Introduction to Game Development

Academic Year: (2023 / 2024)   **Review date: 03-06-2021**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: ARIAS FISTEUS, JESUS

Type: Electives ECTS Credits : 3.0

Year :   Semester :

OBJECTIVES

At the end of this course, the student should be able to:
- Understand the basic structure of a videogame.
- Know the 2-dimensional and 3-dimensional coordinate systems normally used in videogames.
- Know the basic principles of 3D modelling.
- Know other aspects such as audio handling, sound and video effects, physics simulation and programming of networked games.
- Program simple 2D games.
- Program simple animations of 3D objects.

During the course, the student will work on the following skills:
- Ability to apply principles of mathematics and physics in a game, especially Newtonian mechanics and vector spaces.
- Ability to design the game to be developed in the project taking into account the constraints of time and manpower.
- Ability to use development environments and third-party code libraries in the development of the project.

DESCRIPTION OF CONTENTS: PROGRAMME

This course is an introduction to the basic techniques of game programming. The program includes the following topics:

- Introduction:
    - Basic structure of a videogame. Main loop, capturing user input.
- 2D videogames:
    - 2D coordinate systems, moving aroud objects, scaling and rotating.
    - Presentation and animation of 2D objects.
    - Collision detection.
- 3D videogames:
    - Basics of 3D modelling: vertices, textures, lighting, animation.
    - 3D coordinate systems, moving aroud objects, scaling and rotating.
    - 3D engines.
- Introduction to other aspects of videogame programming:
    - Sound and sound effects.
    - Video effects.
    - Physics simulation in videogames.
    - Programming multiplayer networked games.

LEARNING ACTIVITIES AND METHODOLOGY

The learning activities include:

- Lectures, in which the topics that students should learn are explained. Students will receive class notes. Reference texts will allow them to complete and deepen in those subjects in which they are most interested.

- Lab clases in which the students program some of the techniques presented in the lectures.

- A group project in which the students develop a small videogame.

% end-of-term-examination: 0

% of continuous assessment (assigments, laboratory, practicals…): 100