



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## Metaverse Apps with C#, Unity, and Firebase

### Duration

5 days

### Description

In this dynamic course, participants will delve into the vast and evolving world of the Metaverse, uncovering its key concepts and learning how to craft their own virtual spaces. Using the Unity engine and its extensive asset library, learners will gain practical skills in creating immersive Metaverse environments. The course includes integrating Unity with Firebase to enhance real-time data handling and interactions. Participants will also develop proficiency in writing custom C# scripts to manipulate game objects, and learn how to incorporate Non-Fungible Tokens (NFTs) within their Metaverse projects. The course offers hands-on experience with various interaction methods, including desktops, game controllers, and the Meta Quest 3, culminating with preparing a Metaverse for distribution.

### Objectives

- Explore the many concepts that define the Metaverse
- Learn how to use Unity and Unity Assets to create a Metaverse
- Integrate Unity with Firebase
- Implement custom C# scripts to control game objects
- Utilize a Non-Fungible Token (NFT) in a Metaverse
- Interact with a Metaverse using a desktop, game controller, or Meta Quest 3
- How to distributing a Metaverse

### Prerequisites

Students need C# programming experience. Experience with Unity and Firebase is highly recommended.

### Training Materials

All students receive comprehensive courseware covering all topics in the course. Courseware is distributed via GitHub in the form of documentation and extensive code samples. Students practice the topics covered through challenging hands-on lab exercises.



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## Software Requirements

Students will need a free, personal GitHub account to access the courseware. Students will need a Windows or macOS computer. Student will need permission to install Visual Studio 2022 (or Visual Studio Code) and Unity on their computers. Also, students will need permission to install NuGet Packages. Finally, students will need permissions to provision Google Firebase resources. If students are unable to configure a local environment, a cloud-based environment can be provided.

## Outline

- Introduction
- Metaverse Overview
  - What is the Metaverse?
  - Social Interaction
  - Virtual Object Interaction
  - Real-Time Experience
  - Social, Commercial, and Educational Applications
- Development Tools
  - Visual Studio Code
  - C#
  - Unity
  - Firebase
- Unity Overview
  - 3D Game Engine
- Unity Setup
  - Create Unity Account
  - Download Unity Hub
  - Install Unity Platform
  - Project Templates
  - Unity Editor
- Unity Project
  - Create a New Project
  - Rendering Pipelines
  - Scenes
  - Game Objects
  - Project Organization



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

- Firebase Overview
  - Cross-Platform Backend
  - Unity SDK
- Firebase Compilation Features
  - Authentication & AppCheck
  - Real-time and Firestore Database
  - Storage, Hosting, and Functions
- Firebase Launch & Monitoring Features
  - Crashlytics
  - Performance
  - Test Lab
  - App Distribution
- Firebase Analytics Features
- Firebase Participation Features
  - A/B Testing
  - Messaging
  - Dynamic Links
- Firebase Setup
  - Create Google Account
  - Create Firebase Project
  - Enable Google Analytics
  - Download Firebase SDK for Unity
  - Import Firebase SDK into Unity Project
  - Register Unity Project with Firebase
  - Import Google Plist Files
- Scenes
  - Creating a Scene
  - Scene & Game View
  - Inspector
  - Moving, Rotating, and Scaling Objects
- Game Objects
  - Third Person Controller
  - Import Assets from Unity
  - Add a Character
  - Add a Camera



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

- Run a Game and Control Character
- Cubes and Spheres
- Physics Engine
- Rigid Body
- Gravity and Kinematic
- Push Rigid Bodies
- Hall or Meeting Point
- Hub Scene
- Players
- C# Scripts
  - Create a C# Script
  - Attach a C# Script to a Game Object
  - C# Script Editor
  - C# Script Lifecycle
  - C# Script Variables
  - C# Script Functions
  - C# Script Events
  - C# Script Debugging
  - C# Scripting Unity and Firebase
- Non-Fungible Tokens
  - What is a Non-Fungible Token?
  - dApps
  - Interplanetary File System (IPFS)
  - Goerli Testnet
  - Chainsafe
  - Metamask
- Chainsafe
  - Blockchain integration
  - Smart contract development
  - Consultancy and advisory
  - Security testing and auditing
  - IPFS Storage
- NFT & Unity
  - Create a Chainsafe Project
  - Create a Chainsafe IPFS Storage



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

- Install Unity SDK
- Multiplayer World
  - Metaverses are Multiplayer
  - Photon SDK
  - Photon Unity Networking (PUN)
  - Text and Voice Chat
  - C# Scripting with Photon
- Streaming Video
  - Video Streaming
  - Why is Video Streaming useful?
  - Video Streaming with Unity
  - Supported File Formats
- User Interaction
  - Desktop
  - Game Controller
  - Meta Quest 3
- Distributing
  - Optimization
  - Cross-Platform
- Conclusion