



Information about the subject

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

Faculty: Faculty of Legal, Economic and Social Sciences

Code: 2050213 **Name:** 3D modelling and representation II

Credits: 6,00 **ECTS Year:** 2 **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:

2052A Adrian Mantilla Pousa (**Responsible Lecturer**)

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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



Currently, the digital entertainment industry is characterized by its constant evolution and demand for sophisticated visual content. 3D Modeling and Representation have become essential disciplines for creating immersive experiences within the realm of video games. Acquiring an advanced level of expertise in the 3D modeling framework, along with obtaining the tools and knowledge required to create high-quality three-dimensional models, will provide students with the keys to competitiveness in the job market.

Throughout this course, advanced 3D modeling concepts, modeling techniques, and strategies for optimizing 3D assets for real-time implementation in video games will be explored.

Recommended prerequisites for enrolling in this course include:

- 1.(Recommended) Having successfully completed and passed the course "3D Modeling and Representation I."
- 2.Proficiency in vector software and image editing software.
- 3.Knowledge in the field of pictorial discourse.
- 4.Familiarity with level design principles and scenography in video games, including the composition of playable and aesthetically appealing environments.
- 5.Understanding of current trends in game design and the video game industry as a whole.

These recommended skills and knowledge will provide students with a solid foundation for tackling the advanced concepts and challenges that will be explored in the course "3D Modeling and Representation II." While not strict prerequisites, having prior knowledge in these areas will enable students to fully leverage the course and advance in their development as professionals in 3D content creation for video games.

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.

- 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.



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 sculpt, texturize, light up, render and/or animate) organic components of the 3D scene.			X	
E13	To develop (to sculpt, 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
R3, R4	10,00%	Written tests
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14	60,00%	Practical tests
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14	30,00%	Elaboration of projects

Observations

- It will be mandatory to obtain a passing grade (5) in the written exam for the rest of the exams to be valid during the first exam sessions.
- In case of losing the right to continuous assessment, either due to lack of attendance or failing the theoretical exam, the student will need to, during the second exam sessions, take a new theoretical exam and submit new assignments and projects.
- Unauthorized use by the professor of generative technologies (artificial intelligences), fraudulent use, plagiarism, and/or improper use of others' artistic work in favor of students will result in the loss of the right to assessment in both the first and second exam sessions.

In "**Modelado y representación en 3D II**", 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	R6, R7, R8, R9	20,00	0,80
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	40,00	1,60
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	45,00	1,80
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	45,00	1,80
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
Part I - 3D Modeling	In this block, the different 3D modeling techniques will be studied and put into practice where the students will assimilate a correct workflow within the Autodesk Maya software and will be able to export it to other modeling software, always focusing on the correct creation of a Maya.
Part II - UV and Materials	In block 2, the student will go through the techniques of UV map extraction and the creation of textures, for the formation of materials. Different matepaint and digital painting techniques will be applied to create artistic styles that accompany the narrative style of the 3D piece.
Part III - Illumination and renders	In the last block the student will learn the basics of lighting and the different configurations of the Maya rendering engine to be able to obtain quality images for their projects.

Temporary organization of learning:

Block of content	Number of sessions	Hours
Part I - 3D Modeling	20,00	40,00
Part II - UV and Materials	5,00	10,00
Part III - Illumination and renders	5,00	10,00



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

Given the digital component of 3D modeling, it is difficult to find reference books that serve for a deep and advanced assimilation of 3D modeling, without becoming obsolete in short periods of time due to new tools and/or software updates. Therefore, these bibliographical references should be understood as small approaches to the technological environment.