

Syllabus
Course description

Course title	Descriptive Geometry DES
Course code	97127
Scientific sector	MAT/03
Degree	Bachelor in Design and Art (L-4)
Semester	Winter semester 2020/21
Year	1st, 3rd
Credits	6
Modular	no

Total lecturing hours	30
Total hours of self-study and/or other individual educational activities	about 120 for 6 cp; about 95 for 5 cp
Attendance	Not compulsory but strongly recommended
Prerequisites	none

Specific educational objectives	<p>The course belongs to the class “di base” in the Curriculum in Design and Art.</p> <p>Every good design artifact comes from the ability to visualize an idea: observing, studying and drawing the reality of life allows the designer to think and translate a concept into a visual language. Being able to think by drawing is essential to understand and produce artifacts, from the very first idea to the interaction with users.</p> <p>The aim of the course is to build a well balanced process of work that enables the student to manage drawing techniques and tools in order to combine them with geometrical and mathematical aspects closely related to some design disciplines (such as perspective, study of shadows, proportions, shape and surface, composition, storytelling, study of color). The student will be guided to understand the theoretical foundation and the essential tools for design, in a draw-what-you-see approach.</p> <p>The course includes skills and research fields related to Geometry, and in particular to the study of the properties and classification of geometric structures, topological varieties and basic mathematical models applied to visual arts, communication and industrial design.</p> <p>For both disciplines taught in the first semester, the course will provide the basic tools for conceptual sketching, free hand geometrical drawing and perspective</p>
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	<p>skills, quick free hand 3D drawings, rendering (how shadows, surfaces and colors change and affect shapes and composition).</p> <p>In the field of product design, the student will be encouraged to understand the nature of an artifact analyzing it through a sketching process.</p> <p>In the field of communication design, the same artifact will be analyzed through its narrative potential and its context.</p> <p>Educational objectives</p> <p>The course objectives has been defined for the 1st year students with different backgrounds and almost a total absence of basic skills in relation to the course subject, and applied in the field of product design and visual communication. The course aims to provide a theoretical and practical method for/to:</p> <ul style="list-style-type: none"> • Knowledge of the basic tools and skills for free hand drawings; • Analysis of geometrical and mathematical models applied to the design field (perspective, axonometric projection, orthogonal projection, surface, shadows, lights); • Build a working method and develop a personal language; • Organize/visualize ideas and translate a concept into a visual language; • Manage a project from the idea to its realization, and define the interdisciplinary scientific competences needed to do it; • Gain the ability to represent, communicate and present an artifact in all its aspects (technical, aesthetics, social, branding/market position...).
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Lecturer	Rigoberto Arambula, e-mail Rigoberto.Arambula@unibz.it,
Teaching language	English
Office hours	18 – please refer to the timetable online: https://www.unibz.it/en/timetable/
List of topics covered	<ul style="list-style-type: none"> - Standards and tools for technical and free hand drawings (ISO, scale standards, ergonomoy, freehand tools and digital manipulation) - Signs and lines - Proportions - Orthogonal projection - Axonometric projection - Perspective (one point, two and three points view) - Maps, surfaces and textures - Lights and shadows - Exploded view - Palette and color techniques

	<p>- Composition, moodboard and materials Storytelling: the importance of visual design, texts, colors and details in a project presentation</p>
<p>Teaching format</p>	<p>Frontal lectures, individual and group exercises, personal research and projects (both vecchio and nuovo ordinamento)</p> <p>The lectures consist in theoretical (introducing some topics through visual references, technical contents and case histories) and practical activities, divided in two branches:</p> <ul style="list-style-type: none"> - warm-up sessions. They consist in experimental quick exercises to gain confidence with tools (such as: quick sketches and experiments with signs and tools, illustration and translation of concepts, experimenting compositions with shapes); - focused exercises. They consist in a simulation of professional activities in order to build a working method, understand the different phases of a job, understand and practice rules in technical and free hand geometry drawings, study the relation between shape and materials, develop a problem-solving attitude. <p>List of practical contents: Practice with sketchbook and basic tools; freehand drawing exercises applied to projections and perspective; intuitive perspective; how to observe and reproduce an object/architecture/context/concept; observe and reproduce an exploded view of an object; how to render a surface; exercises for combine and select a color palette and build a mood-board; exercises w/colors and surfaces (black and white, 2 colors, mixed media and digital manipulation, solid base colors and transparency); sketches applied to prototyping (from 2D to 3D sketches, details; re-design an artifact in order to improve its function/message; how to present a project taking care of the details and according to a brief; communication and storytelling; development of a personal/group project which includes all the experienced topics.</p>

<p>Learning outcomes</p>	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> • Knowledge of geometric drawing techniques (from orthogonal projections to perspective) applied to the design of products and visual artifacts (2D and 3D); • Knowledge of theoretical and practical topics related to mathematic and geometry applied to product design; • Knowledge and application of design standards; • Basic knowledge of hand drawings, ability to present an environment and its content; • Ability to observe, collocate, scale, reproduce an object in the space and to study how it is made;
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	<ul style="list-style-type: none"> • Use of storytelling to improve the communication of an artifact (product or graphic); • Know how to choose the best drawing method in order to observe, analyze and communicate an artifact. <p><i>Applying knowledge and understanding</i> Students will be able to:</p> <ul style="list-style-type: none"> • Devise, develop, implement a project in the field of product design, visual communication and/or visual arts; • Apply the basic knowledge acquired in technical, scientific and theoretical fields in order to develop a project (in the field of product design and visual communication). <p><i>Making judgements</i></p> <ul style="list-style-type: none"> • Know how to decide the proper techniques, tools and rules (together with technical, theoretical and scientific decisions) in order to achieve and complete a project; • Ability to find the more suitable solutions of drawings depending by the context (technical, conceptual, creative). <p><i>Communication skills</i></p> <ul style="list-style-type: none"> • Being able to present a personal project in a professional way (moreover in another language), determining which are the best choices, terms and drawings for an appropriate communication of the information; • Ability to communicate the project ideas in a clear way throughout drawings, from a technical, scientific, conceptual and/or creative point of view. <p><i>Learning skills</i> Ability to organize and apply the knowledge (necessary to continue the course of study) that has been acquired in technical, scientific, theoretical and communication fields to personal projects.</p>
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<p>Assessment</p>	<p>Lab - Students will present an individual/group research and analysis of an existing object of design, in order to apply and describe all the aspects related to the properties and classification of geometric structures encountered during the course.</p> <p>Oral - Every student must present a portfolio of given exercises. The contents will be revised and discussed during the exam in order to test knowledge, skills and comprehension of geometric structures and topological varieties, applied to product design and visual communication</p>
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Assessment language	The same as the teaching language
Evaluation criteria and criteria for awarding marks	<p>Final mark amounts to the sum of marks related to intermediate and final assignments:</p> <ul style="list-style-type: none"> - Intermediate assignments: the sum of their marks weight about 60% of final mark; - Final assignment: its marks weight about 40% of final mark <p>Students must achieve and be able to apply the following skills:</p> <p>Relevant for the portfolio review:</p> <ul style="list-style-type: none"> • comprehension of theoretical and practical topics, related to geometry and its correct application to the assignments; • Ability in drawing techniques, composition, portfolio presentation and clarity of contents; • Respect of the deadline. <p>Relevant for the project presentation:</p> <ul style="list-style-type: none"> • Ability in team working; • Ability to explain personal projects in a professional way; • Respect of the deadline.
Required readings	<p>Didactical tests and materials will be provided during lessons.</p> <p><i>Geometria descrittiva Vol. 1-2</i> (Città Studi) - Riccardo Migliari (together with Geometry text books from high school, more indications will be provided during the course)</p> <p><i>Design as Art</i> - Bruno Munari</p> <p><i>The Square, The Circle, The Triangle</i> (Corraini) - B. Munari (from <i>Quaderni di Design</i>, Zanichelli - Series of Books)</p> <p>Gli elementi del disegno (Adelphi) - John Ruskin</p>
Supplementary readings	<p><i>The elements of Euclid</i> (Taschen) - Curated by Oliver Byrne</p> <p><i>Good Design</i> (Corraini) - B. Munari</p> <p><i>The Design of Everyday Things</i> (ENG)/<i>La caffettiera del masochista</i> (ITA) - Donald Norman</p> <p><i>What we see when we read</i> (Vintage Books) - Peter Mendelsund</p> <p><i>Cromorama</i> (Einaudi) - R. Falcinelli</p>

