving. Autonomy of judgment: Acquiring the potential to "analyze", "locate", "decide" and "know how to do". Acquiring the potential to choose the simplest strategies for dealing with and solving problems. Communication skills: To be able to expose with logical rigor, with language skills and competence the concepts and arguments of the discipline. Learning Capacity: Ability to find and acquire information contained in written texts with formalized and scientific language; Ability to use logical and scientific methods in different contexts. The Mathematics course also intends to encourage students to develop scientific curiosity and encourage them to deepen the study independently.
<b>ASSESSMENT METHODS</b>	Written and / or Oral Test. The written test is made up of at least four exercises over the entire program and two theoretical questions. Full and complete details of the exercises are required: the resolution steps should be adequately justified in order to obtain a sufficient assessment. Each exercise is assigned a score. The evaluation is done over 30. The written test tends to verify the abilities, skills and competences provided. Written exam is passed if one gets a minimum vote of 18/30. Students have the opportunity to support two test runs that replace the written test. Each intermediate test consists of at least 2 exercises and a theoretical questions and is evaluated according to the criteria announced previously. Written tests can be replaced by multiple choice questions. The oral test consists of a discussion on the written test (or on the tests performed in itinere) and on a subsequent oral exam on topics discussed during the course. Rating: Excellent. Rating: 29-30 cum laude. Outcome: excellent knowledge of the topics, excellent property of language and analytical skill; the student is able to apply the knowledge to solve the exercises. Rating: very good. Rating: 26-28. Outcome: good knowledge of the topics, full ownership of language and analytical ability; the student is able to apply the knowledge to solve the exercises. Rating: Good. Rating: 22-25. Outcome: Basic knowledge of the main topics discreet property of language and limited analytical capacity; the student is able to apply partially the knowledge to solve the exercises. Rating: enough. Rating: 18-21. Outcome: minimum basic knowledge of the main topics and language; the student is able to solve very elementary exercises. Rating: Not enough. Rating: <18. Outcome: does not have an acceptable knowledge of the contents of the course topics and is not able to solve the exercises.
<b>EDUCATIONAL OBJECTIVES</b>	The course, together with a cultural training goal aimed at accustoming to the logical rigor and refine the critical thinking skills, has the goal of provide students with basic concepts, tools and mathematical methods of mathematical analysis, geometry and linear algebra useful to applications.
<b>TEACHING METHODS</b>	Frontal lessons. Exercises in class.
<b>SUGGESTED BIBLIOGRAPHY</b>	P. Marcellini, C. Sbordone - Elementi di Calcolo - Liguori Editore M. Bramanti, C.D. Pagani, S. Salsa - Matematica (Calcolo infinitesimale e algebra lineare) - Ed. Zanichelli F. Calio', E. Scarazzini - Metodi matematici per la generazione di curve e superfici, Città Studi Edizioni. Dispensa del docente Apostol, Calculus, Vol.I

## SYLLABUS

Hrs	Frontal teaching
10	Linear Algebra
6	Geometry in the plane and in the space
6	Linear transformation.
18	Functions, derivatives and integrals.

Hrs	Practice
6	Linear Algebra
4	Geometry in the plane and in the space
4	Linear transformations.
10	Functions, derivatives and integrals.