

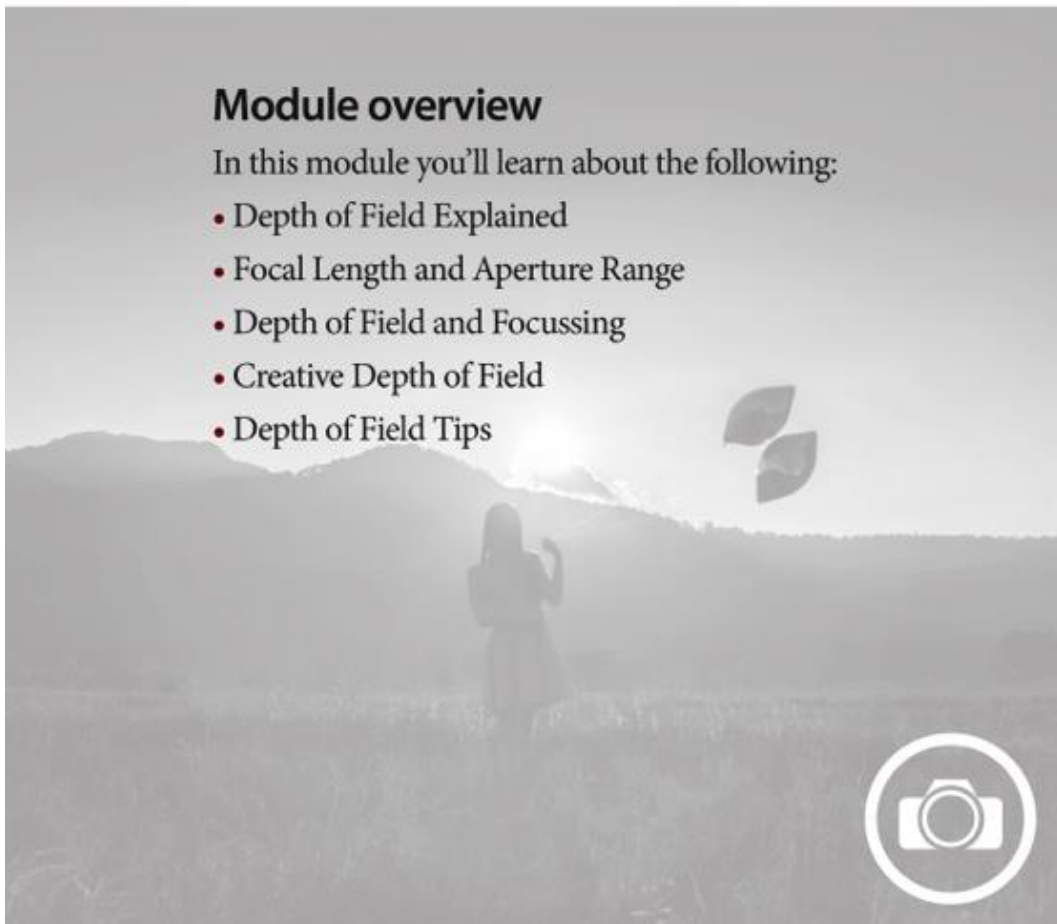


Module 7: **Depth of Field**

Module overview

In this module you'll learn about the following:

- Depth of Field Explained
- Focal Length and Aperture Range
- Depth of Field and Focussing
- Creative Depth of Field
- Depth of Field Tips



“Look and think before opening the shutter. The heart and mind are the true lens of the camera.”

Yusuf Karsh
(1908 – 2002)

7.1 Depth of Field Explained

Tip:

remember the F-stop numbering system?

It can be confusing at first.

Even though f/1.4 is a smaller number than f/22, f/1.4 is the larger aperture.

Try thinking of it in terms of the aperture blades. To make a smaller aperture, you have to adjust the blades, which makes them take up more space and appear larger.

So as you increase the aperture setting, you are increasing the size of the blades.

A brief description of depth of field was given during Module 3, but this module will take a more detailed look.

The depth of field refers to area in a photograph that is in focus. If a photograph has a subject (like a person or an object) in sharp focus but the background is blurred, then this is known as a shallow depth of field.



With only the main subject in focus, this image has a very shallow depth of field.

Tip: try using a 35mm, 50mm and 70mm prime lens (fixed focal length lens), as they have a larger maximum aperture setting. The cheaper lenses are usually f/1.8 and the more expensive ones are f/1.4.

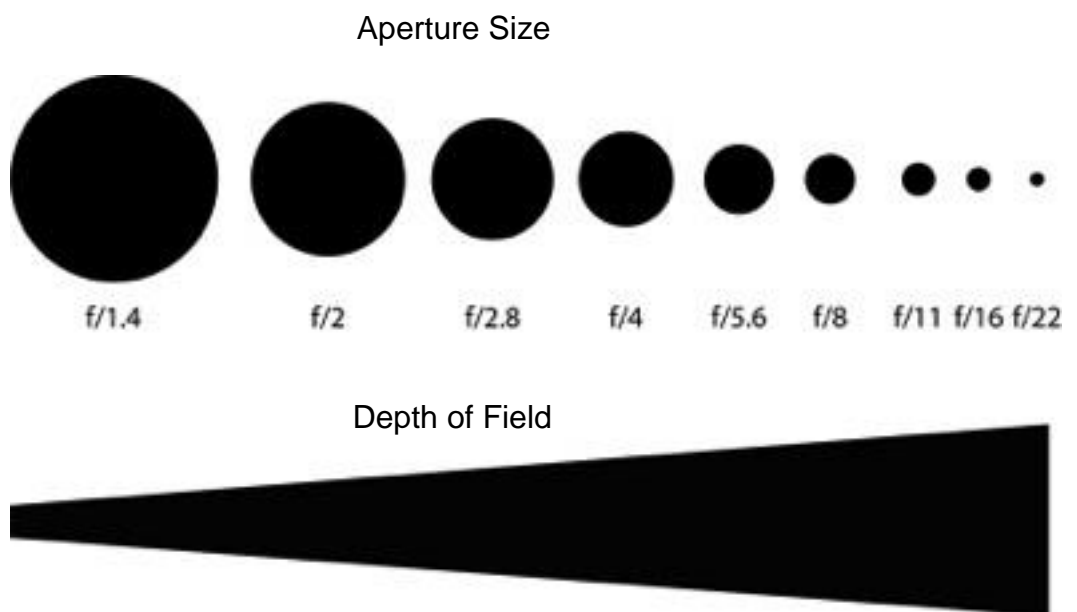
They also have the advantage of producing sharper image quality.

There are many cheap 50mm lenses that are surprisingly good, but do some research before you buy.



Here we see a greater (or deep) depth of field: everything in the photograph is in focus.

Those are the two extremes; many images will have an average depth of field, meaning that one area will be in sharp focus but the rest of the image will have a slightly softer focus. Most shots taken outdoors in auto mode will have an average depth of field; this is due to the exposure settings used.



As mentioned in Module 3, the size of the aperture will affect the depth of field. A large aperture like f/1.4 will create a shallow depth of field and a small aperture like f/22 will produce a greater depth of field.

Different lenses have a different aperture range, so the depth of field range will depend on what lens you are using.

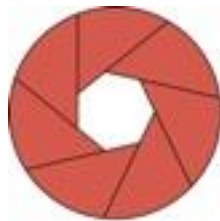
7.2 Focal Length and Aperture Range

Tip: if you're trying to create a shallow depth of field and you're using the viewfinder, try the DoF (depth of field) preview.

This is usually a small black button on the front of your camera (if you're not sure where it is then consult your manual, or the internet).

This will give you a more accurate view of the depth of field you are creating.

Zoom lenses will have a smaller aperture range than a prime lens and that range will depend on the focal length. A standard telephoto lens will usually have a maximum aperture of $f/3.5$, but only at its widest focal length; as you start to zoom, the aperture gradually starts to become smaller and at maximum zoom the largest setting be closer to $f/5.6$. The same is true of the smaller aperture settings. At its widest length, the smallest aperture available will be around $f/22$, but at maximum zoom that can go up to $f/36$.



$f/3.5$



$f/22$



Focal length 18mm

Aperture range of an 18-105mm lens.

A telephoto lens with a focal length of 18-105mm.

The aperture range at 18mm is a maximum of $f/3.5$ and a minimum of $f/22$.

When the same lens is extended to 105mm, the aperture range changes to a maximum of $f/5.6$ and a minimum of $f/36$.

Having a minimum of $f/36$ sounds good in theory, but the reality is, this is an aperture setting that should rarely be used.



$f/5.6$



$f/36$



Focal length 105mm

Tip: don't be afraid to have out-of-focus objects in the extreme foreground. This can help create depth.

Just make sure it's not something too distracting.

Let's see how that works in practical terms. Here are two shots taken with an 18-105mm lens. The distance between the camera and the subject was the same; the only change was in the focal length, which also created a slight difference in the aperture setting.



At 18mm the aperture was set to f/4; despite being at the larger end of the aperture scale, the depth of field is reasonably strong.



With the focal length at 105mm the aperture setting has automatically been decreased to f/5.6. In theory, the depth of field should be slightly deeper but it isn't. This is because of the increased focal length. As mentioned previously, focal length doesn't actually affect the depth of field; technically, this photo has a deep depth of field due to the smaller aperture. The blurred background and foreground is caused purely by the zoom – the blurriness was already there but it's just been magnified by the zoom, which creates the illusion of a shallow depth of field.

Tip: if you're shooting at night, you'll probably be using a large aperture.

Try shooting with street lighting or with cars moving in the background. The blurred lights can make for some interesting effects.

Here's a comparison of f/36 and f/16 aperture settings.



f/36



f/16

The f/16 image is much sharper than f/36 because the light is less diffracted. Shooting with a medium-sized aperture also has the advantage of giving you more control over the exposure settings, especially when the lighting is strong.

Tip: you don't always have to shoot at eye level.

Try shooting as high and as low as you can manage.

If you see something you can stand on, then use it.

7.4 Creative Depth of Field

Even though photographs are two dimensional, there are many ways to give your photographs a sense of depth.



In this example, the camera was placed on the floor. Using an aperture of $f/3.5$ and focusing on the subject several feet away blurs everything in the extreme foreground, creating depth.



If you're shooting portraits with more than one subject, try placing them at different distances from the camera and using the largest aperture possible. If you don't have a lens that goes to $f/1.8$ or smaller, just use a telephoto lens on full zoom and step back from your subjects. Be sure that you are focused on the person closest to the camera.

Tip: even though backgrounds will sometimes be severely blurred, that doesn't mean they're not important.

Think about what's in the background: should it be in focus or not?

Here's a more extreme version.



Shallow depth of field works particularly well in portrait photography, by (literally) focusing solely on your subject. Obscuring the rest of the frame with soft focus or blurring it isolates your subject and makes a more dynamic composition.

When attempting shots like these, the auto focus can select the wrong area. Don't be afraid of switching to manual focus. If you wear glasses, then it's probably better to use the live view screen.

7.5 Summary

- Depth of field refers the area that's in focus.
- If only a small area is in focus, then it's a shallow depth of field.
- If most of the image is in focus, then it's a greater (or deeper) depth of field.
- Aperture is the most important aspect of controlling the depth of field.
- The distance from the subject is also important.
- Using a long focal length may appear to affect the depth of field, but in reality it doesn't. However, it can give the impression of a shallow depth of field when used correctly.
- Although f/36 would give a greater depth of field than f/16, it is not recommended because of light diffraction.
- Increased light diffraction causes images to lose their sharpness.
- Depth of field can be a useful compositional technique when used correctly.

7.6 Assessment Questions

- 1) What happens to the light that travels through a large aperture setting?
- 2) Which of these apertures will produce an average depth of field: f/1.8, f/7 or f/16?
- 3) True or False? f/32 will produce a very deep depth of field.
- 4) Do telephoto lenses have a fixed aperture range?
- 5) Does zooming with a telephoto lens decrease the minimum aperture?
- 6) True or False? A 50mm prime lens can produce a greater depth of field.
- 7) Give an explanation for your answer to Question 6.
- 8) True or False? Shooting with the camera at ground level and using a standard lens will create blur in the extreme foreground, regardless of the aperture setting.
- 9) If you are using a very large aperture to create a shallow depth of field, would manual focus be better than auto focus?
- 10) True or False? The depth of field has no effect on composition.

7.7 Assignment

Every lens has what's known as a "sweet spot" and this assignment will help you to find it. First, set your camera on a tripod and attach a sheet of newspaper or a magazine page to the wall. Make sure the camera is pointed straight at the wall (this won't work if it shoots at an angle) and then when the focus is correct, switch to manual focus; this will keep the focusing locked.

Then take a series of shots using mid-range aperture settings (f/4, f/5.6, f/8, f/11, f/16 would be the best). Finally, look at the images on your computer at 100% magnification and see which one is the sharpest.

When you've decided which aperture setting took the sharpest image, switch to that setting and use aperture priority mode to take another series of photos using different focal lengths (these photos can be of whatever you want).

If you have more than one lens, then do the same thing with your other lenses. Keep a note and then you'll know which setting gives you the sharpest image with each lens.