UNIVERSIDADE DA CORUÑA

Academic Year: 2025/26

202880 - 3D Fundamentals

The English version of the teaching guide may be incomplete and/or partially translated. The teaching guide is the document that presents the academic proposal for this UDC subject. This document is public and cannot be modified, except in exceptional cases under the review of the competent authority in accordance with the current regulations that establish the process for developing guides.

Teaching Guide Information

Subject code: 202880

Degree program: 10098 - Degree in Audiovisual Communication

Type: Compulsory

Year: 1

Number of ECTS: 6.0

Period: Second term

Languages:

Lecture-based teaching:	Group 101: Spanish
Interactive teaching:	Group 101: Spanish
	Group 102: Spanish
	Group 103: Spanish

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Subject coordination: Guillermo Franganillo Parrado

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1. Overview

The course introduces students to the fundamental principles of 3D synthetic image creation, covering Modeling, Shading, Lighting and Rendering of three-dimensional scenes in an integrated manner.

Through a progressive and practical approach, the essential tools and techniques for the production of computer-generated graphics are explored, with special emphasis on professional workflows and visual understanding of the processes involved.

Learning will be developed using **Autodesk Maya** software for modeling and animation, and **Arnold** as a rendering engine.

This subject replaces and unifies the contents previously taught in *Infografía 3D-1* and *Infografía 3D-2.*

2. Educational and learning outcomes (RD 822/2021 degree programs) or competences (RD 1393/2007 degree programs)

Knowledge

- **[C4]** Relate the research and analysis methodologies of the audiovisual field.
- **[C6]** Identify and assess the importance of entrepreneurial culture and recognize the means to undertake.

Skills

- **[H1]** Apply audiovisual creation and production techniques.
- **[H3]** Transmit information, ideas, problems and solutions to both specialized and non-specialized audiences, taking into account universal accessibility and design for all people.

Competences

- **[CP2]** Design and create audiovisual products.
- **[CP5]** Communicate in the main codes of the audiovisual message.
- **[CP7]** Integrate for the exercise of an open, educated, critical, committed, democratic and supportive citizenship, capable of diagnosing problems, formulating and implementing solutions oriented to the common good.
- **[CP8]** Justify as a professional and citizen the importance of lifelong learning.

3. Contents

Content unit	Description	Education and learning outcomes / competences	Teaching methodologie and training activities	Assessment systems
Topic	Introduction: Introduction. Context and applications. Structure of a 3D production. Workflow for the creation of audiovisual products based on synthetic images.	H3, CP7, CP8.	MAG00, MAG39, MAG42.	SEG42.
Topic	3D modeling: Taxonomy of 3D modelling and representation systems. Uses and applications of modelling systems. Polygon meshes. Topology. UVs.	H1, H3, CP2, CP7, CP8.	MAG00, MAG39, MAG42.	SEG42.
Topic	Shading: Arnold materials. Types of textures. Texture mapping.	C4, H1, H3, CP2, CP7, CP8.	MAG00, MAG39, MAG42.	SEG42.
Topic	Lighting and Rendering: Lighting techniques. The rendering process. Render separation by layers & AOVs Final composition.	C4, C6, H1, H3, CP2, CP5, CP7, CP8.	MAG00, MAG02, MAG39, MAG42.	SEG32, SEG42.

4. Teaching methodologies and training activities

Modality In-person					
Methodology	**Description**	**In-person teaching hours**	**Virtual teaching hours**	**Independent study hours**	
Personalized attention [MAG00]	The tutoring will complement the workshops and the lecture content, in order to resolve, individually or in small groups, any doubts or difficulties that may arise during the students' study and non-classroom work.	0,00	2,00	2,00	
Document analysis [MAG02]	Analysis of the bibliographic references that will serve to consolidate the concepts worked on in the classes.	0,00	0,00	5,00	
Mixed objective/subjective test [MAG32]	Theoretical examination.	0,00	0,00	3,00	

Methodology	Description	In-person teaching hours	Virtual teaching hours	Independent study hours
Guest lecture / keynote speech [MAG39]	An expository method complemented by the use of audiovisual material, the purpose of which is to transmit knowledge, show different learning methods and define a workflow.	30,00	0,00	28,00
Supervised projects [MAG42]	The students will carry out several works in the practical classes and a final work in which they will put into practice the knowledge acquired when designing, modeling, texturing, lighting, rendering and composing the final image.	24,00	0,00	56,00
	Sum of hours by type	**54,00**	**2,00**	**94,00**
			Total hours	**150,00**

5. Assessment

Modality In-person		
Assessment system	**Description**	**Weighting (%)**
Mixed objective/subjective test [SEG32]	Theoretical and practical examination.	30,00
Supervised projects [SEG42]	Assignments submitted throughout the term and final delivery.	70,00
	Total (%)	**100,00**

All aspects related to academic exemption, study dedication, retention, and academic fraud will be governed in accordance with the current academic regulations of the UDC.

5.1. First opportunity

The evaluation of the subject will consist of the completion of practices carried out throughout the term (70% of the final grade) as well as the completion of a theoretical / practical exam (30%).

The competences, delivery dates and evaluation criteria to be developed in each test will be previously notified in class and will be published in the Virtual Campus throughout the term.

5.2. Second opportunity

In addition to taking the second chance exam, those who have failed or undelivered internships must retake them and deliver them by the same day of the second chance exam.

5.3. Early opportunity

In the advanced opportunity, students must deliver all the practices corresponding to the four-month period before the date set for the exam of such convocation.

Delivering these practices is a prerequisite for taking the exam, which is the final evaluation test.

Both the practical work and the exam will contribute to the final grade.

5.4. Academic exemption

Practicals and exams are essential assessments of minimum competences, and must not be waived. However, part-time students and those with academic dispensation should contact the teaching staff to arrange flexible delivery dates and/or virtual tutorials, and to agree on how non-attendance will be monitored, in order to guarantee their right to assessment and the acquisition of the learning outcomes.

The fraudulent performance of tests or evaluation activities, once verified, will directly involve the grade of failure in the call in which the infraction is committed: the student will be graded with “fail” (numerical qualification 0) in the corresponding call of the academic year, whether the infraction is committed in the first opportunity as in the second. To this end, his/her grade will be modified in the report of the first opportunity, if necessary.

6. Recommended bibliography

Basic bibliography

- Albers, Josef, 1888-1976., Albers, Josef; LeBUC (2017). Interacción del color. Alianza Editorial, Edición del cincuentenario. Book. [URL]
- Bacher, Hans P., Ebscohost Books (2018). Dream worlds : production design for animation. Routledge. Book. [URL]
- Bacher, Hans P., Suryavanshi, Sanatan (2018). Vision : Color and Composition for Film. Laurence King. Book. [URL]
- Birn, Jeremy (2006). Iluminación y render. Anaya Multimedia, Ed. 2007. Book. [URL]
- Birn, Jeremy. (2014). [Digital] lighting and rendering. New Riders, 3rd edition.. Book. [URL]
- Brown, Tim H. (2007). The art of Maya : an introduction to 3D computer graphics. Autodesk, 4th ed.. Book. [URL]
- Demers, Owen. (2001). Digital texturing & painting. New Riders. Book. [URL]
- Katatikarn, Jasmine, autor, Tanzillo, Michael, autor (2020). Lighting for animation : the art of visual storytelling. CRC Press Taylor & Francis Group A Focal Press Book. Book. [URL]
- Kerlow, Isaac V. (2009). The art of 3D computer animation and effects. John Wiley & Sons, 4th ed.. Book. [URL]
- Legaspi, Chris (2015). Anatomy for 3d artists : the essential guide for CG professionals. 3dtotal Pub. Book. [URL]
- Vaughan, William. (2012). Modelado digital. Anaya Multimedia. Book. [URL]
- Wissler, Virginia Bowman (2013). Illuminated Pixels : The Why, What, and How of Digital Lighting. Cengage Learning. Book. [URL]
- Zarins, Uldis, Kondrats, Sandis (2017). Anatomy for sculptors : understanding the human figure. Anatomy Next. Book. [URL]

Supplementary bibliography

- Cantor, Jeremy., Valencia, Pepe. (2004). Inspired 3D short film production. Thomson. Book. [URL]
- Rodríguez Rodríguez, Alberto (2010). Proyectos de animación 3D. Anaya Multimedia. Book. [URL]
- Wolfe, Art, Sheppard, Rob (2019). El arte de la fotografía: hábitos esenciales para lograr grandes composiciones. Anaya Multimedia, 2ª ed.. Book. [URL]

7. Recommendations

It is advisable to have a laptop or desktop computer that is prepared to work under minimum quality standards both with this subject and with the rest of the degree that are related to 3D.

Hardware requirements:

https://dev.epicgames.com/documentation/es-es/unreal-engine/hardware-and-software-specifications-for-unreal-engine

https://www.autodesk.com/es/support/technical/article/caas/sfdcarticles/sfdcarticles/ESP/System-Requirements-for-Autodesk-Maya-2025.html