

Welcome

Welcome to the lecture on understanding the exposure triangle. When we first get cameras, the majority of us are under the impression it is easy. For those who are happy keeping their camera in auto mode, that is somewhat true - but if you want to be more creative you need to learn manual mode.

Exposure

Exposure, in it's most simple definition, is how bright a photograph is. There are 3 main points which control the exposure of a photograph - and each of these points makes up part of the triangle.

ISO

ISO is the most simple of the triangle to understand. For this reason, I think of it as the top/tip of the triangle. This is quite simply how sensitive the camera is to light. the higher the ISO, the brighter the image appears.

The benefits of using a high ISO is that you can still capture good shots in low light. There is, however, a down side. The higher the ISO used, the more grain appears in the image. This grain is called noise - and modern cameras and editing software makes it a lot more manageable. Most budget cameras can comfortably manage 800 ISO before the noise becomes a large issue.

The below image was shot using a really high ISO - 40,000. The image has a lot of noise.



In comparison, the below image was shot at 5,000 ISO. This is still substantially higher than I would normally like, however the difference is very noticeable.



Shutter Speed

The next component of the triangle is shutter speed - there will be a bit of slightly technical information here - but I'll keep it as basic as possible. The sensor on your camera is what records the image. In front of this is a shutter, and every time you press the button to take your photograph, the shutter opens and closes. This allows the sensor to capture the image.

To put that in simpler terms, put your right hand over your right eye. Think of your eye as the camera sensor, and your hand as the shutter. When you take your hand away from your eyes you can see, but when you replace it, your vision is obscured. This split second is enough for your camera to record an image.

The longer the shutter is left open, the more light is let in. In some situations where photographers are in low light, they may opt to keep the shutter open longer - which is a great technique to avoid the noisy images that high ISO's can produce.

For fast moving subjects, a slow shutter speed is not an option - as the sensor will record any movement as a blur. This is however, how light trail photographs are created, and it is also great for capturing fireworks.

For still objects or landscapes, using a slower shutter speed is preferred over increasing ISO.

Below is a slow shutter speed used incorrectly. If this had been taken at 1/2000 (or one two thousandth of a second) the kingfisher would have been sharp.



In comparison, here is an example where the still buildings remain in focus, but the blurred lights of the cars move through the frame.



Aperture

The last component of our triangle is aperture. The reason I have saved this until last is it is perhaps the most tricky to explain. This aspect is determined by your lens - so on interchangeable lens cameras results will vary.

Aperture numbers are displayed as f numbers - such as f1.8. In many ways, it works the same as a shutter - in that it controls the amount of light hitting your sensor. Your lens aperture is the hole that lets light through the lens onto the sensor, and the smaller the number is the larger the aperture hole is. In low light situations where you cannot use a high ISO or a slow shutter speed, making the aperture as wide as possible will help.

The consequence of changing the aperture is 'depth of field'. This is the area of your photograph that is in focus. If a small f number (wide aperture) is used, only the subject you have focused on will be in focus. Anything that is not the same distance between you and the subject will appear out of focus.

Here a wide f number has been chosen to give a lot of light, and to isolate the pigeon from the background. This technique is used a lot for portraits, wildlife, events, and sport.



In comparison, the below was shot at a mid range aperture (f11) to keep everything in focus. To compensate for this I used a slow shutter speed to let in more light - hence the movement in the waves.



That concludes the guide on the exposure triangle. Experiment with learning each of them, and how they affect one another. For example, using a really high ISO, and slow shutter speed and a wide aperture will result in a really bright shot. If you need a slow shutter for light trails, experiment with keeping the ISO down and the F number higher.