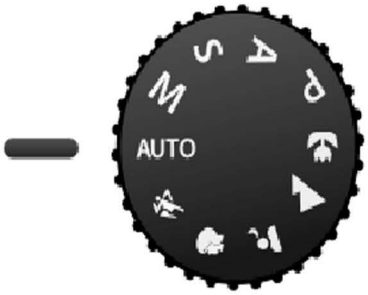
CHUDLEIGH CAMERA CLUB

Basic Skills 2 Focus Sheet

A general look at Camera modes and ISO

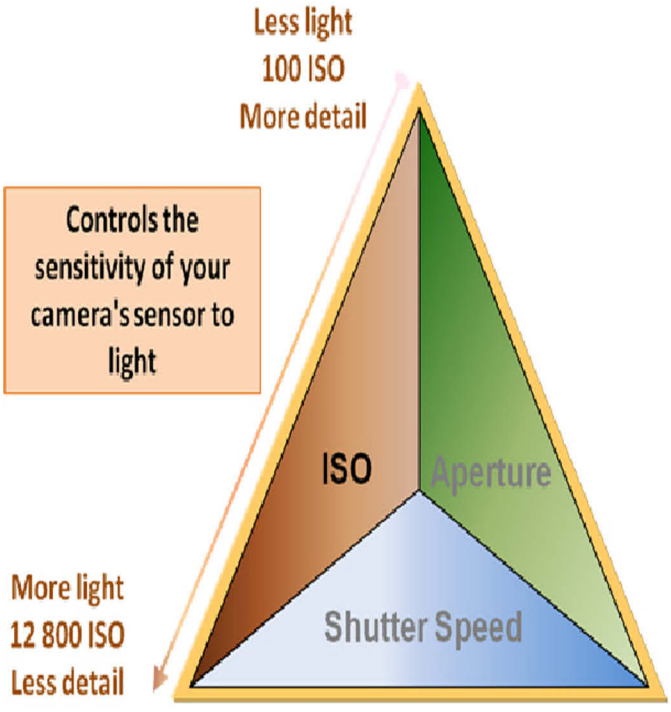
P: Program mode has the camera calculate both shutter speed and aperture (given a manually or automatically selected ISO). Higher-end cameras offer partial manual control to shift away from the automatically calculated values (increasing aperture and decreasing shutter time or conversely). The difference between Program mode and Full Auto mode is that in program mode, only the exposure is automatic, while other camera settings (e.g. shooting mode, exposure compensation, flash) can be set manually; in Full Auto mode everything is automatic.

M: Manual mode both shutter speed and aperture and independently set manually (with ISO sensitivity also set manually), where proper image exposure requires accurate manual adjustment.



A or Av: Aperture priority or 'Aperture value' enables manual control of the aperture, and shutter speed is calculated by the camera for proper exposure (given an ISO sensitivity).

S or Tv: Shutter priority or 'Time value' enables manual control of the shutter speed, and aperture is calculated by the camera for proper exposure (given an ISO sensitivity).



What is ISO and how does it affect exposure?

Traditionally, ISO refers to how sensitive a film is to light. Digital cameras offer a variety of ISO settings -- typically 100, 200, 400, 800 and 1,600 -- which allow you to choose how the sensor takes in light rather than making you stick with one film speed. With aperture and shutter speed, ISO is the third variable in how to create a proper exposure for the given amount of light in a scene. Changing your ISO settings on a film camera can be helpful under certain situations.

ISO and Exposure Stops

Changing your ISO setting by one stop affects exposure just like changing your aperture or shutter speed does. Switching from ISO 200 to ISO 400, in effect, lets in one stop more light just as changing from f/5.6 to f/4 does (or 1/60 of a second to 1/30). In this way, you can calculate what shutter speed and aperture combinations are possible when you select a different ISO.

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Sensitivity and Noise

Although it is common to hear that changing your ISO settings changes the sensor's sensitivity to light, this is actually not true. At a higher ISO setting, digital sensors simply amplify the same information that they would gather under a lower ISO setting. Digital "noise," which describes pixels that are brighter than surrounding ones, is not as noticeable at a low ISO, but is amplified and made visible at a higher ISO. In a low-light situation, such as indoors at night, it is still preferable to use a high ISO setting to reduce camera blur.

Taking action pictures, fast or slow shutter speeds

Take it slow . . .

First off, slow shutter speed. We use this for two reasons – first, because it's quite dark and we need to let more light into the camera. Or second, because we want to introduce some blur into our photo.

What? Blurry photos? Yep! That's right. Sometimes we can use blur for a creative effect. To the right there's an example of how we can use blur to emphasise a certain part of a photo:

Deliberately chose a slow shutter speed and used a technique called "panning".

Panning is a photography technique where you follow your subject as it moves.

Basically you pan the camera with the subject and as it passes press the shutter button and keep panning until the picture is complete.

Because you are using a slow shutter speed (in this case above it was 1/15th of a second) you get a blurred background, but the car remained sharply in focus.

So how did that happen? Well, it's because you are panning your camera, and tracking the car. Therefore for the time the shutter was open you are keeping pace with the object. Relative to the camera the object doesn't move in the frame, but the background did. Hence the background appears blurred, and the object stays in focus.

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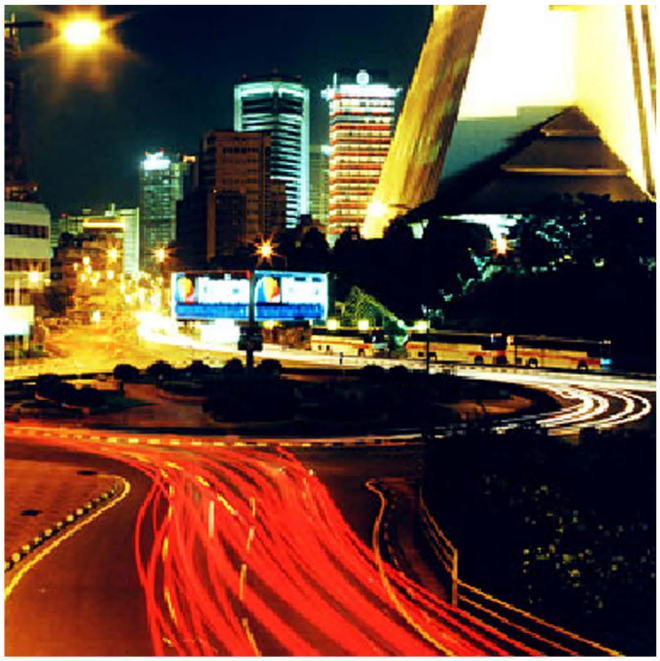

Slow shutter speed – things to remember

The key thing to remember about using a slow shutter speed is that anything that moves in the scene will blur. Once you're aware of this you can use it creatively in your photography.

The example used above was to keep the main subject in focus, but use a slow shutter speed to blur the background. Left is another creative technique using slow shutter speeds:

This was taken with a very slow shutter speed (ten seconds).

The result demonstrates the principle that, with slow shutter speeds, anything that moves will blur (in this case, the lights of moving cars), but anything stationary in the photo will stay in focus.

And then you've gotta speed it up . . .

If slow shutter speeds allow you to get creative with blur, fast shutter speeds have the opposite effect – they freeze movement. With a little practice, and some guidance from others in the group (such as how to set the correct shutter speed for action photography), you'll soon get the hang of using faster shutter speeds to good effect.

A fast shutter speed could be considered anything over 1/500th of a second. But modern digital cameras go much faster than this. If you have a digital SLR you may well be able to select shutter speeds up to 1/8,000th of a second – incredibly fast!

What this means is that the shutter opens for just 1/8,000th of a second. In this brief moment, time is frozen. As a photographer you can use this brief moment creatively to capture movement.

Fast shutter speed capturing a moment in time

Take a look at the photo to the left here.

There is one downside to using such fast shutter speeds – you need good light, and you need a wide aperture. Often you will only get apertures wide enough on prime lenses (and some of these can be rather expensive!)

There are other ways to use fast shutter speeds. One of the most common is to freeze movement in sport. Pro sports photographers use fast shutter speeds to capture the action. You'll notice they all have large lenses attached to their cameras – those are those expensive lenses with wide apertures I mentioned!

With good light, and a high ISO you should still be able to make use of fast shutter speeds, without the pricey lenses.

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