

Virtual Reality Engine Unity3D Hands On

EPFL Immersive Interaction Group

Thibault Porssut

Dr. Ronan BOULIC

Outline

Hands on part:

- Hands on planning
- TP1: Unity Game Base
- TP2: Unity Package VRTK
- TP3: Oculus Go
- TP4: Discovery of Devices
- Install the Last Unity Version
- First Hands on with Unity

Hands on planning

| Week | Group 1 (11h15-13h) | Group 2 (11h15-13h) |
|------|---------------------------|---------------------------|
| 5 | TP1: Unity Game Base | TP2: Unity Package VRTK |
| 6 | TP2: Unity Package VRTK | TP1: Unity Game Base |
| 7 | TP3: Oculus Go | TP4: Discovery of Devices |
| 8 | TP4: Discovery of Devices | TP3: Oculus Go |

Topic 1 (2h) : Unity Game Base

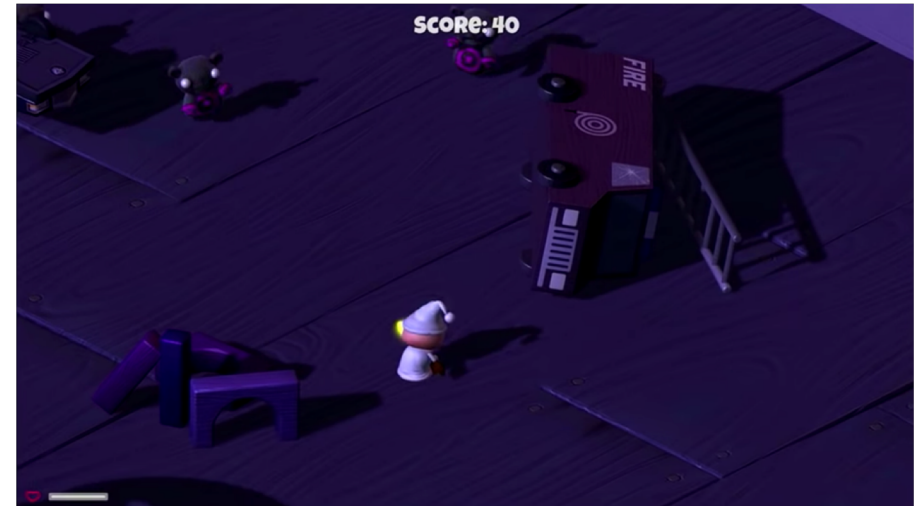
- 2 groups
- Laptop
- Unity3D platform
- Animation/Navigation/Sound
- Scripting (C#)
- Goal: Make your first 3D game with Unity
- <https://unity3d.com/pt/learn/tutorials/s/survival-shooter-tutorial>



Topic 1: Unity Game Base

Goal:

- Discover the main modules of Unity (Sound Mixer, Animator, Particle effect, UI..)
- First Scripting Approach (C#)
- Organize a full project
- Make your first full 3D Game



Topic 2 (2h): Unity Package VRTK

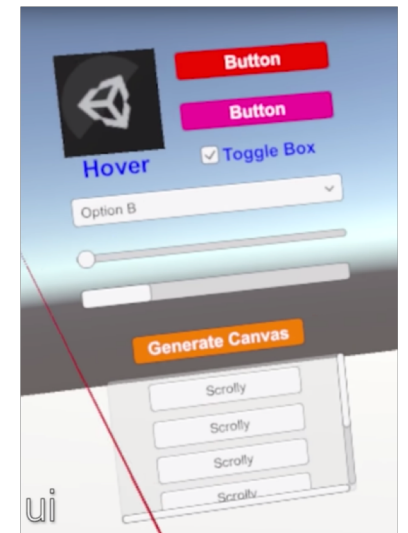
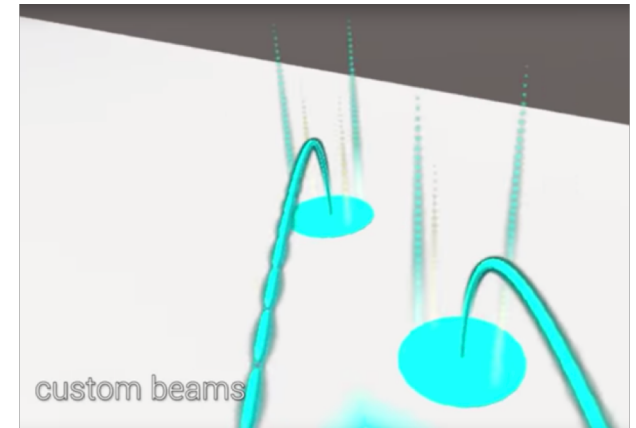
- 2 groups
- 4*HMD (HTC-Vive/Oculus Rift) + Desktop
- Unity 3D
- Virtual Reality Application
- Interaction/Locomotion
- Scripting (C#)
- Goal: First use of VR devices with Unity.
- <https://vrtoolkit.readme.io/docs>



Topic 2: VRTK Unity Package

Goal:

- Try a VR headset
- Make your first VR application
- Discover different types of locomotion and interaction design for Virtual Reality.
- Re-use provided assets
- Fast prototype



Topic 3 (2h): Oculus Go and GulliVR

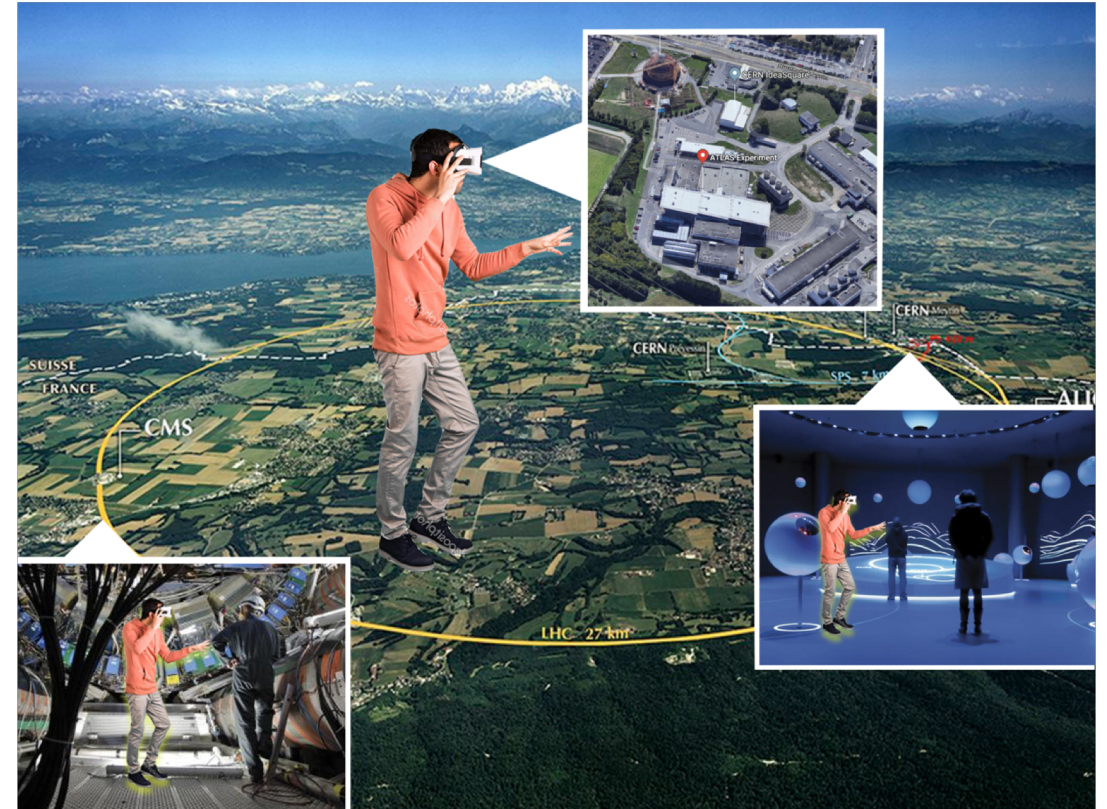
- 20 groups (2 people per HMD)
- Using your own laptop (Mac or PC)
- Unity 3D
- Android SDK and Debug Bridge
- Interaction/Controller Settings
- Scripting (C#)
- Goal: Modify, build, and deploy an APK for Oculus Go
- *Build an Oculus Go App from Start to Finish*
<https://bit.ly/2x93LNr>
- GulliVR App -
<https://bit.ly/2E6LYb0>



Topic 3: Oculus Go and GulliVR

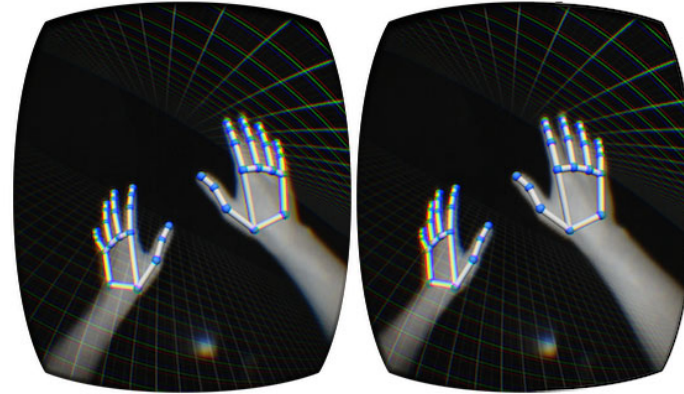
Goal:

- Continue working with different types of locomotion and interaction design for Virtual Reality
- Gain experience with controls of Android Based standalone HMDs (Oculus Go)
- Build and Deploy Android APKs to Oculus Go
- Develop novel navigation technique based on dynamic scaling in the VE (GulliVR)



Topic 4 (2h): Discovery of Devices

- 2 groups
- Leap motion sensor
- Kinect
- Katwalk
- Hololens
- Goal : Discover different technologies (tracking, locomotion, visualization...)



Topic 4: Discovery of Devices

- Goal :
- Discover new technologies (Full Body Tracking, Augmented Reality,...)
- Get ideas for your future project
- Use these new devices in a Unity Project
- Example of Unity integration



Install the Last Unity Version

- Link to download :

https://store.unity.com/fr/?_ga=2.187361902.794958388.1519564968-856357652.1519564968

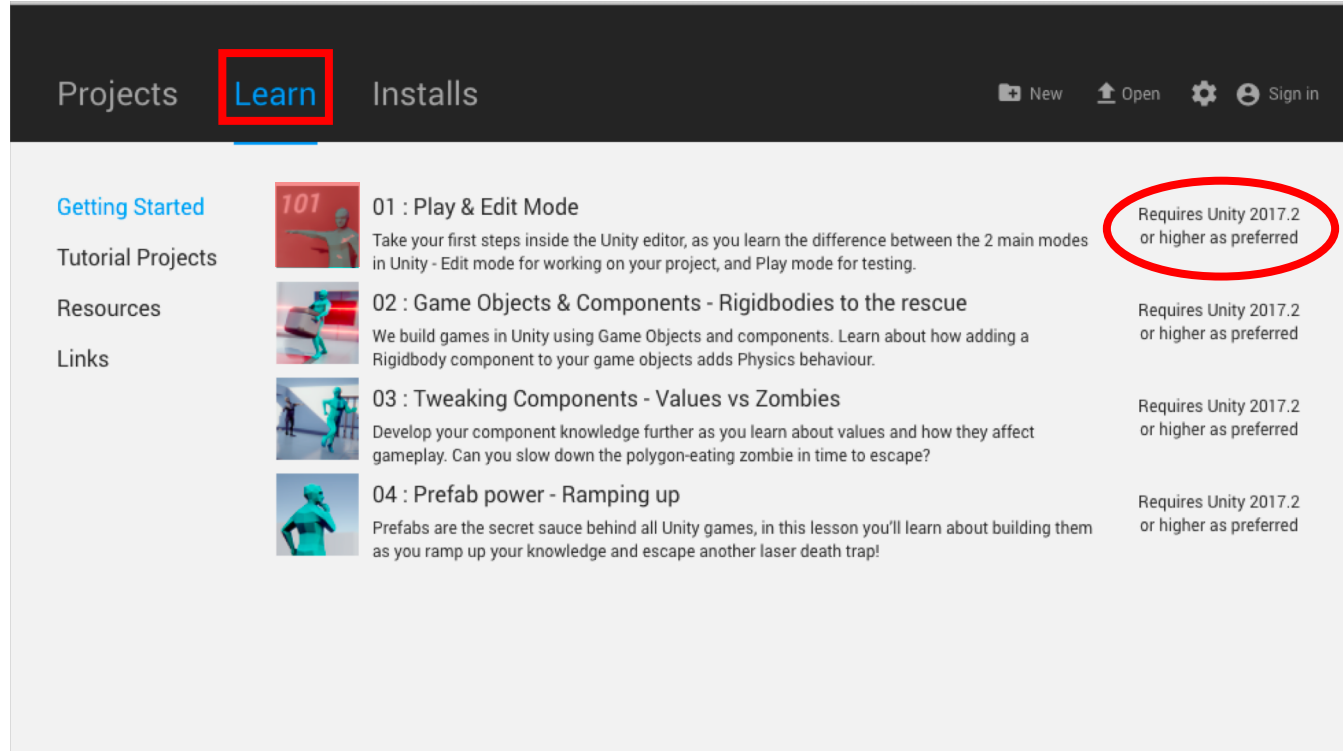
Different use means different plans but one application:

- Personal License: Annual revenue or funds raised of \$100k or less.
- Plus: Annual revenue or funds raised of \$200k or less.
- Pro: No limits on revenue or funding.

=>Choose Personal License

First Hands on with Unity

- 1: Play & Edit Mode

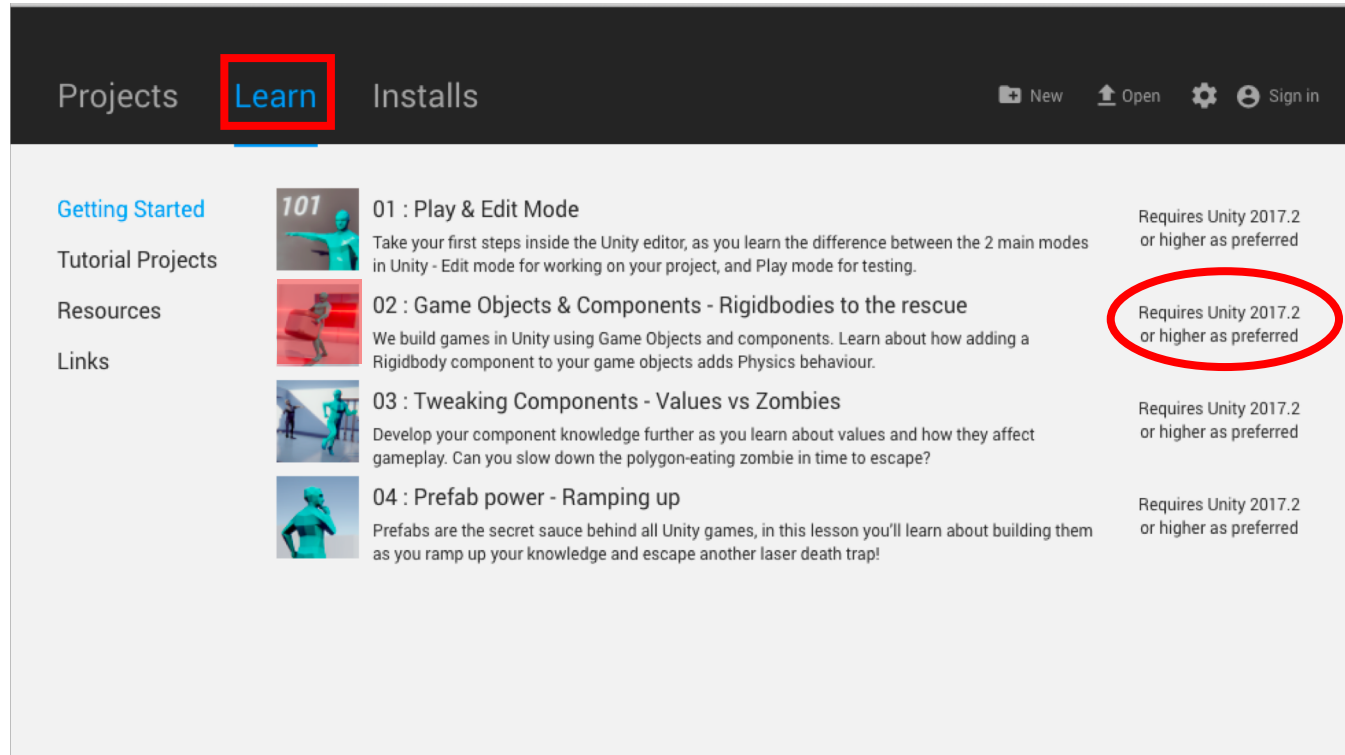


The screenshot displays the Unity Learn website interface. The top navigation bar includes 'Projects', 'Learn' (highlighted with a red box), and 'Installs'. On the right of the bar are icons for 'New', 'Open', 'Settings', and 'Sign in'. The left sidebar lists 'Getting Started', 'Tutorial Projects', 'Resources', and 'Links'. The main content area shows a list of tutorials. The first tutorial, '01 : Play & Edit Mode', is selected. Its description states: 'Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing.' To the right of the description, the text 'Requires Unity 2017.2 or higher as preferred' is circled in red. Below it are three more tutorials: '02 : Game Objects & Components - Rigidbodies to the rescue', '03 : Tweaking Components - Values vs Zombies', and '04 : Prefab power - Ramping up', each with its own description and a 'Requires Unity 2017.2 or higher as preferred' note.

| Tutorial Title | Description | Requirement |
|--|--|--|
| 01 : Play & Edit Mode | Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing. | Requires Unity 2017.2 or higher as preferred |
| 02 : Game Objects & Components - Rigidbodies to the rescue | We build games in Unity using Game Objects and components. Learn about how adding a Rigidbody component to your game objects adds Physics behaviour. | Requires Unity 2017.2 or higher as preferred |
| 03 : Tweaking Components - Values vs Zombies | Develop your component knowledge further as you learn about values and how they affect gameplay. Can you slow down the polygon-eating zombie in time to escape? | Requires Unity 2017.2 or higher as preferred |
| 04 : Prefab power - Ramping up | Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap! | Requires Unity 2017.2 or higher as preferred |

First Hands on with Unity

- 2: Game Objects & Components - Rigidbodies to the rescue

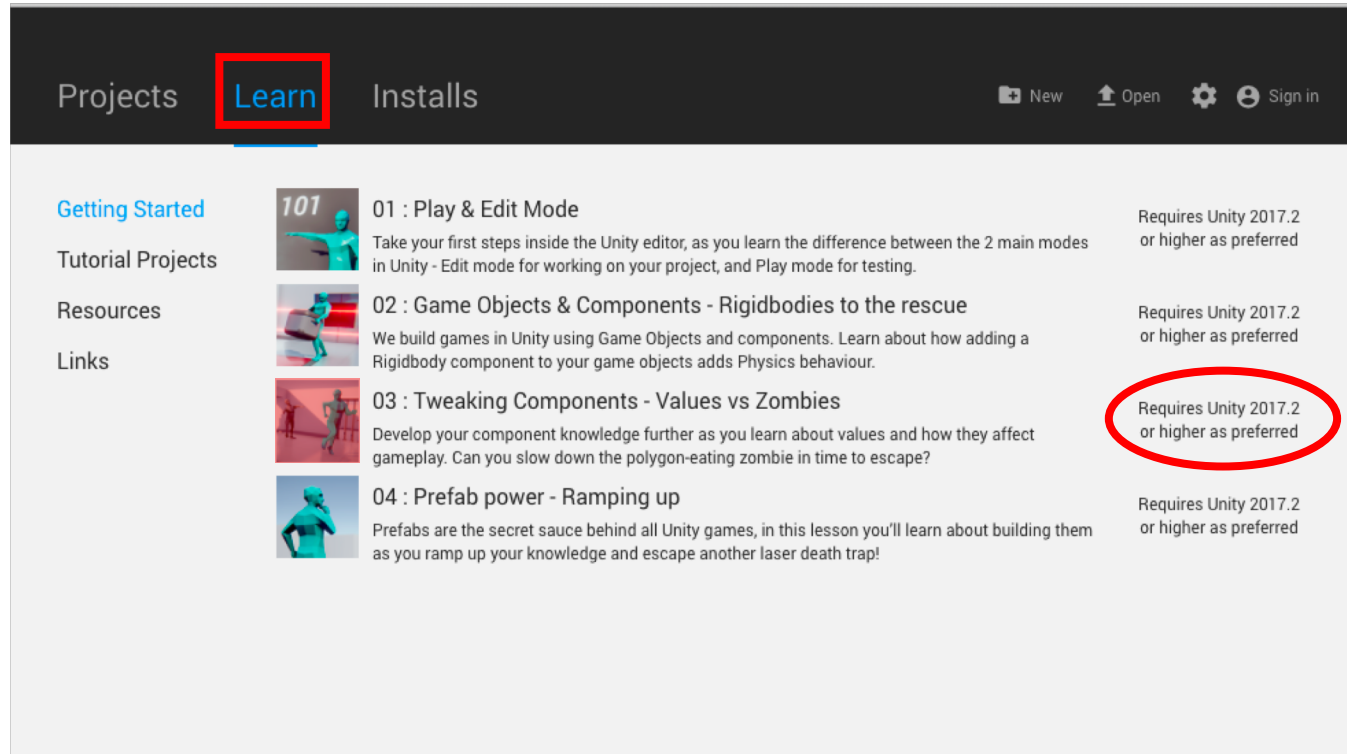


The screenshot shows the Unity Learn website interface. The top navigation bar includes 'Projects', 'Learn' (highlighted with a red box), and 'Installs'. Below the navigation bar, there are links for 'Getting Started', 'Tutorial Projects', 'Resources', and 'Links'. The main content area displays a list of tutorials. The second tutorial, '02 : Game Objects & Components - Rigidbodies to the rescue', is highlighted with a red circle. To the right of this tutorial, the text 'Requires Unity 2017.2 or higher as preferred' is also circled in red. A red warning triangle with an exclamation mark is positioned to the right of the circled text.

| Tutorial Title | Description | Requirements |
|--|--|--|
| 01 : Play & Edit Mode | Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing. | Requires Unity 2017.2 or higher as preferred |
| 02 : Game Objects & Components - Rigidbodies to the rescue | We build games in Unity using Game Objects and components. Learn about how adding a Rigidbody component to your game objects adds Physics behaviour. | Requires Unity 2017.2 or higher as preferred |
| 03 : Tweaking Components - Values vs Zombies | Develop your component knowledge further as you learn about values and how they affect gameplay. Can you slow down the polygon-eating zombie in time to escape? | Requires Unity 2017.2 or higher as preferred |
| 04 : Prefab power - Ramping up | Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap! | Requires Unity 2017.2 or higher as preferred |

First Hands on with Unity

- 3: Tweaking Components – Values vs Zombies



The screenshot shows the Unity Learn website interface. The top navigation bar includes 'Projects', 'Learn' (highlighted with a red box), and 'Installs'. On the right of the navigation bar are icons for 'New', 'Open', 'Settings', and 'Sign in'. The main content area lists four tutorial projects:

| Tutorial Project | Description | Requirement |
|--|--|--|
| 01 : Play & Edit Mode | Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing. | Requires Unity 2017.2 or higher as preferred |
| 02 : Game Objects & Components - Rigidbodies to the rescue | We build games in Unity using Game Objects and components. Learn about how adding a Rigidbody component to your game objects adds Physics behaviour. | Requires Unity 2017.2 or higher as preferred |
| 03 : Tweaking Components - Values vs Zombies | Develop your component knowledge further as you learn about values and how they affect gameplay. Can you slow down the polygon-eating zombie in time to escape? | Requires Unity 2017.2 or higher as preferred |
| 04 : Prefab power - Ramping up | Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap! | Requires Unity 2017.2 or higher as preferred |



First Hands on with Unity

- 4: Prefab power – Ramping up

The screenshot shows the Unity Learn website interface. At the top, there are tabs for 'Projects', 'Learn' (highlighted with a red box), and 'Installs'. To the right of these tabs are icons for 'New', 'Open', 'Settings', and 'Sign in'. On the left side, there is a sidebar with links: 'Getting Started', 'Tutorial Projects', 'Resources', and 'Links'. The main content area displays a list of lessons. The fourth lesson, '04 : Prefab power - Ramping up', is highlighted with a red circle. Its description reads: 'Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap!'. To the right of the lesson title, the text 'Requires Unity 2017.2 or higher as preferred' is circled in red.

| Lesson Title | Description | Requirement |
|--|--|--|
| 01 : Play & Edit Mode | Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing. | Requires Unity 2017.2 or higher as preferred |
| 02 : Game Objects & Components - Rigidbodies to the rescue | We build games in Unity using Game Objects and components. Learn about how adding a Rigidbody component to your game objects adds Physics behaviour. | Requires Unity 2017.2 or higher as preferred |
| 03 : Tweaking Components - Values vs Zombies | Develop your component knowledge further as you learn about values and how they affect gameplay. Can you slow down the polygon-eating zombie in time to escape? | Requires Unity 2017.2 or higher as preferred |
| 04 : Prefab power - Ramping up | Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap! | Requires Unity 2017.2 or higher as preferred |



Questions?