

Course Unit	Multimedia Technologies	Field of study	Multimedia
Bachelor in	Informatics and Communications	School	School of Public Management, Communication and Tourism
Academic Year	2021/2022	Year of study	2
Type	Semestral	Semester	2
Level	1-2	ECTS credits	6.0
Code	9188-320-2205-00-21		
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 - 70% (Two group works (35%+35%) using Unity. Minimum grade 8 values.)
 - Practical Work - 30% (Individual works. Minimum grade 8 values.)
2. Erasmus Students - (Regular) (Final, Supplementary)
 - Practical Work - 70% (Two group works (35%+35%) using Unity. Minimum grade 8 values.)
 - Practical Work - 30% (Individual works. 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
08-03-2022	10-03-2022	10-03-2022	21-03-2022