



Information about the course

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

Faculty: Faculty of Legal, Economic and Social Sciences

Code: 2050329 **Name:** 2D video game programming

Credits: 6,00 ECTS **Year:** 3 **Semester:** 2

Module: PROGRAMACIÓN DE VIDEOJUEGOS

Subject Matter: PROGRAMACIÓN **Type:** Obligatoria

Branch of knowledge:

Department: Multimedia and Digital Arts

Type of learning: Classroom-based learning

Language/-s in which it is given: Spanish

Teachers:

2053A David Ponce Segura (Profesor responsable)

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Module organization

PROGRAMACIÓN DE VIDEOJUEGOS

Subject Matter	ECTS	Subject	ECTS	Year/semester
FUNDAMENTOS DE LA PROGRAMACIÓN	12	Arithmetic foundations of video game programming	6	3/1
		Programming foundations	6	3/1
PROGRAMACIÓN	30	2D video game programming	6	3/2
		3D video game programming	6	4/1
		Artificial Intelligence for Video Games	6	4/1
		Online game programming	6	4/1
		Virtual reality	6	4/2

Recommended knowledge

Basic programming knowledge (variables, functions, control structures, objects, etc.) acquired in the course *Fundamentals of Programming*. Basic arithmetic knowledge (trigonometry, simple equations, etc.) covered in the course *Arithmetic Fundamentals for Programming* is recommended.

Other types of requirements

Para cursar las asignaturas: Programación de videojuegos 3D, Inteligencia artificial para videojuegos, Programación de juegos en red y Realidad virtual, se recomienda haber superado las asignaturas de: Fundamentos de programación y Fundamentos aritméticos para programación de videojuegos.



Learning outcomes

At the end of the course, the student must demonstrate having acquired the following learning outcomes:

R5 - Develop basic two-dimensional video games using specific programming environments and languages. RA12.84

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Illustrate and generate specific animation and video game projects using traditional procedures and digital techniques

R6 - Establish the rules of a two-dimensional video game, taking into account the sincere search for the whole truth and the integration of all dimensions of the human being in the face of life's big questions, applying the principles derived from the concept of integral ecology and respecting and putting into practice the ethical principles and proposals for action derived from the sustainable development goals. RA12.85/ RA6.28 / RA7.28 / RA8.35

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Illustrate and generate specific animation and video game projects using traditional procedures and digital techniques

Type of AR: Competencias

- Apply the principles derived from the concept of integral ecology to their proposals or actions, regardless of their scope, area of knowledge, and the contexts in which they are presented.
- Develop theoretical and practical responses based on the sincere search for the full truth and the integration of all dimensions of the human being in response to life's major questions.
- Respect and implement the ethical principles and action proposals derived from the Sustainable Development Goals, applying them to all academic and professional activities.



R7 - Identify the technical requirements necessary for each type of video game.

RA12.86

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Illustrate and generate specific animation and video game projects using traditional procedures and digital techniques

R8 - Create levels and scenarios for two-dimensional video games, correctly applying the principles of structural design. RA12.87

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Illustrate and generate specific animation and video game projects using traditional procedures and digital techniques

R9 - Adapt the necessary multimedia resources to formats suitable for two-dimensional video game programming. RA12.88

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Illustrate and generate specific animation and video game projects using traditional procedures and digital techniques



Assessment system

In-person modality

Assessed learning outcomes	Granted percentage	Assessment tool
	30,00%	SE1 – Written exams.
	20,00%	SE6 – Practical exams.
	50,00%	SE8 – Project development.

Observations

The use of artificial intelligence for problem-solving, the design of complete algorithms, the generation of code for deliverable exercises, or during exam tests is strictly prohibited. However, its use is recommended in the completion of practical assignments for self-correction purposes and to consult specific uses of functions or particularities of the programming language.

The distinction of "Honors with Distinction" (*Matrícula de Honor*) may be awarded to students who have obtained a grade equal to or higher than 9.0. The number of such distinctions may not exceed five percent of the students enrolled in a group for the corresponding academic year, unless the number of enrolled students is small.

According to Article 9 of the General Regulations for the Evaluation and Grading of Official Degrees and UCV's Own Degrees, the continuous assessment system is the preferred method of evaluation at UCV. Article 10, however, allows for those students who, with justified and documented reasons, demonstrate their inability to attend in person (or to participate in synchronous communication activities in virtual and/or hybrid teaching modalities), to be evaluated extraordinarily through what is known as *single evaluation*. This single evaluation must be requested within the first month of each semester from the Faculty Dean's Office through the Associate Deans or Master's Program Directors, who are responsible for deciding whether to



accept the student's request.

For this course, the evidence to be submitted and/or the test(s) to be completed in the single evaluation by the student are as follows: completion of a final exercise covering all the concepts studied in the course (50%) and a final exam (50%).

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.

Training activities

The methodologies to be used so that the students reach the expected learning outcomes will be the following:

- M2 MD2: Interactive lecture
- M4 MD4: Problem-solving exercises
- M5 MD5: Case studies
- M6 MD6: Project-based learning

IN-CLASS TRAINING ACTIVITIES

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
AF2 – Active listening, elaboration and formulation of questions, summaries, concept maps and/or notes that organize the information received, and related work.	R5, R6, R7, R8, R9	MD2: Interactive lecture MD4: Problem-solving exercises MD5: Case studies	12,00	0,48



AF5 – Analysis of exemplary realities — real or simulated — allowing the student to connect theory with practice, learn from real-world models, or reflect on the processes used in the presented cases.	R5, R7, R9	MD4: Problem-solving exercises MD5: Case studies	12,00	0,48
AF6 – The student, individually or collectively, focuses on producing a tangible final result (product) that incorporates the knowledge and skills necessary for its realization.	R5, R6, R7, R8, R9	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	36,00	1,44
TOTAL			60,00	2,40



TRAINING ACTIVITIES OF AUTONOMOUS WORK

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
AF8 – Independent work. Study, memorization, exam preparation, practice of practical skills, preparation of assignments, essays, reflections, metacognitive activities, portfolio development, etc.	R5, R6, R7, R8, R9	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	16,00	0,64
AF6 – The student, individually or collectively, focuses on producing a tangible final result (product) that incorporates the knowledge and skills necessary for its realization.	R5, R6, R7, R8, R9	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	18,00	0,72
AF5 – Analysis of exemplary realities — real or simulated — allowing the student to connect theory with practice, learn from real-world models, or reflect on the processes used in the presented cases.	R6, R8, R9	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	56,00	2,24
TOTAL			90,00	3,60



Description of contents

Description of content necessary for the acquisition of learning outcomes.

Theoretical content:

Block of content	Contents
Content	<ul style="list-style-type: none">1. Introduction to 2D Game Development2. Design and structure of a basic game engine3. Sprite and animation management4. Collision detection and simple physics5. Player control and gameplay mechanics6. Interface, sound, and game publishing

Temporary organization of learning:

Block of content	Sessions	Hours
Content	30	60,00

References