Information about the course

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

Faculty: Faculty of Legal, Economic and Social Sciences

Code: 2050438 **Name:** Virtual reality

Credits: 6,00 ECTS **Year:** 4 **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:

2054A	Adrian Mantilla Pousa **(Profesor responsable)**	adrian.mantilla@ucv.es

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

Recommended Technical Knowledge

·Basic computer skills: file management, project organization, and software installation.

·Introductory 3D knowledge: navigation in three-dimensional environments, object manipulation, and basic understanding of modeling and materials.

·Unreal Engine 5: initial familiarity with the interface, use of Blueprints, and working with project templates.

·Audiovisual production: basic knowledge of video recording and editing.

·Multimedia formats: basic understanding of image, video, and audio formats compatible with VR.

Recommended Artistic and Conceptual Knowledge

·Visual language: composition, framing, and spatial storytelling.

·Fundamentals of light and color: their role in creating immersive experiences.

·Narrative design: strategies to guide user attention and construct meaning in virtual environments.

Attitude and Transferable Skills

·Willingness to experiment with new tools and workflows.

·Analytical ability to evaluate user experience in immersive environments.

·Creativity in the design of interactive and audiovisual content.

·Organizational skills to manage complex projects with multiple media sources.

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:

R10 - Adapt the necessary multimedia resources to formats suitable for three-dimensional video game programming. RA12.89

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

R11 - Develop basic three-dimensional video games using specific programming environments and languages. RA12.90

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

- Respect and implement the ethical principles and action proposals derived from the Sustainable Development Goals, applying them to all academic and professional activities.

R13 - Create levels and scenarios for three-dimensional video games, correctly applying the principles of structural design. RA12.92

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

R14 - Develop basic three-dimensional video games using specific environments and programming languages for virtual reality, taking into account the sincere search for the full 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. RA12.93 / RA12.94/ RA6.30 / RA7.30 / RA8.37

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
	10,00%	SE1 – Written exams.
	30,00%	SE6 – Practical exams.
	60,00%	SE8 – Project development.

Observations

1.Submission of all practical and written test assignments is mandatory in order to carry out the final project of the course.

2.An oral defense of each project (when required by the professor) is mandatory for the project to be evaluated. The oral defense is considered part of each project, as it serves to assess the use of discipline-specific vocabulary.

3.Single evaluation is not permitted, given the daily tutoring and in-class work required in this subject.

4.All assignments must be submitted through the designated tasks in the course's virtual campus .

5.In cases where files exceed the platform's upload limit, students are required to submit via their institutional UCV OneDrive account, keeping the files available at least until the end of the current academic year. The professor may reject any submission that does not follow these instructions or fails to meet the established deadlines.

6.All files must be delivered in the formats specified by the professor (e.g., .mb, .ma, .fbx, .png, .pdf…), uncompressed unless expressly indicated. Failure to comply with this requirement may result in the work not being graded.

7.It is the sole responsibility of the student to ensure that files are correctly uploaded and accessible. Claims regarding corrupted, incomplete, or expired links will not be accepted

afterwards.

8.Late submissions will not be accepted unless a justified and documented reason is provided. The professor may apply a grade penalty or directly reject the submission, depending on the case.

9.In addition to attendance, active participation in class is expected. Repeated lack of engagement may negatively affect the qualitative assessment of the student's performance .

10.Any evidence of plagiarism, copying, or unauthorized use of others' work will automatically result in a failing grade for the corresponding activity, and the provisions of the UCV Academic Integrity Regulations will apply.

11.The use of Artificial Intelligence in the creation of 3D models (obj, fbx, or others) is strictly prohibited. Except for specific uses that are documented and expressly authorized by the professor, the use of AI-based image generators is forbidden.

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.	R10, R11, R13, R14	MD2: Interactive lecture MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	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.	R10, R11, R13, R14	MD2: Interactive lecture MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	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.	R10, R11, R13, R14	MD2: Interactive lecture 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.	R10, R11, R13, R14	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.	R10, R11, R13, R14	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	56,00	2,24
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.	R10, R11, R13, R14	MD4: Problem-solving exercises MD5: Case studies MD6: Project-based learning	18,00	0,72
TOTAL			**90,00**	**3,60**

Description of contents

Description of content necessary for the acquisition of learning outcomes.

Theoretical content:

Block of content	Contents
Block 1. Foundations of Immersive Narrative and the Language of Virtual Reality	This block introduces the theoretical principles of storytelling in immersive environments. It examines how VR reshapes traditional narrative structures, the role of the viewer-user as an active agent, and the specificities of spatial language compared to film and video games. Case studies are analyzed, and the basics of scriptwriting for VR experiences are introduced.
Block 2. Design and Construction of Narrative Environments in VR	This block addresses the practical application of narrative through the design of virtual spaces in *Unreal Engine 5*. Students will explore how visual composition, lighting, interaction with objects, and spatial sound guide user attention and generate meaning. Emphasis is placed on building atmospheres and narrative paths that integrate the user's actions within the story.
Block 3. Production and Prototyping of Narrative Experiences in VR	This block focuses on developing practical projects that integrate script, space, and interaction. Students will work with 360° cameras and *Unreal Engine 5* to create prototypes of VR experiences, applying testing and feedback strategies. The objective is to produce coherent immersive narratives that make effective use of the medium's resources and communicate meaningfully to the user-viewer.

Temporary organization of learning:

Block of content	Sessions	Hours
Block 1. Foundations of Immersive Narrative and the Language of Virtual Reality	10	20,00
Block 2. Design and Construction of Narrative Environments in VR	10	20,00
Block 3. Production and Prototyping of Narrative Experiences in VR	10	20,00

References

Murray, J. H. (2017). *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (updated edition). MIT Press.

Ryan, M.-L. (2015). *Narrative as Virtual Reality 2: Revisiting Immersion and Interactivity in Literature and Electronic Media*. Johns Hopkins University Press.

Biocca, F., & Levy, M. R. (eds.). (2013). *Communication in the Age of Virtual Reality*. Routledge.

Sherman, W. R., & Craig, A. B. (2019). *Understanding Virtual Reality: Interface, Application, and Design* (2nd ed.). Morgan Kaufmann.

Lanier, J. (2017). *Dawn of the New Everything: A Journey Through Virtual Reality*. Henry Holt.