

Academic Year: 2025/26

202005 - Character Development

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Teaching Guide Information

Subject code: 202005

Degree program: 10014 - Degree in Digital Creation, Animation and Video Games

Type: Compulsory

Year: 3

Number of ECTS: 6.0

Period: Second term

Languages:

Interactive teaching: Group 101: Spanish

Group 102: Spanish

Group 103: Spanish

Degree coordination: Patricia Comesaña Comesaña

Subject coordination: Luis Omar Álvarez Mures

Faculty: David Rogel Pernas, Luis Omar Álvarez Mures

1. Overview

The aim of this course is for students to learn how to create characters and give them the required appearance within a video game engine, based on the character design previously defined for the game. Students will learn how to import these models into the engine, configure them correctly, combine them, and optimize them to achieve the best performance. They will also learn how to manage characters within a video game engine and provide them with the required behavior (either autonomous or based on player actions).

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

Competences (RD 1393/2007 degree programs)

- **[A10]** CE10 - Understanding the main stages of the animation or video game production pipeline and their significance in the overall process.
- **[A23]** CE23 - Understanding of video game development environments and their use in creating the game world and components, applying specific modeling and material creation criteria for real-time graphics systems.
- **[A26]** CE26 - Application and integration of artificial intelligence techniques in video game engines.
- **[A30]** CE30 - Ability to develop characters in a video game environment, configuring their attributes and programming

their movement patterns, actions, and behaviors in response to user actions and game mechanics.

- **[B01]** CB1 - That students have demonstrated possession and understanding of knowledge in a field of study that builds upon general secondary education and is typically at a level that, while supported by advanced textbooks, also includes some aspects involving knowledge from the forefront of their field of study.
- **[B02]** CB2 - That students know how to apply their knowledge to their work or vocation in a professional way and possess the competencies that are usually demonstrated through the preparation and defense of arguments and problem-solving within their field of study.
- **[B03]** CB3 - That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant social, scientific, or ethical issues.
- **[B04]** CB4 - That students can communicate information, ideas, problems, and solutions to both specialized and non-specialized audiences.
- **[B05]** CB5 - That students have developed the learning skills necessary to undertake further studies with a high degree of autonomy.
- **[B06]** CG1 - Organizational and planning skills, especially in designing work aimed at creating the digital audiovisual content that forms part of an animation production or video game.
- **[B07]** CG2 - Ability to effectively solve problems, mainly of a technological nature, and in the field of creating interactive and animated digital content.
- **[B08]** CG3 - IT knowledge, especially regarding the use of state-of-the-art technologies and software within the field of study.
- **[B09]** CG4 - Knowledge of the procedures, skills, and methodologies required to adapt the creative process to digital media and to produce artistic works using specific technologies.
- **[B10]** CG5 - Critical evaluation of available knowledge, technology, and information for their application in problem-solving.
- **[B11]** CG6 - Critical and self-critical thinking skills, necessary in all creative processes that aim for a commitment to the quality of the work, outcomes, and proposed solutions.
- **[B12]** CG7 - Teamwork skills. Ability to tackle projects collaboratively with other students, assuming roles and fulfilling commitments to the group.
- **[B13]** CG8 - Ability to apply knowledge in practice, integrating the different parts of the program and connecting them in the development of complex products.
- **[C01]** CT1 - Adequate oral and written expression in the official languages.
- **[C03]** CT3 - Using ICT in working contexts and lifelong learning.
- **[C04]** CT4 - Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.
- **[C06]** CT6 - Acquiring skills for healthy lifestyles, and healthy habits and routines.
- **[C07]** CT7 - Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.
- **[C08]** CT8 - Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society.
- **[C09]** CT9 - Ter a capacidade de xestionar tempos e recursos: desenvolver plans, priorizar actividades, identificar as críticas, establecer prazos e cumprilos.

2.1. Learning outcomes (RD 1393/2007 degree programs)

Learning outcomes	Study programme competences / results		
The student will learn to import characters developed in external modeling programs into a video game engine, adjusting the different features of their skeletal system within the engine and defining the animation combination modes that determine their behavior based on user actions and game mechanics.	A10	B1	C1
	A23	B2	C3
	A26	B3	C4
	A30	B4	C6
		B5	C7
		B6	C8
		B7	C9
		B8	
		B9	
		B10	
		B11	
		B12	
		B13	

3. Contents

Content unit	Description	Education and learning outcomes / competences	Teaching methodologies and training activities	Assessment systems
Topic	Characters in video game engines: <ul style="list-style-type: none"> - Basic character animation concepts. - Elements and assets of a character in a video game engine. - Importing skeletal meshes and animations from external programs. - Skeleton hierarchy adjustment. Retargeting. 			
Topic	Character appearance: <ul style="list-style-type: none"> - Character materials. - Character textures and detail. - Specific materials: skin, eyes, hair. 			
Topic	Movement and action control: <ul style="list-style-type: none"> - Responding to player interactions. - Executing actions. 			
Topic	Character animation: <ul style="list-style-type: none"> - Connectors. - Dynamic simulation. - Animation blend spaces. - State machines. - Character animation system. Variations and montages. 			
Topic	Non-playable characters: <ul style="list-style-type: none"> - Basic artificial intelligence. 			

4. Teaching methodologies and training activities

Modality In-person					
Methodology	Description	In-person teaching hours	Virtual teaching hours	Independent study hours	Education and learning outcomes / competences
Personalized attention [MAG00]	Through tutoring sessions, students will solve any doubts or problems they encounter during their work outside of class. For students with academic exemption, attending tutoring sessions is encouraged to oversee the progress of their coursework.	1,00	0,00	0,00	
Oral presentation [MAG22]	The project or work completed during the course will be presented publicly.	1,00	0,00	6,00	B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C01, C03, C09.
Guest lecture / keynote speech [MAG39]	In-person theoretical lectures, where basic concepts that students must know will be explained, which will be applicable to practical assignments.	26,00	0,00	0,00	A10, A23, A30, B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C04, C06, C08.
Problem solving [MAG41]	Practical case studies will be presented in which the student will have to apply the knowledge	19,00	0,00	57,00	A23, A30, B01, B02, B03, B04,

Methodology	Description	In-person teaching hours	Virtual teaching hours	Independent study hours	Education and learning outcomes / competences
	acquired through the lectures to solve problems as they arise in order to achieve the desired result.				B05, B06, B07, B08, B09, B10, B11, B12, B13, C03, C07, C08, C09.
Supervised projects [MAG42]	With teacher supervision, and primarily through individual and autonomous work, students will have to develop the requirements and content necessary for each course project.	5,00	0,00	35,00	A26, A30, B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C01, C03, C04, C06, C07, C08, C09.
Sum of hours by type		52,00	0,00	98,00	
Total hours				150,00	

5. Assessment

Modality In-person			
Assessment system	Description	Weighting (%)	Education and learning outcomes / competences
Oral presentation [SEG22]	Presentation (10)	10,00	B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C01, C03, C09.
Problem solving [SEG41]	P1 (5), P2 (10), P3 (10), P4 (5)	30,00	A23, A30, B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C03, C07, C08, C09.
Supervised projects [SEG42]	Demoreel (20) Report (10) Prototype (30)	60,00	A26, A30, B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, C01, C03, C04, C06, C07, C08, C09.
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

- To pass the course, it is necessary to achieve a grade greater than or equal to 50% of the total score, which is the sum of all assessable activities (practical assignments + supervised project + oral presentation).
- Submitting the supervised project alone is not sufficient to pass.
- Fraudulent participation in tests or assessment activities, once verified, will directly result in a failing grade for the opportunity in which it occurs. The student will be graded as "suspense" (with a numerical grade of 0) in the

corresponding opportunity of the academic year, whether the offense is committed in the first or the second assessment opportunity. To this end, their grade in the official record for the first opportunity will be amended if necessary.

5.2. Second opportunity

- Practical assignments or supervised projects with a grade below 50% will be re-submitted.
- To pass the course, it is necessary to achieve a grade greater than or equal to 50% of the total score, which is the sum of all assessable activities (practical assignments + supervised project + oral presentation).
- Submitting the supervised project alone is not sufficient to pass.
- Fraudulent participation in tests or assessment activities, once verified, will directly result in a failing grade for the opportunity in which it occurs. The student will be graded as "suspense" (with a numerical grade of 0) in the corresponding opportunity of the academic year, whether the offense is committed in the first or the second assessment opportunity. To this end, their grade in the official record for the first opportunity will be amended if necessary.

5.3. Early opportunity

- Practical assignments or supervised projects with a grade below 50% will be re-submitted.
- To pass the course, it is necessary to achieve a grade greater than or equal to 50% of the total score, which is the sum of all assessable activities (practical assignments + supervised project + oral presentation).
- Submitting the supervised project alone is not sufficient to pass.
- Fraudulent participation in tests or assessment activities, once verified, will directly result in a failing grade for the opportunity in which it occurs. The student will be graded as "suspense" (with a numerical grade of 0) in the corresponding opportunity of the academic year, whether the offense is committed in the first or the second assessment opportunity. To this end, their grade in the official record for the first opportunity will be amended if necessary.

5.4. Academic exemption

The Governing Council, in its session of May 28, 2025, approved the regulation that governs the study commitment status and the academic exemption procedure for undergraduate and master's degree students. In accordance with this regulation, none of the mandatory attendance activities in this course can be waived, as they are all included among the exceptions established in Article 12, Section 2 of said regulation.

6. Recommended bibliography

Basic bibliography

- Carnall, Benjamin, autor (2016). Unreal Engine 4.X by example : an example-based practical guide to get you up and running with Unreal Engine 4.X. Packt Publishing. Book. [\[URL\]](#)
- Cooper, Jonathan (2021). Game Anim : video game animation explained. Crc Press, Second edition. Book. [\[URL\]](#)
- Henk Venter, Wilhelm Ogterop (2022). Unreal Engine 5 Character Creation, Animation, and Cinematics: Create custom 3D assets and bring them to life in Unreal Engine 5 using MetaHuman, Lumen, and Nanite. Packt Publishing. Book. [\[URL\]](#)
- Moniem, Muhammad A. (2016). Mastering Unreal Engine 4.X: Master the art of building AAA games with Unreal Engine. Packt Publishing. Book. [\[URL\]](#)
- Romero, Marcos, autor, Sewell, Brenden, autor (2022). Blueprints visual scripting for Unreal Engine 5. Packt Publishing, Third edition. Book. [\[URL\]](#)
- Satheesh, P. V., autor (2016). Unreal Engine 4 game development essentials : master the basics of Unreal Engine 4 to build stunning video games. Packt Publishing. Book. [\[URL\]](#)
- Tavakkoli, Alireza (2019). Game development and simulation with unreal technology. CRC Press, 2nd ed.. Book. [\[URL\]](#)

7. Recommendations

Recommended courses:

- Animation 1.
- Animation 2.
- Character Animation.
- Materials and Lighting.

Online resources:

- [Class tutorials.](#)
- [Unreal Online Learning.](#)
- [Unreal Engine documentation.](#)
- [Unreal Engine YouTube channel.](#)