Animation and Design of Videogames

Title: Animation and Design of Videogames. *(Creación de Videojuegos Multiplataforma: Animación)*

Resume: Animation provides the key that makes exciting video games possible. Good animations enhance games in playability, beauty and popularity. The study of this subject is intended to link the main concepts of animation with the complex technics of animating in modern videogames engines (like Unity) in an applied way, with constant small individual practices that will conduct the students to create a final videogame project at the end of the semester.

Language: English.

Professor: Adolfo Muñoz. (DCADHA)

Methodology: Continuous-assessment of individual and group practices in the laboratory with Unity. Follow-up of activities, contents and materials in our private website.

Contents: The following list provides an idea of the topic of the course and their correlated practices.

1 Introduction: Concept Design and Animation.

1.1 Animation and history of videogames.

From “Ping-Pong” to “Mario Bros” and “Call of Duty”. Video game genres.

1.2 Concept Design and production Roles.

Planning animations for specific mechanics in a videogame. Programmers and artists working together.

2 Principles of videogame animation.

2.1 Animation Types.

Rigid body animation. Bone-based animations. Sprite animation. Physic-based animation. Video animation. Particle animation. Programmatic animation. Material and mapping animation. Animation and Visual effects.

2.2 Keyframe animation and motion curves. *[P1: First steps with Unity]*

Triggers, animation sheets and state machines. Invoking functions from animations.

3 Sprite animations and UIs.

3.1 Animation with sprites for 2d Videogames. *[P2a: Creating an animated sprite]*

Sprite sheets. Animating sprites in *Unity*.

3.2 Animating buttons, labels and other UI controls. *[P2b: Creating an animated UI]*

Adaptive UI design. Layouts. Basic interactions form *Unity* inspector.

4 Noncharacter animation

4.1 Speed, velocity, time, transform. *[P3a: opening a door]*

Blend Trees. Sub-state machine hierarchies. Animator Controller layers.

4.2 Physics. *[P3b: adding physics]*

Animation and Physics in 2d and 3d.

5 Character animation

5.1 Character animation workflow. *[P4a: Animating a player in a third-person shooter game]*

Humanoid Avatars. Animating the Player. Import/export and retargeting animations.

5.2 Animating the Enemies. *[P4b: Animating humanoid enemies]*

AI driven animation for enemy characters. Ragdolls.

6 Camera animation

6.1 Controlling cameras without code. *[P5a: Animating the cameras]*

6.2 Controlling cameras with code. *[P5b: Scripting cameras]*

7 Advanced animation using Unity Timeline. *[P6: Final project]*

Motion graphics, Timelines and Sequences. Cinematographic animated scenes.