INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Multimedia Technologies			Field of study	Multimedia								
Bachelor in	Informatics and Communications			School	School of Public Management, Communication and Tourism								
Academic Year	2023/2024	Year of study	2	Level	1-2	ECTS credits	6.0						
Type	Semestral	Semester	2	Code	9188-320-2205-00-23								
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 for processing multimedia information, tools for creating multimedia projects. 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
   - Woking 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. Final assessment - (Regular, Student Worker) (Final, Supplementary, Special)
   - Practical Work - 100% (Three individual works performed in Unity. Minimum grade 7 values.)
2. Erasmus Students - (Regular) (Final, Supplementary)
   - Practical Work - 100% (Three individual works performed in Unity. Minimum grade 7 values.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

João Paulo Pereira de Sousa	Elisabete da Anunciacao Paulo Morais	Anabela Neves Alves de Pinho	Luisa Margarida Barata Lopes
04-03-2024	04-03-2024	04-03-2024	12-03-2024