

Teaching guide

IDENTIFICATION DETAILS

Degree:	Expert Technical Artist (UFV-Awarded Title associated with the Video Game Creation)		
Faculty/School:	Communication Science		
Course:	SPECIAL EFFECTS		
Type:	Compulsory Internal	ECTS credits:	3
Year:	4	Code:	46119
Teaching period:	Seventh semester		
Teaching type:	Classroom-based		
Language:	English		
Total number of student study hours:	75		

Teaching staff	E-mail
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SUBJECT DESCRIPTION

This course consists of four parts:

Part one is a general introduction and overview of prior knowledge and common techniques employed in the field of VFX and real-time VFX

Part two centers on learning the tools offered by the Unity3D for VFX production

Part three centers on learning the Unreal Engine 4 toolset

Part four focuses on teamwork and collaboration to create a complex VFX based scene

This course aims to generate a general knowledge in common techniques employed in the field of VFX, for both for 2D and 3D games.

PART 1: Creating 2D visual effects in Adobe After Effects and Unity.

PART 2: Learning the tools offered by the Unity3D for 3D VFX production.

PART 3: Centers on learning the Unreal Engine 4 toolset for 3D VFX production.

GOAL

Students who pass this subject are expected to attain the skills, technical knowledge and artistic sense to develop engaging real time visual effects, with a focus on storytelling and a project-driven mindset. Students will learn how to implement effects such as fire, smoke, embers, slashes, lightning, auras or sparks among others. Students will be encouraged to come up with their own innovative effects and will learn to create effects as coherent deliverable units to be used by different team members in a production pipeline.

The specific aims of the subject are:

Creating 2D visual effects with Adobe After Effects and Unity.

Using Unity3D visual special effects creation toolset

Using Unreal Engine 4 visual special effects creation toolset

PRIOR KNOWLEDGE

Students are expected to know the basics of Unity3D and Unreal Engine 4, have an understanding of Unreal's Blueprint system, know what a node based workflow is, essential lighting and rendering techniques and shader creation. Basic knowledge of Photoshop is advised.

COURSE SYLLABUS

This course aims to generate a general knowledge in common techniques employed in the field of VFX, for both for 2D and 3D games.

PART 1: Creating 2D visual effects in Adobe After Effects and Unity.

PART 2: Learning the tools offered by the Unity3D for 3D VFX production.

PART 3: Centers on learning the Unreal Engine 4 toolset for 3D VFX production. Part 1: Introduction and previous notions

A) Introduction to Real Time Visual Effects

PART 1: 2D Visual Effects with After Effects

1. Introduction to After Effects
2. Particles Systems
3. 2D VFX creation with AE and Unity pipeline

PART 2: 3D Visual Effects with Unity3D

0. Shader Creation for VFX (review)
1. Unity Particle System
2. Unity Visual Effect Graph

PART 3: 3D Visual Effects with Unreal Engine 4

0. Shader creation for VFX (review)
1. Particle systems
2. The new Niagara System

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.

MASTER CLASS. One-way lecturing from teacher to students will be the least preferred activity, and will be avoided as much as possible.

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. Students will be offered plenty of external material to prepare their work and do research.

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, identifies 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.

DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
30 hours	45 hours
COLLABORATIVE EXERCISE 20h FINAL PROJECT 10h	FINAL PROJECT 15h FLIPPED CLASSROOM WORK 30h

SKILLS

Competencia artística
 Competencia digital y de manejo de software
 Competencia espacial y geométrica
 Competencia matemática

LEARNING RESULTS

Is capable of defining and identifying the general basic abstract concepts required to develop visual special effects
 Perceives the importance and prominence of visual special effects in the gaming industry and its relation to economic growth
 Is capable of using the Unity3D Shader Graph to define and use shaders in a creative way
 Can create and apply post-process materials and effects in Unity3D
 Can set up a (classical) Particle System in Unity3D and achieve a variety of creative results
 Understands the components of a Unity3D Visual Effect Graph and can set up a variety of particle-based special effects
 Can set up a variety of creative effects using the Unreal Engine Material creation tool for different material domains (surface, particles and post-process)

Can set up a variety of particle effects using the Unreal Engine Cascade particle system

Can set up a variety of effects using the Unreal Engine Niagara fully programmable particle system

Is capable of setting up breakable objects in Unreal Engine

Can simulate cloth with Unreal Engine 4

Knows how to properly name assets and use a Versioning Control System to do collaborative work in the context of a production pipeline

LEARNING APPRAISAL SYSTEM

Assistance must be no less than 80%

Evaluation will be done on the basis of practical assignments.

QUALIFICATION ELEMENTS:

- Individual work 40%
- Assistance and laboratory work 10%
- Final project 50%

- Additional voluntary work (honor track), up to an extra 10%

EXTRAORDINARY EVALUATION:
Final Global Exam or exercise 100%.

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

PLAGIARISM

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

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

Brenlla Ramos, Brais. Doran, John P. (2019) "Unreal Engine 4 Shaders and Effects Cookbook: Over 70 recipes for mastering post-processing effects and advanced shading techniques". Packt Publishing.

Doran, John P. (2018) "Unity 2018 Shaders and Effects Cookbook: Transform your game into a visually stunning masterpiece with over 70 recipes, 3rd Edition". Packt Publishing.

Additional

Lee, Joanna (2016) "Learning Unreal Engine Game Development". Packt Publishing.

Halladay, Kyle (2019) "Practical Shader Development: Vertex and Fragment Shaders for Game Developers". Apress Media.