Lesson 2

The second lesson covers the workflow for generating realistic exterior renderings:

- Trees and grass require lots of polygons so we use V-Ray Proxy and V-Ray Fur to generate them efficiently
- We use the Override Material function to speed up the lighting process
- We use the V-Ray Sun and Sky system to match the illumination at a specific place in the world at a given time and day of the year
- Using the Physical camera option we adjust the exposure and white balance of the image
- We switch the illumination to image based lighting – using a panoramic high dynamic range picture of an environment and V-Ray Dome Light to illuminate our scene
- We show how to setup night time illumination using the Dome Light and some of the lights covered in the Extra modules of lesson 01
- We use the VFB Lens Effects to further enhance the night time setup

Each section is annotated in the video. You can find scene files with the same names in the Lesson 2 folder. These were made so that you can start at any one of these stages and follow the steps in the video to the end.

V-Ray Proxy

The main lesson begins with setting up some vegetation. Since vegetation is usually very high poly and SketchUp cannot handle that much geometry we use several V-Ray functionalities

We begin by setting up some trees and bushes using the V-Ray Proxy. The proxy allows us to store any geometry on the hard drive and load it to SketchUp without impacting the poly count and performance of SketchUp. V-Ray then loads the geometry during render times.

The geometry can be exported from any platform that supports V-Ray (into a .vrmesh file) or any platform that can export .alembic files.

V-Ray Fur

The V-Ray fur is a procedurally generated geometry that can be used to simulate effects like fur, hair and grass. In this module, we use it to quickly setup some grass for the front lawn. The **Length**, **Thickness**, **Bend** and **Taper** parameters allows us to control the look of each individual strand. The **Variance** parameters allow us to introduce some randomness in the grass so it looks more natural - higher numbers mean greater variation from the values determined in the **Basic Parameters**. The **Distribution** parameters allow us to control the density of the grass. We can choose between controlling the number of grass strands in two ways:

- Per Face - each face has the same number of strands, if the faces have different areas the density of the grass will vary.
- Per Area - guarantees equal density of the grass across faces with different areas

Instancing

When working with proxies it is better to make copies of one proxy rather than importing the same geometry multiple times with different v-ray proxies. This method saves memory by keeping only one instance of the geometry in the RAM

Material Override

This option is useful when setting up the illumination of a scene in which materials are already present. It allows us to render the entire scene with a single diffuse material which speeds up the rendering. In our workflow, we enable it in each step where we adjust the illumination and then disable it in the end for the final render

Sun and Sky

This part demonstrates the basics of setting up a V-Ray Sun and Sky System. The main point is that the illumination (color and intensity) depends on the Sun's position. Setting up the geographical position of our scene allows us to create accurate day time illumination for any given date and hour of that day. The intensity and colors of the sky will be physically accurate based on those settings.

The **Size Multiplier** parameter, though not actually physically accurate - the Sun has a constant size, allows us to control the softness of the shadows for artistic purposes. Higher values create softer shadows.

The **Sky Model** parameter allows us to choose between different methods for generating the Sky texture. We prefer using the **Hosek et al** method which we believe produces the most visually pleasing effect.

Finally, we discuss the Albedo options which control the color of the sky below the horizon and how this color is blended with the actual color of the sky (above the horizon).

Basic Camera

This part of the workflow covers the usage of the V-Ray Physical **Camera** options to adjust the exposure and white balance of the image. We are using the camera in its "basic options" mode in which we only have one parameter - **Exposure Value(EV)** to set the exposure of the image. Higher EV makes the image darker and vice versa. The White Balance parameter allows us to adjust the white balance of the image to accommodate for the color of the illumination.

Once you adjust those two parameters, you can disable the **Material Override** to render one version of a day time illumination.

Dome Light

This part demonstrates another method of generating day time illumination. We will use a **V-Ray Dome Light** along with **a high dynamic range image (.hdr)** to create **Image Based Lighting**. The Dome Light makes IBL much faster and easier to calculate as it doesn't require high GI settings for a good result. Start by enabling the Material Override to speed up the rendering, and then once the setup is complete disable it for the final rendering.

Night time setup

In this part, we demonstrate how to set up night time illumination. We adjust the **Intensity** parameter of **Dome Light** to make it look like evening time. We change the rotation of the image so that we can bring another part of the image into view and get rid of the direct light coming from the bright sun in the image. We add several light sources and adjust their **Intensity** and **Color** to create warm artificial illumination in the scene. To speed up the process we enable the **Material Override** in the beginning and disable it for the final render.

VFB Lens Effects

In the final part of the workflow we use the Lens effects to further enhance the image by adding some Bloom and Glare effects. Since those are calculated very quickly once the image is rendered we can experiment freely and get the desired result quickly.