

Game Design in Unity Syllabus

High School (125 Contact Hours)

Course Overview and Goals

The Game Design in Unity course teaches the fundamentals of designing a game using the most widely accessed and preferred editing engine in the world. The intent of this course is to prepare high school students with the industry related skills needed for the workplace and higher learning environments. By the end of this course, they will understand the design planning process, be knowledgeable of industry related careers, and be able to navigate the Unity environment in order to create 2D and 3D games.

Learning Environment

While this course adapts the blended learning approach, it can also be delivered within a virtual learning environment. Course content is a combination of web-based and offline activities. Students will access lessons through the CodeHS platform and perform activities directly within the Unity game engine. Students and instructors will need to sign up for and download the Unity game engine in order to complete this course. Steps to do so are included within this course.

Programming Environment

Students illustrate comprehension of game design skills using the CodeHS platform and apply their knowledge using the Unity game engine. Students will prepare their assignment for grading by exporting the project as a .zip package, then upload to the CodeHS platform. Once this is completed, teachers will be able to open the file using the Unity engine to view the student's assignment.

Quizzes

Each lesson includes at least one multiple choice assessment. At the end of each module, students will take a summative multiple choice assessment to test their understanding of the concepts covered throughout the course.

Presentations

Some lessons include an activity where students create a presentation using Google Slides. Teachers have the choice of structuring this slideshow as either having the students deliver an oral presentation or having the students complete and turn in as a hands-on, visual activity.

Prerequisites

While Game Design in Unity is designed for highschool students with some understanding of web development, learners with a basic level of technical proficiency or exposure to digital design will be able to successfully complete this course.

More Information

Browse the content of this course at: <https://codehs.com/course/12842>

Course Breakdown

Module 1: Intro to Game Design (2 weeks / 10 hours)

In this module, students will be introduced to the gaming industry by exploring what it means to be a game developer and observing the role of the consumer. The module includes an overview of the industry, the history of video games, and a case study review. Students will also participate in a mindset check to prepare them for the course. The content of this module is mostly specific to the gaming industry.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18052>

Objectives / Topics Covered	<ul style="list-style-type: none">● Welcome● Intro to Game Design● Case Studies● Careers in Game Design
Assignments / Labs	<ul style="list-style-type: none">● Welcome<ul style="list-style-type: none">○ Survey: Content Overview○ Mindset Check● Intro to Game Design<ul style="list-style-type: none">○ Quiz: Intro to Game Design● Case Studies<ul style="list-style-type: none">○ Exercise: Review Case Studies○ Reflection: Case Study○ Exercise: Create a Case Study○ Quiz: Case Studies● Careers in Game Design<ul style="list-style-type: none">○ Quiz: Game Design Careers○ Reflection: Careers in Game Design

Module 2: Unity Fundamentals (8 weeks / 40 hours)

In this module, students will continue their understanding of game design by becoming familiar with the Unity game engine. Here, they will learn how to sign up, download, and navigate the Unity platform. They will also learn how to access necessary game assets and submit assignments for this course. The content in this module is mostly specific to the Unity game engine.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18086>

Objectives / Topics Covered	<ul style="list-style-type: none">● Intro to Unity● Unity Setup● Course Management● Navigating Unity's Interface● Controller Perspective● Add an Object● Duplicating Objects● Textures● Colors● Standard Assets
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Assignments / Labs

- Intro to Unity
 - Quiz: Intro to Unity
 - Reflection: Intro to Unity
- Unity Setup
 - Exercise: Unity SignUp/Log In
 - Reflection: Create an Account
 - Quiz: Installing Unity
 - Exercise: Install Unity
- Course Management
 - Exercise: Managing Updates
 - Quiz: Course Management
- Controller Perspective
 - Exercise: First-Person Controller
 - Exercise: Third-Person Controller
 - Quiz: Controller Perspective
- Add an Object
 - Exercise: Adding a Sphere
 - Exercise: Resizing an Object
 - Quiz: Add an Object
- Delete an Object
 - Exercise: Delete an Object
 - Quiz: Delete an Object
- Duplicating Objects
 - Exercise: Duplicate an Object
 - Quiz: Duplicating Objects
- Office Hours
 - Free-Response: Midway through the module, students will check-in with the teacher via Free-Response. This allows the teacher to identify if the student needs additional help or monitor pacing.
- Textures
 - Exercise: Add Texture to an Object
 - Quiz: Textures
- Colors
 - Exercise: Add Colors
 - Exercise: ROY G. BIV
 - Quiz: Colors
- Standard Assets
 - Exercise: Import Standard Assets
 - Quiz: Standard Assets

Module 3: Building a Game (8 weeks / 40 hours)

In this module, students will show their understanding of the game development industry and the Unity game engine by simulating the game building process. Students will study the different roles in game development, map out the design process, review project management, and simulate the publishing process. This module will challenge students to create and present 2 basic games using the concepts learned in previous modules using Google Slides.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18087>

Objectives / Topics Covered	<ul style="list-style-type: none">● The Design Process● 3D Game: The Great Outdoors● 2D Game: Karel's Reward
Assignments / Labs	<ul style="list-style-type: none">● The Design Process<ul style="list-style-type: none">○ Reflection: The Design Process○ Quiz: The Design Process● 3D Game: The Great Outdoors<ul style="list-style-type: none">○ Exercise: Key Terms○ Exercise: Access Game Assets○ Exercise: Submit Your Project○ Exercise: Presentation● 2D Game: Karel's Reward<ul style="list-style-type: none">○ Exercise: Key Terms○ Exercise: Access Game Assets○ Exercise: Submit Your Project○ Exercise: Presentation

Module 4: Project: CRC Cards (1.5 weeks / 5-10 hours)

In this module, students will sharpen their understanding of the design process by creating Class Responsibility Collaboration cards for a theoretical game. This project can also be modified for a group project by assigning each student a role within the design team.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18088>

Objectives / Topics Covered	<ul style="list-style-type: none">● CRC Cards
Assignments / Labs	<ul style="list-style-type: none">● CRC Cards<ul style="list-style-type: none">○ Exercise: Guidelines○ Exercise: Submit Your Project○ Presentation: Present Your Project

Module 5: Project: Storyboarding (1 weeks / 5 hours)

In this module, students will sharpen their understanding of the design process by creating a storyboard project for a game they hope to market and create. The storyboard will be submitted using Google Slides.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18089>

Objectives / Topics Covered	<ul style="list-style-type: none">● Storyboarding
Assignments / Labs	<ul style="list-style-type: none">● Storyboarding<ul style="list-style-type: none">○ Exercise: Guidelines○ Exercise: Submit Your Project○ Presentation: Present Your Project

Module 6: Project: Extra Challenges (4 weeks / 20 hours)

This module includes prompts that will allow students more creative autonomy, as they will be able to create their own 2D and 3D games from scratch. Students will only be given general prompts in order to complete the game design flow from beginning to end. This is a great resource for students who have completed the lesson early or learners who need a challenge.

Browse the full content of this module at: <https://codehs.com/library/course/12842/module/18090>

Objectives / Topics Covered	<ul style="list-style-type: none">● Create Your Own 2D Game● Create Your Own 3D Game
Assignments / Labs	<ul style="list-style-type: none">● Create Your Own 2D Game<ul style="list-style-type: none">○ Exercise: Create Your Storyboard○ Exercise: Submit Your Project○ Presentation: Present Your Project● Create Your Own 3D Game<ul style="list-style-type: none">○ Exercise: Create Your Storyboard○ Exercise: Submit Your Project○ Presentation: Present Your Project