

Course Unit	Multimedia Technologies	Field of study	Multimedia
Bachelor in	Informatics and Communications	School	School of Public Management, Communication and Tourism
Academic Year	2022/2023	Year of study	2
Type	Semestral	Semester	2
Level	1-2	ECTS credits	6.0
Code	9188-320-2205-00-22		
Workload (hours)	162	Contact hours	T -    TP 60    PL -    TC -    S -    E -    OT 20    O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) João Paulo Pereira de Sousa

#### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Recognize and apply the steps of developing a multimedia project.
2. Outline strategies and identify requirements for the development of interactive applications and games.
3. Integrate preexisting assets using resources provided by the game engine;
4. Create interactive applications and games using the existing game engines, namely with Unity.

#### Prerequisites

Before the course unit the learner is expected to be able to:  
Basic concepts of programming.

#### Course contents

Tools and applications of multimedia information processing, Multimedia creation tool, namely game engine. Emerging multimedia technologies.

#### Course contents (extended version)

1. Introduction do Computer Game Development
2. Game Level Design
  - 3D Space Navigation
  - GameObjects and Prefabs
  - Materials and Textures
  - Light and Lightmapping
  - Terrain
  - Particle Systems
  - Camera Configuration
  - Adding Audio
  - Working with sprites.
3. Physics System
  - RigidBody
  - Colliders
  - Controllers
  - Joints
  - Cloth
4. Animação
  - Creating Animation Clips (Animation View/Mecanim)
  - Character Animation (Rigged)
5. Scripting
  - C# Introduction
  - Variables, Components and GameObjects
  - 3D Vector Geometry
  - Movement Generation
  - Animation System
6. Augmented Reality and Virtual Reality
7. Game/Application Deployment

#### Recommended reading

1. Hocking, J. (2015). Unity in Action: Multiplatform Game Development in C# with Unity 5 1st Edition. Manning Publications. [ISBN: 161729232X]
2. Okita, A. (2014). Learning C# Programming with Unity 3D. A K Peters/CRC Press [ISBN: 1849691843]
3. Hirata, A. I. (2011). Desenvolvendo Games com Unity 3D - Space Invasion. Ciência Moderna. [ISBN: 1466586524]
4. Unity Team, (2016). Unity official documentation, retrieved from, <http://unity3d.com/learn/documentation>

#### Teaching and learning methods

The course will be taught using lectures on theoretical concepts, practical lessons in problem solving and self-learning guided by the teacher.

#### Assessment methods

1. Continuous assessment - (Regular, Student Worker) (Final, Supplementary, Special)
  - Practical Work - 100% (Three individual works performed in Unity. Minimum grade 8 values.)
2. Erasmus Students - (Regular) (Final, Supplementary)
  - Practical Work - 100% (Three individual works performed in Unity. Minimum grade 8 values.)

#### Language of instruction

Portuguese, with additional English support for foreign students.

## Electronic validation

João Paulo Pereira de Sousa	Vítor José Domingues Mendonça	Elisabete da Anunciacao Paulo Morais	Luisa Margarida Barata Lopes
26-04-2023	10-05-2023	10-05-2023	22-05-2023