Unity3D Curriculum

❖ Complete course (Unity + AR + VR) - (120 hrs)
❖ Unity + AR - (104 hrs)
❖ Unity + VR - (110 hrs)
❖ Only AR (Overview of Unity concepts + AR) - (40 hrs)
❖ Only VR (Overview of Unity concepts + VR) - (46 hrs)

*All the above durations includes the assignments also.

1.Introduction to Unity (3 hrs)

- Getting to Know the Unity Editor
- The Project Dialog
- The Unity Interface
- The Project View
- The Hierarchy View
- The Inspector View
- The Scene View
- The Game View
- Honorable Mention: The Toolbar
- Navigating the Unity Scene View
- The Hand Tool
- The transform tool(New)
- Flythrough Mode
- Layouts
- Asset Store
- Unity services view

2. Game Objects (4 hrs)

- Dimensions and Coordinate Systems
- Putting the 2D in 3D
- Using Coordinate Systems
- World Versus Local Coordinates

- Game Objects
- Transforms
- Translation
- Rotation
- Scaling
- Hazards of Transformations
- Transforms and Nested Objects

3. Models, Materials, and Textures (4 hrs)

- The Basics of Models
- Built-In 3D Objects
- Importing Models
- Models and the Asset Store
- Textures, Shaders, and Materials
- Shaders Revisited

4. 3D Terrain (2 hrs)

- Terrain Generation
- Adding Terrain to Your Project
- Heightmap Sculpting
- Unity Terrain Sculpting Tools
- Terrain Textures
- Importing Terrain Assets
- Texturing Terrain

5. Environments (4 hrs)

- Generating Trees and Grass
- Painting Trees
- Painting Grass
- Terrain Settings
- Environment Effects
- Skyboxes
- Fog
- Lens Flares
- Water

- Character Controllers
- Adding a Character Controller
- Fixing Your World

6. Lights and Cameras (4 hrs)

- Lights
- Point Lights
- Spotlights
- Directional Lights
- Creating Lights Out of Objects
- Halos
- Cookies
- Cameras
- Anatomy of a Camera
- Multiple Cameras
- Working with layers and using the layers

7. Scripting—Part 1 (3 hrs)

- Scripts
- Creating Scripts
- Attaching a Script
- Anatomy of a Basic Script
- The Using Section
- The Class Declaration Section
- The Class Contents
- Variables
- Creating Variables
- Variable Scope
- Public and Private
- Operators
- Arithmetic Operators
- Assignment Operators
- Equality Operators
- Logical Operators
- Conditionals
- The if Statement
- The if / else Statement

- The if / else if Statement
- Iteration
- The while Loop
- The for Loop

8. Scripting—Part 2 (6 hrs)
- Methods
- Anatomy of a Method
- Writing Methods
- Using Methods
- Input
- Input Basics
- Input Scripting
- Specific Key Input
- Mouse Input
- Accessing Local Components
- Using GetComponent
- The Transform
- Accessing Other Objects
- Finding Other Objects
- Modifying Object Components
- Understanding playerprefs
- How to save and load data

9. Collision (5 hrs)
- Collision
- Rigidbodies
- Colliders
- Physics Materials
- Triggers
- Raycasting

10. Prefabs (2 hrs)
- Prefab Basics
- Prefab Terminology
- Prefab Structure

- Working with Prefabs
- Adding a Prefab Instance to a Scene
- Inheritance
- Instantiating Prefabs Through Code

11. 2D Games Tools (16 hrs)
- The Basics of 2D Games
- The 2D Scene View
- Orthographic Cameras
- Adding Sprites
- Importing Sprites
- Sprite Mode
- Imported Sprite Sizes
- Draw Order
- Sorting Layer
- Order in Layer
- 2D Physics
- Rigidbody 2D
- 2D Colliders
- 2D Joints
- 2D Effectors

12. User Interfaces (6 hrs)
- Basic UI Principles
- The Canvas
- The Rect Transform
- Anchors
- Additional Canvas Components
- UI Elements
- Images
- Text
- Buttons
- Canvas Render Modes
- Screen-Space Overlay
- Screen-Space Camera
- World Space

13. Particle Systems (6 hrs)

- Particle Systems
- Particles
- Unity Particle Systems
- Particle System Controls
- Particle System Modules
- Default Module
- Emission Module
- Shape Module
- Velocity over Lifetime Module
- Limit Velocity over Lifetime Module
- Force over Lifetime Module
- Color over Lifetime Module
- Color by Speed Module
- Size over Lifetime Module
- Size by Speed Module
- Rotation over Lifetime Module
- Rotation by Speed Module
- External Forces Module
- Collision Module
- Sub Emitter Module
- Texture Sheet Module
- Renderer Module
- The Curve Editor

14. Animations (4 hrs)

- Animation Basics
- The Rig
- The Animation
- Animation Types
- 2D Animations
- Creating the Animation
- Animation Tools
- Animation Window
- Creating a New Animation

- Record Mode
- The Curves Editor
- Animator Basics
- Rigging Revisited
- Importing a Model
- Configuring Your Assets
- Rig Preparation
- Animation Preparation
- Creating an Animator
- The Animator View
- The Idle Animation
- Parameters
- States and Blend Trees
- Transitions
- Scripting Animators

15. Audio (5 hrs)

- Audio Basics
- Parts of Audio
- 2D and 3D Audio
- Audio Sources
- Importing Audio Clips
- Testing Audio in the Scene View
- 3D Audio
- 2D Audio
- Audio Scripting
- Starting and Stopping Audio
- Changing Audio Clips
- Audio Manager

16. Mobile Development (4 hrs)

- Preparing for Mobile
- Setting Up Your Environment
- The Unity Remote
- Accelerometers
- Designing for the Accelerometer

- Using the Accelerometer
- Multi-Touch Input
- Gyroscope

17. Game Revisions (2 hrs)

- Cross-Platform Input
- Virtual Controls
- Converting Projects to Mobile
- Using Tilt Control
- Using a Touch Joystick
- Fixing the Disappearing Joystick

18. Polish and Deploy (4 hrs)

- Managing Scenes
- Establishing Scene Order
- Switching Scenes
- Persisting Data and Objects
- Keeping Objects
- Saving Data
- Unity Player Settings
- Cross-Platform Settings
- Per-Platform Settings
- Building Your Game
- Build Settings

19. Augmented Reality (10 hrs)

- Introduction to AR using Unity
- Understanding the AR with Vuforia SDK
- Handling the AR Camera
- Understanding and implementing the AR based user interface
- Interactions with the AR objects using Mobile Devices
- How to create markers with Vuforia
- Understanding different target types and example on each target

20. Virtual Reality (16 hrs)

- VR overview
- Getting Started with VR development using Unity3D
- Google VR sdk overview
- Vuforia sdk overview
- Input for OpenVR controllers
- Input for Oculus
- Interaction in VR
- User interface for VR
- WorldSpace UI with Curved UI
- Movement in VR
- Deploying your VR project
- Optimisations for VR in Unity3D

21. Assignments

- 2D Mini project (24 hrs)
- 3D Mini project (50 hrs)
- Ar Mini project: Simple Ar application (12 hrs)
- Vr Mini project: Simple Vr application (12 hrs)