Unity Creative Core pathway

All lesson plans

# Pathway description

Creative Core is your next step towards becoming a Unity creator. This free learning path will teach you all the core elements you will need to bring your imagination to life with Unity. Once you’ve completed Unity Essentials as an introduction to the fundamentals of the Unity Editor, take this pathway to learn VFX, Lighting, Animation, Audio, UI, and other creative skills, no programming required.

**Skills covered in this course**

Beginner Job Preparation

* Prepare yourself for a freelance job search
* Refine your job search priorities and goals
* Practice continuous personal and professional growth

Absolute Beginner Design Process

* Implement an iterative design process
* Coordinate a user feedback and testing session
* Practice putting the user first

Absolute Beginner Project Management

* Plan projects in the real-time development cycle
* Manage projects in the real-time development cycle

Beginner Render Pipelines

* Choose an appropriate render pipeline for a project, given certain requirements
* Explain the basic concepts of real-time graphics rendering
* Given a scenario, determine the appropriate rendering methods that should be used

Absolute Beginner Digital Citizenship

* Engage in digital citizenship best practices
* Act in compliance with relevant intellectual property laws

Absolute Beginner Research

* Conduct research using online technical documentation

Beginner Critical Thinking

* Conduct critical evaluation in decision making for creative projects

Beginner Shader scripting

* Create a simple shader and material using Shader Graph

Beginner Materials

* Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
* Create materials for the URP/Lit Shader on a 3D GameObject
* Simulate common substances with physically-based materials
* Synthesize your new shaders and materials skills in response to project requirements

Beginner Shaders

* Decide among common shaders to use for a given project

Beginner Lighting

* Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
* Decide the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project
* Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism
* Generate a lightmap in order to implement baked lighting in a scene
* Configure light sources and shadows in order to functionally light a scene
* Configure Light Probes in order to increase the realism of baked lighting
* Configure Reflection Probes in order to achieve accurate reflections
* Troubleshoot common lighting errors in order to appropriately light a scene
* Synthesize your new lighting skills in response to project requirements

Beginner Animation Systems

* Describe key components of an animator controller
* Describe the relationship between different animation components
* Synthesize your new animation skills in response to project requirements

Beginner 3D Animation (Native Unity)

* Create simple keyframed 3D animation sequences

Beginner 3D Animation (Imported)

* Configure Animation Clips imported from digital content creation third-party 3D modeling software or the Asset Store for use in a project
* Configure a humanoid rig for use with the Humanoid Animation system

Beginner Particles and Visual Effects

* Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
* Produce environmental and burst effects by configuring Unity's Particle System object
* Interpret a simple VFX Graph asset
* Synthesize your new VFX skills in response to project requirements

Beginner Unity Cameras

* Decide which camera setup to use, given a project’s requirements
* Configure a single Unity camera in a 2D or 3D scene
* Synthesize your new camera skills in response to project requirements

Beginner Post-Processing

* Evaluate whether post-processing is an appropriate tool for a given goal
* Implement a particular visual style in a project by configuring a post-processing profile
* Synthesize your new post-processing skills in response to project requirements

Beginner Audio Design Principles

* Implement audio in Unity
* Create interactive experiences by synthesizing audio experience design principles
* Solve accessibility challenges in an audio design

Beginner Audio Implementation

* Produce customized results by correctly configuring audio in a scene
* Refine existing audio in a Unity project
* Synthesize your new audio skills in response to project requirements

Beginner User Interface

* Decide on a user interface approach for a project
* Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions
* Create and configure interactive UI components such as buttons, toggles, and sliders, in order to implement simple UI functionality

Beginner Prototyping

* Determine the appropriate prototyping approach for a specific project
* Decide the critical project features required in order to create a functional prototype
* Create a functional prototype in Unity
* Integrate external assets and tools into your prototype
* Refine a prototype environment using ProBuilder
* Refine a prototype environment using Terrain
* Test a basic experience prototype
* Synthesize your new prototyping skills in response to project requirements

| **How to use the pathway** | | |
| --- | --- | --- |
| The Unity Creative Core pathway is broken up into 10 “missions,” with each mission containing multiple tutorials and assessments. The following missions make up the complete pathway: | | |
|  | **Introduction to Creative Core** | 2 hours |
|  | **Shaders and materials** | 6 hours 45 minutes |
|  | **Lighting** | 9 hours and 20 minutes |
|  | **Animation** | 6 hours |
|  | **VFX** | 3 hours 30 minutes |
|  | **Cameras** | 30 hours 10 minutes |
|  | **Post-processing** | 3 hours |
|  | **Audio** | 4 hours 40 minutes |
|  | **UI** | 4 hours 45 minutes |
|  | **Prototyping** | 5 hours 45 minutes |
| Students are encouraged to complete all the missions in the correct sequence to ensure the best learning experience. | | |

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# Mission 1: Getting started with Unity



Part of the [Creative Core](https://learn.unity.com/pathway/creative-core?uv=2020.3)

**Mission overview**

This mission is your first step on the Creative Core pathway. Start here to learn about the topics covered, the activities required, and the skills you will gain along the way.

In this mission, you will:

* Learn about the topics covered in Creative Core.
* Select a guided project in which to apply your new skills.
* Create a new project in Unity and make some technical decisions about that project.
* Learn how to use other people’s works in your projects responsibly.
* Tour Unity’s technical documentation as another resource for your learning.
* Conduct critical evaluation in decision making for creative projects.

**Tutorials in this mission**

1. Welcome to Creative Core
2. Meet the creators
3. Select your guided project
4. Get started with Unity documentation
5. Develop your critical evaluation skills
6. Guided project setup checkpoint
7. Mission checkpoint

## **Welcome to Creative Core**

| **Lesson link** | [Welcome to Creative Core](https://learn.unity.com/tutorial/welcome-to-creative-core) | |
| --- | --- | --- |
| **Length** | **10 minutes** | |
| **Summary**  Welcome to the Creative Core pathway! In this tutorial, you will learn what the Creative Core pathway is, who it’s for, and how it’s structured.    **Materials**  [Creative Core](https://learn.unity.com/pathway/creative-core?uv=2020.3) | |  |
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| **Steps**   1. Overview 2. What is the Creative Core pathway? 3. What’s the purpose of this pathway? 4. How is the Creative Core pathway structured? 5. What are the core missions? 6. What are the guided projects? 7. What is the independent project? 8. Next steps | |  |

## Meet the creators

| **Lesson link** | [Meet the creators](https://learn.unity.com/tutorial/meet-the-creators) | |
| --- | --- | --- |
| **Length** | **10 minutes** | |
| **Overview**  Meet the creators who will help guide you along your Creative Core learning journey.  In this tutorial you’ll:   * Describe a variety of different creator journeys in real-time 3D. * Identify job roles to consider in preparation for refining your personal goals. * Identify a method for evaluating the ongoing learning journey that will help you synthesize the experience.   **Skills**   * Beginner Job Preparation   + Refine your job search priorities and goals | |  |
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| **Steps**   1. Overview 2. Established creator insights 3. Who are Unity creators? 4. How did they get started? 5. What have they learned so far? 6. Next steps | |  |

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## Select your guided project

| **Lesson link** | [Select your guided project](https://learn.unity.com/tutorial/select-your-guided-project) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  In the Creative Core pathway, your guided project is where you will apply your skills. We have provided three guided projects for you to choose from so that you don’t have to come up with a concept on your own in order to get started in the pathway. In this tutorial, you’ll select the guided project that’s right for you.  By the end of this tutorial, you'll be able to:   * Define key terms of real-time graphics including rendering, render pipeline, and scriptable render pipeline. * Identify the differences between Unity’s provided render pipelines, including advantages, disadvantages, and common use cases for each. * Create a new project using a particular render pipeline.   **Materials**  [GuidedProjectStarterFiles.zip](https://connect-prd-cdn.unity.com/20211206/e5ebc5c5-c53b-4c74-bd6a-74cb19e04b23/GuidedProjectStarterFiles.zip?_ga=2.125976526.297591224.1642065466-1225599304.1599060347)  **Skills**   * Beginner Render Pipelines   + Choose an appropriate render pipeline for a project, given certain requirements | |  |
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| **Steps**   1. Overview 2. Before you begin 3. Browse possible templates for your project 4. What is rendering? 5. What are render pipelines? 6. Choose a render pipeline 7. Create a new URP project 8. Make a new scene and import the assets 9. Next steps | |  |

## Get started with Unity documentation

| **Lesson link** | [Get started with Unity documentation](https://learn.unity.com/tutorial/get-started-with-unity-documentation) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  In your learning journey, you will (we hope!) become curious about the many features and capabilities of the Unity Hub, Editor, packages, and scripting API. Unity provides a comprehensive library of documentation on these products that’s available online.  Unity documentation is an excellent resource to review what you have learned, investigate intermediate and advanced features, and expand your learning.  By the end of this tutorial, you will be able to:   * Define documentation. * Identify the major sections of Unity documentation. * Find information on a specific topic in Unity documentation.   **Skills**  Absolute Beginner Research  Conduct research using online technical documentation | |  |
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| **Steps**   1. Overview 2. What is documentation? 3. Get started with Unity Docs 4. Finding what you need 5. Challenge: Find information in Unity documentation 6. Next steps 7. Answers | | |

## Develop your critical evaluation skills

| **Lesson link** | [Develop your critical evaluation skills](https://learn.unity.com/tutorial/develop-your-critical-evaluation-skills) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Making the best possible decisions in a moment can sometimes feel like a mysterious quality that some people have and others just don’t. That’s not actually the case — anyone can work to improve the set of skills that decision-making relies on! Critical evaluation is at the heart of this.  By the end of this tutorial, you'll be able to:   * Explain the importance of critical evaluation in a creative project. * Identify approaches to obtain and evaluate information required to make a decision in a creative project. * Consider the role of critical evaluation in your journey as a creator. | |  |
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| **Steps**   1. Overview 2. What is critical evaluation? 3. What variables are involved in complex decisions? 4. How do I get the information I need? 5. Find a framework for asking questions 6. Try the decision-making framework 7. How do I evaluate information to make a decision? 8. Evaluate your own example 9. What happens after I’ve made a decision? 10. Next steps | | |

## Guided project setup checkpoint

| **Lesson link** | [Checkpoint](https://learn.unity.com/quiz/guided-project-setup-checkpoint) | |
| --- | --- | --- |
| **Length** | **5 minutes** | |
| **Summary**  In this checkpoint, you will confirm that you are ready to continue with your Creative Core learning journey.  **Quiz objective**  In this checkpoint, you will confirm that you have:   * Downloaded and installed Unity 2020.3 LTS. * Set up a new Unity project for your guided project. * Imported the guided project assets. | |  |
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| **Steps**   1. Have you downloaded and installed Unity 2020.3 LTS? 2. Have you created a new Universal Render Pipeline (URP) Unity project using Unity 2020.3 LTS for your guided project? 3. Have you imported the guided project assets that we provided into your new Unity project? | | |

## Mission checkpoint

| **Quiz:** [Guided project setup checkpoint](https://learn.unity.com/quiz/guided-project-setup-checkpoint) | | |
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# Mission 2: Shaders and materials

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Shaders and materials let you define how your 3D objects look: their colors, reflectivity, and physical texture. With shaders and materials, you can bring realism into your projects or express your own artistic style.

In this mission, you will explore concepts of light and reflection, including common terms that many 3D artists use every day. You’ll apply these concepts to create your own materials and shaders that simulate real-world objects — and even some other-worldly objects. You’ll complete this mission by creating a still life composition in which you can demonstrate a variety of shaders and materials.

By the time you complete this learning experience, you will be able to:

* Explain how surfaces in Unity are defined and rendered.
* Select a type of shader for your own project.
* Create materials for a common shader, using a wide variety of properties.
* Create your own simple shader using Shader Graph.

**Skills**

Beginner Materials

* Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
* Create materials for the URP/Lit Shader on a 3D GameObject
* Simulate common substances with physically-based materials
* Synthesize your new shaders and materials skills in response to project requirements

Beginner Shader Scripting

* Create a simple shader and material using Shader Graph

Beginner Shaders

* Decide among common shaders to use for a given project

**Tutorials in this mission**

1. Get started with shaders and materials
2. Explore meshes and rendering
3. Explore shaders
4. Manage materials in a project
5. Simulate solid surfaces
6. Map materials with textures
7. Create translucent and transparent effects
8. Add physical texture with bump mapping
9. Refine surfaces with more texture maps
10. Get started with Shader Graph
11. Challenge: Create your still life composition
12. Apply materials and shaders to your guided project
13. Mission checkpoint

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## Get started with shaders and materials

| **Lesson link** | [Get started with shaders and materials](https://learn.unity.com/tutorial/get-started-with-shaders-and-materials?pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
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| **Length** | **15 minutes** | |
| **Summary**  Shaders and materials are to a 3D scene as paint is to a painting — they are the media for expressing the artistic look and feel of your real-time 3D projects. In this tutorial, you will get acquainted with the art gallery project that we’ll use in this learning experience.  **Materials**  [CC\_Shaders.zip](https://connect-prd-cdn.unity.com/20211207/a8f296fe-abac-4104-bb84-6583679738f5/CC_Shaders.zip?_ga=2.20722683.297591224.1642065466-1225599304.1599060347) | |  |
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| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Shaders and materials 4. Welcome to the gallery 5. Your work of art 6. Next steps | | |

## Explore meshes and rendering

| **Lesson link** | [Explore meshes and rendering](https://learn.unity.com/tutorial/explore-meshes-and-rendering?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  In technical terms, shaders and materials operate on meshes, which are the surfaces of GameObjects. They instruct Unity’s renderer how to render each mesh. In this tutorial, you’ll learn about meshes and rendering.  By the end of this tutorial, you'll be able to:   * Define a mesh, its characteristics, and its use in rendering a 3D GameObject. * Explain the role of shaders in the rendering process. * Assign a material to a GameObject.   **Skills**  Beginner shaders   * Decide among common shaders to use for a given project   Beginner materials   * Create materials for the URP/Lit Shader on a 3D GameObject | |  |
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| **Steps**   1. Overview 2. Look closely at meshes 3. What exactly is a mesh? 4. Mesh filter and renderer components 5. Apply a material in the Mesh Renderer 6. Next steps | | |

## Explore shaders

| **Lesson link** | [Explore meshes and rendering](https://learn.unity.com/tutorial/explore-meshes-and-rendering?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  Shaders do the work of computing how meshes will be rendered. In this tutorial, you’ll learn about the types of shaders and see how they fit into the rendering process.  By the end of this tutorial, you'll be able to:   * Determine the shader type for an object based on the design requirements. * Explain the difference between physically-based and non-physically-based rendering, and reasons for using each. * Explain the difference between a lit and unlit shader, and the reasons for using each. * Explain vertex and fragment (pixel) shaders. * Describe use cases for the Universal Render Pipeline shaders provided with Unity.   **Related documentation**  [Standard Shader Docs](https://docs.unity3d.com/Manual/shader-StandardShader.html?_ga=2.25763710.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Shaders   * Decide among common shaders to use for a given project | |  |
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| **Steps**   1. Overview 2. Types of shaders 3. Physically based shaders and rendering 4. Shaders in the Universal Render Pipeline 5. Explore: Shaders 6. Next steps | | |

## Manage materials in a project

| **Lesson link** | [Manage materials in a project](https://learn.unity.com/tutorial/manage-materials-in-a-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  You will do much of your more artistic work using materials to color, texture, and stylize your 3D objects. In this tutorial, you’ll learn how materials work, and how to use, troubleshoot, and organize them in your projects.  By the end of this tutorial, you'll be able to:   * Define material. * Create a new material. * Assign a material to a GameObject. * Manage materials as project assets. * Fix broken (magenta) materials.   **Related documentation**  [Project Window](https://docs.unity3d.com/Manual/ProjectView.html?_ga=2.58986606.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements * Create materials for the URP/Lit Shader on a 3D GameObject | |  |
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| **Steps**   1. Overview 2. What is the relationship between shaders and materials? 3. Fix magenta materials 4. Observe the default material 5. Find materials in the Project window 6. Apply a material to a GameObject 7. Change a material 8. Locate a material applied to a GameObject 9. Create a new material 10. Duplicate a material 11. Explore materials and begin creating 12. Next steps | | |

## Simulate solid surfaces

| **Lesson link** | [Simulate solid surfaces](https://learn.unity.com/tutorial/simulate-solid-surfaces?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
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| **Length** | **30 minutes** | |
| **Summary**  Materials define the ways that light will behave on an object.  In this tutorial, you’ll begin learning about materials by learning how light behaves with solid objects. Along the way, you’ll be creating materials for solid objects, and you’ll be able to simulate objects in the real world.  By the end of this tutorial, you'll be able to:   * Explain specular and diffuse reflectivity. * Distinguish between Specular and Metallic properties and explain how each is configured. * Adjust the Base Map of a material using a color. * Apply the Specular and Metallic workflows to achieve desired effects. * Identify the characteristics of a real-world surface to be configured in a new material. * Adjust material properties to simulate a given solid substance.   **Related documentation**  [Material Charts](https://docs.unity3d.com/Manual/StandardShaderMaterialCharts.html?_ga=2.87283675.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements * Create materials for the URP/Lit Shader on a 3D GameObject * Simulate common substances with physically-based materials | |  |
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| **Steps**   1. Overview 2. How light behaves 3. Specular and diffuse reflections 4. Diffuse reflectivity: The base map 5. Metals in the Specular workflow 6. Metals in the Metallic workflow 7. Smoothness 8. Explore: Create a solid material 9. Next steps | | |

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## Map materials with textures

| **Lesson link** | [Map materials with textures](https://learn.unity.com/tutorial/map-materials-with-textures?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  Textures are 2D maps that wrap around 3D objects to create variations in color, reflectivity, and other properties. In this tutorial, you’ll learn how textures work, and you’ll begin applying them to objects using materials.  By the end of this tutorial, you'll be able to:   * Define texture and map as they are used in materials. * Explain the maps that are configurable on the URP/Lit Shader and their various effects. * Define UVs. * Explain how 3D modeling programs are used to create assets for Unity materials. * Adjust the Base Map of a material using an image. * Given a collection of texture files, select appropriate maps to simulate a material.   **Skills**  Beginner Materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements * Create materials for the URP/Lit Shader on a 3D GameObject * Simulate common substances with physically-based materials | |  |
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| **Steps**   1. Overview 2. What are textures? 3. Examine texture files 4. Change colors with base map textures 5. Tiled textures 6. UV mapped textures 7. Change reflective properties with textures 8. Match the textures to the model 9. Explore texture files 10. Next steps | | |

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## Create translucent and transparent effects

| **Lesson link** | [Create translucent and transparent effects](https://learn.unity.com/tutorial/create-translucent-and-transparent-effects?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Light doesn’t only bounce off objects — sometimes it passes through them. In this tutorial, you’ll use transparency to create a translucent object that looks like glass, and the technique of alpha clipping to create realistic looking leaves from simple rectangular meshes.  By the end of this tutorial, you'll be able to:   * Apply more maps that are configurable on the URP/Lit Shader . * Apply alpha clipping in a material. * Apply the transparent surface type to a material.   **Skills**  Beginner Materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements * Create materials for the URP/Lit Shader on a 3D GameObject | |  |
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| **Steps**   1. Overview 2. Transparency with the alpha channel 3. Create a glass material 4. Add detail with alpha clipping 5. Explore transparent effects 6. Next steps | | |

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## Add physical texture with bump mapping

| **Lesson link** | [Add physical texture with bump mapping](https://learn.unity.com/tutorial/add-physical-texture-with-bump-mapping?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  Textures are commonly used to add the look of a physical texture to the surface of a mesh without changing the mesh itself. In this tutorial, you’ll learn how bump mapping adds the illusion of relief to a surface.  By the end of this tutorial, you'll be able to:   * Apply more maps that are configurable on the URP/Lit Shader. * Add a normal map and a height map to a material.   **Related documentation**  [Normal Maps](https://docs.unity3d.com/Manual/StandardShaderMaterialParameterNormalMap.html?_ga=2.87627995.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements * Create materials for the URP/Lit Shader on a 3D GameObject | |  |
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| **Steps**   1. Overview 2. What are bump maps? 3. Add surface detail with normal maps 4. Add relief with height maps 5. Next steps | | |

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## Refine surfaces with more texture maps

| **Lesson link** | [Refine surfaces with more texture maps](https://learn.unity.com/tutorial/refine-surfaces-with-more-texture-maps?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  Once you are familiar with the basic properties of the URP/Lit shader, you will know how to use many shaders, materials, and textures that you’ll encounter as a 3D creator. This tutorial will complete your education on this shader.  By the end of this tutorial, you'll be able to:   * Explain the use of Detail Inputs for the URP/Lit shader. * Explain High Dynamic Range color.   **Skills**  Beginner Materials   * Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements | |  |
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| **Steps**   1. Overview 2. Intensify shadows with occlusion maps 3. Add detail with microsurface maps 4. Light up surfaces with emission maps 5. Next steps | | |

## 

## Get started with Shader Graph

| **Lesson link** | [Get started with Shader Graph](https://learn.unity.com/tutorial/get-started-with-shader-graph?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  Now that you know the basics of shading, you have the knowledge to go even further — to create your own shader. With Shader Graph, you can easily apply your knowledge to create new and exciting effects.  By the end of this tutorial, you'll be able to:   * Explain Shader Graph and its uses. * Create a new shader in Shader Graph. * Navigate in the Shader Graph editor window. * Connect commonly used Shader Graph nodes to create desired effects. * Make a shader with configurable material properties. * Make a material from a custom Shader Graph shader.   **Materials**  [Make a Flag Wave with shadergraph](https://learn.unity.com/project/make-a-flag-move-with-shadergraph)  [Shader Graph shaders in the Unity Asset Store](https://assetstore.unity.com/?free=true&q=shader%20graph&_ga=2.254997579.297591224.1642065466-1225599304.1599060347)  **Related documentation**  [Shader Graph Window](https://docs.unity3d.com/Packages/com.unity.shadergraph@10.7/manual/Shader-Graph-Window.html?_ga=2.254997579.297591224.1642065466-1225599304.1599060347)  [About Shader Graph](https://docs.unity3d.com/Packages/com.unity.shadergraph@10.7/manual/index.html?_ga=2.91945817.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Shader Scripting   * Create a simple shader and material using Shader Graph | |  |
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| **Steps**   1. Overview 2. Open Shader Graph 3. Add a procedural map 4. Create motion over time 5. Add input material properties 6. Combine maps 7. Group nodes to stay organized 8. Allow texture scaling in the materials 9. Adjust contrast 10. Adjust color and transparency 11. Finalize the shader 12. Create a test material 13. Explore Shader Graph 14. Next steps | | |

## 

## Challenge: Create your still life composition

| **Lesson link** | [Challenge: Create your still life composition](https://learn.unity.com/tutorial/challenge-create-your-still-life-composition?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **2 hours** | |
| **Summary**  It’s time to create your own work of art! We challenge you to create a still life composition with a variety of surfaces, demonstrating what you’ve learned about shaders and materials.  By the end of this tutorial, you'll be able to demonstrate your new skills in shaders and materials.  **Related documentation**  [Unity Recorder User Manual](https://docs.unity3d.com/Packages/com.unity.recorder@2.0/manual/index.html?_ga=2.92936286.297591224.1642065466-1225599304.1599060347)  [Using Shader Graph](https://docs.unity3d.com/Manual/shader-graph.html?_ga=2.92936286.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Materials   * Synthesize your new shaders and materials skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Review your skills 3. About still life 4. Create your still life composition 5. Success criteria 6. What will you do next with shaders and materials? 7. Next steps | | |

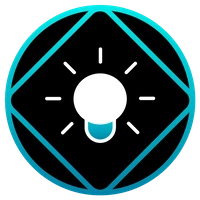
## 

## Apply materials and shaders to your guided project

| **Lesson link** | [Apply materials and shaders to your guided project](https://learn.unity.com/tutorial/apply-materials-and-shaders-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  Now it’s time to apply what you have learned about shaders and materials to your guided project! | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## Mission checkpoint

| **Lesson link** | [Creative Core: Shaders and materials quiz](https://learn.unity.com/quiz/creative-core-shaders-and-materials-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=619f9b6cedbc2a39aabd7b1e) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  Now it’s time to apply what you have learned about shaders and materials to your guided project! | |  |
|
|



# Mission 3: Lighting

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Whether you’re exploring the architectural design of your new house, sneaking through a haunted castle in a stealth game, or immersing yourself in the world of a cinematic animation, good lighting takes a real-time experience to the next level. From the basics of illuminating a space to telling evocative stories through your design, lighting will help you get there.

In this mission, you will light an indoor and outdoor space in the Unity Editor and learn about the fundamental principles of lighting for Unity experiences along the way. You’ll finish by applying what you’ve learned to complete your own lighting study.

**Skills**

By the time you complete this learning experience, you’ll be able to:

* Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light.
* Decide on the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project.
* Configure light sources and shadows in order to functionally light a scene.
* Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism.
* Generate a lightmap in order to implement baked lighting in a scene.
* Configure Light Probes in order to increase the realism of baked lighting.
* Configure Reflection Probes in order to achieve accurate reflections.
* Troubleshoot common lighting errors in order to appropriately light a scene.

**Tutorials in this mission**

1. Get started with lighting in Unity
2. Get started with lighting
3. Configure the Directional Light and skybox
4. Add light sources to your scene
5. Configure shadows in your scene
6. Bake a lightmap for your scene
7. Improve your lighting with Light Probes
8. Examine and complete the indoor scene
9. Refine and troubleshoot the indoor scene
10. Improve reflections in your scene
11. Showcase your work with lighting
12. Challenge: Complete a cinematic lighting study
13. Apply lighting to your guided project
14. Mission checkpoint

## Get started with lighting

| **Lesson link** | [Get started with lighting](https://learn.unity.com/tutorial/get-started-with-lighting/?contentId=61a108b3edbc2a39aabda3cf&missionId=61a106efedbc2a5554f0dcba&pathwayId=61a65568edbc2a00206076dd&tab=skills) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Whether you’re exploring the architectural design of your new house, sneaking through a haunted castle in a stealth game, or immersing yourself in the world of a cinematic animation, good lighting takes a real-time experience to the next level. From the basics of illuminating a space to telling evocative stories through your design, lighting will help you get there.  By the end of this tutorial, you'll be able to:   * Describe the fundamentals of the behavior of light. * Identify light sources in an image.   **Materials**  [CC\_Lighting.zip](https://connect-prd-cdn.unity.com/20211207/bb577b45-fae7-4db8-af29-e2cc48b906f3/CC_Lighting.zip?_ga=2.113515332.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light. | |  |
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|
| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Lighting 4. Identify the light sources 5. How does light work? 6. How do you perceive light? 7. What changes the direction of light? 8. What is the artistic impact of lighting? 9. What does a lighting artist do? 10. Extend: Examine the light sources 11. Next steps | | |

## 

## Get started with lighting in Unity

| **Lesson link** | [Get started with lighting in Unity](https://learn.unity.com/tutorial/get-started-with-lighting-in-unity?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Now that you’ve explored the role of a lighting artist and the basic behavior of light, you’re ready to think more specifically about lighting in Unity.  By the end of this tutorial, you'll be able to:   * Explain the difference between direct and indirect light. * Define the term global illumination. * Identify Unity’s global illumination system for URP. * Explain the main differences between real-time and baked lighting in Unity.   **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Decide on the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project. | |  |
|
|
| **Steps**   1. Overview 2. Examine the outside lighting example 3. What is the difference between direct and indirect light? 4. Unity’s global illumination systems 5. Real-time lighting in Unity 6. Baked lighting in Unity 7. Next steps | | |

## 

## Configure the Directional Light and skybox

| **Lesson link** | [Configure the Directional Light and skybox](https://learn.unity.com/tutorial/configure-the-directional-light-and-skybox?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  When you create a new scene in the Unity Editor, your Scene view loads to a bright blue sky. The Directional Light is one of the two GameObjects created for you. These two things are the absolute basics of lighting in Unity, present by default to help creators get started.  By the end of this tutorial, you'll be able to:   * Identify key considerations for lighting outdoor scenes realistically. * Describe the role of the Directional Light in a scene. * Configure the Directional Light in a scene to achieve common effects. * Describe the role of a skybox in a scene. * Create a procedural skybox.   **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism * Configure light sources and shadows in order to functionally light a scene | |  |
|
|
| **Steps**   1. Overview 2. How do you light a scene realistically? 3. Identify the types of light source 4. Configure the Directional Light 5. Advanced uses of Directional Lights 6. Get started with the skybox 7. Create a new procedural skybox 8. Create a late-night look 9. Next steps | | |

## 

## Add light sources to your scene

| **Lesson link** | [Add light sources to your scene](https://learn.unity.com/tutorial/add-light-sources-to-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  At the moment, the amphitheater space in the outdoor scene is lit by natural light in the scene you’re working on — now you’re ready to add additional light sources.  By the end of this tutorial, you'll be able to:   * Identify the differences between the different types of Light components. * Configure Light components to achieve common lighting effects. * Configure the ambient (diffuse environmental) light in your scene.   **Skills**  Beginner Lighting   * Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism * Configure light sources and shadows in order to functionally light a scene | |  |
|
|
| **Steps**   1. Overview 2. Add a street lamp 3. Configure your streetlamp 4. How do light and color work? 5. Add and configure more lights in the space 6. Check your color space 7. Configure the ambient lighting 8. Next steps | | |

## 

## Configure shadows in your scene

| **Lesson link** | [Configure shadows in your scene](https://learn.unity.com/tutorial/configure-shadows-in-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Now that you’ve configured both real-time light sources and ambient light in your scene, you’re ready to configure the shadows.  By the end of this tutorial, you'll be able to:   * Explain the relationship between lighting and post-processing. * Configure shadows in your scene to achieve realistic effects.   **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Configure light sources and shadows in order to functionally light a scene | |  |
|
|
| **Steps**   1. Overview 2. Configure the render pipeline asset 3. Enable Soft Shadows in the Directional Light 4. Consider the impact of post-processing on lighting 5. Explore: Change the mood of your scene 6. Next steps | | |

## 

## Bake a lightmap for your scene

| **Lesson link** | [Bake a lightmap for your scene](https://learn.unity.com/tutorial/bake-a-lightmap-for-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  Now that you’ve set up real-time lighting in your outdoor scene, you’re ready to set up the second type of lighting for your project: baked lighting. When you’ve implemented this and made some adjustments to the lighting configuration throughout your scene, you’ll have covered the basics of lighting an outside space!  By the end of this tutorial, you'll be able to:   * Configure light sources appropriately so that they can be baked. * Create a new Lighting Settings asset. * Explain why any changes to the baked lighting require an update to the lightmap. * Customize lightmap properties for your scene.   **Skills**  Beginner Lighting   * Generate a lightmap in order to implement baked lighting in a scene | |  |
|
|
| **Steps**   1. Overview 2. What is baked lighting? 3. Change the Light Mode 4. Set your light sources as static 5. Bake a lightmap 6. Add an Area Light 7. Set the Light Mode to Mixed 8. Next steps | | |

## Improve your lighting with Light Probes

| **Lesson link** | [Improve your lighting with Light Probes](https://learn.unity.com/tutorial/improve-your-lighting-with-light-probes?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  You’ve almost finished working on the outdoor scene! In this tutorial, you’ll learn about the role of Light Probes in making lighting in your scene more realistic.  By the end of this tutorial, you'll be able to:   * Explain how Light Probes improve the realism of lighting in a scene. * Place Light Probes appropriately within a scene. * Evaluate the impact of Light Probes using a diagnostic view.   **Skills**  Beginner Lighting   * Configure Light Probes in order to increase the realism of baked lighting | |  |
|
|
| **Steps**   1. Overview 2. What about dynamic objects? 3. What are Light Probes? 4. How do I know where to place them? 5. Place Light Probes in your scene 6. Test your changes 7. Try some tools for reviewing your scene 8. Explore: Customize your lightmap 9. Next steps | | |

## 

## Examine and complete the indoor scene

| **Lesson link** | [Examine and complete the indoor scene](https://learn.unity.com/tutorial/examine-and-complete-the-indoor-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  Now that you’ve worked on implementing lighting in an outdoor scene, it’s time to turn your attention indoors. The same basic principles of lighting apply to indoor environments, but just as light indoors and outdoors tends to be different in the physical world, there are particular considerations that it’s important to make when lighting an indoor space for a real-time experience.  By the end of this tutorial, you'll be able to:   * Identify key considerations for lighting indoor scenes realistically. * Add emissive materials to a scene. * Check emissive materials in a diagnostic view. * Place Light Probes in a 3D volume arrangement within a scene.   **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Configure light sources and shadows in order to functionally light a scene * Configure Light Probes in order to increase the realism of baked lighting | |  |
|
|
| **Steps**   1. Overview 2. What makes a great lighting artist? 3. Identify the indoor light sources 4. Examine the working scene lighting 5. What are the key considerations for indoor lighting? 6. Create and configure an emissive material 7. Check the Emissive diagnostic view 8. Place and configure Light Probes 9. Next steps | | |

## 

## Refine and troubleshoot the indoor scene

| **Lesson link** | [Refine and troubleshoot the indoor scene](https://learn.unity.com/tutorial/refine-and-troubleshoot-the-indoor-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  You’re nearly at the end of your indoor and outdoor scene journey. So far you’ve lit the outdoor scene from scratch and made some minor additions to the indoor scene. Now you’re ready to refine the lighting in this scene.  By the end of this tutorial, you'll be able to:   * Configure indirect lighting to improve the overall lighting level in an indoor scene. * Identify common troubleshooting issues for beginner-level lighting in Unity. * Improve light leaks through exploratory adjustment of lighting properties. * Identify when an important model has incorrect lightmap UVs. * Generate lightmap UVs for a model imported without them.   **Materials**  [Apple\_BrokenLightmapUVs.fbx](https://connect-prd-cdn.unity.com/20211124/2a865f48-d818-4ff2-8106-fcd6dbfa63d9/Apple_BrokenLightmapUVs.fbx?_ga=2.87612251.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Lighting   * Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism * Troubleshoot common lighting errors in order to appropriately light a scene | |  |
|
|
| **Steps**   1. Overview 2. Check the shadow configuration 3. Increase the light in the room 4. Improve the light leaks 5. Import a new model 6. Check the Baked Lightmap diagnostic view 7. Generate Lightmap UVs for the model 8. Next steps | | |

## 

## Improve reflections in your scene

| **Lesson link** | [Improve reflections in your scene](https://learn.unity.com/tutorial/improve-reflections-in-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  You’ve almost completed your work on the indoor scene, but there’s a little more to do. Before you finish the indoor scene, you need to make the scene more realistic by addressing issues with reflection that are currently present.  By the end of this tutorial, you'll be able to:   * Explain how Reflection Probes improve the accuracy of reflections in a scene. * Configure a Reflection Probe.   **Skills**  Beginner Lighting   * Configure Reflection Probes in order to achieve accurate reflections | |  |
|
|
| **Steps**   1. Overview 2. How does reflection work in Unity? 3. How do Reflection Probes work? 4. Place and configure a Reflection Probe 5. Test the Reflection Probe 6. Why take this approach to reflection? 7. Explore: Establish a mysterious atmosphere in the gallery 8. Next steps | | |

## 

## Showcase your work with lighting

| **Lesson link** | [Showcase your work with lighting](https://learn.unity.com/tutorial/showcase-your-work-with-lighting?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  In the previous tutorials in this learning experience, you lit an outdoor scene and an indoor scene, developing your understanding of lighting in Unity as you did so. Now it’s time to apply your understanding of lighting in Unity to a slightly different context: showcasing a product.  By the end of this tutorial, you'll be able to:   * Identify research topics and resources to develop your understanding of foundational lighting science and design principles. * Configure Light components to showcase an object in Unity.   **Related documentation**  [Unity Recorder User Manual](https://docs.unity3d.com/Packages/com.unity.recorder@2.0/manual/index.html?_ga=2.117587914.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Configure light sources and shadows in order to functionally light a scene | |  |
|
|
| **Steps**   1. Overview 2. Examine the example studio scene 3. Three-point lighting 4. Review the studio lighting setup 5. Establish mood with your lighting 6. Customize your own product lighting study 7. Explore: Set up traditional three-point lighting 8. Next steps | | |

## 

## Challenge: Complete a cinematic lighting study

| **Lesson link** | [Challenge: Complete a cinematic lighting study](https://learn.unity.com/tutorial/challenge-complete-a-cinematic-lighting-study?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **3 hours** | |
| **Summary**  In this challenge, you’ll complete a cinematic lighting study using your own choice of inspiration.  By the end of this tutorial, you'll be able to:   * Identify research topics and resources to develop your understanding of foundational lighting science and design principles. * Demonstrate your new skills in lighting.   **Skills**  Beginner Lighting   * Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light * Synthesize your new lighting skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. How can I develop my lighting skills further? 3. Complete a cinematic lighting study 4. Challenge success criteria 5. Continue your lighting learning journey | | |

## 

## Apply lighting to your guided project

| **Lesson link** | [Apply lighting to your guided project](https://learn.unity.com/tutorial/apply-lighting-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **1 hours** | |
| **Summary**  Now it’s time to apply what you have learned about lighting to your guided project! | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## 

## Mission checkpoint

| **Lesson link** | [Creative Core: Lighting quiz](https://learn.unity.com/quiz/creative-core-lighting-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a106efedbc2a5554f0dcba) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |



# Mission 4: Animation

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

The world around you is in constant motion. The same is true for digital worlds. A static environment tends to appear unfinished or cold and unfeeling; animation is all about creating the illusion of life.

In this mission, you will learn how to create animations in the Unity Editor and how to configure animations imported from an external program. You’ll apply these concepts to add animation to objects and characters in your scenes, and even control when the animation gets played.

By the end of this mission, you’ll be able to:

* Describe the relationship between different animation components.
* Create simple keyframed 3D animation sequences.
* Describe key components of an Animator Controller.
* Configure Animation Clips imported from third-party 3D modeling software or the Asset Store for use in a project.
* Configure a humanoid rig for use with the Humanoid Animation system.

**Skills**

* Beginner Animation Systems
* Describe key components of an animator controller
* Describe the relationship between different animation components
* Synthesize your new animation skills in response to project requirements
* Beginner 3D Animation (Native Unity)
* Create simple keyframed 3D animation sequences
* Beginner 3D Animation (Imported)
* Configure Animation Clips imported from third-party party 3D modeling software or the Asset Store for use in a project
* Configure a humanoid rig for use with the Humanoid Animation system

**Tutorials in this mission**

1. Get started with animation
2. Create your first 3D animations
3. Refine your animation
4. Control animation with an Animator
5. Import animation
6. Challenge: Bring the scene to life
7. Apply animation to your guided project
8. Mission checkpoint

## Get started with animation

| **Lesson link** | [Get started with animation](https://learn.unity.com/tutorial/get-started-with-animation?pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  In this tutorial you’ll learn about the role and responsibilities of animators and set up your project to begin animating.  By the end of this tutorial, you'll be able to:   * Define the different rig types and their uses.   **Materials**  [CC\_Animation.zip](https://connect-prd-cdn.unity.com/20211207/4a61686a-d8dc-4ba3-a45c-f4485407cf35/CC_Animation.zip?_ga=2.122279112.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Animation Systems   * Describe the relationship between different animation components | |  |
|
|
| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Animation 4. What does an animator do in Unity? 5. Why is animation important? 6. Next steps | | |

## 

## Create your first 3D animations

| **Lesson link** | [Create your first 3D animations](https://learn.unity.com/tutorial/create-your-first-3d-animations?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **40 minutes** | |
| **Summary**  In this tutorial, you’ll learn the basic principles of animation and the tools available to you in Unity by animating a ball. This is a classic exercise for new animators, both digital and traditional alike.  By the end of this tutorial, you'll be able to:   * Set up a new Animation Clip. * Record a GameObject animation using Record Mode. * Add keyframes to an Animation Clip. * Adjust multiple Keyframes at once.   **Related documentation**  [Using the Animation view](https://docs.unity3d.com/Manual/animeditor-UsingAnimationEditor.html?_ga=2.146420983.297591224.1642065466-1225599304.1599060347)  [Creating a new Animation Clip](https://docs.unity3d.com/Manual/animeditor-CreatingANewAnimationClip.html?_ga=2.146420983.297591224.1642065466-1225599304.1599060347)  [Animating a GameObject](https://docs.unity3d.com/Manual/animeditor-CreatingANewAnimationClip.html?_ga=2.146420983.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner 3D Animation (Native Unity)   * Create simple keyframed 3D animation sequences | |  |
|
|
| **Steps**   1. Overview 2. Create an Animation Clip 3. Set the animation keyframes 4. Create a second clip 5. Create the bounce animation 6. Next steps | | |

## 

## Refine your animation

| **Lesson link** | [Refine your animation](https://learn.unity.com/tutorial/refine-your-animation?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **40 minutes** | |
| **Summary**  In this tutorial, you’ll learn about the Curve editor and explore some basic animation principles.  By the end of this tutorial, you'll be able to:   * Edit the values of an Animation Curve. * Add keyframes to an Animation Clip. * Record a GameObject animation using Record Mode. * Adjust multiple Keyframes at once.   **Related documentation**  Key manipulation in Curves mode  Editing Curves  Using Animation Curves  **Skills**  Beginner 3D Animation (Native Unity)   * Create simple keyframed 3D animation sequences | |  |
|
|
| **Steps**   1. Overview 2. Refine the animation with Curves 3. Adjust the easing of the ball 4. Create squash keyframes 5. Create stretch keyframes 6. Move your animation throughout the scene 7. Explore: Bounce over distance | | |

## 

## Control animation with an Animator

| **Lesson link** | [Control animation with an Animator](https://learn.unity.com/tutorial/control-animation-with-an-animator?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **50 minutes** | |
| **Summary**  In this tutorial, you’ll create a door that animates based on the proximity of the player. In doing so, you’ll learn about Animators, Animator Controllers, and basic State Machines.  By the end of this tutorial, you'll be able to:   * Set up a new Animation Clip. * Record a GameObject animation using Record Mode * Add keyframes to an Animation Clip. * Identify the purpose of a specified parameter. * Describe the relationship between parameters and transitions.   **Related documentation**  [Animator Component](https://docs.unity3d.com/Manual/class-Animator.html?_ga=2.58986606.297591224.1642065466-1225599304.1599060347)  [Animator Controller](https://docs.unity3d.com/Manual/class-AnimatorController.html?_ga=2.20706555.297591224.1642065466-1225599304.1599060347)  [Colliders](https://docs.unity3d.com/Manual/CollidersOverview.html?_ga=2.20706555.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner 3D Animation (Native Unity)   * Create simple keyframed 3D animation sequences   Beginner Animation Systems   * Describe key components of an Animator Controller | |  |
|
|
| **Steps**   1. Overview 2. Create the door animation 3. Explore the Animator Controller 4. Explore State Machines 5. Create the default state 6. Open the door 7. Close the door 8. Reset the State Machine 9. Create the proximity trigger 10. Explore: More triggered animations 11. Next steps | | |

## 

## Import animation

| **Lesson link** | [Import animation](https://learn.unity.com/tutorial/import-animation?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  In this tutorial, you’ll learn how to configure imported animation and use it in an already existing project.  By the end of this tutorial, you'll be able to:   * Define the different rig types and their uses. * Describe how an avatar is used with a humanoid rig to share animation. * Describe how an avatar is used with an Animator Controller to control animation. * Apply imported Animation Clips to rigged models in Unity. * Configure a humanoid rig to share animations between characters. * Trim Animation Clips to access specific keyframed sequences within them. * Create a new Animator Controller for an imported rig. * Share Animator Controllers between humanoid rigs. * Identify the purpose of a specified parameter. * Describe the relationship between parameters and transitions.   **Related documentation**  [Importing a model with humanoid animations](https://docs.unity3d.com/Manual/ConfiguringtheAvatar.html?_ga=2.45301607.297591224.1642065466-1225599304.1599060347)  [Animation](https://docs.unity3d.com/Manual/AnimationSection.html?_ga=2.45301607.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Animation Systems   * Describe key components of an Animator Controller * Describe the relationship between different animation components   Beginner 3D Animation (Imported)   * Configure Animation Clips imported from third-party modeling software or the Asset Store for use in a project * Configure a humanoid rig for use with the Humanoid Animation system | |  |
|
|
| **Steps**   1. Overview 2. Can animation be shared? 3. Share the Controller 4. Configure the animation type 5. Configure the first Animation Clip 6. Configure the two remaining clips 7. Add the new clips to the Animation Controller 8. Explore: Dance Party! | | |

## 

## Challenge: Bring the scene to life

| **Lesson link** | [Challenge: Bring the scene to life](https://learn.unity.com/tutorial/challenge-bring-the-scene-to-life/?contentId=61a64ed6edbc2a00253d71a3&missionId=61a64e25edbc2a0020607564&pathwayId=61a65568edbc2a00206076dd&tab=skills&uv=2020.3) | |
| --- | --- | --- |
| **Length** | **1 hour 30 minutes** | |
| **Summary**  In this challenge, you’ll be tasked with creating at least five new in-editor animations and configuring at least one character to use three new imported animations that you source yourself.  By the end of this tutorial, you'll be able to demonstrate your new skills in animation.  **Skills**  Beginner Animation Systems   * Synthesize your new animation skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Review your skills 3. Use the keycode trigger script 4. Create your animations 5. Criteria 6. Next steps | | |

## 

## Apply animation to your guided project

| **Lesson link** | [Apply animation to your guided project](https://learn.unity.com/tutorial/apply-animation-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  Now it’s time to apply what you have learned about animation to your guided project!  **Skills**  Beginner Animation Systems   * Synthesize your new animation skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## Mission checkpoint

| **Lesson link** | [Creative Core: Animation Quiz](https://learn.unity.com/quiz/title-creative-core-animation-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a64e25edbc2a0020607564) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |

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# 

# Mission 5: VFX

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

VFX are simulated motion effects added to enhance a scene, ranging from a subtle splash of water to a massive fiery explosion.

In this mission, you will learn to create your own visual effects, including fire, weather effects, and a puff of smoke.

By the time you complete this learning experience, you will be able to:

* Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene.
* Produce environmental and burst effects by configuring Unity's Particle System object.
* Interpret a simple VFX Graph asset.

**Skills**

Beginner Particles and Visual Effects

* Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
* Produce environmental and burst effects by configuring Unity's Particle System object
* Interpret a simple VFX Graph asset
* Synthesize your new VFX skills in response to project requirements

**Tutorials in this mission**

1. Get started with VFX
2. Play around with a Particle System
3. Create an environmental Particle System
4. Create a burst particle
5. Experiment with VFX Graph
6. Challenge: Add some magic to your scene
7. Apply VFX to your guided project
8. Mission checkpoint

## Get started with VFX

| **Lesson link** | [Get started with VFX](https://learn.unity.com/tutorial/get-started-with-vfx?pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **10 minutes** | |
| **Summary**  VFX are simulated motion effects added to enhance a scene, ranging from a subtle splash of water to a massive fiery explosion. In this tutorial, you will learn what VFX are, who makes them in the industry, and then you will tinker with a fire effect in Unity.  By the end of this tutorial, you'll be able to:   * Define the acronym VFX. * Explain different applications of VFX in real-time 3D experiences, such as gameplay and environmental effects. * Describe the impact that VFX can have on the level of polish in a project. * Understand the differences between Unity's Particle System and VFX Graph.   **Materials**  [CC\_VFX.zip](https://connect-prd-cdn.unity.com/20211207/74a98779-3974-499f-84cd-0059747ebd58/CC_VFX.zip?_ga=2.35707488.1357814478.1644834550-1225599304.1599060347)  **Skills**  Beginner Particles and Visual Effects   * Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene * Produce environmental and burst effects by configuring Unity's Particle System object | |  |
|
|
| **Steps**   1. Overview 2. Before you begin 3. What are VFX? 4. Identify the VFX 5. What does a VFX artist do? 6. Particle Systems vs VFX Graph 7. Open the project and run the scene 8. Play, pause, and restart the fire effect 9. Next steps | | |

## 

## Play around with a Particle System

| **Lesson link** | [Play around with a Particle System](https://learn.unity.com/tutorial/play-around-with-a-particle-system?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **10 minutes** | |
| **Summary**  More complex effects, like a campfire, might actually be made up of multiple individual Particle Systems. A fire could have flames, smoke, and sparks. In this tutorial, you’ll explore the individual elements of a fire, and then play around with the properties of those elements to produce a unique result.  By the end of this tutorial, you'll be able to:   * Explain how individual Particle Systems can be combined to create more complex effects. * Understand the purpose of the three default modules in a Particle System: Emission, Shape, and Renderer.   **Skills**  Beginner Particles and Visual Effects   * Produce environmental and burst effects by configuring Unity's Particle System object | |  |
|
|
| **Steps**   1. Overview 2. Enable the sparks element 3. Enable additional modules for the sparks 4. Explore: Play around with the fire 5. Next steps | | |

## 

## Create an environmental Particle System

| **Lesson link** | [Create an environmental Particle System](https://learn.unity.com/tutorial/create-an-environmental-particle-system?contentId=61a649d9edbc2a07a7e9a571&missionId=61a6488fedbc2a0020607444&pathwayId=61a65568edbc2a00206076dd&tab=overview&uv=2020.3) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Particle Systems are surprisingly versatile. With just a few changes to a Particle System’s modules, you can produce a wide variety of effects. In this tutorial, you will create a brand new Particle System and configure its modules to create snow or rain in the scene.  By the end of this tutorial, you'll be able to:   * Set up a new Particle System in the scene. * Configure a Particle System's main properties, such as lifetime, size, and max particles, by modifying the Main module. * Control the location and initial direction of particles by modifying the Shape module. * Control the rate and timing of particles by modifying the Emission module. * Control the appearance of individual particles by modifying the Renderer module.   **Skills**  Beginner Particles and Visual Effects   * Produce environmental and burst effects by configuring Unity's Particle System object | |  |
|
|
| **Steps**   1. Overview 2. Add and position a new Particle System 3. Configure the main module properties 4. Configure the Shape and Emission modules 5. Configure the Renderer module 6. Save your VFX as a Prefab 7. Explore: Make other weather effects 8. Next steps | | |

## 

## Create a burst particle

| **Lesson link** | [Create a burst particle](https://learn.unity.com/tutorial/create-a-burst-particle?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  Some VFX are triggered by a user’s actions, which makes the application feel more responsive and dynamic. In this tutorial, you will create a new smoke burst effect, then allow the user to generate that effect whenever they want to ignite or extinguish the fire.  By the end of this tutorial, you'll be able to:   * Create a single burst of particles, rather than a continuous emission over time by using the Bursts section of the Emission module. * Add randomness to a Particle System by using the Random Between Two Constants feature. * Change the color of a particle over its lifetime by using the Gradient editor and the Color Over Lifetime module. * Change the size of a particle over its lifetime by using the Curve editor in the Size Over Lifetime module.   **Skills**  Beginner Particles and Visual Effects   * Produce environmental and burst effects by configuring Unity's Particle System object | |  |
|
|
| **Steps**   1. Overview 2. Clear the work area 3. Add a new burst of particles 4. Make the particles move like smoke 5. Add randomness to the particles 6. Edit Color over Lifetime with the Gradient editor 7. Edit the Renderer and Texture Sheet Animation 8. Use a curve to change size over lifetime 9. Customize the curve 10. Trigger the animation 11. Explore: Ignite and extinguish 12. Next steps | | |

## Experiment with VFX Graph

| **Lesson link** | [Experiment with VFX Graph](https://learn.unity.com/tutorial/experiment-with-vfx-graph?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  VFX Graph is a powerful feature that allows users to create incredibly complex effects and simulations, which are still highly optimized. In this tutorial, you will add a few new VFX Graph effects to your scene and play around with their properties in the VFX Graph editor.  By the end of this tutorial, you'll be able to:   * Understand the differences between Unity's Particle System and VFX Graph in order to select the appropriate tool for a given use case. * Recognize whether a particle effect has been created using the Particle System or VFX Graph. * Add a new VFX Graph to the scene. * Explain the role of each of the four default context nodes in a VFX Graph asset: Spawn, Initialize Particle, Update Particle, and Output Particle. * Navigate in the VFX Graph editor window by using the keyboard and mouse. * Perform simple edits to an existing VFX Graph asset, such as changing the emission rate or particle lifetime.   **Materials**  [Visual Effect Graph Samples](https://github.com/Unity-Technologies/VisualEffectGraph-Samples)  [Spaceship demo](https://github.com/Unity-Technologies/SpaceshipDemo)  **Related documentation**  [Visual Effect Graph](https://docs.unity3d.com/Packages/com.unity.visualeffectgraph@6.9/manual/index.html?_ga=2.149083381.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Particles and Visual Effects   * Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene * Interpret a simple VFX Graph asset | |  |
|
|
| **Steps**   1. Overview 2. How is VFX Graph different from the Particle System? 3. Position a VFX Graph effect in the scene 4. Open the VFX Graph editor window 5. Navigate the VFX Graph window 6. Explore the VFX Graph contexts 7. Create a brand new VFX Graph asset 8. Examine a complex VFX Graph 9. Explore: Recreate the fire using VFX Graph 10. Next steps | | |

## Challenge: Add some magic to your scene

| **Lesson link** | [Challenge: Add some magic to your scene](https://learn.unity.com/tutorial/challenge-add-some-magic-to-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  VFX have the power to add intrigue, mystery, and whimsy to your environments. In this tutorial, you will attempt to add a sense of magic to your scene with fireflies, shooting stars, or some other effect of your choice.  By the end of this tutorial, you'll be able to demonstrate your new skills in particles and visual effects.  **Skills**  Beginner Particles and Visual Effects   * Synthesize your new VFX skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Determine a creative direction 3. Create some magical particles 4. Challenge criteria 5. Next steps | | |

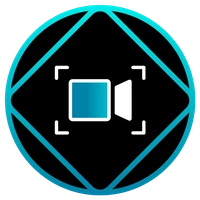
## 

## Apply VFX to your guided project

| **Lesson link** | [Apply VFX to your guided project](https://learn.unity.com/tutorial/apply-vfx-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  Now it’s time to apply what you have learned about VFX to your guided project!  **Skills**  Beginner Particles and Visual Effects   * Synthesize your new VFX skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## Mission checkpoint

| **Lesson link** | [Creative Core: VFX Quiz](https://learn.unity.com/quiz/creative-core-vfx-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a6488fedbc2a0020607444) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |



# Mission 6: Cameras

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Cameras are your eyes in an interactive experience. They can be fully dynamic, fixed, or tied to a character. In this mission, you’ll explore the different camera types common to interactive experiences. You’ll also learn some basic camera shot terminology and practice recreating iconic scenes from popular media.

By the end of this mission, you’ll be able to:

* Decide which camera setup to use, given a project’s requirements.
* Configure a single Unity camera in a 2D or 3D scene.

**Skills**

Beginner Unity Cameras

* Decide which camera setup to use, given a project’s requirements
* Configure a single Unity camera in a 2D or 3D scene
* Synthesize your new camera skills in response to project requirements

**Tutorials in this mission**

1. Get started with cameras
2. Select your camera projection type
3. Control what your camera sees
4. Explore camera views
5. Explore camera shot types
6. Challenge: Recreate the scene
7. Apply cameras to your guided project
8. Mission checkpoint

## Get started with cameras

| **Lesson link** | [Get started with cameras](https://learn.unity.com/tutorial/get-started-with-cameras?pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  In this project, you’ll learn how to work with cameras both from a technical and design perspective.  By the end of this tutorial, you'll be able to:   * Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene. * Explore the effects of camera setup on the user’s experience.   **Materials**  [CC\_Cameras.zip](https://connect-prd-cdn.unity.com/20211207/4165ef46-d1c1-4b80-89ea-3718eb49f3cc/CC_Cameras.zip?_ga=2.24379385.297591224.1642065466-1225599304.1599060347)  **Related documentation**  [Cameras Overview Documentation](https://docs.unity3d.com/Manual/CamerasOverview.html?_ga=2.122279880.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Unity Cameras   * Decide which camera setup to use, given a project’s requirements | |  |
|
|
| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Cameras 4. Who sets up cameras in Unity? 5. The importance of cameras in interactive experiences 6. Explore: Review your favorite media 7. Next steps | | |

## 

## Select your camera projection type

| **Lesson link** | [Select your camera projection type - Unity Learn](https://learn.unity.com/tutorial/select-your-camera-projection-type?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  In this tutorial, you’ll learn about projection settings: the parameters that control how the camera renders what appears inside its frame.  By the end of this tutorial, you'll be able to:   * Identify use cases for a perspective camera view in a 2D or 3D scene. * Identify use cases for an orthographic camera view in a 2D or 3D scene. * Capture the desired view of the scene by controlling the position and rotation of the Main Camera. * Set up a camera for a specified/predetermined point of view. * Set up a perspective camera view in a 3D scene. * Set up an orthographic camera view in a 3D scene.   **Materials**  [Game accessibility guidelines](https://gameaccessibilityguidelines.com/if-the-game-uses-field-of-view-3d-engine-only-set-an-appropriate-default-for-the-expected-viewing-environment/)  **Related documentation**  [Camera Documentation](https://docs.unity3d.com/Manual/class-Camera.html?_ga=2.79819732.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Unity Cameras   * Decide which camera setup to use, given a project’s requirements. * Configure a single Unity camera in a 2D or 3D scene. | |  |
|
|
| **Steps**   1. Overview 2. Adjusting the Camera in the Editor 3. Explore the qualities of a perspective camera 4. Set the field of view 5. Explore the qualities of an orthographic camera 6. Adjust the camera size 7. Extend: Make the scene more dramatic 8. Next steps | | |

## 

## Control what your camera sees

| **Lesson link** | [Control what your camera sees](https://learn.unity.com/tutorial/control-what-your-camera-sees?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  In this tutorial, you’ll learn how to fine tune what appears within the camera view with clipping planes, culling masks, and environment properties.  By the end of this tutorial, you'll be able to:   * Fill in the background of the Main Camera view. * Control the field of view of the Main Camera by adjusting the frustum. * Control the depth of view of the Main Camera by configuring the clipping planes.   **Related documentation**  [Manual: Camera Documentation](https://docs.unity3d.com/Manual/class-Camera.html?_ga=2.58781806.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Unity Cameras   * Configure a single Unity camera in a 2D or 3D scene | |  |
|
|
| **Steps**   1. Overview 2. Define the limits of the camera view with clipping planes 3. Use culling masks to show or hide objects 4. Change the background type 5. Next steps | | |

## 

## Explore camera views

| **Lesson link** | [Explore camera views](https://learn.unity.com/tutorial/explore-camera-views?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  In this tutorial, you’ll explore some of the most popular camera views and learn about when they’re best used.  By the end of this tutorial, you'll be able to:   * Identify use cases for a perspective camera view in a 2D or 3D scene. * Identify use cases for an orthographic camera view in a 2D or 3D scene. * Explore the effects of camera setup on the user’s experience. * Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene.   **Skills**  Beginner Unity Cameras   * Decide which camera setup to use, given a project’s requirements | |  |
|
|
| **Steps**   1. Overview 2. Third-person camera views 3. First-person camera views 4. Top-down camera views 5. Isometric camera views 6. Fixed camera views 7. Combining camera views 8. Next steps | | |

## 

## Explore camera shot types

| **Lesson link** | [Explore camera shot types](https://learn.unity.com/tutorial/explore-camera-shot-types?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **10 minutes** | |
| **Summary**  In this tutorial, you’ll learn about some of the most popular camera shot types and how they can be used to contribute to the overall mood of a scene.  By the end of this tutorial, you'll be able to:   * Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene. * Identify use cases for a perspective camera view in a 2D or 3D scene. * Identify use cases for an orthographic camera view in a 2D or 3D scene. * Explore the effects of camera setup on the user’s experience.   **Skills**  Beginner Unity Cameras   * Decide which camera setup to use, given a project’s requirements | |  |
|
|
| **Steps**   1. Overview 2. Wide angle 3. Close up 4. Bird’s-eye view 5. Worm’s-eye view 6. Extend: Shot considerations 7. Next steps | | |

## 

## Challenge: Recreate the scene

| **Lesson link** | [Challenge: Recreate the scene](https://learn.unity.com/tutorial/challenge-recreate-the-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  In this final challenge, you’ll be tasked with recreating one of your favorite scenes from media in Unity.  By the end of this tutorial, you'll be able to demonstrate your new skills in cameras.  **Materials**  [Unity Asset Store](https://assetstore.unity.com/?_ga=2.150213621.297591224.1642065466-1225599304.1599060347)  [Create and Publish WebGL Builds](https://learn.unity.com/tutorial/creating-and-publishing-webgl-builds)  **Skills**  Beginner Unity Cameras   * Synthesize your new camera skills in response to project requirements | |  |
|
|
| **Steps**   1. Overview 2. Review what you’ve learned 3. Recreate a scene 4. Criteria 5. Next steps | | |

## 

## Apply cameras to your guided project

| **Lesson link** | [Apply cameras to your guided project](https://learn.unity.com/tutorial/apply-cameras-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  Now it’s time to apply what you have learned about cameras to your guided project! | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## 

## Mission checkpoint

| **Lesson link** | [Creative Core: Camera Quiz](https://learn.unity.com/quiz/creative-core-camera-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a646ceedbc2a002076823f) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |

# Mission 7: Post-Processing

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Post-processing is just like applying filters to a photo you take with your phone. This can make your scene look more beautiful and interesting.

In this mission, you will use post-processing to achieve a particular look and feel in a scene.

By the time you complete this learning experience, you will be able to:

* Evaluate whether post-processing is an appropriate tool for a given goal.
* Implement a particular visual style in a project by configuring a post-processing profile.

**Skills**

Beginner Post-Processing

* Evaluate whether post-processing is an appropriate tool for a given goal
* Implement a particular visual style in a project by configuring a post-processing profile
* Synthesize your new post-processing skills in response to project requirements

**Tutorials in this mission**

1. Get started with post-processing
2. Create your own post-processing profile
3. Challenge: Create a local volume
4. Apply post-processing to your guided project
5. Mission checkpoint

## Get started with post-processing

| **Lesson link** | [Get started with post-processing](https://learn.unity.com/tutorial/get-started-with-post-processing?pathwayId=61a65568edbc2a00206076dd&missionId=61a64513edbc2a1317c57aa3) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  Post-processing is just like applying filters to your photos. It can make your scene look more beautiful, interesting, or stylized. In this tutorial, you’ll learn when and why you might use post-processing, then open Unity and enable post-processing in your scene.  By the end of this tutorial, you'll be able to:   * Define post-processing and the purpose of a post-processing profile. * Explain the purpose of post-processing, including visual style and visual fidelity. * Set up post-processing in a scene.   **Materials**  [CC\_PostProcessing.zip](https://connect-prd-cdn.unity.com/20211207/6e40e40c-5dad-46ff-9928-eb1db41183b4/CC_PostProcessing.zip?_ga=2.122436552.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Post-Processing   * Evaluate whether post-processing is an appropriate tool for a given goal * Implement a particular visual style in a project by configuring a post-processing profile | |  |
|
|
| **Steps**   1. Overview 2. What is post-processing? 3. Assess visual style and visual fidelity 4. What professionals work with post-processing? 5. Open the post-processing project and run the scene 6. Enable post-processing on a global volume 7. Identify the post-processing profile 8. A note about post-processing 9. Explore: Tinker with the sample profile 10. Next steps | | |

## 

## Create your own post-processing profile

| **Lesson link** | [Create your own post-processing profile](https://learn.unity.com/tutorial/create-your-own-post-processing-profile?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64513edbc2a1317c57aa3) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  A post-processing profile can radically alter the visuals in your scene. In this tutorial, you will create your own post-processing profile to achieve a particular visual style in the project.  By the end of this tutorial, you'll be able to:   * Use common post-processing effects, such as Bloom, Depth of Field, Tonemapping, and color adjustments. * Modify a post-processing profile to achieve a particular style. * Appreciate the tradeoff between improved visuals and the cost to performance that comes with post-processing effects. * Describe the purpose of a post-processing profile.   **Materials**  [Post Processing Bloom Tutorial](https://learn.unity.com/tutorial/post-processing-effects-bloom-2019-3)  **Related documentation**  [Bloom | Universal RP](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/post-processing-bloom.html?_ga=2.155328376.297591224.1642065466-1225599304.1599060347)  [HDR documentation](https://docs.unity3d.com/Manual/HDR.html?_ga=2.155328376.297591224.1642065466-1225599304.1599060347)  [Emission](https://docs.unity3d.com/Manual/StandardShaderMaterialParameterEmission.html?_ga=2.155328376.297591224.1642065466-1225599304.1599060347)  [Color Adjustments Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Post-Processing-Color-Adjustments.html?_ga=2.155328376.297591224.1642065466-1225599304.1599060347#:~:text=To%20add%20Color%20Adjustments%20to,any%20Camera%20this%20Volume%20affects.)  [Effect List Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Post-Processing-Color-Adjustments.html?_ga=2.155328376.297591224.1642065466-1225599304.1599060347#:~:text=To%20add%20Color%20Adjustments%20to,any%20Camera%20this%20Volume%20affects.)  [Depth of Field Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/post-processing-depth-of-field.html?_ga=2.84023514.297591224.1642065466-1225599304.1599060347)  [Film Grain Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Post-Processing-Film-Grain.html?_ga=2.84023514.297591224.1642065466-1225599304.1599060347)  [Lens Distortion Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Post-Processing-Lens-Distortion.html?_ga=2.84023514.297591224.1642065466-1225599304.1599060347)  [Motion Blur Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Post-Processing-Motion-Blur.html?_ga=2.84023514.297591224.1642065466-1225599304.1599060347)  [Chromatic Aberration Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/post-processing-chromatic-aberration.html?_ga=2.84023514.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Post-Processing   * Evaluate whether post-processing is an appropriate tool for a given goal * Implement a particular visual style in a project by configuring a post-processing profile | |  |
|
|
| **Steps**   1. Overview 2. Choose a visual style 3. Create a new post-processing profile 4. Add Bloom 5. Apply Tonemapping 6. Do some color grading 7. Try out some other post-processing effects 8. Explore: Create profiles for other visual styles 9. Next steps | | |

## Challenge: Create a local volume

| **Lesson link** | [Challenge: Create a local volume](https://learn.unity.com/tutorial/challenge-create-a-local-volume?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64513edbc2a1317c57aa3) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  A local volume allows you to define a completely different visual style within a single scene. In this tutorial, you’ll create a new post-processing profile and apply it to a particular area of the scene.  By the end of this tutorial, you'll be able to:   * Add a new local post-processing volume to the scene and edit its boundaries. * Describe scenarios where a global volume or local volume would be more appropriate. * Demonstrate your new skills in post-processing.   **Related documentation**  [Volumes Documentation](https://docs.unity3d.com/Packages/com.unity.render-pipelines.universal@7.1/manual/Volumes.html?_ga=2.45865063.297591224.1642065466-1225599304.1599060347#:~:text=The%20Universal%20Render%20Pipeline%20(URP,to%20calculate%20a%20final%20value.)  **Skills**  Beginner Post-Processing   * Implement a particular visual style in a project by configuring a post-processing profile * Synthesize your new post-processing skills in response to project requirements | |  |
|
|
| **Steps**   * Overview * Why use a local volume? * Review: How does a local volume work? * Add a local volume to the gallery scene * Challenge criteria * Next steps | | |

## 

## Apply post-processing to your guided project

| **Lesson link** | [Apply post-processing to your guided project](https://learn.unity.com/tutorial/apply-post-processing-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a64513edbc2a1317c57aa3) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  Now it’s time to apply what you have learned about post-processing to your guided project! | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## Mission checkpoint

| **Lesson link** | [Creative Core: Post-processing Quiz](https://learn.unity.com/quiz/creative-core-post-processing-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a64513edbc2a1317c57aa3) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |

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# Mission 8: Audio

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Audio is one of the most overlooked aspects of interactive development, but it’s also one of the first things that can disrupt a user’s immersion if it’s done poorly, or worse, if it’s completely forgotten about.

In this mission, you will learn how to implement audio effects in Unity by creating a soundscape for an outdoor scene. You’ll create ambient audio effects, trigger sounds with events, and modify sounds with special effects.

By the end of this mission, you’ll be able to:

* Implement audio in Unity.
* Produce customized results by correctly configuring audio in a scene.
* Create interactive experiences by synthesizing audio experience design principles.
* Refine existing audio in a Unity project.
* Solve accessibility challenges in an audio design.

**Skills**

Beginner Audio Design Principles

* Implement audio in Unity
* Create interactive experiences by synthesizing audio experience design principles
* Solve accessibility challenges in an audio design

Beginner Audio Implementation

* Produce customized results by correctly configuring audio in a scene
* Refine existing audio in a Unity project
* Synthesize your new audio skills in response to project requirements

**Tutorials in this mission**

1. Get started with audio
2. Create dynamic sound effects
3. Create 3D sound effects
4. Add special effects to existing audio
5. Accessibility considerations for audio
6. Challenge: Your own soundscape
7. Apply audio to your guided project
8. Mission checkpoint

## Get started with audio

| **Lesson link** | [Get started with audio](https://learn.unity.com/tutorial/get-started-with-audio?pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  In this project, you’ll bring a scene to life using audio effects. You’ll explore the different ways audio is perceived and implement ambient and event based sound. You’ll also learn a bit about accessibility considerations for audio and how you can build a more inclusive experience by implementing closed captioning.  By the end of this tutorial, you'll be able to:   * Describe the science of audio in digital environments. * Recommend audio source file formats that can be used in a given project. * Explain the role of audio in supporting narrative and worldbuilding. * Explain the difference between diegetic and nondiegetic sound. * Describe the primary types of audio found in real-time projects. * Explain the role of audio in developing atmosphere.   **Materials**  [Monday at 5-35 PM.m4a.zip](https://connect-prd-cdn.unity.com/20211203/3a8d86c5-2307-48eb-b4e2-ad4ee4518880/Monday%20at%205-35%20PM.m4a.zip?_ga=2.83023701.297591224.1642065466-1225599304.1599060347)  [Tuesday at 4-24 PM.m4a.zip](https://connect-prd-cdn.unity.com/20211203/35b5a62b-54f1-4d08-a233-a06b8d8d2b66/Tuesday%20at%204-24%20PM.m4a.zip?_ga=2.83023701.297591224.1642065466-1225599304.1599060347)  [CC\_Audio.zip](https://connect-prd-cdn.unity.com/20211207/2350a301-1801-4b00-8245-0abcb194b89f/CC_Audio.zip?_ga=2.83023701.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Audio Implementation   * Produce customized results by correctly configuring audio in a scene   Beginner Audio Design Principles   * Implement audio in Unity * Create interactive experiences by synthesizing audio experience design principles | |  |
|
|
| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Audio 4. What does an audio engineer do? 5. How does audio work in Unity? 6. The importance of audio in interactive experiences 7. Explore: What can you hear? | | |

## 

## Create dynamic sound effects

| **Lesson link** | [Create dynamic sound effects](https://learn.unity.com/tutorial/create-dynamic-sound-effects?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **35 minutes** | |
| **Summary**  In this tutorial, you’ll begin the process of creating a complex soundscape by adding footstep sound effects to the player character.  By the end of this tutorial, you'll be able to:   * Choose time-based or action-based methods, such as triggers or events, to play audio clips. * Explain the role of audio in developing atmosphere.   **Materials**  [Using Animation Events](https://docs.unity3d.com/Manual/script-AnimationWindowEvent.html?_ga=2.24780025.297591224.1642065466-1225599304.1599060347)  [Tags](https://docs.unity3d.com/Manual/Tags.html?_ga=2.24780025.297591224.1642065466-1225599304.1599060347)  [Audio Clip](https://docs.unity3d.com/Manual/class-AudioClip.html?_ga=2.24780025.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Audio Implementation   * Refine existing audio in a Unity project   Beginner Audio Design Principles   * Create interactive experiences by synthesizing audio experience design principles | |  |
|
|
| **Steps**   1. Overview 2. Assess scene needs 3. Add Animation Events 4. Apply the audio script 5. Explore the audio script 6. Tag scene surfaces 7. Add a footstep clip 8. Explore: customize the footsteps | | |

## 

## Create 3D sound effects

| **Lesson link** | [Create 3D sound effects](https://learn.unity.com/tutorial/create-3d-sound-effects?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **50 minutes** | |
| **Summary**  In this tutorial, you’ll add sound to the waterfall and customize it to suit the scene’s needs.  By the end of this tutorial, you'll be able to:   * Explain the role of audio in supporting narrative and worldbuilding. * Explain the role of audio in developing atmosphere. * Simulate different types of audio sources by applying custom rolloffs. * Describe the science of audio in digital environments.   **Related documentation**  [Audio Source](https://docs.unity3d.com/Manual/class-AudioSource.html?_ga=2.88801240.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Audio Design Principles   * Implement audio in Unity * Create interactive experiences by synthesizing audio experience design principles   Beginner Audio Implementation   * Produce customized results by correctly configuring audio in a scene | |  |
|
|
| **Steps**   1. Overview 2. Add the waterfall sound 3. Adjust the audio spread 4. Explore logarithmic rolloff 5. Explore linear roloff 6. Create a custom rolloff 7. Adjust the audio listener 8. Explore: Add more ambient audio | | |

## 

## Add special effects to existing audio

| **Lesson link** | [Add special effects to existing audio](https://learn.unity.com/tutorial/add-special-effects-to-existing-audio?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **20 minutes** | |
| **Summary**  In this tutorial, you’ll create an echo effect using an audio reverb zone.  By the end of this tutorial, you'll be able to:   * Add special audio effects to a scene. * Describe the science of audio in digital environments. * Explain the role of audio in developing atmosphere. * Control the priority of different audio sources in a scene by setting Priority settings.   **Related documentation**  [Reverb Zones](https://docs.unity3d.com/Manual/class-AudioReverbZone.html?_ga=2.112860103.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Audio Design Principles   * Implement audio in Unity * Create interactive experiences by synthesizing audio experience design principles   Beginner Audio Implementation   * Refine existing audio in a Unity project | |  |
|
|
| **Steps**   1. Overview 2. What is an audio reverb zone? 3. Create a reverb zone 4. Test different presets 5. Add a water drop sound effect 6. Set audio importance 7. Next steps | | |

## 

## Accessibility considerations for audio

| **Lesson link** | [Accessibility considerations for audio](https://learn.unity.com/tutorial/accessibility-considerations-for-audio?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  In this tutorial, you’ll add closed captioning to your scene to add an extra level of accessibility to your project.  By the end of this tutorial, you'll be able to:   * Add subtitles to a Unity project. * Recommend optimization techniques for audio, given a target platform. * Choose time-based or action-based methods, such as triggers or events, to play audio clips. * Add special audio effects to a scene.   **Skills**  Beginner Audio Design Principles   * Solve accessibility challenges in an audio design   Beginner Audio Implementation   * Produce customized results by correctly configuring audio in a scene * Refine existing audio in a Unity project | |  |
|
|
| **Steps**   1. Overview 2. Audio accessibility best practices 3. Create the closed caption database 4. Add closed captions to the Audio Source 5. Add a directional indicator for the waterfall 6. Explore: Add closed captions to other audio sources | | |

## 

## Challenge: Your own soundscape

| **Lesson link** | [Accessibility considerations for audio](https://learn.unity.com/tutorial/accessibility-considerations-for-audio?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |
| **Summary**  In this final challenge, you’ll take everything that you learned and create a soundscape for a new environment.  By the end of this tutorial, you'll be able to demonstrate your new skills in audio.  **Skills**  Beginner Audio Implementation   * Synthesize your new audio skills in response to project requirements. | |  |
|
|
| **Steps**   1. Overview 2. Create your soundscape 3. Criteria 4. Next steps | | |

## 

## Apply audio to your guided project

| **Lesson link** | [Accessibility considerations for audio](https://learn.unity.com/tutorial/accessibility-considerations-for-audio?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **1 hour** | |
| **Summary**  Apply audio to your guided project. | |  |
|
|
| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

## 

## Mission checkpoint

| **Lesson link** | [Creative Core Audio quiz](https://learn.unity.com/quiz/creative-core-audio-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a615eaedbc2a03fbc84c03) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |

# Mission 9: UI

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

A user interface is what allows a user to interact – or interface – with an application. A UI often includes images, text, buttons, toggles, sliders, or dropdowns.

In this mission, you will design your own title screen and functional settings menu.

By the time you complete this learning experience, you will be able to:

* Decide on a user interface approach for a project.
* Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions.
* Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality.

**Skills**

Beginner User Interface

* Decide on a user interface approach for a project
* Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions
* Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality

**Tutorials in this mission**

1. Get started with user interfaces
2. Add a title to your scene
3. Manage screen size and anchors
4. Create a menu background with images
5. Add basic button functionality
6. Add toggles and sliders
7. Challenge: Make a worldspace UI
8. Apply UI to your guided project

## Get started with user interfaces

| **Lesson link** | [Get started with user interfaces](https://learn.unity.com/tutorial/get-started-with-user-interfaces?pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  A user interface (UI) is what allows a user to interact with a program, and a UI designer is responsible for making those interactions as clear and enjoyable as possible. In this tutorial, you’ll learn a bit more about what UI design is and the tools available in Unity to help you create UIs. Then, you’ll open your project and begin customizing your scene.  By the end of this tutorial, you'll be able to:   * Define “UI” and the role of user interfaces in real-time 3D experiences. * Differentiate between UI design and other related disciplines, like User Experience Design and Information Architecture. * Distinguish between Unity's three available UI systems: uGUI (or Unity UI), IMGUI (or “Immediate Mode” GUI), and UI Toolkit.   **Materials**  [CC\_UI.zip](https://connect-prd-cdn.unity.com/20211207/a7da8667-0274-4d4e-81d5-b936ac944aea/CC_UI.zip?_ga=2.45282535.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner User Interface   * Decide on a user interface approach for a project | |  |
|
|
| **Steps**   1. Overview 2. Before you begin 3. What does a UI designer do? 4. What UI design is and what it is not 5. Test yourself: Who does what? 6. Open the UI project and scene 7. Personalize the backdrop 8. Which Unity UI system to use? 9. Next steps | | |

## 

## Add a title to your scene

| **Lesson link** | [Add a title to your scene](https://learn.unity.com/tutorial/add-a-title-to-your-scene?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  Text is arguably the most critical element of any UI. So, when you add text elements, you should also make sure it’s easy for everyone to read. In this tutorial, you’ll add title text to your project, then make sure it meets basic accessibility requirements.  By the end of this tutorial, you'll be able to:   * Add text elements (labels) to the screen. * Customize text element styling in the Inspector. * Recall essential accessibility considerations for UI, such as font choice, text size, color contrast, and content.   **Skills**  Beginner User Interface   * Decide on a user interface approach for a project * Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions | |  |
|
|
| **Steps**   1. Overview 2. Add and center your title text 3. Customize your title text 4. Make sure your text is accessible 5. Explore: Download and import new fonts 6. Next steps | | |

## 

## Manage screen size and anchors

| **Lesson link** | [Manage screen size and anchors](https://learn.unity.com/tutorial/manage-screen-size-and-anchors?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  You can spend a ton of time making your UI look perfect on your screen, but what happens if someone opens your application on a screen with a different size or a different shape? In this tutorial, you’ll learn how to consider the screen’s aspect ratio and use Canvas Anchors to make sure your UI elements stay where you want them to.  By the end of this tutorial, you'll be able to:   * Preview different aspect ratios for your project. * Understand the role of the Canvas GameObject in designing a UI. * Position 2D elements on screen by using the Rect Transform component and Rect tool. * Control how UI elements scale, rotate, and reposition relative to other objects on screen by editing the anchor and pivot points. * Anchor a UI element to different parts of a Canvas by using presets and by positioning it manually. * Control how the entire UI responds to changes in screen resolution by understanding different Canvas Scaler modes.   **Skills**  Beginner User Interface   * Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions | |  |
|
|
| **Steps**   1. Overview 2. Arrange the Editor for working with UI 3. Select an aspect ratio 4. Add a settings button in the corner 5. What are anchors? 6. Set the anchor for the settings button 7. What are pivot points? 8. Explore: Experiment with canvas scaling 9. Next steps | | |

## 

## Create a menu background with images

| **Lesson link** | [Create a menu background with images](https://learn.unity.com/tutorial/create-a-menu-background-with-images?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **25 minutes** | |
| **Summary**  Images are critical in the design of UIs; from simple backgrounds and icons to more complex heads up displays and dashboards. In this tutorial, you will add custom images for your settings menu background and button, making sure they still look good if they’re stretched in different directions.  By the end of this tutorial, you'll be able to:   * Add Image elements. * Apply and configure UI sprites. * Apply and configure materials to an Image component.   **Skills**  Beginner User Interface   * Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions | |  |
|
|
| **Steps**   1. Overview 2. Add a basic settings background 3. Add a “Settings” title 4. Create a simple exit button 5. Choose a 9-sliced image 6. Explore: Continue customizing your UI 7. Next steps | | |

## Add basic button functionality

| **Lesson link** | [Add basic button functionality](https://learn.unity.com/tutorial/add-basic-button-functionality?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  A button is the simplest and most common interactive UI element. Without buttons, you couldn’t get very far. In this tutorial, you will make your buttons functional using Unity’s Event System.  By the end of this tutorial, you'll be able to:   * Understand the role of the EventSystem GameObject in developing interactive UIs. * Identify use cases for buttons in various UIs. * Implement simple button functionality by using the Event System.   **Skills**  Beginner User Interface   * Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality | |  |
|
|
| **Steps**   1. Overview 2. Analyze some familiar UIs 3. Edit your button transition colors 4. Add an action to the OnClick event 5. Make the settings menu appear on button click 6. Make the title screen elements disappear 7. Navigate back to the title screen 8. Next steps | | |

## 

## Add toggles and sliders

| **Lesson link** | [Add toggles and sliders](https://learn.unity.com/tutorial/add-toggles-and-sliders?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
| --- | --- | --- |
| **Length** | **30 minutes** | |
| **Summary**  As a UI becomes more complex, you will inevitably need to implement toggles and sliders, which each give the user a unique way to interact with an application. In this tutorial, you will add a toggle that allows the user to turn music on and off and a slider that allows them to control the volume.  By the end of this tutorial, you'll be able to:   * Identify use cases for Sliders and Toggles in UI design. * Implement simple toggle functionality by using the Event System. * Implement simple slider functionality by using the Event System.   **Skills**  Beginner User Interface   * Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality | |  |
|
|
| **Steps**   1. Overview 2. Add a music toggle setting 3. Add music to the scene 4. Make the music toggle functional 5. Add a volume slider 6. Make the volume slider functional 7. Explore: Add new UI elements 8. Next steps | | |

## 

## Challenge: Make a worldspace UI

| **Lesson link** | [Challenge: Make a worldspace UI](https://learn.unity.com/tutorial/challenge-make-a-worldspace-ui?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
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| **Length** | **30 minutes** | |
| **Summary**  A worldspace UI can exist in the three dimensional world, just like any other GameObject. This allows you as a UI designer to create completely different types of interactions, compared with a traditional Screen Space UI. In this tutorial, you will learn more about the use cases for worldspace UIs, then design a new version of your UI in world space.  By the end of this tutorial, you'll be able to:   * Identify the use cases for different Canvas render modes: Screen Space - Overlay, Screen Space - Camera; World Space. * Demonstrate your new skills in user interfaces.   **Skills**  Beginner User Interface   * Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions | |  |
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| **Steps**   1. Overview 2. Why use a worldspace UI? 3. Get set up with a worldspace Canvas 4. Design your worldspace UI 5. Challenge criteria 6. Next steps | | |

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## Apply UI to your guided project

| **Lesson link** | [Apply UI to your guided project](https://learn.unity.com/tutorial/apply-ui-to-your-guided-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
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| **Length** | **1 hour** | |
| **Summary**  Now it’s time to apply what you have learned about user interfaces to your guided project! | |  |
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| **Steps**   1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps | | |

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## Mission checkpoint

| **Lesson link** | [Creative Core: UI quiz](https://learn.unity.com/quiz/creative-core-ui-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a63fbcedbc2a0020607294) | |
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| **Length** | **20 minutes** | |

# Mission 10: Prototyping

Part of the [Creative Core pathway](https://learn.unity.com/pathway/creative-core)

**Overview**

Before you get caught up in developing your dream project, it’s important to start a little smaller and create a prototype. Prototyping gives you the opportunity to work out what should really be at the heart of the real-time experience you want to make and to test out different approaches to achieve that.

In this mission, you’ll learn about some different approaches to prototyping and explore an example we’ve created as you work on your own prototype. This learning experience is about process rather than a set outcome; if you’re new to prototyping, we hope you’ll find something useful no matter what you want to create!

By the time you complete this learning experience, you’ll be able to:

* Determine the appropriate prototyping approach for a specific project.
* Decide the critical project features required in order to create a functional prototype.
* Create a functional prototype in Unity.
* Integrate external assets and tools into your prototype.
* Refine a prototype environment using ProBuilder and Terrain.
* Test a basic experience prototype.

**Skills**

Beginner Prototyping

* Determine the appropriate prototyping approach for a specific project
* Decide the critical project features required in order to create a functional prototype
* Create a functional prototype in Unity
* Integrate external assets and tools into your prototype
* Refine a prototype environment using ProBuilder
* Refine a prototype environment using Terrain
* Test a basic experience prototype
* Synthesize your new prototyping skills in response to project requirements

**Tutorials in this mission**

1. Get started with prototyping
2. Choose a prototype idea
3. Plan and scope your prototype
4. Create your graybox prototype
5. Build on your basic prototype
6. Enhance your prototype with ProBuilder
7. Enhance your prototype with Terrain
8. Test your prototype
9. Challenge: Complete your independent project
10. Plan your next steps
11. Entry-level freelancing for creators
12. Mission checkpoint

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## Get started with prototyping

| **Lesson link** | [Get started with prototyping](https://learn.unity.com/tutorial/get-started-with-prototyping?pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **25 minutes** | |
| **Summary**  Before you get caught up in developing your dream project, it’s important to start a little smaller and create a prototype. Prototyping gives you the opportunity to work out what should really be at the heart of the real-time experience you want to make and to test out different approaches to achieve that.  By the end of this tutorial, you'll be able to:   * Explain the purpose of prototyping. * Explain the difference between rapid and evolutionary prototyping.   **Materials**  [CC\_Prototyping.zip](https://connect-prd-cdn.unity.com/20211207/5eed3542-2877-44d6-b7f5-cec7510144ff/CC_Prototyping.zip?_ga=2.59382638.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Prototyping   * Determine the appropriate prototyping approach for a specific project | |  |
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| **Steps**   1. Overview 2. Before you begin 3. Welcome to Creative Core: Prototyping 4. What is prototyping? 5. Why create a prototype? 6. Examine the example prototype 7. Rapid and evolutionary prototyping 8. Explore: What have other creators done? 9. Next steps | | |

## Choose a prototype idea

| **Lesson link** | [Choose a prototype idea](https://learn.unity.com/tutorial/choose-a-prototype-idea?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **15 minutes** | |
| **Summary**  You’ve explored the background of prototyping, now it’s time to get specific. You might have a specific idea for a prototype already in mind, a range of concepts to choose between, or be uncertain where to start. Wherever you’re starting from, we’ll guide you through the process.  By the end of this tutorial, you'll be able to:   1. Identify a prototype concept. 2. Identify target users for a prototype. 3. Write an elevator pitch for a prototype.   **Skills**  Beginner Prototyping   * Decide the critical project features required in order to create a functional prototype | |  |
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| **Steps**   1. Overview 2. What’s your coding experience? 3. What’s your prototype idea? 4. Identify and center your target users 5. What’s an elevator pitch? 6. Draft your own elevator pitch 7. Next steps | | |

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## Plan and scope your prototype

| **Lesson link** | [Plan and scope your prototype](https://learn.unity.com/tutorial/plan-and-scope-your-prototype?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **40 minutes** | |
| **Summary**  Now that you’ve identified an idea and your target audience, you can start planning your prototype in a lot more detail.  By the end of this tutorial, you'll be able to:   * Explain the importance of scoping and incremental iteration in the prototyping process. * Identify key features and requirements for a prototype. * Scope which features are required to deliver a minimum functional prototype.   **Skills**  Beginner Prototyping   * Determine the appropriate prototyping approach for a specific project * Decide the critical project features required in order to create a functional prototype | |  |
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| **Steps**   1. Overview 2. Guidance if you have limited coding experience 3. Scope your concept 4. What is a paper prototype? 5. Create your own paper prototype 6. Prioritize your interactions and features 7. Define a look for your prototype 8. Extend: Experiment with lo-fi prototyping 9. Next steps | | |

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## Create your graybox prototype

| **Lesson link** | [Create your graybox prototype](https://learn.unity.com/tutorial/create-your-greybox-prototype?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **30 minutes** | |
| **Summary**  Planning complete, you can now get started working in Unity! You’ll start by working on a graybox of your prototype, where primitive 3D shapes (which are often gray) are used to block out the scene so you can implement the basic functionality.  By the end of this tutorial, you'll be able to:   * Graybox a basic functional prototype. * Import a third-party character controller.   **Skills**  Beginner Prototyping   * Create a functional prototype in Unity * Integrate external assets and tools into your prototype | |  |
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| **Steps**   1. Overview 2. Read the example graybox plan 3. Examine the example graybox prototype in Unity 4. Set up your project 5. Import the assets from the example project 6. Add and configure a character controller 7. Review the custom script components 8. Create your own prototype graybox 9. Test as you go 10. Next steps | | |

## Build on your basic prototype

| **Lesson link** | [Build on your basic prototype](https://learn.unity.com/tutorial/build-on-your-basic-prototype?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **30 minutes** | |
| **Summary**  Now that you’ve got a basic graybox prototype, it’s time to develop it so it’s closer to the final experience that you want to deliver.  By the end of this tutorial, you'll be able to:   * Explain the importance of scoping and incremental iteration in the prototyping process. * Evaluate a prototype against key requirements. * Refine a prototype experience. * Identify third-party assets and resources for a prototype. * Create an asset inventory.   **Skills**  Beginner Prototyping   * Determine the appropriate prototyping approach for a specific project * Create a functional prototype in Unity * Integrate external assets and tools into your prototype | |  |
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| **Steps**   1. Overview 2. The challenges of prototyping 3. Examine the example’s basic enhancements 4. What changes did we make first? 5. Examine the example’s improved enhancements 6. What changes did we make? 7. Scope your prototype enhancements 8. Identify your key assets and placeholders 9. Next steps | | |

## Enhance your prototype with ProBuilder

| **Lesson link** | [Enhance your prototype with ProBuilder](https://learn.unity.com/tutorial/enhance-your-prototype-with-probuilder?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **45 minutes** | |
| **Summary**  ProBuilder is a package that you can use to build, edit, and texture custom geometry (3D shapes) in Unity. You can use it to create all sorts of objects in your environment that go beyond combinations of primitives.  By the end of this tutorial, you'll be able to:   * Explain how ProBuilder can support prototype development. * Create meshes using ProBuilder. * Configure geometry to make basic scenery for a prototype. * Set a Collider for a mesh. * Set a mesh as a trigger.   **Related documentation**  [About ProBuilder](https://docs.unity3d.com/Packages/com.unity.probuilder@5.0/manual/index.html?_ga=2.87234779.297591224.1642065466-1225599304.1599060347)  **Skills**  Beginner Prototyping   * Refine a prototype environment using ProBuilder | |  |
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| **Steps**   1. Overview 2. Set up ProBuilder 3. Create a cube 4. Create a cube using the alternative method 5. Review the ProBuilder edit modes 6. Create a wall with your cube 7. Extrude edges and faces to make a door 8. Adjust the shape of the door 9. Clear a hole for the door 10. Bridge the gaps to solidify the frame 11. Create a door in a pre-existing wall 12. Set Collider and Set Trigger 13. Apply materials using ProBuilder tools 14. Next steps | | |

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## Enhance your prototype with Terrain

| **Lesson link** | [Enhance your prototype with Terrain](https://learn.unity.com/tutorial/enhance-your-prototype-with-terrain?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **20 minutes** | |
| **Summary**  Terrain is the landscape of an interactive experience. Unity 2020.3 LTS includes a series of Terrain features that you can use to create a custom landscape that’s right for your prototype.  By the end of this tutorial, you'll be able to:   * Explain how Terrain can support prototype development. * Create a new Terrain. * Customize Terrain for your prototype.   **Related documentation**  [Terrain tools](https://docs.unity3d.com/Manual/terrain-Tools.html?_ga=2.55177320.297591224.1642065466-1225599304.1599060347) | |  |
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| **Steps**   1. Overview 2. Create a Terrain tile 3. Expand your landscape 4. Create some hills 5. Smooth your hills 6. Refine and enhance your landscape 7. Next steps | | |

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## Test your prototype

| **Lesson link** | [Test your prototype](https://learn.unity.com/tutorial/test-your-prototype?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **30 minutes** | |
| **Summary**  Testing is a critical aspect of refining and completing your prototype.  By the end of this tutorial, you'll be able to:   * Explain the importance of different types of testing in prototype development. * Complete acceptance tests against prototype requirements. * Identify unexpected behavior in a prototype. * Conduct user testing for a prototype.   **Skills**   * Beginner Prototyping * Create a functional prototype in Unity * Test a basic experience prototype | |  |
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| **Steps**   1. Overview 2. Why is testing so important? 3. What is the user experience like? 4. Avoid making assumptions 5. Test for expected behavior 6. Test for unexpected behavior 7. Guidance for exploratory testing 8. Exploratory testing example 9. Get feedback from target users 10. Next steps | | |

## Challenge: Complete your independent project

| **Lesson link** | [Challenge: Complete your independent project](https://learn.unity.com/tutorial/challenge-complete-your-independent-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **1 hour** | |
| **Summary**  In this challenge, you’ll apply what you’ve learned throughout the Creative Core pathway to your prototype.  By the end of this tutorial, you'll be able to demonstrate your new skills from each domain in the Creative Core pathway.  **Skills**  Beginner Audio Implementation   * Synthesize your new audio skills in response to project requirements   Beginner Lighting   * Synthesize your new lighting skills in response to project requirements   Beginner Materials   * Synthesize your new shaders and materials skills in response to project requirements   Beginner Animation Systems   * Synthesize your new animation skills in response to project requirements   Beginner Prototyping   * Synthesize your new prototyping skills in response to project requirements   Beginner Post-Processing   * Synthesize your new post-processing skills in response to project requirements   Beginner Particles and Visual Effects   * Synthesize your new VFX skills in response to project requirements   Beginner Unity Cameras   * Synthesize your new camera skills in response to project requirements | |  |
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| **Steps**   1. Overview 2. Return to the example polished prototype 3. Import your final assets 4. Bring together your Creative Core experience 5. Independent project criteria 6. Domain-specific guidance 7. Next steps | | |

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## Plan your next steps

| **Lesson link** | [Challenge: Complete your independent project](https://learn.unity.com/tutorial/challenge-complete-your-independent-project?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **20 minutes** | |
| **Summary**  As you finalize and prepare to submit your independent or guided project, take some time to reflect on your accomplishments and explore possibilities as a real-time 3D creator.  In this tutorial you will:   * Plan to update your portfolio to support changing priorities and skills. * Research sources of continuous learning in real-time 3D.   **Skills**  Beginner Job Preparation   * Practice continuous personal and professional growth | |  |
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| **Steps**   1. Overview 2. Review what you’ve accomplished 3. Reflect on what you’ve learned 4. Update your portfolio 5. Learn in your spare time 6. Evaluate your possible next steps 7. Embrace the unexpected 8. Share your journey with others 9. Next steps | | |

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## Entry-level freelancing for creators

| **Lesson link** | [Entry-level freelancing for creators](https://learn.unity.com/tutorial/entry-level-freelancing-for-creators?uv=2020.3&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
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| **Length** | **15 minutes** | |
| **Summary**  Freelancing is an excellent way to pursue a career as a real-time creator. Freelancing can expose you to a wider variety of projects and teams, and the pace of freelancing can accelerate your career. However, it can also be challenging. It demands a high degree of professionalism and flexibility. If you’re up for the challenges of freelancing but don’t know how to get started, this tutorial is for you.  By the time you complete this tutorial, you’ll be able to:   * Identify the key challenges and opportunities of entry-level freelancing roles in real-time 3D industries. * Research entry-level freelance roles that align with your personal experience and goals. * Make a plan to build a portfolio to help launch a freelance career.   **Materials**  [Explore Game Jams](https://learn.unity.com/tutorial/explore-game-jams)  [Portfolios](https://learn.unity.com/tutorial/introduction-to-portfolios)  **Skills**  Beginner Job Preparation   * Prepare yourself for a freelance job search | |  |
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| **Steps**   1. Overview 2. What is freelancing? 3. What are the challenges of freelancing? 4. What are the opportunities of freelancing? 5. What do companies look for in an entry-level freelancer? 6. How do I get started? 7. Next steps | | |

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## Mission checkpoint

| **Lesson link** | [Creative Core: Prototyping quiz](https://learn.unity.com/quiz/creative-core-prototyping-quiz?uv=2020.3&labelRequired=true&pathwayId=61a65568edbc2a00206076dd&missionId=61a617feedbc2a00253d67ee) | |
| --- | --- | --- |
| **Length** | **15 minutes** | |