Università degli Studi di L'Aquila - Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica
Course catalogue

Programme of Course "Geometria"

- Code: I0197
- Type of course unit: Elective (Laurea in Ingegneria dell'Informazione curriculum Automatica)
- Level of course unit: Undergraduate Degrees
- Semester: 1

Number of ects credits: (Laurea in Ingegneria dell'Informazione) 9 (workload 225 hours)

Teachers: Alessandro Fedeli

1	**Course objectives**	The goal of the course is to acquire a good knowledge of the main concepts and techniques of linear algebra and analytical geometry.
2	**Course content and learning outcomes (dublin descriptors)**	Topics of the module include: - Matrices. Matrix operations. Determinants. Matrix inversion. Rank of a matrix. Kronecker theorem. Linear systems. Rouchè-Capelli theorem. Cramer theorem. Gaussian elimination algorithm. Cartesian coordinates. Vectors. Scalar and vector product. Mixed product. Plane geometry. Conics. Space geometry, lines, planes and their relative position. Vector spaces, subspaces. Linear combinations.Linear dependence and independence. Systems of generators. Basis and dimension. Linear transformations. Null space and range. Nullity plus rank theorem. Matrix representation of linear transformations. Change of basis. Similar matrices. Eigenvalues and eigenvectors. Eigenspace. Characteristic polynomial. Matrix diagonalization. On successful completion of this module, the student should : - The student should have a good knowledge of linear algebra and analytical geometry. - The student should be able to use the related calculation tools. - The student should be able to understand and solve problems. - The student should be able to present in a clear and rigorous way the acquired knowledge. - The student should develop those learning skills necessary to deal with the subsequent studies.
3	**Course prerequisites**	It is required a knowledge of the basic topics in mathematics, covered in high school.
4	**Teaching methodsand language**	Lectures and exercises. **Language**: Italian **Reference textbooks** - Anichini e Conti, *Geometri analitica e algebra lineare*. Pearson Prentice Hall. 2009.
5	**Assessment methods**	Written exam