ACADEMIC PROGRAM

VIDEO GAME DESIGN

B.F.A. IN **ANIMATION**

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Video Game Design
Degree :	Animation
Location:	Centro Universitario de Tecnología y Arte Digital
Area:	Art for Video Games and Immersive Systems
Year:	3º
Teaching period:	1
Type:	OBM
ECTS credits:	6
Teaching modality:	On campus
Language:	English
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SUBJECT DESCRIPTION

Area description

The subject includes all the courses that are part of the Mention in Art for Games and Immersive Systems. The subject allows for a deeper understanding in creation of digital content for games and immersive systems. Students in the mention will acquire theoretical, technical, and methodological knowledge with the aim of generating graphic elements such as 2D and 3D items, textures or icons for realtime rendering game engines and another interactive and immersive systems.

Subject description

In the subject of Video Game Design, students will acquire the basic competences and skills necessary for a correct understanding of video games as an interactive product, its technical, methodological and interpersonal requirements and the creation process from its conception to its release to the market (and subsequent Live Ops maintenance). Students will also acquire general knowledge about the different genres and subgenres of video games, their identifying characteristics and specific requirements.

Finally, the student will receive a basic competence on the different members of a development team, focusing on the design sub-teams, in order to be able to be part of a real project in their professional career.

COMPETENCIES AND LEARNING OUTCOMES

Competencies

BASIC AND GENERAL

CG2 - Know the vocabulary and concepts inherent to the digital artistic field.

CG4 - Apply the aesthetic and perception fundamentals of the image in terms of structure, form, color and space in the representation of digital content.

CG8 - Optimize the work according to the technological resources related to the processes and tools of the project to be developed.

CB1 - That students have demonstrated to possess and understand knowledge in an area of study that starts from the basis of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study.

CB2 - That students know how to apply their knowledge to their work or vocation in a professional manner and possess the skills that are usually demonstrated through the development and defense of arguments and problem solving within their field of study.

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.

CB4 - Students should be able to convey information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5 - That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

TRANSVERSALS

CT3 - Knowing the hardware and software fundamentals of computers and communication networks, as well as the principles of

storage and cloud computing along with their usefulness and application to the development projects of the digital economy.

CT4 - Update the knowledge acquired in the management of digital tools and technologies according to the current state of the sector and the technologies used.

CT5 - Demonstrate versatility, flexibility and creativity in the development of projects, activities and works.

CT6 - Develop collaborative projects in a climate of teamwork based on respect, cooperation and responsibility.

SPECIFIC

CE16 - Know the concepts and apply the tools and techniques that allow the introduction of visual effects in an audiovisual project.

SC17 - Use texturing techniques to apply materials to 3D models.

SC2 - Know and apply the fundamentals of photography, its elements of visual composition and the expressive value of lighting.

SC4 - Represent three-dimensional forms and spaces using the essential techniques of traditional and digital modeling.

SC9 - Use the techniques of modeling for the three-dimensional representation of forms from a design.

CE11 - Use the theory, techniques and tools associated with lighting, rendering and composition.

SPECIFIC TO THE MENTION

Students who choose this subject will acquire the following specific competences of the mention (CEAV):

- CEAV1: Build Rigs for video games from a given model according to the constraints of real-time interaction with the character.

- CEAV2: Build and adapt the models and assets generated in 3D for their import and use in a video game engine.

- CEAV3: Know the methodologies and the main dynamic simulation tools for the creation of real-time visual effects.

Learning outcomes

At the end of the degree, the graduate will be able to:

- Apply the fundamentals of visual language to the digital environment.

- Apply the visual language to the different animation techniques to transmit ideas.

- Recognize the software and hardware requirements that meet the needs of a project and its cloud storage requirements.

- Know the syntax and basic use of programming languages for rigging and particle simulation.

- Represent objects and spaces in 3D through modeling, texturing, lighting and digital rendering.

- Apply basic digital modeling techniques to the creation of 3D objects, figures and environments in video game projects.

- Create clean and optimized modeling meshes in the creation of objects, figures and 3D environments.

- Manage the interaction between different materials and lighting systems in 3D and 2D creation environments.

- Create environments with a high degree of verisimilitude through the use of layers, alphas and other basic digital compositing techniques.

- Identify the software and hardware requirements necessary for lighting, rendering and compositing.

- Simulate the dynamic elements and situations involved in atmospheric phenomena, such as clouds, fog, rain, smoke, fire, or in the breakage and destruction of rigid solid bodies by collisions or explosions.

- Optimize the programming code used in a video game by means of the necessary debugging tools.

- Apply the required textures and shaders convincingly and according to the needs of the production in the various parts of a 3D animation scene such as sets, objects or characters.

- Identify the interaction needs between 3D models and users in the construction of rigs for video games.

- Generate the interactive controls of a 3D model for the creation of video games.

- Create the skinning or appearance of the interactive 3D character according to the needs of the system or hardware in a video game production.

- Calculate the optimal degree of polygonization of models and assets according to the technical limitations of the system or hardware in video game projects.

- Produce different versions of models and assets according to the game engine or final hardware.

- Determine the different components and fields involved in the collisions and interactions of particles rendered in real time in the creation of visual effects.

- Know the hardware limitations that can affect the generation of real-time rendered effects.

CONTENTS

· Structures and design areas (Logic, Mechanic and Dynamic)

· Playability, genres and mechanics

· Systems design

· Game dynamics

· Environment design: Process of level design

· Game balancing

SUBJECT SYLLABUS

0. Introduction to video games

- A brief history of video games.

- How do companies make games?

- Team members, workflows and truths about being a game developer.

Game Design

- MDA System

- How to study the needs of a game: Proposals.

- Proposals: How to make one? Let's practice with a real example.

2. The current market:

3. Game designers

- What is a game designer?

- Different types:

- Level, combat and UI designers.

- Narrative, puzzle and economic designers.

4. Working in a game studio

- Film and short films Vs video game animation.

- Collaboration with game designers.

- Collaboration with the programme

TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
Theoretical / Expository classes	22,50	22,50
Practical classes	33,50	33,50
Tutorials	3,75	1,88
Independent study and autonomous work of the student	36,25	0,00
Elaboration of work (group or individual)	50,00	0,00
Evaluation Activities	4,00	4,00
TOTAL	150	61,88

Teaching methodologies

Expository method or master class

Case method

Problem-based learning

Cooperative or collaborative learning

Inquiry-based learning

Flipped classroom or inverted classroom methodology

Gamification

TEMPORAL DEVELOPMENT

Theme 1 - 3 weeks

Theme 2- 3 weeks

Theme 3- 2 weeks

Theme 4 - 7 weeks

EVALUATION SYSTEM

ASSESSMENT SYSTEM	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
Assessment of participation in class, exercises or projects of the course	10	20
Assessment of assignments, projects, reports, memos	30	60
Objective test	30	60

GRADING CRITERIA

ASSESSMENT SYSTEM	ORDINARY EVALUATION	EXTRAORDINARY EVALUATION
Assessment of participation in class, exercises or projects of the course	10	10
Assessment of assignments, projects, reports, memos	40	40
Objective test	50	50

General comments on the evaluations/assessments

The practical exercises will simulate real mechanical design situations, proposals or problems that could occur in a real working environment (or the closest and most reasonable equivalent) evaluating the application of theoretical and practical concepts learned in class. The defense of the work, presentation and grammatical correctness will also be taken into account.

-In order for an exercise to be corrected, it must be handed in on the date assigned by the professor, or immediately after (see next point).

- If an exercise is not handed in on time, 3 points will be subtracted automatically.Students can submit the exercise up to 3 days late, but the subtraction will always be the same (this is to avoid that someone who has submitted the exercise on time has the same grade as someone who submits it late, being also good). If it is

resubmitted in the "extraordinary", the exercises will have to have the same content as in the "ordinary" submission, that is:

- If it is a work submitted in a team, the student will not be able to send only the part that corresponds to him/her, unless the whole team needs to pass that exercise again. (And the exercise will be sent in its complete version).

- Students will not be allowed to send their errors corrected exclusively (if the exercise has several points, correcting only the ones they have failed and not including the rest in the submission), in short, it will always have to be submitted as a "finished and complete" exercise, and never a part of it.

- The grade for both exercises will be counted as a median of 30-30-30 to check if the subject is passed or failed.

- Any exercise that has been failed in one call, even if it has been passed in the following call (Ex. One failed in the "ordinary" call, passed in the "extraordinary" call) will have a maximum grade of 5. This is done to prevent students from being able to access a grade with Honors in the extraordinary evaluation.

Other considerations:

- If there is suspicion that any exercise is plagiarized, the grade will be 1 (out of 10)until the checking work is finished. If it is confirmed, it will be changed to zero and the faculty and academic coordinator will be informed. It is the students' responsibility to find, organize and coordinate their own equipment for the team exercises. If any student runs out of equipment, they will be responsible for turning in the exercise on their own, with all sections.

- If the teacher is not able to open a folder, deliverable or link to view the exercise, the exercise will be graded 0. No deliverables (excluding the 10h delay) will be allowed to solve the problem, nor justifications related to this topic. It is strongly recommended to check the folder before sending the link, as well as to host the exercise on a secure platform.

- Students will not be allowed to repeat the same games in different exercises. Individual participation will also be taken into account, so two members of the same team will not necessarily have the same grade if they have had different workloads and effort.

- If a team refuses - or ignores - the above rule of marking the Member->Work-all division the team will share the same grade, regardless of the result of this.

- All team members must submit the exercises. If any member submits the exercise late or forgets it, the late rules will only apply to that individual.

LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

Basic:

SELLERS, Michael. Advanced Game Design. 1ª ed. Pearson Addison-Wesley, 2018.ISBN 978-0134667607

DAMS, Ernest y DORMANS, Joris. Game Mechanics: Advanced Game Design. 1ªed. New Riders, 2012. ISBN 978-0321820273

FULLERTON, Tracy. Game Design Workshop: A Playcentric Approach to CreatingInnovative Games. 3ª ed. A K Peters/CRC Press, 2014. ISBN 978-1482217162

Bibliografía recomendada:

KOSTER, Raph. A Theory of Fun for Game Design. 1ª ed. Paraglyph Press, 2004.ISBN 978-1932111972

SALEN, Katie y ZIMMERMAN, Eric. Rules of Play: Game Design Fundamentals. MitPress, 2003. ISBN 978-0262240451

SCHELL, Jesse. The Art of Game Design, a book of Lenses. CRPress. ISBN:978-0123694966

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom
Theory

Materials:
Display - Digital whiteboard, Laptop

Software:
Unreal engine, Unity