UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Architettura
ACADEMIC YEAR	2023/2024
BACHELOR'S DEGREE (BSC)	ARCHITECTURE AND PROJECT IN BUILT SPACE
SUBJECT	PRINCIPLES OF DESCRIPTIVE GEOMETRY
TYPE OF EDUCATIONAL ACTIVITY	A
AMBIT	50109-Formazione di base nella storia e nella rappresentazione
CODE	22731
SCIENTIFIC SECTOR(S)	ICAR/17
HEAD PROFESSOR(S)	DI PAOLA FRANCESCO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	102
COURSE ACTIVITY (Hrs)	48
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**DI PAOLA FRANCESCO** Tuesday 15:00 17:00 Presso il Dipartimento di Architettura

DOCENTE: Prof. FRANCESCO DI PAOLA

PREREQUISITES	The course does not require any specific prerequisites. A review of plane and solid geometry is suggested.
LEARNING OUTCOMES	Knowledge and understanding Knowledge of the theory of projection, of the specific features of parallel and perspective projection, of the peculiar features of surfaces generated by the movement, revolvement (or the combination of both) of a figure. Understanding the features of a spatial layout from a drawing. Applying knowledge and understanding Ability to draw, with a pencil, a simple spatial layout or an architectural element (stairs, vaults) , in orthogonal and oblique parallel projection and in perspective. Making judgements The student understands the links between design and representation. Communication skills The student is able to make drawings that properly represent the features of architectural elements and of a house. Learning skills The student is able to study architecture both interpreting and producing drawing, according to a habit long practiced by architects.
ASSESSMENT METHODS	The oral test consists of an interview, and in the presentation of drawings, aimed at ensuring the possession of the competences and the disciplinary knowledge provided by the course; The evaluation is expressed in thirtieths. Examining will have to answer at least two or three questions posed orally, on all parts of the program, with reference to the suggested texts. Applications will tend to verify: a) the knowledge and understanding acquired; B) the ability to elaborate, c) the possession of adequate exhibition capacity, d) the autonomy of judgment Distribution of votes: 30 - 30 and praise A) Advanced knowledge of topics and critical understanding of theories of the principles of discipline B) Advanced ability to apply knowledge and solve problems also proposed in an innovative way C) Full ownership of specific language D) Capacity to organize work autonomously and innovatively 26 - 29 A) Comprehensive and specialized knowledge accompanied by awareness criticism B) Complete ability to apply acquired knowledge and to develope Creative solutions to abstract problems C) Good command of specialist language D) Ability to organize work autonomously 22 - 25 A) Knowledge of principles, processes and general concepts of teaching B) Basilari has the ability to apply methods, tools, materials and information related teaching C) Basic mastery of specialized language D) Basilari has the ability to organize the work autonomously 18-21 A) Minimum knowledge of the main subjects of the teaching B) Minimum ability to apply the acquired knowledge independently C) Minimal mastery of technical language D) Minimal ability to organize the work autonomously
EDUCATIONAL OBJECTIVES	Knowledge of the subjects underlying the transfer of spatial relations on a plane support (paper) and the inverse, that is finding out spatial relations from drawings. Comprehension of the links between the forms of architectural design and the forms of its representation. Knowledge of the geometrical layout of surfaces and of the process leading to determine the intersection between a surface and a straight line, a plane and another surface.
TEACHING METHODS	Teaching activity is made of lessons and of tests addressed to evaluate the response of students to the discussed subjects. The teacher reserves one morning a week (according to student consultation protocol) to meet the students who need further explications. In addition, the lecturer receives students at the beginning or end of the lesson upon request.
SUGGESTED BIBLIOGRAPHY	- Docci M., Gaiani M., Maestri D., Scienza del disegno, Città studi edizioni, Novara 2011.005, ISBN 88-317-8617-2. - Riccardo Migliari, Geometria Descrittiva, 2 vol., Città Studi, Roma 2009, ISBN 978-88-251-7329-1. - V. Ugo, Fondamenti della Rappresentazione architettonica, Società Editrice Esculapio, Bologna, 2002. - Massimo Scolari, Il disegno obliquo. Una storia dell'anti prospettiva, Marsilio,

Venezia 2005, ISBN 88-317-8617-2.
- Meuser N., Construction and design manual. Drawing for architects. DOM Publishers, Berlin 2015, pp-119-229

SYLLABUS

Hrs	Frontal teaching
5	Course objectives and its organisation in the different theoretical-practical articulations. Perception visual and representation - General criteria governing vision with particular regard to perception of space. From multi-directional space to geometric space: relations between perceived form and geometric form.
5	Notes on the origins and development of drawing. The methods of representation. The coded language.
5	The scientific foundations of representation - The logical tools of descriptive geometry: fundamental geometric entities, fundamental geometric operations, improper entities, forms fundamental geometric operations, invariant properties; introduction to homological planar transformation (bi-univocal correspondence between geometric entities).
6	The method of multiple orthogonal projections (Monge): origins of the method; the projective system; representation of fundamental geometric entities; membership conditions, parallelism perpendicularity, overturning; remarkable problems. Projections and restitution of plane figures. Restitution of segments. Angle between geometric elements. Projections and plane sections of elementary volumes. Apparent contour. Exposure checks. Distance between geometric elements. Intersection between elementary geometric elements; intersection between elementary volumes.
6	The axonometric projection method: historical genesis; the projective model; homology of overturning. Orthogonal and oblique axonometry; projection from a centre to infinity; overturning of co-ordinate planes, projection and restitution of a polygonal or circular figure belonging to the coordinate planes, restitution of heights. Axonometry of elementary volumes, their plane sections significant; dimensioning. Urban or panoramic axonometry of an urban core. Assoonometry of a contour line orography from cartography, vertical plane sections, profiles and their restitution.
6	Central projections: the projective system; representation of fundamental geometric entities fundamentals; conditions of membership, parallelism, perpendicularity, overturning. The perspective: spatial genesis; geometric entities of reference; metric and positional problems; vertical, inclined and horizontal frame perspective. Direct perspective. Projection from a centre to the finite on a plane frame. Reversal onto the frame of the reference plane Geometric and perspective of a polygonal, circular, oval or mixtilinear figure. Measurement and displacement of segments. Report of dimensions. Projection and restitution of elementary volumes. Plane section of elementary volumes; dimensioning of plane figures and volumes; scale on the picture.
3	Elements of shading of simple volumes due to an own/improper source, carried on a plane or surface.

Hrs	Practice
4	Graphical solving of problems relating to plane geometric figures, aggregation and composition of plane geometric figures.
3	Sketching life drawing. Objectives, operational methodologies. examples, organised visits and applications in the field. field.
5	In all projection systems: Intersection between elementary volumes; most common aggregations and cavities common. The sphere and its parts. The design of the drawing: choice of data according to the results.