UNIVERSITÀ DEGLI STUDI DI PALERMO

SCHOOL	POLYTECHNIC SCHOOL
ACADEMIC YEAR	2016/2017
FIRST CYCLE COURSE	CIVIL AND BUIDING ENGINEERING
SUBJECT	GEOMETRY
TYPE OF EDUCATIONAL ACTIVITY	A
AMBIT	50279-matematica, informatica e statistica
CODE	03675
SCIENTIFIC SECTOR(S)	MAT/03
HEAD PROFESSOR(S)	STAGLIANÒ PAOLA LEA Professore a contratto Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54
PROPAEDEUTICAL SUBJECTS	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**STAGLIANÒ PAOLA LEA** Monday 10:30 11:30 Edificio 7 Ex Dipartimento di Metodi e Modelli Matematici, 2° piano, scala F1. Citofonare "Incaricati". Si riceve solo su appuntamento

DOCENTE: Prof.ssa PAOLA LEA STAGLIANÒ

TEACHING METHODS	Lectures and classroom exercises
ASSESSMENT METHODS	Oral examination preceded by a written test
LEARNING OUTCOMES	Knowledge and understanding After completing the course, the student will have acquired the knowledge of the main arguments of linear algebra and affine Euclidean geometry. In particular, the student will be able to effectively solve various geometric and algebraic problems with appropriate techniques. Applying knowledge and understanding: The student will be able to use the methods and the conceptual tools of geometry to solve problems such as the study of a linear system, the determination of the rank of a matrix, the calculation of the determinant of a square matrix, the determination of the inverse matrix of a invertible matrix, the reduction to canonical form of the equation of a conic irreducible to real points, the determination of the minimum straight distance of two assigned skew lines. He must also be able to recognize if and when a theorem in certain specific cases may be applied. Making judgments The student will be able to choose the simplest strategies to address and solve typical problems of linear algebra and geometry by evaluating the difficulty of a problem and thus recognizing the effectiveness of the tools learned during the course. Communication skills: The student will acquire the logical-deductive rigor and ability to communicate and express issues concerning the course content. He will formulate and prove theorems, discuss the issues that concern the statement of a theorem, derive a solution of a Geometry problem in a rigorous and correct way. learning ability The student will have learned the basic knowledge of linear algebra and analytic geometry topics and will be able to use the methods learned in the continuation of his engineering studies.
EDUCATIONAL OBJECTIVES	Knowing the basics of linear algebra and its applications to geometry. Knowing the demonstrations of the main theorems. Knowing how to define a vector space through a base. Determine the linear dependence of a vector system by determining the rank. Knowing how to define a linear transformation through the matrix calculus. Knowing how to establish the structure of a linear system and put in relation with the whole of the geometric structure of the solutions. Knowing how to determine the eigenvalues and the corresponding eigenspaces of an endomorphism. Knowing how to determine a geometric entity subject to conditions. Knowing how to study the mutual position of two affine subspaces. Knowing how to properly set up a hypothetical-deductive reasoning path.
PREREQUISITES	Basic knowledge of mathematics
SUGGESTED BIBLIOGRAPHY	S. Greco-P. Valabrega, “Lezioni di Geometria”, Levrotto & Bella, Torino. M. Rosati, “Lezioni di Geometria”, Libreria Cortina, Padova

SYLLABUS

Hrs	Frontal teaching
3	groups, rings, fields, vector spaces, subspaces
4	matrices and determinants
4	linear systems
3	linear applications
3	eigenvalues and eigenvectors
5	analytic geometry of the plane and conical
3	analytic geometry of space and quadrics

Hrs	Practice
2	eigenvalues and eigenvectors
1	Analytic geometry of the plane
1	analytic geometry of space
2	Conical
2	Quadrics