Dapto Camera Club Newsletter..
EXTRA
The teaching Club.

May—2017

STAR TRAILS TUITION

By request Star Trail Lessons will be held again to attend you MUST register the day you intend attending, note there will be no repeat of this lesson this year.

So if you want to go get registered quickly there is a limit of four students on each session.

The location has not been set yet but you will be advised the dates are as follows,

Sat 20th may, Sunday 21st may, Sat 27th may, Sunday 28th may to register contact me.

PLEASE NOTE - these dates are dependent on clear skies should it be cloudy or raining.

I will send those registered, details of settings for their camera and how to apply them.

1

The Exposure Triangle

The three elements of the exposure triangle are:

1. **ISO** – this is the measure of a digital camera sensor's sensitivity to light.
2. **Aperture** – the size of the opening in the lens when a picture is taken.
3. **Shutter Speed** – the amount of time that the shutter is open.

It is at the intersection of these three elements that an image's exposure is worked out.

Most importantly – a change in one of the elements will impact the others. This means that you can never really isolate just one of the elements but you always need to have the other elements in the back of your mind.

Mastering the art of exposure is something that takes a lot of practice. In many ways it's a juggling act and even the most experienced photographers experiment and tweak their settings as they go.

Keep in mind that changing each element not only impacts the exposure of the image but each one also has an impact upon other aspects of it (ie changing ISO changes the graininess of a shot, changing aperture changes depth of field and changing shutter speed impacts how motion is captured).

The great thing about digital cameras is that they are the ideal testing bed for learning about exposure. You can take as many shots as you like at no cost and they not only allow you to shoot in Auto mode and Manual mode – but also generally have semi-automatic modes like aperture priority and shutter priority modes which allow you to make decisions about one or two elements of the triangle and let the camera handle the other elements.

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ISO - in Digital Photography

What is ISO? - The Sensitivities in Camera Sensors

ISO (I.S.O.) is the abbreviation for the International Organization of Standardization, a governing body based in Europe that provides the standards for a wide variety of subjects.

For photographers the key standard is Film Speed ratings. In the past this was known as ASA or the American Standards Association (Now discontinued), you could buy your films in ASA 50, 100, 200, 400, 800 or 1600.

In traditional (film) photography the ASA was the indication of how sensitive a film was to light. The lower the number the lower the sensitivity of the film and the finer the grain in your images.

In Digital Photography ISO measures the sensitivity of the image sensor. The same principles apply as in film photography – the lower the number the less sensitive your camera is to light and the finer the grain.

The standard ISO that most people use every day, giving accurate colour rendition and "clean" noise-free images is 100 ISO.

Higher ISO settings are generally used in darker situations to get faster shutter speeds. For example an indoor sports event when you want to freeze the action in lower light. However the higher the ISO you choose the noisier your images will be.

Most modern digital cameras give you the opportunity to select your own ISO.
When you override the automatic ISO you'll notice that this will also impact on the aperture and shutter speed needed for a well exposed shot.

For example – if you bumped your ISO up from 100 to 400 you'll notice that you can shoot at higher shutter speeds and/or smaller apertures.

Questions to Ask When Choosing ISO

When choosing the ISO setting I ask myself the following four questions:

Light – Is the subject well lit?
Grain – Do I want a grainy shot or one without noise?
Tripod – Am I using a tripod?
Moving Subject – Is my subject moving (and how fast) or stationary?

If there is plenty of light, I want little grain, I'm using a tripod and my subject is stationary I will generally use a pretty low ISO rating.
If it's dark, I purposely want grain, I don't have a tripod and/or my subject is moving I might consider increasing the ISO as it will enable me to shoot with a faster shutter speed and still expose the shot well.
Of course the tradeoff of this increase in ISO will be noisier shots.

3

Aperture in Digital Photography

If you can master the technical aspects of aperture selection you will have real creative control over your camera. Aperture is where a lot of the magic happens in photography, changes in it can mean the difference between one dimensional and multi-dimensional shots.

What is Aperture?

Put simply – Aperture is 'the size of the opening in the lens when a picture is taken.'

When you hit the shutter release button of your camera a hole opens up that allows your cameras image sensor to catch a glimpse of the scene. The aperture that you set impacts the size of that hole. The larger the hole the more light that gets in – the smaller the hole the less light.

Aperture is measured in 'f-stops'. You'll often see them referred to as f/number – for example f/2.8, f/4, f/5.6,f/8,f/22 etc.

Moving from one f-stop to the next doubles or halves the size of the opening in your lens (and the amount of light getting through). Keep in mind that a change in shutter speed from one stop to the next doubles or halves the amount of light that gets in also – this means if you increase one and decrease the other you let the same amount of light in – very handy to keep in mind).

One thing that causes a lot of new photographers confusion is that large apertures (where lots of light gets through) are given small f/stop numbers and smaller apertures (where less light gets through) have larger f-stop numbers. So f/2.8 is in fact a much larger aperture than f/22. It seems the wrong way around when you first hear it but you'll get the hang of it.

Depth of Field and Aperture

Depth of Field (DOF) is that amount of your shot that will be in focus.

Aperture has a big impact upon depth of field. Large aperture (remember it's a smaller number) will decrease depth of field while small aperture (larger numbers) will give you larger depth of field.

Small (or shallow) depth of field means that only part of the image will be in focus and the rest will be fuzzy.

Large depth of field means that most of your image will be in focus whether it's close to your camera or far away.

The best way to get your head around aperture is to get your camera out and do some experimenting. Go outside and find a spot where you've got items close to you as well as far away and take a series of shots with different aperture settings from the smallest setting to the largest. You'll quickly see the impact that it can have and the usefulness of being able to control aperture.

Some styles of photography require large depths of field (and small Apertures)

For example in most landscape photography you'll see small aperture settings (large numbers) selected by photographers. This ensures that from the foreground to the horizon is relatively in focus.

On the other hand in portrait photography it can be very handy to have your subject perfectly in focus but to have a nice blurry background in order to ensure that your subject is the main focal point and that other elements in the shot are not distracting. In this case you'd choose a large aperture (small number) to ensure a shallow depth of field.

Macro photographers tend to be big users of large apertures to ensure that the element of their subject that they are focusing in on totally captures the attention of the viewer of their images while the rest of the image is completely thrown out of focus.

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Sutter Speed in Digital Photography

What is Shutter Speed?

Shutter speed is 'the amount of time that the shutter is open'.

In film photography it was the length of time that the film was exposed to the scene you're photographing and similarly in digital photography shutter speed is the length of time that your image sensor 'sees' the scene you're attempting to capture.

- **Shutter speed is measured in seconds** – or in most cases fractions of seconds. The bigger the denominator the faster the speed (ie 1/1000 is much faster than 1/30).
- **In most cases you'll probably be using shutter speeds of 1/60th of a second or faster**. This is because anything slower than this is very difficult to use without getting camera shake. Camera shake is when your camera is moving while the shutter is open and results in blur in your photos.
- **If you're using a slow shutter speed (anything slower than 1/60) you will need to either use a tripod** or some some type of image stabilization (more and more cameras are coming with this built in).
- **Shutter speeds available to you on your camera will usually double (approximately) with each setting.** This 'doubling' is handy to keep in mind as aperture settings also double the amount of light that is let in – as a result increasing shutter speed by one stop and decreasing aperture by one stop should give you similar exposure levels.
- **Some cameras also give you the option for very slow shutter speeds** that are not fractions of seconds but are measured in seconds (for example 1 second, 10 seconds, 30 seconds etc). These are used in very low light situations, when you're going after special effects and/or when you're trying to capture a lot of movement in a shot. Some cameras also give you the option to shoot in 'B' (or 'Bulb') mode. Bulb mode lets you keep the shutter open for as long as you hold it down.
- **When considering what shutter speed to use in an image you should always ask yourself whether anything in your scene is moving** and how you'd like to capture that movement. If there is movement in your scene you have

the choice of either freezing the movement (so it looks still) or letting the moving object intentionally blur (giving it a sense of movement).

- **To freeze movement in an image** you'll want to choose a fast shutter speed and to let the movement blur you'll want to choose a slower shutter speed. The actual speeds you should choose will vary depending upon the speed of the subject in your shot and how much you want it to be blurred.

- **Motion is not always bad**. I spoke to one digital camera owner last week who told me that he always used fast shutter speeds and couldn't understand why anyone would want motion in their images. There are times when motion is good. For example when you're taking a photo of a waterfall and want to show how fast the water is flowing, or when you're taking a shot of a racing car and want to give it a feeling of speed, or when you're taking a shot of a star scape and want to show how the stars move over a longer period of time. In all of these instances choosing a longer shutter speed will be the way to go. However in all of these cases you need to use a tripod or you'll run the risk of ruining the shots by adding camera movement (a different type of blur than motion blur).
- **Focal Length and Shutter Speed** - another thing to consider when choosing shutter speed is the focal length of the lens you're using. Longer focal lengths will accentuate the amount of camera shake you have and so you'll need to choose a faster shutter speed (unless you have image stabilization in your lens or camera). The 'rule' of thumb to use with focal length in non-image stabilized situations) is to choose a shutter speed with a denominator that is larger than the focal length of the lens. For example if you have a lens that is 50mm 1/60th is probably ok but if you have a 200mm lens you'll probably want to shoot at around 1/250.

Shutter Speed – Bringing it Together

Remember that thinking about Shutter Speed in isolation from the other two elements of the Exposure Triangle (aperture and ISO) is not really a good idea.

For example if you speed up your shutter speed one stop (for example from 1/125th to 1/250th) you're effectively letting half as much light into your camera. To compensate for this you'll probably need to increase your aperture one stop (for example from f16 to f11). The other alternative would be to choose a faster ISO rating (you might want to move from ISO 100 to ISO 400 for example).

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Aperture and Shutter Priority Modes

The two shooting modes are **Aperture Priority Mode** and **Shutter Priority Mode**.

A Quick Reviser

We're looked at how the three elements of the exposure triangle impact one another. This is particularly the case when it comes to aperture and shutter speeds. As you increase the size of your aperture (make the hole that you shoot through bigger) you let more light into your image sensor. As a result you will need a slower shutter speed. In the opposite way if you increase the length of time your shutter is open you decrease the necessary aperture that you'll need to get a well exposed shot.

Priority Modes

Aperture and Shutter Priority modes are really semi-manual (or semi-automatic) modes. They give you some control over your settings but also ensure you have a well exposed image by the camera making some of the decisions on settings. Let me explain each separately:

Aperture Priority Mode

(often it has a symbol of 'A' or Av' to indicate it's selected)

In this mode you as the photographer sets the aperture that you wish to use and the camera makes a decision about what shutter speed is appropriate in the conditions that you're shooting in.

When would you use Aperture Priority Mode? – Use Aperture Priority Mode when you are attempting to have some control over the Depth of Field (DOF)

If you want a shallow DOF then select a large aperture (for example f/1.4 and let the camera choose an appropriate shutter speed. If they wanted an image with everything in focus then pick a smaller aperture (for example f/22) and let the camera choose an appropriate shutter speed (generally a longer one).

When choosing an Aperture keep in mind that the camera will be choosing faster or longer shutter speeds and that there comes a point where shutter speeds get too long to continue to hand hold your camera (usually around 1/60). Once you get much slower than this level you'll need to consider using a tripod. Also if you're photographing a moving subject your shutter speed will impact how it's captured and a slow shutter speed will mean your subject will be blurred).

Shutter Priority Mode (often has a symbol of Tv or S)

In this mode you as the photographer choose the shutter speed that you wish to shoot at and let the camera make a decision about what aperture to select to give a well exposed shot.

When would you use Shutter Priority Mode? – Use shutter priority mode when you are trying to control the amount of movement is showing in your image.

For example if they want to photograph a racing car but want to completely freeze it so there is no motion blur they'd choose a fast shutter speed (say at 1/2000) and the camera would take into consideration how much light there was available and set an appropriate aperture.

If instead you wanted to photograph the car but have some motion blur to illustrate how fast the car is moving you might like to choose a slower shutter speed (1/125) and the camera would choose a smaller aperture as a result.

Keep in mind that as the camera chooses different apertures it will impact the Depth of Field in your image. This means if you choose a fast shutter speed to freeze your fast moving object that it'll have a narrower DOF.

Practice

As you can see – Shutter and Aperture Priority modes do give you more control over your images but they do take a little practice to get used to.

As you use them you need to not only think about the setting that YOU set but also keep an eye on the setting that the camera selects for you.

I find that when shooting in Av or Tv modes that it's often best to bracket your shots and shoot a number of images of the same subject (where you have time) at different settings. This will ensure that you're likely to get at least one shot which meets your need.

The best way to learn about Shutter priority and Aperture priority modes is to grab your camera, to head out with it and to experiment. Switch to Av or Tv and start playing with the different settings (taking lots of shots as you go). Particularly watch how the camera makes changes to compensate for your selections and what impact it has upon the shots that you take.

In Aperture Priority Mode take some shots at the largest aperture you can (small numbers) and see how it blurs the background (but also increases the shutter speed) and then head to the other end of the spectrum to take some shots at the smallest aperture you can (large numbers) to see how it keeps more of your image in focus.

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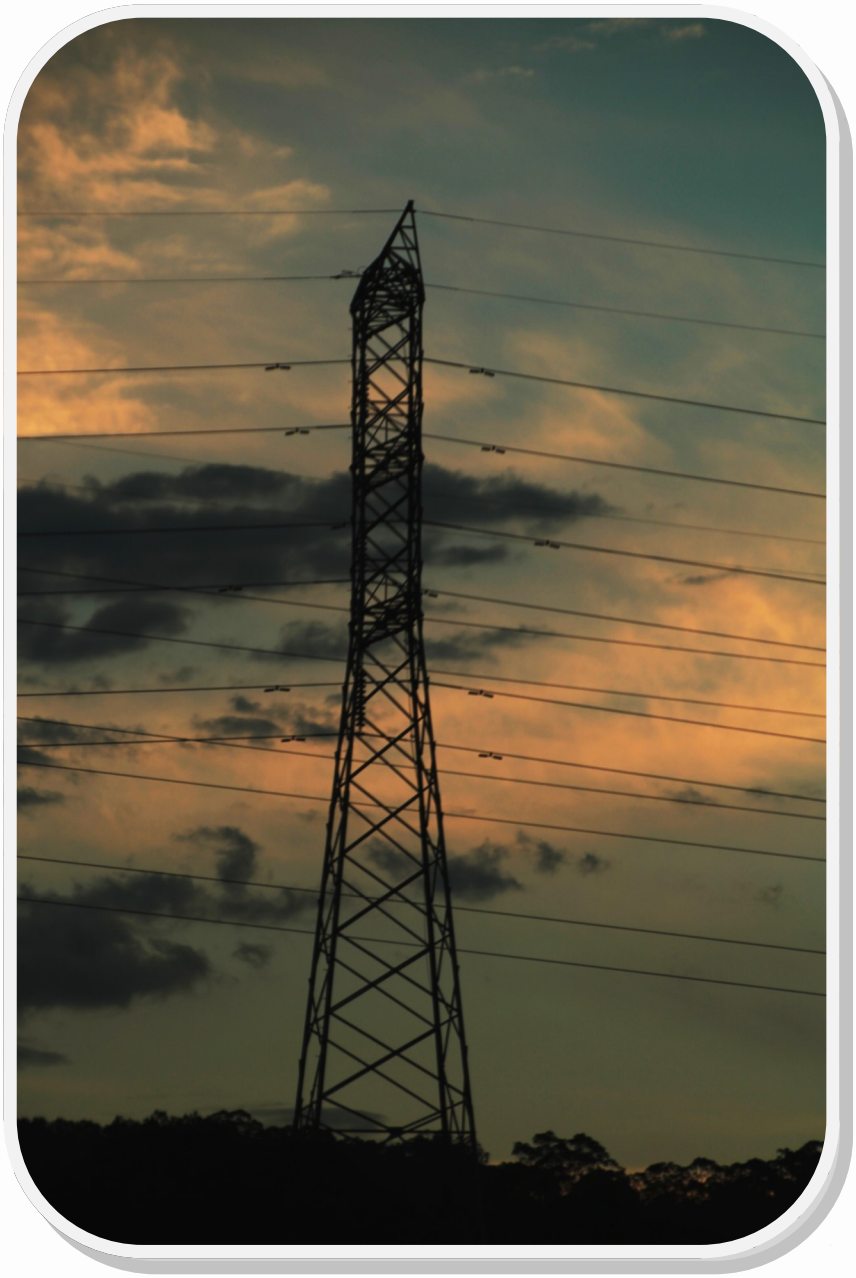
In Shutter Priority Mode play with fast and slow shutter speeds and see how that impacts DOF.

Don't be frustrated if your initial shots are not what you'd expect – it takes practice to get your head around these modes. But keep in mind that when you do master them you'll have a lot more creative control over your images.



Let me ask you a question, Have you read your Camera Manual. NO!

You do not have a manual, No excuse, as you can Google your camera and download a manual from the internet.

There is no way you can learn to control your camera for ISO, Aperture and Shutter speed if you do not know how to do so.

If you wish to be in one of Norms Tutorials then you need to know this before you turn up for class.

We are bringing back the meat raffle at our next meeting night so bring your money with you.

HELP PLEASE…….. Has any of our members an old Lap top or Tower that they are not using anymore that can be given to one of our Junior members that has a great need of one so they can work on their photos.

If so please see Norm.

NOTE!!!

Just a gentle reminder to all that there is a $2.00 Attendance fee each meeting night to cover the hall hire and the supper. Please pay this when you pick up your Name badge.

For Info or Contact - dcc.newsletter.editor@gmail.com