

# Unity for Films, Real-time Rendering and Cinemachine

## 1. INTRODUCTION TO REAL TIME FILMMAKING

- What is Real time Render
- Modern Rendering experiences

## 2. OVERVIEW

- Hardware
- Software
- Human physiology and perception

## 3. Introduction to Unity

- 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
  - Flythrough Mode

## 4. Game Objects

- Dimensions and Coordinate Systems
  - Putting the D in 3D
  - Using Coordinate Systems
  - World Versus Local Coordinates
- Game Objects
- Transforms

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

## **6. Models, Materials, and Textures**

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

## **7. 3D Terrain**

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

## **8. Environments**

- 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

## **9. Lights and Cameras**

- Lights
  - Point Lights
  - Spotlights
  - Directional Lights

- Creating Lights Out of Objects
  - Halos
  - Cookies
- Cameras
  - Anatomy of a Camera
  - Multiple Cameras
  - Split Screen and Picture in Picture
- Layers
  - Working with Layers
  - Using Layers

## **10. Cinemachine**

- Using Cinemachine: Getting Started
  - The Concept
  - The Rules
  - The Requirements
- Using Cinemachine: Track & Dolly
- Using Cinemachine: Free Look
- Using Cinemachine: Clear Shot
- Using Cinemachine: Post Processing

## **11. Post-processing**

- Installation
- Quick-start
- Effects
  - Ambient Occlusion
  - Anti-aliasing
  - Auto-exposure
  - Bloom
  - Chromatic Aberration
  - Color Grading
  - Deferred Fog
  - Depth of Field
  - Grain
  - Lens Distortion
  - Motion Blur
  - Screen-space reflections
  - Vignette

## **12. Vignetteinemachine: Post Processing**

## **10. Collision**

- Rigidbodies
- Collision
  - Colliders
  - Physics Materials
- Triggers
- Raycasting

## **11. Prefabs**

- Prefab Basics
  - Prefab Terminology
  - Prefab Structure
- Working with Prefabs

- 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

## 14. 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

## 15. Animations

- Animation Basics
  - The Rig
  - The Animation
- Animation Types
  - Creating the Animation
- Animation Tools
  - Animation Window

- Creating a New Animation
- Record Mode
- The Curves Editor

## **16. Animators**

- 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

## **17. Audio**

- 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

## **19. Publish and Deploy**

- 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

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## **20. Cinemachine Examples**

- Alembic File Import
- Fbx Import
- Maya to unity
- Sample Project

## **21. Creating an Animated Short**

- Virtual Cameras and setup
- Animate the Cinemachine Dolly Track
- Sequence cameras with Timeline and Cinemachine
- Animate game object properties with Timeline
- Add music and screen fading to your animation

**Note – This course does not cover Scripting in unity with C# or JavaScript's – This course uses pre built Scripts for additional functionalities.**