Course title	**3D Game Development**				
Course code	**BIMA-380**				
Course type	**Elective**				
Level	**1st Cycle**				
Year / Semester	**3rd /4th**				
Teacher's name	**Dr C G Christou**				
ECTS	6	**Lectures / week**	12	**Laboratories / week**	
Course purpose and objectives	The main objectives of the course are to: • Introduce the student to concepts of 3D computer games and how to design and develop them. • Develop three genres of 3D games: First-Person and Third-Person Shooters and Skill games (FPS, TPS, Skill). • Create game narratives, objectives, and game logic. • Provide students with an appreciation of textures, materials, and lighting and how to use them effectively in game level design. • Introduce students to the Unity3D game engine and to basic scripting in C# • Prepare 3D characters for games and apply animations to them. • Introduce animation and animation timelines. Looped and triggered animations. • Create simple user interfaces and get user input using scripts.				
Learning outcomes	After completion of the course students are expected to be able to: 1. Have Foundational Understanding of Game Development • Comprehend the history and significance of game development. • Understand the role of game engines with a focus on Unity. 2. Demonstrate Unity Interface Proficiency • Navigate and utilize the Unity Editor effectively. • Understand the functionalities of the Scene, Game, and Asset views. 3. Be conversant with 3D Object Manipulation • Create and manipulate 3D objects within Unity scenes. • Understand the basics of scene hierarchy, lighting, and camera setup. 4. Understand Material and Texture Application • Apply materials and textures to 3D objects. • Understand basic shader concepts. 5. Understand C# Scripting Basics • Write simple C# scripts for basic game functionality. • Understand variables, data types, and control structures in C#. 6. Understand User Input and Interactivity • Capture and handle various types of user input.				

	• Implement basic interactive elements in Unity. 7. Use Physics and Collision Handling • Utilize Unity's physics engine for object movement and interaction. • Implement basic collision detection. 8. Create Animation and Sound Integration • Create simple animations using Unity's animation tools. • Implement sound effects and background music. 9. Create Simple User Interfaces • Create and script basic UI elements like text, buttons, and sliders. • Understand the importance of UI in game development. 10. Understand Game Logic and State Management • Implement basic game states and transitions. • Create a simple scoring system and understand how to save and load game states. 11. Be conversant with Game Building and Testing • Build a standalone game for at least one platform. • Understand basic testing and debugging techniques. 12. Project Completion-Understand the workflow of game development from concept to completion.		
Prerequisites	BIMA-160	**Required**	
Course content	Introduction to Unity and Game Development. Unity Interface and Basic Concepts. Introduction to 3D Objects and Scenes. Materials and Textures Basic Scripting in C#. User Input and Interactivity. Unity Canvas and buttons Physics and Collisions. Animation and Sound. User Interface (UI) Elements. Game Logic and State Management. Building and Testing a Game. Final Project and Review.		
Teaching methodology	The course will consist of lectures, lab presentations, practical exercises, and assignments. Each class (week/session) will consist of two parts: 1. Theory on specific topics with demos and walk-throughs (40 minutes) 2. Self-paced exercises, either following tutorials, completing homework or completing assessment projects (60 minutes)		
Bibliography	Learning C# by Developing Games with Unity, Harrison Ferrone, Packt 2019, 1789532051 Websites: https://learn.unity.com/		
Assessment	Class attendance and performance, assignment and practical projects.		
Language	English		