Universidad Zaragoza

Academic Year/course: 2024/25

25141 - 2 and 3D Animation

Syllabus Information

Academic year: 2024/25
Subject: 25141 - 2 and 3D Animation
Faculty / School: 301 - Facultad de Ciencias Sociales y Humanas
Degree: 278 - Degree in Fine Arts
ECTS: 6.0
Year:
Semester: Second Four-month period
Subject type: Optional
Module:

1. General information

1. To understand the historical evolution and animation production techniques, from traditional to digital methods, analyzing works by various authors to discern different production systems and their meaning.

2. To acquire fundamental skills necessary for the development and execution of personal animation projects in 2D and 3D, practicing all the production phases to apply them effectively in personal animation projects.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

Goal 4: Quality Education.

Goal 5: Gender Equality.

Goal 8: Decent Work and Economic Growth

10: Reduction of Inequalities

11: Sustainable Cities and Communities

Goal 12: Responsible Production and Consumption

Goal 16: Peace, Justice and Strong institutions

Goal 17: Alliances to Achieve Objectives.

2. Learning results

The student, to pass this subject, must demonstrate the following results...
Is able to identify and differentiate various animation techniques within the traditional and digital fields.
Is able to create and animate your own graphics or drawings using animation fundamentals correctly and effectively.
Is able to employ industry standard methodologies for animation production to plan and execute projects efficiently and with attention to detail.
Is competent in the use of animation software tools (free and licensed) to assist in the artistic creation process, demonstrating competence in their application to achieve the desired results.

3. Syllabus

BLOCK A

3D Animation - Blender I

Basic fundamentals of 3D animation
1. Introduction to the free 3D construction software interface and its navigation.
2. Basic 3D Modeling: Fundamental modeling tools and techniques. Basic mesh creation and editing (for example, adding primitives, extruding, scaling, and rotating).
3. Materials and texturing: Basic concepts of materials, shaders and UV mapping.
4. Lighting and rendering: Lighting principles (spot, solar and area lights) and rendering in Blender.
5. Animation in Blender: Basics of keyframe animation in Blender. Timeline and graph editor. Creating simple animations (for example, moving, rotating, and scaling objects over time).
6. Camera animation and final rendering: Camera setup and animation in that scene. Animation rendering settings, including frame rate and output format.

3D Animation - Blender II
Character and Set Design

7. Character design and modeling: Character design concepts (proportions, anatomy and style). Character-specific modeling techniques, including sculpting and mesh editing using reference images.
8. Design and modeling of scenarios: Design and modeling of an environment/environment. Principles of environmental design (composition, scale and detail). Modeling techniques to create various elements of an environment (for example, buildings, trees, and accessories).
9. 3D Character Design: Prepare a character for animation using the full assembly process, including creating armor (skeletons) and painting weights, as well as using Blender's Rigify plugin for quick team creation.
10. Materials, textures and shading: Application of materials, textures and shaders to the character and the environment.
11. Character/s animation: Basic animation techniques for character movement (keyframes, timing and movement paths). Using Dope Sheet and Graph Editor to adjust animations.
12. Integration of the character with the stage and the final representation, combining the character and the stage to render the final animation. Analysis of camera/s settings, lighting and rendering for a coherent scene. How to animate camera movements to improve storytelling.

BLOCK B
2D animation with open source programs and After Effects

13. Introduction to the fundamental principles of 2D animation such as squash and stretch, anticipation, timing and relaxation. Keyframes and the importance of storytelling in animation. Analysis of classic animations to identify and discuss these principles.tos.
14. Introduction to open source software (Krita and Synfig Studio) by studying the Krita interface and tools for creating 2D works of art. Study of Synfig Studio animation interface and workflow, including keyframes and timelines.
15. Character design and rigging in Synfig Studio: Character design process, focusing on simplicity and functionality for animation. Explain the assembly process including bones and warping tools in Synfig Studio.
16. Animating in Synfig Studio: Advanced animation techniques such as walk cycles, lip syncing and facial expressions. Keyframe, tween and layer functions.
17. Introduction to After Effects for 2D Animation: Basics of Adobe After Effects for 2D animation and compositing. After Effects interface, tools and workflow. Using layers, keyframes, and effects to enhance animations.
18. Finalize and render the animation: Combine and render the final animation project.

4. Academic activities

Students will complete at least three practical tests, two in 3D and one in 2D, before performing exercises that entail a grade. Thus, the exercises will consist of the following:

Exercise 01
Content: Students know the basic rudiments of Blender such as position, rotation and scale, as well as polygonal segmentation through the extrusion, bevel, inset faces or loop cut tools, among others. Likewise, he knows and has practiced the animation of basic elements such as simple polygons, cameras and lighting, and more complex elements such as bones or armor sets. She knows how to apply color buckets and materials and knows the options for exporting media to animated film.

Goals:
- The creation of an animation that combines scenery with buildings, inert elements (objects) and at least one animated character.
- The animation will have a duration of between 250 and 450 frames.
- The format will be MPEG and a minimum of 1920px x 1080px.

Exercise 02
Content: Students know the rudiments of After Effects such as position, rotation and scale, as well as the import of bases, videos and characters, among others. Likewise, he knows and has practiced the animation of basic elements.

Goals
- The creation of an animation that combines a moving set or with moving elements and at least six animated characters, which form a scene in an orderly manner.
- Likewise, it will have animated input and/or output text as a header.
- The animation will have a duration of approximately 45 seconds.
- The format will be MPEG/AVI and a minimum of 1920px x 1080px.

5. Assessment system

Evaluation rubric for animation exercises

Exercise 01: 3D animation in Blender

Contents and skills evaluated:

Basic Blender rudiments (position, rotation, scale)
Polygonal segmentation (extrusion, bevel, inset faces, loop cut)
Animation of basic elements (simple polygons, cameras, lighting)
Animation of complex elements (bones, armor sets)
Application of cubes of colors and materials.
Media export options for animated movies.

Goals:

To create an animation that combines scenarios with buildings, objects and at least one animated character.
Duration: 250-450 frames
Format: MPEG, minimum resolution 1920px x 1080px

Criteria	Excellent (10-9)	Good (8-6)	Satisfactory (5)	Needs improvement (4-0)	Score
Basic rudiments	Skillfully uses position, rotation and scale.	Properly uses position, rotation and scale.	Inconsistent use of position, rotation, and scale.	Misuse of position, rotation and scale.	25%
Polygonal segmentation	Proficient use of extrusion, bevel, inset faces, etc.	Proper use of segmentation tools	Inconsistent use of segmentation tools	Poor use of segmentation tools.	10%
Animation basics	Fluid and realistic animation of elements.	Adequate animation of elements.	Basic animation with some flaws.	Bad element animation.	25%
Complex animation	Effective use of bones and armor sets.	Proper use of bones and armor sets.	Basic use of bones and armor sets.	Misuse of bones and armor sets.	25%
Materials and coloring	Excellent application of materials and colors.	Adequate application of materials and colors.	Basic application of materials and colors.	Poor application of materials and colors.	5%
Export Quality	High quality export, correct format and resolution	Good export, minor issues with format or resolution.	Basic export, some issues with formatting or resolution.	Poor export quality, incorrect format or resolution	10%

Exercise 02: 2D animation in After Effects

Contents and skills evaluated:

Basic rudiments of After Effects (position, rotation, scale)
Import of bases, videos and characters.
Animation of basic elements.
Animated input and/or output text

Goals:

Create an animation that combines a moving set or elements and at least six animated characters.
Animated input/output text as header
Duration: ~45 seconds
Format: MPEG/AVI, minimum resolution 1920px x 1080px

Criteria	Excellent (10-9)	Good (8-6)	Satisfactory (5)	Needs improvement (4-0)	Score
Basic rudiments	Skillfully use position, rotation and scale.	Properly uses position, rotation and scale.	Inconsistent use of position, rotation, and scale.	Misuse of position, rotation and scale.	25%
Element Import	Efficiently import bases, videos and characters.	Properly imports bases, videos and characters.	Some problems with importing bases, videos and characters..	Major problems with importing bases, videos and characters.	10%
Animation basics	Fluid and realistic animation of elements.	Adequate animation of elements.	Basic animation with some flaws.	Bad element animation.	25%
Character Animation	Effective animation of at least six characters.	Adequate character animation.	Basic character animation with some issues.	Bad character animation.	25%
Text Animation	Excellent animated input/output text	Good animated input/output text	Basic animated input/output text	Poor animated input/output text	5%
Export Quality	High quality export, correct format and resolution	Good export, minor issues with format or resolution.	Basic export, some issues with formatting or resolution.	Poor export quality, incorrect format or resolution	10%

Assessment
In order to pass the subjects it is mandatory to have presented the three animation practices not subject to grade.

Calculation of final grade in continuous evaluation: 1st exercise (60%) + 2nd exercise (40%)

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NOTAS:
El plagio conlleva la NO superación de la asignatura.
El uso de IA generativa en los proyectos se realizará siempre de forma explícita y coordinada con el docente. Si no se informa y se detecta el uso de IA, penalizará en la evaluación del correspondiente trabajo de forma proporcional a su uso.
PRUEBA GLOBAL
Todo el estudiantado tendrá derecho a presentarse a la prueba global para superar la asignatura o para mejorar la calificación obtenida. El estudiantado que concurra al examen deberá presentarse puntualmente el día y la hora indicada en la convocatoria, en el caso contrario se considerará como “No Presentado”.
SEGUNDA CONVOCATORIA
La evaluación en segunda convocatoria, a la que tendrá derecho todo el estudiantado que no haya superado la asignatura, se llevará a cabo mediante una prueba global que tendrá lugar en el periodo establecido en el calendario académico, a tal efecto, por el Consejo de Gobierno.

6. Sustainable Development Goals

4 - Quality Education
5 - Gender Equality
8 - Decent Work and Economic Growth