Information about the subject

Degree: Degree in Design and Narration in Animation and Video games

Faculty: Faculty of Legal, Economic and Social Sciences

Code: 2050110 **Name:** 3D modelling and representation I

Credits: 6,00 **ECTS Year:** 1 **Semester:** 1

Module: 3D MODELLING AND ANIMATION

Subject Matter: THREE-DIMENSIONAL MODELLING **Type:** Compulsory

Department: Multimedia and Digital Arts

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

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Module organization

3D MODELLING AND ANIMATION

Subject Matter	ECTS	Subject	ECTS	Year/semester
THREE-DIMENSIONAL MODELLING	24,00	3D Digital sculpture and character modelling I	6,00	3/1
		3D Digital sculpture and character modelling II	6,00	3/1
		3D modelling and representation I	6,00	1/1
		3D modelling and representation II	6,00	2/1
THREE-DIMENSIONAL ANIMATION	18,00	3D Animation	6,00	2/2
		3D Character Animation I	6,00	2/2
		3D Character Animation II	6,00	3/1

Recommended knowledge

Basic use of the computer.

Prerequisites

In order to take the subject Modelling and Representation in 3D II, it is essential to have passed the subject Modelling and Representation in 3D I.
- In order to take the subject Character Modelling and Digital Sculpting I it is essential to have passed the subjects 3D Modelling and Representation I and 3D Modelling and Representation II.
and Representation in 3D II
- In order to take the subject Character Modelling and Digital Sculpting II, it is essential to have passed the subject Character Modelling and Digital Sculpting I

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1   To produce a work in which original and innovative ideas and proposals in the process of modelling inorganic objects are expressed.

R2   To cooperatively model scenarios and inorganic objects in three dimensions.

R3   To use the vocabulary specific to the area of 3D modelling and demonstrate it in a written test.

R4   To analyse the structure of real or fictitious objects and show this in the development of their inorganic modelling work.

R5   To digitally develop basic materials and apply them to inorganic three-dimensional models.

R6   To model inorganic three-dimensional objects using simple techniques (extrusion, revolution, Boolean operations, etc.).

R7   To produce a work in which original and innovative ideas and proposals for the three-dimensional modelling of complex inorganic objects are expressed.

R8   To apply the new trends in the field of three-dimensional modelling, incorporating them into their projects.

R9   To use the specific vocabulary developed in the subject and demonstrate it in a written test

R10   To digitally model complex inorganic three-dimensional objects by means of specific techniques (surface subdivision, polygonal modelling, metaballs, etc.).

R11   To digitally design complex materials (displacement mapping, alpha channels, shaders, etc.) and apply them to inorganic three-dimensional objects.

R12   To develop, using digital tools (camera and lighting), the three-dimensional scene according to the basic principles of photography.

R13   To render (make digital captures of three-dimensional scenes) inorganic three-dimensional objects and scenes, adjusting the export parameters according to the requirements of the project.

R14   To prepare the three-dimensional models created, to be included in other editing and/or video game development programs.

R15   To design simple materials (colour, reflection, transparency, etc.) and apply them to organic objects.

R16   To use the specific vocabulary shown in the subject and demonstrate it in a written test.

R17   To develop, using digital tools (camera and lighting), the three-dimensional scene and adjust its parameters on the basis of the aesthetic purpose of the project.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
B2	Students to apply their knowledge to their job or vocation in a professional manner and to possess competences that are usually shown through the elaboration and defence of arguments and problem-solving within their area of study.				x

GENERAL		Weighting			
		1	2	3	4
G1	To develop original and innovative ideas and proposals in the area of design and narrative of animation and videogames in the required work in a project, combining conceptual and technical aspects.				x
G2	To collaborate in teams that adopt interdisciplinary roles in the elaboration of animation and videogames projects.	x			
G3	To identify new trends in the field of animation and videogames and to incorporate them in their work.	x			
G5	To use a specific and inclusive vocabulary in the area of expertise of the degree.	x			

SPECIFIC		Weighting			
		1	2	3	4
E12	To develop (to sculp, texturize, light up, render and/or animate) organic components of the 3D scene.	x			
E13	To develop (to sculp, texturize, light up, render and/or animate) inorganic components of the 3D scene.	x			
E19	To prepare resources analytically in two and three dimensions susceptible to be included in projects of animation and videogames.	x			

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	10,00%	Written tests
	30,00%	Practical tests
	60,00%	Elaboration of projects

Observations

In "**Modelado y representación en 3D I"**, the single evaluation is not accepted as an option to pass the subject. The reason is that continuous tutoring by the teacher and in-person monitoring of the practices proposed in the subject are required to obtain the learning results planned in the teaching guide.

CLASS ATTENDANCE IN FACE-TO-FACE DEGREES

In accordance with the development guidelines of the General Regulations for the Evaluation and Qualification of Official Teachings and Own Degrees of the UCV, in face-to-face degrees, class attendance with a minimum of 80% of the sessions of each subject will be required as a requirement. to be evaluated. This means that, if a student does not attend the sessions of each subject, in a percentage greater than 20%, he/she will not be able to be evaluated, neither in the first nor in the second call, unless the person responsible for the subject, with the approval of the person responsible for degree, in view of duly justified exceptional circumstances, exempt from the minimum attendance percentage.The same criterion will be applicable for hybrid or virtual degrees in which teachers must maintain the same percentage in the requirement of "presence" in the different training activities , if any, even if these are carried out in virtual environments.

MENTION OF DISTINCTION:

The mention of "Honors" may be awarded to students who have obtained a grade equal to or greater than 9.0. Their number may not exceed five percent of the students enrolled in a group in the corresponding academic year, unless the number of students enrolled is lower.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M2   Participatory master class

M4   Problem solving activities

M6   Project-based learning

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Active listening, summaries, concept maps and/or notes organizing the information and work in small groups (Kagan structures) to process the received information. M2, M4	R1, R2, R3, R4, R5, R6, R7, R8, R9, R12, R13, R14, R15, R16, R17	10,00	0,40
The student, individually or in a group, leads their action to the elaboration of a tangible final result (product) in which process knowledges and needed competences are incorporated. M4, M6	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17	50,00	2,00
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Autonomous work. Study, memorization, test preparation, practical abilities drilling, elaboration of works, essays, reflections, metacognitions, portfolios elaboration, … M4, M6	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17	30,00	1,20
The student, individually or in a group, leads their action to the elaboration of a tangible final result (product) in which process knowledges and needed competences are incorporated. M4, M6	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17	60,00	2,40
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
1. Introduction to 3D design.	History of 3D design. Basic fundamentals of creating in 3D.
2. Description of the three-dimensional concept: XYZ coordinate systems, projections and depth.	Basic principles of the three-dimensional environment. Concept of axes, coordinate systems. What does it mean to work in 3D.
3. Phases and components of the creative process in three dimensions.	Description of the creative process in three dimensions: Modeling / texturing / lighting / camera / scene composition / rendering / digital retouching. 3D Work philosophy.
4. Introduction to Autodesk Maya. Windows, panels and preferences.	What is Autodesk Maya. History, work philosophy, main windows and panels. Work environment.
5. Object modeling using primitives.	Types of modeling in Autodesk Maya. What are primitives: advantages and disadvantages. Moving, scaling and rotating objects. Grouping and visibility.
6. Composición de la escena: cámaras y luces.	Types of lighting in Cinema. Use and philosophy of the camera object. Scene composition following the photographic concept.
7. Import of external objects.	Export and import formats in the 3D environment. Relationship of cinema 4D with Adobe Illustrator.
8. Advanced modeling using surface subdivision and Boolean.	Polygonal modeling: what it is based on and how it works. Basic functions of polygonal modeling. What is surface subdivision modeling and its relation to polygonal modeling.
9. Rendering typology and parameters.	Parameters and settings in the rendering process. Size, resolution, alpha channels and post effects.

Temporary organization of learning:

Block of content	Number of sessions	Hours
1. Introduction to 3D design.	1,00	2,00
2. Description of the three-dimensional concept: XYZ coordinate systems, projections and depth.	1,00	2,00
3. Phases and components of the creative process in three dimensions.	2,00	4,00
4. Introduction to Autodesk Maya. Windows, panels and preferences.	3,00	6,00
5. Object modeling using primitives.	6,00	12,00
6. Composición de la escena: cámaras y luces.	5,00	10,00
7. Import of external objects.	3,00	6,00
8. Advanced modeling using surface subdivision and Boolean.	6,00	12,00
9. Rendering typology and parameters.	3,00	6,00

References

Autodesk Maya 2023 Basics Guide - 1630575275 - SDC Publications
Autodesk Maya - An Introduction to 3D Modeling - 1983263427
Maya Studio Projects: Game Environments and Props (English Edition) - 978-0470524039 - Sybex
Digital Lighting and Rendering (Voices That Matter) (English Edition) - 978-0321928986 - New Riders
Dado el componente digital del modelado 3D, es dificil encontrar libros de referencia que sirvan para una asimilación profunda y avanzada del modelado 3D, sin que se queden obsoletos en períodos cortos de tiempo a causa de nuevas herramientas y/o actualizaciones de software. Por tanto entiendase estas referencias bibliográficas como pequeños acercamientos al medio tecnológico.
-------GrayscaleGorilla. From:
https://greyscalegorilla.com/categor/tutorials/

Cineversity. From:
http://www.cineversity.com

HelloLux. From:
http://www.helloluxx.com

EyeDesign. From:
https://eyedesyn.com

The Pixel Lab. From:
https://www.thepixellab.net/tutorials

Simply4D. From:
https://www.youtube.com/channel/UCP6AeFYfJ_jsrNMhvLeNuRw

Cinema 4D Tutorial. From:
https://www.cinema4dtutorial.net

Creative Bloq. From:

https://www.creativebloq.com/how-to/cinema-4d-tutorials-47-projects-to-up-your-3d-skills

Hands on with Maxon. From:
https://www.youtube.com/playlist?list=PLMeO87vDgOoNAIESE1YfgbUmKzxsg_e-9

Los 12 principios de la animación. From:
https://www.notodoanimacion.es/los-12-principios-de-la-animacion-disney-libro/