Curso 2025-26

Istituto Europeo di Design

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GUÍA DOCENTE DE

Virtual Space. Laboratory.

Título de Grado en
Enseñanzas Artísticas Superiores de Diseño

Especialidad de Diseño de Interiores

Fecha de actualización: 1 de septiembre de 2026

Dirección General de Universidades y
Enseñanzas Artísticas Superiores
CONSEJERÍA DE CIENCIA, UNIVERSIDADES
E INNOVACIÓN

Título de Grado en Enseñanzas Artísticas Superiores de Diseño.
Subject: Virtual Space. Laboratory (Laboratorio. Espacio virtual)

1. COURSE IDENTIFICATION

Type	Pathway Elective	
Nature	Theory and Practice	
Specialisation / Pathway / Style / Instrument	Interior Design	
Subject Area	Interior Design Projects	
Teaching Period	5th Semester	
Number of Credits	4 ECTS	
Number of Hours	Total: 120 hours	In-person: 72 hours
Minimum Number of Students Required for the Course to Run	-	
Department	Interior Design Department	
Prerequisites	None	
Language(s) of Instruction	English	

2. COURSE COORDINATOR

Surname and Name	Email
Gómez Arroyo, Fernando	campus IED

3. TEACHING STAFF AND GROUPS

Surname and Name	Email	Groups
Gómez Arroyo, Fernando	campus IED	All

4. COMPETENCES

Transversal Competences
CT1 Organise and plan work efficiently and effectively, fostering motivation.
CT2 Gather relevant information, analyse and synthesise it, and manage it appropriately.
CT3 Solve problems and make decisions in accordance with the objectives of the work being carried out.
CT8 Develop ideas and arguments in a reasoned and critical manner.

CT11 Develop a professional ethic in practice based on appreciation and sensitivity towards aesthetics, the environment and diversity.
CT12 Adapt, in competitive environments, to cultural, social and artistic changes and to developments in professional practice, and select appropriate pathways for continuing education.
CT13 Pursue excellence and quality in professional practice.
CT14 Master research methodology in the development of projects, ideas and viable solutions.

General Competences
CG1 Conceive, plan and develop design projects in accordance with technical, functional, aesthetic and communication requirements and constraints.
CG2 Master the languages and expressive resources of representation and communication.
CG3 Establish relationships between formal language, symbolic language and specific functionality.
CG5 Act as mediators between technology and art, ideas and purposes, culture and commerce.
CG8 Develop research and innovation strategies to address expectations centred on functions, needs and materials.
CG10 Be able to adapt to changes and developments in industrial technology.
CG20 Understand the behaviour of the elements involved in the communication process, master communication technologies and assess their influence on design processes and products.
CG21 Master research methodology.

Specific Competences
CEI1 Generate and materialise functional, formal and technical solutions that enable the optimal use of interior spaces.
CEI4 Analyse, interpret, adapt and produce information relating to the materialisation of projects.
CEI5 Solve aesthetic, functional, technical and construction problems arising during the development and execution of a project.
CEI9 Adapt methodology and proposals to technological and industrial developments specific to the sector.
CEI10 Understand communication technologies and their applications to interior design.
CEI11 Master the specific digital technology associated with the development and execution of interior design projects.
CEI15 Reflect on the positive social impact of design, its contribution to improving quality of life and the environment, and its capacity to generate identity, innovation and quality in production.

5. LEARNING OUTCOMES

- Identify how virtual and augmented reality software works and its application in the spatial design process.
- Identify basic 3D concepts required to create real-time visualisations using game engines, such as 3D model optimisation, polygon control, normal alignment and UV coordinate editing.
- Be able to use game engines to produce rendered images, video, real-time walkthroughs and virtual reality experiences.
- Experiment with the use of virtual reality devices.
- Be able to apply virtual and augmented reality software to a spatial design project.

6. CONTENT

Thematic Block (if applicable)	Topic / Content
I. Virtual Development	Topic 1. REAL-TIME PROJECT VISUALISATION AND MIXED REALITY. ● Real-time visualisation. Theoretical introduction to real-time visualisation technologies, their current state of development and applications. ● Mixed Reality. History, current state and applications of Mixed Reality. ● Devices. Evolution, applications and use of Mixed Reality devices. ● Development Methodology. Techniques, processes and software for developing immersive experiences.
	Topic 2: BASIC DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY. ● Software installation. Downloading and installing development software. ● Project management. General concepts for creating and developing projects in an organised manner. ● Interface and navigation. Tool layout and movement within three-dimensional spaces. ● Use of 3D models. Development and use of custom 3D models. ● Scene editing. Creation, distribution and management of elements to build environments. ● Basic lighting. Types of lights and use of lighting for scene development. ● Basic materials. Development of visual materials to control the surface appearance of 3D elements. ● Render. Rendering 2D images from scenes. ● Video. Production of video within a real-time 3D space. ● Project packaging. Packaging projects to run outside the development software.

	Topic 3. ADVANCED DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY • Development and optimisation of 3D models. Development of optimised 3D models to achieve better performance. • UV coordinate generation. Generation of coordinates to correctly map textures onto 3D models. • Advanced materials. Advanced use of PBR materials. • Advanced lighting. Development of realistic lighting using advanced techniques. • Environment and vegetation. Use of tools for terrain creation and the distribution of large quantities of vegetation elements. • VR project packaging. Packaging Virtual Reality projects to run outside the development software.
	Topic 4. ADVANCED TECHNIQUES AND OTHER VISUALISATION TOOLS • Sound. Use of sound within 3D spaces. • Animation. Basic animation of 3D elements. • 3D web platforms. Visualisation of models within 3D web platforms. • 360 video editing. Development of narratives, editing and distribution of video in immersive format. • Augmented Reality. Basic development of Augmented Reality experiences.

7. STUDENT WORKLOAD PLANNING

Type of Activity	**Total Hours**
Theoretical Activities	7 hours
Practical Activities	13 hours
Other Compulsory Training Activities (workshops, seminars, etc.)	32 hours
Assessment Activities	120 hours
Student Independent Study	4 hours
Preparation of Practical Work	34 hours
Assessment Activities	10 hours
Total Student Workload	**120 hours**

8. METHODOLOGY

Theoretical Activities	The main teaching method used is the lecture, in which course content is presented and explained by the lecturer, supported by the use of Information and Communication Technologies (ICT). During these sessions, questions may be raised, doubts clarified, guidance provided on information research, and individual or group discussions encouraged. These sessions cover the course content through a three-way exchange of information (lecturer-student-student group), which is then developed into tangible exercises designed to form part of the practical activities. At the end of these sessions, a series of assignments or tasks are proposed for the student or group of students to develop during the practical activities.
Practical Activities	This course combines digital tools and project development. It is therefore divided into two thematic blocks (tool learning and a project applying the tool). The first block focuses on learning to use the tool to create virtual reality experiences through a complete case study. In the second block, students develop an interior design project using the tool they have learned, continue to deepen their knowledge of virtual reality, and develop a complete virtual reality experience to communicate their project. Accordingly, the practical activities will include several types: Case study: a technique in which students analyse professional situations presented by the lecturer in order to develop an experiential conceptualisation and identify effective solutions. These cases involve the development of a complete basic project based on a given case, and the generation of graphic resources using BIM methodology together with a game engine to visualise an interior design project. Project-Based Learning: situations in which students explore and address a practical problem by applying interdisciplinary knowledge. In this case, they must produce a virtual space design project in response to a given brief. Project Presentation: presentation of the project assigned to a student. In this case, project development includes the use of virtual reality devices.

Other Compulsory Training Activities (workshops, seminars, etc.)	Virtual Reality Laboratory: an instructional period led by the lecturer to review and discuss the materials and topics presented in class. During these sessions supporting the work proposed for the course, students can resolve questions and explore in greater depth the content covered in theoretical and/or practical activities.

9. ASSESSMENT AND GRADING CRITERIA AND METHODS

9.1. ASSESSMENT METHODS

Theoretical Activities	Critical and rigorous participation will be required in discussions held during theoretical sessions in relation to virtual environments.
Practical Activities	• Students will analyse complete case studies related to the course content, in this case virtual spaces. • Students will develop a final project (individual or group) related to virtual reality and user integration in immersive environments. Specific submission requirements will be established for each deliverable.
Other Compulsory Training Activities (workshops, seminars, etc.)	

Attendance and participation in the Virtual Reality Laboratory will be required.

9.2. ASSESSMENT CRITERIA

The following will be assessed:

- Be able to identify how virtual and augmented reality software works and its application in the spatial design process.
- Identify basic 3D concepts required to create real-time visualisations using game engines, such as 3D model optimisation, polygon control, normal alignment and UV coordinate editing.
- Be able to use game engines to produce rendered images, video, real-time walkthroughs and virtual reality experiences.
- Experiment with the use of virtual reality devices.
- Be able to apply virtual and augmented reality software to a spatial design project.

Assessment must be designed and planned in such a way that it is integrated into teaching and learning activities.

Student assessment should be continuous, personalised and comprehensive:

- Continuous, as it is embedded within the teaching and learning process and is therefore not limited to specific dates or assessment situations.
- Personalised, as it must take into account each student's abilities, skills and attitudes. Particular attention will be paid to the student's participation in group work.
- Comprehensive, as it requires consideration of the general competences established for the programme through the objectives of the different thematic units and subject areas.

Students' learning will be assessed in relation to the achievement of the educational objectives established in the curriculum and associated with the general and specific objectives, taking the assessment criteria established for the subject area as the primary reference.

In order to assess the students' learning process, it is necessary to:

- Assess their curricular competence (abilities and aptitudes).
- Assess the factors that hinder or facilitate effective learning.
- Encourage student self-assessment and peer assessment as a means of analysing and critically reviewing results, allowing students to adjust their attitudes and approaches in order to improve.
- Assess the learning context in which the student develops their knowledge and skills.

Theoretical **Activities**	Critical and rigorous participation in discussions held during sessions in relation to the content covered.

Practical Activities	• The case study analysis will assess: clear and in-depth identification of the key elements of the project; the relationship between the case and the course content; strengths and weaknesses of the project; and clarity of presentation. • For the completion, presentation and submission by the established deadline of the proposed individual or group final project, the following will be assessed: • Fluent use of virtual reality software. • Ability to apply interior design concepts in virtual spaces, including lighting, materials and scale. • Consistency between the initial objectives and the final outcome. • Quality of the oral and visual presentation of the submission. • For group submissions, the parts developed by each member will be documented. The final grade will combine the common project grade (70-80%) and the individual assessment (20-30%).
Other Compulsory Training Activities (workshops, seminars, etc.)	Attendance and participation in the Virtual Reality Laboratory.

9.3. GRADING CRITERIA

1. The assessment system used in this course follows a continuous assessment model.
2. Under the continuous assessment system, class attendance is compulsory, and students must attend at least 80% of the activities conducted in the presence of the lecturer.
3. Students who do not meet the requirements for continuous assessment must complete a specific submission for assessment without continuous assessment. This may include any components deemed appropriate, with their corresponding weightings specified in the relevant section of this course guide.
4. In all cases, students will have access to an extraordinary assessment opportunity, the structure, assessment methods and grading criteria of which will be defined during the course if necessary.
5. To be eligible for continuous assessment, students must submit each and every practical assignment by the established deadline.

9.3.1. Weighting of Assessment Components for Continuous Assessment

Assessment Components	Weighting
Case studies and interim course submissions	40%
Completion, presentation and final project submission	50%

Critical and well-reasoned participation in sessions: laboratory, tutorials, discussions...	10%
Total	100%

9.3.2. Weighting of Assessment Components for Assessment without Continuous Assessment
Reasons why a student may lose the right to continuous assessment: failure to meet the compulsory class attendance requirement, set at a minimum of 80% of activities conducted in the presence of the lecturer.

Assessment Components	Weighting
Completion, presentation and submission of case studies and the final project	60%
Completion of a Specific Assessment for Students Who Have Lost the Right to Continuous Assessment	40%
Total	100%

9.3.3. Weighting of Assessment Components for the Extraordinary Assessment

Assessment Components	Weighting
Completion, presentation and final project submission	60%
Completion of a Specific Assessment for the Extraordinary Assessment	40%
Total	100%

9.3.4. Weighting for the Assessment of Students with Disabilities

Adaptations to assessment methods must take into account the different types of disability.

Assessment Components	Weighting
To be determined according to the student's specific needs.	
Total	100%

10. SCHEDULE OF CONTENT, TEACHING METHODOLOGY AND ASSESSMENT

Session	CONTENT, ASSOCIATED TEACHING METHODOLOGY AND ASSESSMENT METHODS		Total hours In-Person	Total hours Independent Study
Session 1	**TOPIC 1: REAL-TIME PROJECT VISUALISATION AND MIXED REALITY.**			
	Theoretical Activities	Lecture covering the specific content of the section (Real-Time Project Visualisation and Mixed Reality).	1 hours	1 hour

	Practical Activities	Completion of practical exercises	1.5 hours	2 hours
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	2 hours	

Session 2 and 3	**TOPIC 2: BASIC DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY.**			
	Theoretical Activities	Lectures covering the specific content of the section (Basic Development of Real-Time Visualisations and Mixed Reality).	2 hours	1 hours
	Practical Activities	Completion of practical exercises and case studies	2 hours	5 hours
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	4 hours	
	Assessment	Review of work completed in class	1 hour	

Session 4	**TOPIC 2: BASIC DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY.**			
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	2 hours	
	Assessment	Submission and review of Visualisation Exercise 1.	2.5 hours	3 hours
Session 5, 6 7 and 8	**TOPIC 3: ADVANCED DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY**			
	Theoretical Activities	Lecture covering the specific content of the section (Advanced Development of Real-Time Visualisations and Mixed Reality).	2 hours	1 hour
	Practical Activities	Completion of practical exercises and case studies	4 hours	11 hours
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	8 hours	
	Assessment	Review of work completed in class	4 hours	

Session 9	**TOPIC 3: ADVANCED DEVELOPMENT OF REAL-TIME VISUALISATIONS AND MIXED REALITY**			
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	2 hours	
	Assessment	Submission and review of Visualisation Exercise 2.	2,5 hours	4 hours

Session 10, 11, 12 and 13	**TOPIC 4. ADVANCED TECHNIQUES AND OTHER VISUALISATION TOOLS**			
	Theoretical Activities	Lecture covering the specific content of the section (Advanced Techniques and Other Visualisation Tools).	2 hours	1 hour
	Practical Activities	Course project development.	8 hours	11 hours
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	8 hours	
	Assessment	Course Project Review	4 hours	

Session 14	**TOPIC 4. ADVANCED TECHNIQUES AND OTHER VISUALISATION TOOLS**			
	Practical Activities	Course project development.	1.5 hours	5 hours
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	2 hours	
	Assessment	Course Project Review	1 hour	

Session 15	**Project Presentation**			
	Other Training Activities	Attendance at the Virtual Reality Laboratory.	4 hours	

	Assessment	CONTINUOUS ASSESSMENT. Final project presentation. ASSESSMENT WITHOUT CONTINUOUS ASSESSMENT: Presentation of the course project and completion of the specific assessment for this assessment opportunity.	2.5 hours	3 hours

Session 16	**Assessment and Grade Release**			
	Assessment	Release of grades to students, feedback and final assessment.	2.5 hours	

11. TEACHING RESOURCES AND MATERIALS

Teaching resources and materials available on the virtual campus for each thematic block:

- PDF files
- Explanatory videos
- Video screen captures taken from the lecturer's computer during certain sessions.

In addition, the classroom computers will include the following specific software:

- Rhinoceros: project modelling.
- Unreal Engine: creation of real-time experiences, VR, rendering and video.
- Twinmotion: creation of real-time experiences, VR, rendering and video.
- Sketchfab: creation of real-time experiences, VR, rendering and video.
- Photoshop: texture editing and image post-production.
- OBS: screen capture.

Specific resources for the exercises, such as models, textures and scripts, will be stored on the virtual platform so that they can be accessed at any time.

11.1. General Bibliography

Título	UNREAL ENGINE 5.6 GUÍA DEL USUARIO: Un manual práctico para desarrolladores de juegos, cineastas y arquitectos: desde la instalación hasta las funciones avanzadas y Complementos. (Spanish Edition)
Autor	Miles Brennan
Editorial	Amazon Digital Services LLC - Kdp, 2025

Título	Visual Scripting for Unreal Engine
Autor	Brenden Sewell
Editorial	Brenden Sewell

11.2. Bibliografía complementaria

Título	3D Photorealistic Rendering: Interiors & Exteriors with V-Ray and 3DS Max

Autor	Thomas Lockwood
Editorial	CRC Press. Taylor & Francis Group

11.3. Useful Websites

https://www.unrealengine.com/
https://unity3d.com/es
https://www.ronenbekerman.com/
https://showitbetter.co/
https://www.fjordnet.com/
https://opinno.com/
https://www.designit.com/

11.4. Other Teaching Materials and Resources

Revit	Project modelling
Rhinoceros	Project modelling
Unreal Engine	Creation of real-time experiences, VR, rendering and video
Twinmotion	Creation of real-time experiences, VR, rendering and video
Photoshop	Texture editing and image post-production
OBS	Screen capture