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: -

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

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.
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.

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
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

- Punctuality and attendance account for 10% of the course evaluation, constituting part of the 50% of the assessment system for practical exams. It is mandatory to have a 50% attendance rate to maintain the right to continuous assessment. Lack of active attention and participation in the development of course classes can also be interpreted as a lack of attendance.
- 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.

MENTION OF DISTINCTION:
According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

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 - Ilumination 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 - Ilumination 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.

Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

X	Microsoft Teams
	Kaltura

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

X	Microsoft Teams
	Kaltura

Explanation about the practical sessions:

2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

| X | The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus. |

| | The following changes will be made to adapt the subject's assessment to the online teaching. |

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System: