VR/AR DEVELOPMENT WITH UNITY

COURSE SYLLABUS
COURSE OVERVIEW

In the 10-week Professional Virtual Reality Development with Unity course you’ll learn to create VR apps using Unity, C#, and the industry standards for VR design. Course participants will build a personal VR application for their portfolio or as a project for a client. Instructors will always be professionals working in the virtual and augmented reality industry committed to helping you learn to build VR apps. Participants leave this course better prepared to create their own VR apps from scratch in Unity.

WEEKLY OUTLINE

The course meets twice weekly for 10 weeks:

1. Online Class (3 hours)
2. Personal VR Project (1 hour)

In section 2, the course dedicates a separate focus on your own application. You will have a one-on-one session together with the instructors focused on solving specific problems and building your personal VR app.

At the end of the course, there is a two week period for finalizing your VR application and connecting with opportunities in the industry.

COURSE GOALS

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

- Create your own VR or AR idea in Unity
- Design for different VR and AR platforms
- Manage production of VR and AR projects
- Effectively design applications around the benefits of VR and AR
- Collaborate on team Unity projects
- Connect to a powerful network in the VR and AR industry
PREP COURSE

Perfect for learning programming and Unity fundamentals! Set yourself up for success with our guided Unity tutorials completed from anywhere at your own pace. The first step in creating virtual reality apps is laying the foundations in Unity and C#. The prep course will introduce basic features and get you comfortable with the tools you’ll be using throughout the course. Ready to get started? Email support@circuitstream.com and we’ll send you the list of introductory tutorials!

COURSE PREREQs

This is a beginner friendly course, no previous experience is required.

Students who have no programming experience will be guided with beginner coding resources. We will provide additional course preparation material to learn the fundamentals of programming and C#. All students with programming experience will be provided additional resources through a developer stream.

ABOUT US

From humble beginnings on an Oculus DK1, collectively a small team of instructors from the virtual and augmented reality industry formed Circuit Stream. Since our inception, Circuit Stream has taught over 1000 people how to begin building VR and AR apps in Unity. We’ve helped participants start their own companies, inspired working professionals to kickstart their own projects, and guided internal VR and AR development for international businesses.

The Professional Virtual Reality Development with Unity course takes Circuit Stream’s curriculum and makes it accessible to working professional and companies across the world. We’re looking forward to seeing what you create!
WEEK ONE
INTRODUCTION TO UNITY

- Introduction to the Instructor
- Unity Overview;
  *Unity Windows, Interface, Navigation, Terminology, GameObjects, Hierarchy, Parenting Objects*
- Asset Store, Importing Plug-ins
- Overview of VR Devices and their representation in scene

→ WEEK ONE PROJECT

- Create a new Project
- Create a Scene within the new project
- Create Primitives Objects within the Scene
- Create a Terrain
WEEK TWO

INTRODUCTION TO THE VR INTERACTION SYSTEM

- Introduction to Interaction System and its Components
- Attaching Components to Objects in Scene (Interactables)
- Attaching Input Components to Controllers

WEEK TWO PROJECT

- Set up interaction scripts on controllers
- Attach scripts to some objects in the scene
- Test objects – ensure you’re able to pick up and throw them
WEEKS THREE & FOUR
INTRODUCTION TO SCRIPTING

- Introduction to monobehaviours (awake, start, update)
- Overview of instances vs static
- Public variables in Unity – inspector representation
- Manipulating components in scripts
- Creating GameObjects via scripts (new GameObject, prefabs)
- Accessing components through scripts (GetComponent)
- Explanation of transforms and how parenting affects them (local vs global)
- Input
  - Getting input from keyboard
  - Setting up Unity input (axis)
  - Discuss controller input

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WEEK THREE PROJECT

- Create a cube, parent the camera to it
- Create a script for your cube that can:
  - Move cube with keyboard input (w, a, s, d)
  - Rotate cube with keyboard input (q, e)

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WEEK FOUR PROJECT

- Create a prefab of any GameObject
- Create a script that spawns the prefab when key is pressed
- Keep track of spawned GameObjects in script
- Delete all cubes when different key is pressed
WEEK FIVE

INTERACTIONS

• Introduction to colliders and their use
  ◦ OnCollisionEnter, OnCollisionExit, OnCollisionStay
  ◦ Explain OnTrigger VS OnCollision
  ◦ Rigidbodies and how colliders report to them

WEEK FIVE PROJECT

• Create a script that will modify GameObject when collided with: Shrink / Grow / Change Colour
• Create a script that will modify GameObject when it is triggered: Shrink / Grow / Change Colour
• Attach scripts to GameObjects in scene and test
WEEK SIX

DEEP DIVE INTO PROVIDED VR INTERACTION SYSTEM

- Controller Script: Getting Input from Devices
- Base Class: The Middle Man
- Interactable Component
- Discuss pros and cons of parenting interactable system
  - Brief talk about joint-based and physics based interactable systems

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WEEK SIX ACTIVITY

- Create a cube and attached that provided interaction script
- Set a cube to pick up with grip button instead of trigger
- Create a new script that inherits from the interactable base class
  - When you are holding a GameObject and press the trigger button, make a visible change to the GameObject (Shrink / Grow / Change Colour)
WEEK SEVEN

EVEN T S Y S TEM S

• Unity Events (For use with Inspector)
• Static Unity Events / Actions within scripts
• Events and Delegates (C#)

--- WEEK SEVEN ACTIVITY ---

• Create a script that fired an event when you pull the trigger and are touching the GameObject that is attached too
• Attach script to a GameObject within the scene
• Create a script that affects a GameObject (Shrink / Grow / Change Colour) when the aforementioned event is invoked
• Attach script to a second GameObject in the scene
WEEKS EIGHT & NINE

PHYSICS

- Overview of RigidBodies
- Overview of Joints
- Introduction to Physics Materials
- Adding force to objects via scripting
- Discuss the pitfalls of interactions via parenting
  - Show how rapidly dragging objects that you’re holding through others can cause them to clip through
  - Discuss physics based interaction system

WEEKS EIGHT & NINE ACTIVITY

- Create a lever using primitives and a joint
- Create a script that detects when lever is pulled
- Add force to an object when lever is pulled
WEEK TEN

PUBLISHING YOUR APP

• Publishing apps that perform consistently at 90fps (desktop) or 60fps (mobile)
• Help from instructors solving bugs and problems in your personal project
• Resources and Next Steps

WEEK TEN ACTIVITY

• Combine all your interaction systems into one interactive application
WEEKS ELEVEN & TWELVE
PERSONAL PROJECTS

It doesn’t stop there! Building on technologies and coding concepts learned in the first 10 weeks, the focus shifts to refining and completing your own project. Finish the course section by submitting your project for feedback to instructors, peers and our VR community. You’ll also have a chance to test other’s projects from the class.

SPECIAL GUEST PRESENTATION

Each cohort will have guest speakers from the VR and AR industry! Professionals from different organizations will share their experience working on commercial releases for large companies and studios, independent contracts, or self-publishing original content on platforms like Steam.

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SUPPORTED HEADSETS & TECHNOLOGY

We support every VR headset and technology. Need a VR headset for the course? We’ve got you covered. Email support@circuitstream.com with the subject “Google Cardboard” and we’ll send you a brand new Google Cardboard V2.

GOOGLE CARDBOARD
Free with course

GOOGLE DAYDREAM
Supported

SAMSUNG GEARVR
Supported

HTC VIVE
Supported

OCULUS RIFT
Supported

WINDOWS MIXED REALITY
Supported

MICROSOFT HoloLens
Supported
OUR COMMUNITY

We have an online community of VR and AR developers. The community is open to helping you solve technical problems and collaborate to propel your VR and AR projects forward!

INDUSTRY MEMBERSHIP

Job searches for VR developers were up over 800% in 2016. We believe VR and AR technology is set to become the next computing platform. Hundreds of new consumer and business apps will become part of our work, play and everyday life. We have an industry membership program, if your goal is to make a career transition into the VR or AR industry, we can help you get there!

OUR PARTNERS
NEW TO CODING

Interested in learning how to code? The Professional VR Development with Unity course will introduce you to C# coding in an intuitive and visual way. Each week our instructors will help you understand the fundamentals of creating an interactive experience and by the end of the program you’ll be creating your own VR or AR applications.

DEVELOPERS

If you have programming experience you’re going to be diving into the code from Day 1. You’ll begin building VR apps quickly and meet a community of other developers. We’ll focus on specific problems to solve and provide you with the pieces of C# that can help us. Ultimately, you’ll understand the structure of how C# works with Unity on a deep level.

PARTICIPANTS HAVE BUILT APPS FOR:

VIVE
CARDBOARD & DAYDREAM
OCULUS
GEAR VR
PSVR
MICROSOFT HoloLens
AUGMENTED REALITY
ARKIT
IPHONE
ANDROID
**HOW TO ENROLL**

Visit [circuitstream.com](http://circuitstream.com) for the start dates of the next course. To reserve your spot for the course, select your timezone (Eastern or Pacific), and place a $75 deposit to officially enroll.

**COURSE REQUIREMENTS**

Mac or Windows. You do not need a VR headset for the course. Beginner friendly. **No previous experience is required.**

**COURSE PRICE**

The course price is $2,500.

3 month, 6 month, and 12 month payment plans are available for as low as $130 / month.

Email us at support@circuitstream.com with the subject “Payment Plan” for more information.
CONTACT US

Have a question? Just hit reply or contact us at:

1 (844) 858-2121

support@circuitstream.com

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ABOUT OUR COURSES

Courses taught with ❤️ from Vancouver, BC.

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