



GAME DEVELOPMENT

COURSE SYLLABUS



**GAME DEVELOPMENT ON UNITY:
6-MONTH STRUCTURED SYLLABUS**

EXR

ENTER INTO EXTENDED REALITY



STRUCTURE OVERVIEW:

Course Duration: 6 Months (88 instructional days)
Hours: 2 hours/day × 88 = 176 total hours

MODE:

First 4 Months: Mentor-guided training and 4 mini-projects

Last 2 Months: Self-project phase with 4 full games for portfolio

Sessions/Month: Approx. 22 sessions per month



GAME DEVELOPMENT COURSE STRUCTURE

Month	Focus	Content & Activities	Output
Month 1	Unity & Programming Fundamentals	♦ Unity Hub, Scenes, Game Objects ♦ C# Syntax, OOP, Variables, Conditions, Loops ♦ Unity IDE, MonoBehaviour, Start/Update Pattern & Array-based coding challenges- Basic UI & Canvas	🔧 Basic Unity prototype with UI elements
Month 2	2D Game Development	♦ Rigidbody2D, Colliders, Physics ♦ Input Handling, Movement, Jumping ♦ Animation (Animator, State Machines) ♦ Triggers, Health Bars, Score Systems ♦ Git & Version Control intro	★ Mini project 1: 2D Platformer
Month 3	3D Game Foundations	♦ Switching to 3D Mode ♦ 3D Physics: Rigidbody, Colliders, Jump ♦ Terrain Tools, Lighting, Skybox ♦ Basic Enemy AI using NavMesh ♦ Blend Trees and 3D Animation	★ Mini project 2: 3D Exploration Game



Month 4	Advanced Gameplay & Systems	♦ Combat System (Melee / Shooter) ♦ Advanced Scripting (Singleton, Managers) ♦ Dialogue Systems, Game State Handling ♦ Scene transitions, Inventory, and Puzzle Triggers- ♦ Debugging & Optimization	★ Mini project 3:3D Combat game ★ Mini project 4: Student's choice
Month 5	Portfolio Projects (Self-Driven)	♦ Game 1: 2D Platformer Polished ♦ Game 2: 3D Puzzle / Top-down Shooter ♦ Project Planning, Scope Control- Weekly Mentor Review & Bug Fixing	🎮 Games 1 & 2
Month 6	Final Projects & Internship Prep	♦ Game 3: Combat / RPG / Casino Game ♦ Game 4: Free Genre / Open World- Final Playtesting & Polish- Resume Building, Interview Prep ♦ Final Presentation / Demo Day	🎮 Games 3 & 4 + Portfolio Showcase



MONTH 1: UNITY & C# FOUNDATIONS

Day Range	Topic	Subtopic Explanation
Days 1-5	Unity Basics	Getting Started with Unity: This phase introduces Unity Hub, the core interface, scenes, and Game Objects. Students learn how to navigate Unity's interface, manage scenes, and manipulate objects in the 2D/3D space. These are the first steps in building a functioning game environment. TASK – BASIC ASSESSMENT TEST
Days 6-10	Unity Engine & Workflow	Understanding the Unity Engine: Learners are introduced to Unity's Object-Component system, the distinction between 2D and 3D projects, and how the Inspector and Hierarchy work together. This understanding is vital for creating structured and reusable game elements. TASK – BASIC ASSESSMENT TEST ABOUT ELEMENTS
Days 11-15	IDE & Scripting Setup	Programming with Unity: Students set up Visual Studio, create their first C# scripts, and use MonoBehaviour methods like Start() and Update(). These form the backbone of real-time game logic execution. TASK – BASIC ASSESSMENT ABOUT SCRIPT
Days 16-20	C# Fundamentals	Building Coding Foundations: This module covers variables, conditional statements, loops, and functions. It creates the logical thinking needed for scripting gameplay mechanics. TASK – BASIC ASSESSMENT ABOUT SCRIPT



MONTH 2: GAMEOBJECTS, PHYSICS, AND UI

Day Range	Topic	Subtopic Explanation
Days 21-25	Object Management	Organizing Game Elements: Concepts like tags, layers, parenting, and prefabs help efficiently manage GameObjects. These allow developers to structure scenes, group objects logically, and reuse assets. TASK – ASSESSMENT ABOUT GAME OBJECTS
Days 26-30	2D Movement & Input	Controlling the Player: This includes translating, rotating, and scaling GameObjects. Students learn Input.GetAxis for capturing keyboard/mouse input to move characters. TASK – ASSESSMENT ABOUT THE INPUT SYSTEM
Days 31-35	2D Physics	Bringing Physics to Life: Students work with Rigidbody2D, colliders, and triggers to apply realistic movements and detect interactions. Physics Materials help adjust bounciness and friction TASK – ASSESSMENT ABOUT 2D PHYSICS
Days 36-40	Animation	Animating Characters and Objects: Using the Animator, Animation Clips, and Triggers, students build animation state machines to create smooth transitions between character actions. TASK – ASSESSMENT ABOUT ANIMATION



MONTH 3: USER INTERFACES AND 3D INTRODUCTION

Day Range	Topic	Subtopic Explanation
Days 41-45	UI & UX	Creating Game Interfaces: Covers creating a Canvas for UI, implementing buttons, health bars, and pause menus. This ensures user interaction with the game is intuitive and informative. TASK – ASSESSMENT ABOUT UI / UX
Day 46	Mini Project 1	Build a Simple 2D Game: Students apply knowledge to create a basic platformer with working UI and win conditions.
Days 47-50	Game Logic & Polish	Adding Game Mechanics: Topics like timers, score systems, level transitions, and game-over states add polish to gameplay, enhancing user experience. TASK – ASSESSMENT ABOUT GAME MECHANICS
Days 51-55	Advanced Scripting	Scripting Best Practices: Learners use GetComponent, Find Object Of type, and implement the Singleton pattern for efficient and organized script referencing and management. TASK – ASSESSMENT ABOUT SCRIPT
Days 56-60	3D Introduction	Shifting to 3D: Transitioning from 2D to 3D, students explore 3D cameras, lighting systems, and skyboxes, laying the groundwork for building immersive environments. TASK – ASSESSMENT ABOUT 3D GAME



MONTH 4: 3D DEVELOPMENT, AI & INTRO TO AR/VR

Day Range	Topic	Subtopic Explanation
Days 61-65	3D Physics & Controls	Implementing 3D Mechanics: Introduces Rigidbody (3D), colliders, jumping mechanics, and mouse-look scripts to enable first- or third-person movement systems. TASK – ASSESSMENT ABOUT 3D PHYSICS & CONTROL
Day 66-70	3D Environment	Creating 3D Worlds: Using terrain tools, trees, lighting baking, and materials, students design rich, navigable environments. TASK – ASSESSMENT ABOUT 3D ENVIRONMENT
Day 71	Mini Project 2	3D Exploration Game: A basic terrain explorer game is developed to practice navigation and environment interaction.
Days 72-75	3D Animation	Animating in 3D: Learners set up humanoid rigs, blend trees, and input-controlled transitions to animate character models. TASK – ASSESSMENT ABOUT 3D ANIMATION
Days 76-80	Enemy & AI	Programming AI Behavior: Using NavMesh and basic patrol logic, students build simple enemy behaviors such as following and attacking the player. TASK – ASSESSMENT ABOUT AI ENEMY
Days 81-84	Combat System	Developing Combat Mechanics: Players learn to implement melee or shooting attacks, damage systems, and enemy health management. TASK – ASSESSMENT ABOUT COMBAT SYSTEM



Day 85	Mini Project 3	3D Combat Game: Students build a full mini-game with player combat, enemies, and win/loss conditions.
Day 86-87	Mini Project 4	Free Choice Project (2D/3D): A creative mini-project in either 2D or 3D format, letting students apply their skills freely. TASK – ASSESSMENT ABOUT 3D ENVIRONMENT
Days 88	Introduction to AR/VR in Unity	Exploring Immersive Technologies: Students get a hands-on introduction to building AR and VR experiences in Unity. The session includes setting up Unity XR plugins (like AR Foundation), understanding device requirements (Oculus, Android/iOS), and creating simple camera-based AR or VR interactions. This acts as a primer for future immersive development pathways. TASK – BASIC ASSESSMENT ABOUT AR/VR IN UNITY



Tirur

2nd Floor, WW99+G3 AAK Mall, Naduvilangadi, Tirur,
Malappuram , Kerala 676101

Call: +91 999-510-6688

Website: www.exrgames.com, info@exrgames.com