



Universitat de Lleida

DEGREE CURRICULUM
**VIDEO GAME DEVELOPMENT
FOR HIGH PERFORMANCE
PLATFORMS**

Coordination: SEBE FEIXAS, FRANCISCO

Academic year 2023-24

VIDEO GAME DEVELOPMENT FOR HIGH PERFORMANCE... 2023-24

Subject's general information

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|---|---|---------------|------------------|------------------|
| Subject name | VIDEO GAME DEVELOPMENT FOR HIGH PERFORMANCE PLATFORMS | | | |
| Code | 103093 | | | |
| Semester | 1st Q(SEMESTER) CONTINUED EVALUATION | | | |
| Typology | Degree | Course | Character | Modality |
| | Master's Degree in Informatics Engineering | 2 | OPTIONAL | Attendance-based |
| Course number of credits (ECTS) | 6 | | | |
| Type of activity, credits, and groups | Activity type | PRALAB | TEORIA | |
| | Number of credits | 3 | 3 | |
| | Number of groups | 1 | 1 | |
| Coordination | SEBE FEIXAS, FRANCISCO | | | |
| Department | MATHEMATICS | | | |
| Teaching load distribution between lectures and independent student work | 6 ECTS correspond to 150 work hours. | | | |
| Important information on data processing | Consult this link for more information. | | | |
| Language | English | | | |

VIDEO GAME DEVELOPMENT FOR HIGH PERFORMANC... 2023-24

| Teaching staff | E-mail addresses | Credits taught by teacher | Office and hour of attention |
|------------------------|-----------------------|---------------------------|-------------------------------|
| SEBE FEIXAS, FRANCISCO | francesc.sebe@udl.cat | 6 | Arrange a meeting via e-mail. |

Subject's extra information

There exist several platforms that facilitate the development of high complexity video games. These platforms provide an easy way to manage the game graphical elements and program their behaviour through code. They provide tools to position and move objects, manage the interaction among them, add sound and everything needed.

Moreover, in highly realistic games you need to create high quality graphical elements such as characters, vehicles, vegetation and all those elements that are part of the scene. Creation of such material requires specific software.

This course we will employ the Unity 3D game creation platform and the Blender 3D modeling tool.

Learning objectives

- Use the functionalities provided by a video game development tool.
- Implement the logic of a third person 3D videogame.
- Create the graphical material of a video game
- Integrate self-created graphical material in a video game
- Carry out the tasks detailed in a work plan in an autonomous way making use of Internet to complement the information provided.
- Perform a public exposition presenting a project and making use of audiovisual elements

Competences

General competences

- **CG4. Capacity to mathematically model**, calculate and simulate in technological companies and engineering centres, particularly with regard to research, development and innovation tasks in all fields related to computer engineering

Basic competences

- CB5. Students should possess learning skills that enable them to continue studying in a way that will be largely self-directed or autonomous.

Specific competences

- CE14. Capacities to conceptualise, design, develop and evaluate the person-computer interaction of products, systems, applications and computer services

Subject contents

1. The Unity 3D videogame engine

- 1.1. Work space
- 1.2. Class hierarchy and objects
- 1.3. Texture and material creation
- 1.4. Script programming
- 1.5. Addition of sound
- 1.6. Model import

2. The Blender modeling tool

- 2.1. Work space
- 2.2. Basic modeling operations
- 2.3. Texture addition
- 2.4. Model export

Methodology

The subject will follow a completely practical methodology. Students will develop a project along the course.

The work to be done is detailed in a set of documents which explain the work the student has to do so as to complete the project. These documents will be released regularly along the course.

Development plan

This course we will carry out a project in which we will develop a 3D videogame in which the player will drive an armored vehicle. Students will create the graphical elements, program the vehicles movement, projectile launchment and the interaction among game elements.

The documents detailing the work to do will be released on a weekly basis.

| Week | Project tasks |
|-------|---|
| 1-3 | Unity 3D self training |
| 4-10 | Project development using Unity 3D |
| 11-12 | Blender self training |
| 13-14 | Project models development using Blender |
| 15 | Public exposition of the project using audiovisual elements |

Evaluation

At the end of the course, students will make a public presentation of their project. The final score will be computed

from the following items.

| Activity | Weight | Minimum mark | In group | Mandatory | Recuperable |
|------------------------------------|--------|--------------|----------|-----------|-------------|
| Project development using Unity 3D | 50% | No | No | No | Yes |
| Models creation using Blender | 30% | No | No | No | Yes |
| Public exposition | 20% | No | No | No | No |

Overall mark = $0.5 \cdot \text{Unity} + 0.3 \cdot \text{Blender} + 0.2 \cdot \text{Expo}$

The alternative evaluation of the subject requires the submission of the same activities. In this case, the deadline is extended until three labour days before the deadline for academic records.

Bibliography

- Joseph Hocking. Unity in Action. Multiplatform game development in C#. Manning. 2015.
- Oliver Villar. Learning Blender. A hands-on guide to creating 3D animated characters. Addison-Wesley. 2015.
- Home of the Unity Project (<https://unity.com/>)
- Home of the Blender Project (<https://www.blender.org/>).