Basic Lighting in DAZ Studio

Lighting is probably the most important element for any render in DAZ Studio. There are plenty of plugins and light presets to help you get the perfect look. The truth is that good lighting is actually very easy when you understand some basic principles. A good lighting foundation means that your renders will look better and that you’ll get more power out of the cool plugins and shaders in the DAZ 3D store. Here are some easy to learn tips that Melmoth taught me.

Writer’s Note: This article includes a ‘specularity’ light. It turns out this is not necessary, unless you are using the WorldBase Extreme Dome. If you are not using the WorldBase Extreme product, then exclude the specularity lighting.

KINDS OF LIGHT IN DAZ STUDIO

Multiple lights and shadows are essential to proper lighting. There are different kinds of lights you can use in Studio. These are:

- Point Light
- Distant Light
- Spotlight

Each of these types of light has a different function. A Point Light is a light that radiates in all directions from a specific point where it is located. The light fades out over distance. A Distant Light is light that goes in a single direction and radiates as if from a plane throughout the whole scene. Distant light doesn’t fade over an extent of space. It is the same strength everywhere in the scene, but unlike a point light, it only points in one direction. A Spot Light, as the name suggests, is a light from a specific point in the scene that shines in one general direction, like a flashlight beam. The Point Light and the Spot Light do not have infinite distance. The Distant Light does have infinite distance in the scene and is probably the easiest to work with for this reason. Since this is a basic tutorial, we’ll only be using the Distant Light.

To start off, open a new, empty scene in DAZ Studio (FILE -> New). Place a figure or primitive into the scene. I will be using Victoria 4.2. For this tutorial, Victoria 4.2 EZ is equally effective and if you’d like to follow along you should use either Victoria 4.2 or Victoria 4.2 EZ.
CREATE THE FIRST DISTANT LIGHT

Now we’ll add a light. This light will be the main light. To do this, go to CREATE -> Distant Light.
A menu will open with a name for the light. We’re going to make other lights and we want to be able to identify which light is which quickly in the Scene Tab. Let’s change the name of this light to ‘Light Sun.’ In this tutorial, all the lights will start with the word ‘Light.’ This will make them next to each other in the Scene Tab and therefore easier to find and look through. Press ‘Accept’ and Studio puts the light into your scene.

You’ll see Victoria 4.2’s appearance change from the neutral, diffuse lighting that is the default in a new DAZ Studio Scene to the effect of the single Distant Light.
PARAMETER SETTINGS

Let’s change the settings for the “Light Sun.” This will be the main light in the scene. Select the “Light Sun” in the Scene Tab. Then look at the settings in the Parameters Tab (VIEW -> Tabs -> Parameters). Use the scroll bar on the side to scroll down to the bottom.
It's best to use shadows with all lights. Let's change the Shadow Type to 'Deep Shadow Map.' To do this, click on the drop-down and change from 'None' to 'Deep Shadow Map.'
Since this is the main light or sunlight, we want crisp shadows. Let’s leave the ‘Shadow Softness’ on 0.0%.

The ‘Illumination’ should be kept to ‘On’ as this is a full light.

For this tutorial, we’ll keep the ‘Color’ to the default white. You could however change it to a very slight yellowish tint to duplicate the color of the sun.

We’ll leave intensity on 100% since this is the main light.

Our settings now look like this:

![Lighting settings](image)

**POINTING THE LIGHT**

Distant Lights give light of equal strength in a single direction throughout the whole scene. For this reason, it's not necessary to move a distant light away from the default position on the ground in the middle of the scene. As long as the light is pointing in the same direction, you can put it anywhere in the scene and there will be absolutely no change in the lighting effect. Its direction is important. Its location is irrelevant.

Let’s point the light. The default direction is simply in the same direction that the camera by default is pointing which is into the eyes of the figure when it is first loaded. This isn’t very dynamic, so we’ll want to change it. I used to use the transform bars on the Parameters tab to pose lights. It turns out there’s a much better and easier way to do this.

Go to the ‘View Selection List’ drop down and click on it. You’ll see ‘Light Sun in the list.’ Click on it to select it.
Now you're actually looking in the same direction that the distant light is pointing. It's very easy to point the light by using the ‘Camera Orbit Tool.’ Another great thing about this is that you don't even need to see the Distant Light icon in the scene. It could be hidden inside of a prop or figure. It doesn't matter, because you can always find it in the Scene Tab alphabetically listed with the other ‘Lights.’ There's never a good reason to move a Distant Light from the default location. That's just more hassle and work when you can use the Scene Tab to find it and the View function in DAZ Studio to point it.
Hold down the mouse button (left for those who need to know that) on the ‘Camera Orbit Tool’ and move your mouse around.
Choose a direction. In this picture, I have chosen a direction pointing from above front onto Victoria’s right side. You’ll notice that the perspective is distorted when viewing as the light.
Now you can change back to the ‘Default Camera’ and check the lighting.
SPECULAR LIGHT

We want to create a specular light for the ‘Light Sun.’ Go to CREATE --> DistantLight. Name the new light ‘Light Sun Specular’ and press ‘Accept.’

You’ll see that Victoria brightens up. There are two full lights shining on her right now. However, this second light is supposed to be a specular light. Let’s change the properties for it. Select ‘Light Sun Specular’ in the Scene Tab. Then go to the Parameters Tab and scroll down to the Shadow and the other properties.
Change the Shadow Type to ‘Deep Shadow Map.’ Then let’s change Light Illumination to ‘Specular Only.’ The brightens decreases noticeably. This specular light and the other ones we add will help the lighting define the subject and add realism. Shadow softness is not important for a specular light, so we’ll leave the softness setting on 0%. This is the main specular light, so we’ll leave it on 100% intensity.

Now we have these settings for ‘Light Sun Specular.’

Let’s point this light. Change the view selection to ‘Light Sun Specular’ and use the ‘Camera Orbit Rotation’ tool. Since this is the specularity for the ‘Light Sun,’ we’ll want to have this light point in the same or nearly the same direction as ‘Light Sun.’ You can compare the directions by changing from ‘Light Sun Specular’ to ‘Light Sun’ in the View Selection. Adjust the ‘Light Sun Specular’ direction so
that it is the same or nearly the same as ‘Light Sun.’

Now change back to the ‘Default Camera.’ You may not see much of a difference, but the specular light will be an important component when you render.

You can see that the lighting is actually somewhat harsh. In real life, light is usually coming from many directions. In an outside setting, light from the sun can reflect off just about anything in the surroundings. Usually this is primarily the ground. To simulate this effect, we’ll add some more Distant Lights that we’ll call “ambient.” Ambient light is essentially reflected light.
AMBIENT LIGHTS

Create the first ambient light. Go to Create -> DistantLight. Name the light ‘Light Ambient 01’ and press ‘Accept.’ This light will represent ambient light reflecting off the ground. This light is of much less intensity than the sun itself. It’s just a reflection. We’ll set the Shadow Type to ‘Deep Shadow Map.’ We’ll set the shadow softness to 50%. As a rule of thumb, ambient lights should have some softness if their intensity is more than 10%. Illumination should be just ‘On’ as this is a regular light. We’ll leave the color on white for this tutorial. We could change the color to have a very slight green tint to simulate the ambient light from a grassy park. Finally, let’s change the intensity to 20%. Here are the settings:
Let’s pose ‘Light Ambient 01.’ Change the view to ‘Light Ambient 01’ and use the ‘Camera Orbit Rotation’ tool. Let’s point the light so that it is coming nearly straight up and a little towards Victoria 4.2 like this.
Change to the ‘Default Camera.’ You can see how the relatively sharp contrast between dark and light has been softened. The main shadows and lighting are still present for definition, but the other details of the figure are a bit clearer.

Just as we added a specular light for ‘Light Sun,’ we will add a specular light for ‘Light Ambient 01.’ Go to CREATE -> DistantLight. Name the light ‘Light Ambient 01 Specular.’

For this light, let’s have: Deep Shadow Map, Shadow Softness 0%, Illumination: Specular Only, Color: white, Intensity: 20%. Then change the view to ‘Light Ambient 01 Specular’ and use the ‘Camera Orbit Rotation’ tool to point it. It should point in the same or nearly the same direction as ‘Light Ambient 01.’ Change back to ‘Default Camera’ to see the status of the lighting in your DAZ Studio Scene.

For even more realism, you can add more ambient lights with accompanying specular lights. Let’s add a second ambient light. We’ll call it ‘Light Ambient 02.’ We’ll give it the same properties as the first ambient light and have it point from below towards Victoria’s left side.

Follow up with ‘Light Ambient 02 Specular.’ Use the same properties for this light as for ‘Light Ambient 01 Specular.’ Point this light in the same direction as ‘Light Ambient 02.’

Now change the view to ‘Default Camera’ and check out the scene. It’s starting to look even better. Let’s add one last pair of lights (ambient and specular). You guessed it—this one will be called ‘Light Ambient 03.’ It will have the same properties as ‘Light Ambient 01’ and ‘Light Ambient 02.’ We’ll point this light from below at Victoria, but this one will be directed towards Victoria’s right side to balance the other ambient lights. Follow up with ‘Light Ambient 03 Specular.’ Use the same properties as the other two ambient specular lights and point it in the same direction as ‘Light Ambient 03.’

Now check the scene by changing back to ‘Default Camera.’ At this point in the tutorial, we’ll stop adding ambient lights. We could add one or two more ambient lights and specular lights from above to represent light reflecting from the open sky. If we did choose to do this, however, we wouldn’t see a difference in the preview. DAZ Studio only calculates lighting for the first eight lights in the preview. The additional lights beyond the first eight would definitely be used in the render, but they would not show up in the preview. This is because the preview is in real time and additional lighting computations would slow down the preview.

RENDER

Now make a render of your simple scene (CTRL + R). DAZ Studio computes the shadow maps for all eight lights and then renders the scene. Now you can compare it to Victoria 4.2 in a scene with no lighting (or the default, diffuse lighting). What a difference! The lit Victoria 4.2 has a sense of drama and realism. The unlit scene is flat and prosaic.

Your render will not necessarily look exactly the same as this one since the directions of your lights will not be exactly the same.
**SUMMARY**

Create, Set, and point main Distant Light
Create, Set, and point Specular light to accompany main Distant Light
Create, Set, and point first ambient light
Create, Set, and point Specular light for first ambient light
Create additional ambient lights and specular lights for each as needed

**CONCLUSION**

You can see that there are still some heavy shadows in the render. We could have added eight instead of just three ambient light pairs and had them set to intensity of 15% or 10% for a broadly spread ambient light. We could have also increased the intensity of the specular lights for more definition.

Now you have a taste for the power of effective lighting in Studio. You can experiment and create just the look you want for your magnum opus!