

Teaching guide

IDENTIFICATION DETAILS

Degree:	Expert Technical Artist (UFV-Awarded Title associated with the Video Game Creation)		
Faculty/School:	Communication Science		
Course:	3D MODELLING AND RIGGING		
Type:	Compulsory Internal	ECTS credits:	6
Year:	2	Code:	46113
Teaching period:	Fourth semester		
Teaching type:	Classroom-based		
Language:	English		
Total number of student study hours:	150		

Teaching staff	E-mail
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SUBJECT DESCRIPTION

This Subject is divided in two independent parts:

Part 1 Creating 3d content for Mobile, (Represents 75% of the subject)

This part develops the techniques and strategies to create the high quality 3D art & animations needed in a Low-performance Device Game, and is fully related to the other subjects of art as "Introducción a la Imagen Digital", "Representación Conceptual", "animación interactiva" and "Introducción al Diseño 3D".

Part 2 Introduction to Rigging, (Represents 25% of the subject).

In this part will be a concise and dedicated exploration of some forms and great utility of scripting for the rig of characters and elements to improve the production of video games.

GOAL

Part 1

To make known to the student the techniques and strategies of creation optimized 3D Art & Animations for low-performance platforms.

Part 2

To make known to the student the techniques and strategies to create and develop rigging set for his own models and scenes.

The student will be able of create 3D content for low-end devices dealing with limitations of memory and performance.

The student will be able of optimize 3D content from high detailed project assets to match the needs of a low-end device project.

PRIOR KNOWLEDGE

Some of the knowledge that contribute the subjects of Art, Animation and Management of engines:

- Introducción a la Imagen Digital
- Representación Conceptual
- Introducción al modelado, concept y animación 2D
- Fundamentos de la Programación Básica en Videojuegos
- Animación Interactiva

COURSE SYLLABUS

1. Optimize mobile game performance.(Creating Assets)

- a) Rendering engine work & optimization.
- b) Mesh Creation.
 - b.1 Polygon counts
 - b.2 Mesh import setting
 - b.3 Optimize model techniques. (High Poly model and Low poly model, retopology tools)
- c) Optimize UVs layout creation.
 - c.1 Tools for unwrapping UVs
 - c.2 Layout UVs for mobile games.
- d)Texture Creation.
 - d.1 Import and setup textures. (Atlas and Tilling)
 - d.2 Texture Compression
 - d.3 Baking Details.
 - Baking lights and shadows
 - Baking Normals
- e) Optimize the scene.
 - e.1 LODs
 - e.2 Oclusion Culling

2. Fundamentals of Rigging.

- a) Rigging basics.
 - a.1. Controllers and hierarchy
 - a.2 Bones
 - a.3 Inverser kinematic (IK handles)
- b) Setup a rig.
 - b.1 Creating a rig for mechanical objects.
 - b.2 Optimize rigs for mobile games

EDUCATION ACTIVITIES

The activities, as well as the distribution of working times, can be modified and adapted depending on the different scenarios established following the indications of the health authorities.

FLIPPED CLASSROOM: Unlike the classical masterclass, in his method the teacher gives the essential material (Videos and lesson notes) to understand the basic concepts and to develop the main strategies, that gives the students the standard workflows, there are going to need in the future.

AUTONOMOUS WORK. In this methodology, the student takes the initiative with or without the help of others (teachers,

Companions, tutors, mentors). It is the student who diagnoses their learning needs, formulates their

Learning goals, identify the resources it needs to learn, choose and implement

Learning and assesses the results of their learning. The teacher thus becomes the guide, the

Facilitator and in a source of information that collaborates in that autonomous work. This methodology will

Special interest in the development of research-related skills

COLLABORATIVE LEARNING is a method of teaching and learning in which the student's team together to explore a significant question or create something. In this case, the students team up in different groups to develop a collaborative project together as if they were working in the game studio.

COOPERATIVE LEARNING is a specific kind of collaborative learning. In cooperative learning, students work together in small groups on a structured activity. They are individually accountable for their work, and the work of the group as a whole is also assessed. Cooperative groups work face-to-face and learn to work as a team.

TUTORIAL ACTION SYSTEM: which includes interviews, discussion groups, self-reports and

Follow-up tutorial. **RESEARCH:** Search of information from various sources and documents,

Analysis and synthesis of data and development of conclusions.

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DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
60 hours	90 hours
COLLABORATIVE EXERCISES 40h COOPERATIVE EXERCISE 20h	COOPERATIVE EXERCISE 40h AUTONOMOUS WORK 20h FLIPPED CLASSROOM 30h

SKILLS

LEARNING RESULTS

The student can create High-Quality Low-poly Models and Textures for Low-End Devices. The student can optimize High-Poly Assets so they can be used in a Low-end Device Project.
The student can apply different techniques to develop rigging sets, for any kind of model, cameras, and Lights.

LEARNING APPRAISAL SYSTEM

In case of quarantine scenario, all the activities can be done online.

The regular evaluation will be done by the continuous assessment system. And you must comply with the following:

Students must obtain a minimum of 5 in all qualification elements in order to pass.

Assistance must not be less than 80%.

Qualification elements:

Individual and group exercises 25%
Assistance and laboratory work 25 %
Project 50%
 Product result 25%
 Group evaluation 20%
 Auto-evaluation 5%

Extraordinary Evaluation:

Final global exam or exercise 100%

Plagiarism behaviors, as well as the use of illegitimate tools in the evaluation tests, will be sanctioned in accordance with those established in the University's Evaluation Regulations and Coexistence Regulations

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

McDermott W.(2010) "Creating 3D Game Art for the Iphone with Unity". Focal Press

Ahearn L. (2011) "3D Game Textures:Create Professional Game Art Using Photoshop" Third Edition. CRC Press
Osipa J. (2010). "Stop Staring: Facial Modeling and Animation Done Right". Sybex Inc

Jones S. (2012). "Digital Creature Rigging: The Art and Science of CG Creature Setup in 3ds Max". A K Peters/CRC Press

Unity, (2021) Optimize your mobile game performance. Unity Books