

Lesson 1 Extra Modules

This lesson comes with 8 Extra modules. For each module there is a video, and a scene file with the same name in the Lesson 1 folder.

01 Light Plane

This extra module covers the **Plane Light** in more detail. The Plane Light is a physically accurate light source that has a physical measurable area which emits the light and the light decays (loses intensity) accurately as it travels through space. The shape and size of the light affect the softness/sharpness of the shadows cast by it.

Main settings - these settings are the same for all V-Ray lights:

- **Color/Texture** - allows you to pick a color for the light or use a texture file to control it
- **Intensity** - controls the strength of the light. This parameter depends on the Units parameter and in its default state (**Units = Default(Scalar)**) the value of the **Intensity** parameter directly affects the intensity values of the pixels of the light source when they are visible to the camera
- **Units** - the other possible settings here will be covered in the second Extra videos

Plane light specific options

- **Shape** - allows us to control the shape of the plane light - the available options are **Rectangle** and **Ellipse**
- **Directionality** - allows us to focus the light in the direction of the plane's normal.

02 Light Sphere

This extra module uses the **Sphere Light** to discuss the **Units** parameter and demonstrate how it relates to the light intensity and size. The Sphere Light is a physically accurate light source that has the shape of a sphere. It emits light in all directions equally and the light decays (loses intensity) accurately as it travels through space.

- **Units** - this parameter determines the unit used to determine the **Intensity** of the light. Using different units may be necessary when we are trying to match the intensity of a virtual light source to that of a real-world light.
 - **Default(Scalar)** - this is the only mode that is not based on real world measurement units of light intensity. Instead when the **Units** is set to **Default(Scalar)** the intensity parameter directly controls the brightness of the light when it's shape is directly visible by the camera, assuming no color/exposure corrections are applied. This means that the total

amount of light emitted by the light source depends on its size - smaller lights emit less light and larger lights emit more light but the intensity of the light is a constant.

- **Luminous power** - sets the total "amount" of light emitted in **Lumens**, the amount of emitted light remains constant when changing the light size. This means that if you make a light smaller it will shine brighter, in order to emit the same amount of light from a smaller area and vice versa.
- **Radiant power** - sets the total "amount" of light emitted in **Watts**, the amount of emitted light remains constant when changing the light size. This means that if you make a light smaller it will shine brighter, in order to emit the same amount of light from a smaller area and vice versa.
- **Luminance** - sets the amount of light emitted in **Lumens per unit of area** - larger lights emit more total light than smaller lights with the same Intensity
- **Radiance** - sets the amount of light emitted in **Watts per unit of area** - larger lights emit more total light than smaller lights with the same Intensity

03 Spot Light

This extra module discusses the **Spot Light** - a light source that can create the effect of a flash light or spot light which focus the light in one area. This source emits the light from an infinitely small point in space so it cannot be seen by the camera or in clear reflections. The settings we discuss in the video are:

- **Cone angle** - the angle at which the spot light emits light
- **Penumbra angle** - the angle at which the light begins to fadeout to "no light"
- **Penumbra falloff** - determines how the light transitions from full strength inside the cone to no light outside the cone
- **Decay** - this parameter controls the method used to calculate how the light intensity diminishes as it travels away from the source. The physically accurate method is Inverse Square
- **Shadow radius** - this light source emits the light from an infinitely small point and thus it can only create sharp shadows. This parameter allows us to specify a radius of the shape of the light that is used only when calculating shadows. Larger numbers make the shadows softer.

04 Light IES

This extra module discusses the **IES Light** - A light source that allows us to introduce real world lights into the scene. Lighting manufacturers sometimes provide .ies files which hold photometric data for the lights they manufacture. You can use a **V-Ray IES Light** to load those files and have the physically accurate illumination in SketchUp.

- **Intensity** - usually the IES file holds information about the actual intensity of the light. However, this value can be overridden
- **IES Light File** - a slot for the .ies light profile
- **Shape** - specifies how the light shape is determined for the purposes of calculating soft shadows.
 - **From IES file** - uses the shape information (when available) saved in the .ies file
 - **Point** - the light is considered as a point - only can create sharp shadows
 - **Circle** - the light shape is a circular plane, the normal of the plane is the direction of the light and the diameter of the circle is determined by the **Diameter** parameter
 - **Sphere** - the light shape is a sphere, the size of which depends on the **Diameter** parameter
- **Diameter** - controls the softness of the shadows generated by the IES Light when the **Shape** parameter is set to either **Circle** or **Sphere**. Larger values make for softer shadows

05 Light Omni

This extra module uses the **Point Light** to examine some of the extra parameters of lights. A **Point Light** is an infinitely small point (like the **Spot Light**) that emits light in all directions equally. This light cannot be seen by the camera or in clear reflections. It creates sharp shadows by default. The **Shadow radius** parameter allows us to specify a radius of the shape of the light that is used only when calculating shadows. Larger numbers make the shadows softer.

- **Affect Diffuse/Specular** - allows you to enable or disable the effect of the light on the diffuse and specular components of the materials in the scene. This can be used for artistic purposes but disabling these checkboxes or using multipliers different than 1 will create physically inaccurate results
- **Shadows** - enables/disables the casting of shadows by the light

06 GPU Acceleration

This extra module covers the usage of Graphic Cards to accelerate the rendering.

GPU acceleration works for the **Interactive** and **Progressive** rendering modes only.

With the **Interactive Rendering** mode, it works directly and it only has one slider controlling it. The **Interactivity** slider determines the rate at which V-Ray refreshes the image. The speed of the calculations remains the same however you can control how often V-Ray shows you the result of those calculations. When the slider is at its right most position V-Ray refreshes the image very often but the first few iterations are going to be noisy. This is useful for lighting as you can quickly see the effect of changes made to the scene. When the slider is to its left most position V-Ray refreshes the image less

often but each new iteration greatly improves the quality. This may slightly speed the rendering, because V-Ray is not "wasting" time showing you images at the lower quality.

If you want to use the GPU Acceleration with the **Progressive Rendering** mode you need to set the **Primary and Secondary Bounce** engines to **Brute Force**. You can use the **Quality** slider to choose between faster rendering or better-quality result. Additionally, if you expand the right fly off menu, in the **Raytracing** rollout you can set a time limit for the rendering.

07 Batch Render and Animations

- Animations 01 - demonstrates the workflow for rendering an animation
- Batch Render 01 - demonstrates the workflow for quickly rendering multiple views in a scene

08 Advanced VFB

This extra module goes deeper into some of the settings of the V-Ray Frame Buffer including:

- A/B comparison – allows you to compare images that were saved in the VFB History
- More detailed color corrections
- Saving/loading color corrections to a file – this can be useful when working on a project that has multiple shots and you want to all the images to have the same “feel”