1. OVERVIEW

Subject Area	3-D Design Workshop
Degree	Bachelor's Degree in Design
School/Faculty	Architecture, Engineering and Design
Year	Second
ECTS	6 ECTS
Type	Core
Language(s)	Spanish/English
Delivery Mode	On campus
Semester	First semester
Academic Year	2024/2025
Coordinating professor	

2. INTRODUCTION

This subject looks at concepts associated with the execution, design, planning, modelling and construction of 3-D digital models, prototypes and physical models using the appropriate materials, tools, software and techniques. This complements the work done in 2-D Design Workshop. This subject offers a spatial exploration over two main teaching blocks: the first looks at conceptual work on 3-D forms based on how we deal with volumes using physical material; the second dealing with an introduction to the principal digital 3-D modelling techniques - low-poly models and simple NURBS. Physical exploration of volumes and materials (textures, cuts, folds, light, shade, transparency, etc.) and introduction to 3-D modelling. It forms part of Module 1 Representation in Design.

This course teaches students the tools used in design, from analogue to digital techniques. Students gradually learn the concepts, such as 2-D to 3-D transformations and multimedia and website content.

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by the acronym in Spanish):

- CB1: Students have shown their knowledge and understanding of a study area that builds on general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.
- CB2: Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.
- CB3: Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.

- CB4: Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
- CB5: Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Transversal skills (CT, as per the Spanish acronym):

- CT1: Independent Learning: the ability to choose the most effective strategies, tools and opportunities for independent learning and implementation of what they have learnt.
- CT2: Self-confidence: ability to evaluate their own results, performance and skills with the self-determination necessary to complete tasks and meet any objectives.
- CT3: Ability to adapt to new circumstances: being able to evaluate and understand different points of view, taking different approaches to suit the situation.
- CT4: Ability to analyse and synthesize: being able to break down complex problems into manageable blocks; also evaluating alternatives and perspectives to find the ideal solution. Synthesizing to reduce the complexity and better understand the situation and/or solve problems.

Specific skills (CE, as per the Spanish acronym):

- CE1. Good understanding of colours and their applications, the theory of shapes and how to analyse them, and the laws of visual perception.
- CE2: Ability to apply concepts of metric and projective geometry and systems of spatial representation.
- CE4. Ability to use IT tools for representing both 2-D and 3-D objects and spaces.
- CE7: Understanding of theories of shape and composition to create designs to suit user needs and requirements, ensuring they respect the relationship between shape, function and the context in which they are used.

Learning outcomes (RA, as per the Spanish acronym):

- RA2: Master, apply and understand the basic principles of visual, graphic, compositional, organisational and expressive language.
- RA3: Understand and apply correct use of scales, size and proportion in a design and its representation.
- RA5: Understand and apply the systems of spatial representation and their relationship with graphic conceptualisation and visual expression in the different phases of design and architectural rendering with complete understanding of projection skills.
- RA6: Develop the ability to use 3-D models and prototypes (3-D graphical representations) as a tool in the design process, from the first steps (project/design mode) to the last (end product) and how this end product is represented graphically.
- RA13: Understand the graphic representation techniques applied to object design and spaces.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB1, CB2 CT1, CT2 CE1	RA2: Master, apply and understand the basic principles of visual, graphic, compositional, organisational and expressive language.

CB4, CB5 CT3, CT4 CE4	RA3: Understand and apply correct use of scales, size and proportion in a design and its representation.
CB4, CB5 CT3, CT4 CE2	RA5: Understand and apply the systems of spatial representation and their relationship with graphic conceptualisation and visual expression in the different phases of design and architectural rendering with complete understanding of projection skills.
CB1, CB2 CT1, CT2 CE7	RA6: Apply graphical design resources and processes to the representation of spaces and objects (drawing by hand or computer) and ensure the result fits with the intended representation of the design objects.
CB4, CB5 CT3, CT4 CE2, CE4	RA13: Understand the graphic representation techniques applied to object design and spaces.

4. CONTENTS

Learning Unit 01: - 3-D exploration in defining an object
Learning Unit 02: Graphic and technical communication in a project
Learning Unit 03: Form, function and construction
Learning Unit 04: Essential modelling
Learning Unit 05: Modelling for 3-D manufacturing
Learning Unit 06: Introduction to organic modelling
Learning Unit 07: Introduction to parametric modelling
Learning Unit 08: Textures, shaders and lights Render
Learning Unit 09: Cartoon
Learning Unit 10: From 2-D to 3-D: Introduction to the concept of 3-D structure
Learning Unit 11: From digital to analogue: the module for generating 3-D structures
Learning Unit 12: Introduction to project: Design light.
Learning Unit 13: Project development: Packaging ideas/Integrated project

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Master lectures
- Problem-based learning (PBL)
- Project-based learning
- Learning based on workshop teaching

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On-campus:

Learning activity	Number of hours
Attendance and participation in activities	12.5h (on-site)
Directed learning, practical exercises and problem-solving	50h (20% on-site)
Project presentation	12.5h (on-site)
Integrated group project	12.5h (off-site)
Research work and projects	12.5h (off-site)
Self-study	25h (off-site)
Tutorials, academic follow-up and assessment	25h (on-site)
TOTAL	150 h

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

On-campus:

Assessment method	Weight
Submission and/or presentation of projects	90-100%

On the Virtual Campus, when you open the course, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

7.1. Ordinary examination period

To pass the course in the ordinary examination period you must obtain a grade of 5.0 or more out of 10.0 in the final grade (weighted average) for the subject.

In any case, you must achieve a grade greater than or equal to 4.0 in the final assessment so this can be used for the average with the other activities.

7.2. Extraordinary examination period

To pass the course in the extraordinary examination period you must obtain a grade of 5.0 or more out of 10.0 in the final grade (weighted average) for the subject.

In any case, you must achieve a grade greater than or equal to 4.0 in the final assessment so this can be used for the average with the other activities.

Activities not passed in the ordinary examination period, or those not delivered, must now be delivered after having received the relevant corrections to them by the lecturer.

8. SCHEDULE

The schedule with delivery dates of assessable activities in the course is indicated in this section:

Assessable activities	Date
Activity 1	Week 1-2
Activity 2	Week 2-3
Activity 3	Week 4-5
Activity 4	Week 6-7
Activity 5	Week 8-9
Activity 6	Week 10-12
Activity 7	Week 13-15
Activity 8	Week 6-7
Activity 9	Week 8-9
Activity 10	Week 1-3
Activity 11	Week 5-6
Activity 12	Week 7-15
Activity 13	Week 7-15

The schedule may be subject to modifications for logistical reasons of the activities. Students will be informed of any changes in due time and course.

9. BIBLIOGRAPHY

The recommended bibliography is indicated below:

Digital module:

- Scott, A. Rhinoceros Success
- Van der Kley, M. New Rhino book
- De la Flor, M. (2010). Digital sculpting with Mudbox. Burlington.
- Keller, E. Introducing ZBrush (3rd Revised edition). John Wiley & Sons Inc.
- MEDIAactive. Manual de 3DS Max 2013. Marcombo.
- Reyes, A. (2011). AutoCAD (Manual Imprescindible). Ed. Anaya Multimedia.
- Siddi, F. (2010). Grafica 3D con Blender. Ed. Apogeo.
- Vaughan, W. (2012). Modelado digital. Anaya Multimedia.

Analogue module:

- Arnheim, Rudolf. (1979). Arte y Percepción visual. Alianza forma.

- Campo Baeza, A. (2009) *Pensar con las manos*. Buenos Aires: Nobuko.
- Design Packaging, Inc. (2014). Packaging & Dielines: The designer´s book on packaging dielines (Free resource)
- Ganslandt, R. y Hofmann, H. (1992) *Guía Erco. Manual – Cómo planificar la luz.* Madrid: Vieweg
- Jackson, Paul (2011). Técnicas de plegado para Diseñadores y arquitectos. Promo Press. Barcelona.
- MUNARI, Bruno: (1980) Diseño y Comunicación visual, Barcelona, Ed. Gustavo Gili, S.A.
- Razani, Ramin: (1993). Phantastische Papierarbeiten. Verlag Augustus, Germani.
- WONG, Wucius: (1982), Fundamentos del diseño bi- y tri-dimensional, ed. Gustavo Gili.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

The Educational Guidance and Diversity Unit offers support throughout your time at university to help you with your academic achievement. One of the main pillars of our educational policy is the inclusion of students with special educational needs, universal accessibility to the different university campuses and equal opportunities.
This unit offers students:

1. Support and monitoring through personalised counselling and programmes for students who need to improve their academic performance.
2. Promotion of diversity, with curricular changes possible in terms of methodology or assessment for those students with special educational needs in order to provide equal opportunities for all our students.
3. We also offer students a range of educational extracurricular resources for developing a variety of skills to enhance their personal and professional development.
4. Career guidance by offering tools and advice to students with doubts regarding their professional careers or those who believe they have chosen the wrong line of study.

Students who need educational support can contact us at:
orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, degree courses and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the course.

Many thanks for taking part.