Understanding your DSLR

Welcome to module 1

In this first module we will show you how a camera works and how to find the important settings that you will be using during the course.

The word ‘photography’ means drawing with light and comes from the ancient Greek words *Photo* meaning light and *Graph* meaning drawing. Your camera is basically a light tight box which allows light to enter through the lens, where the image is created and recorded on the camera sensor.

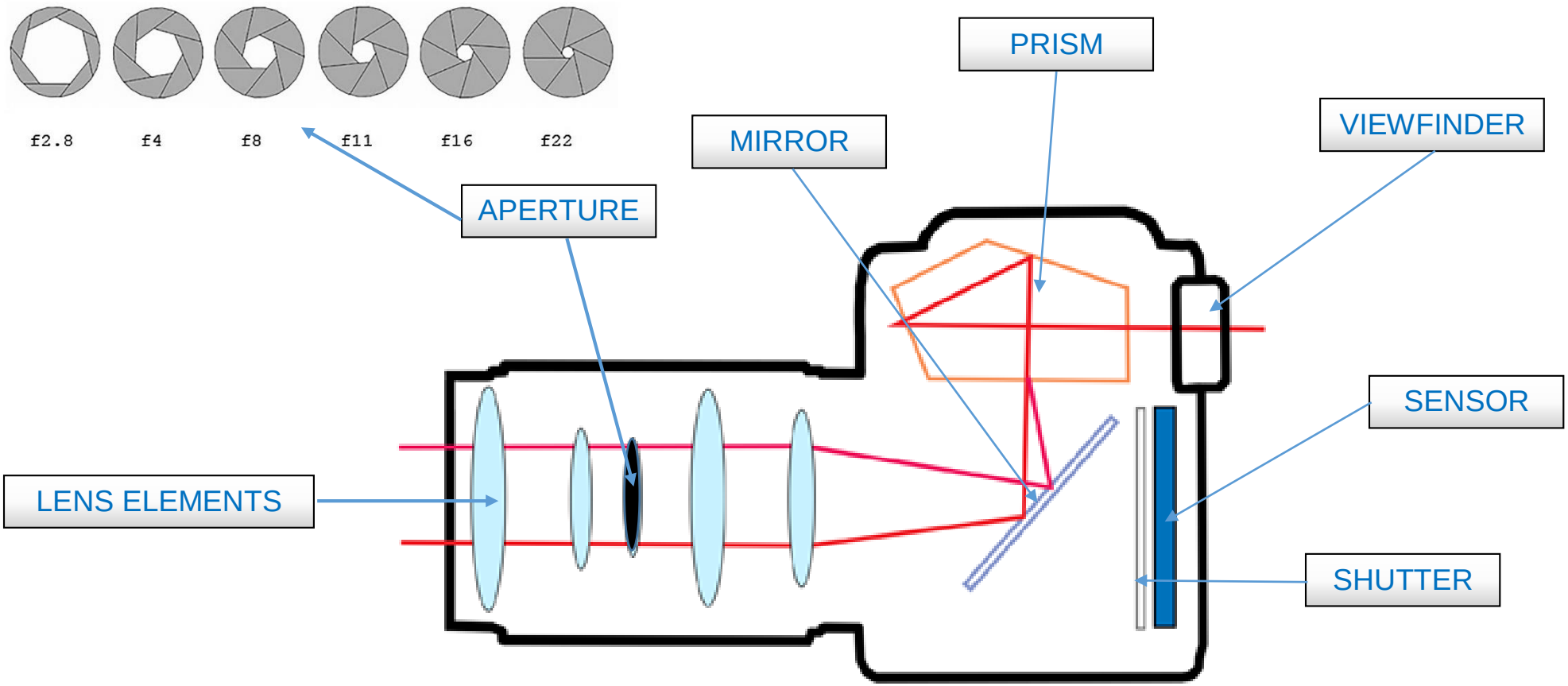
DSLR stands for **Digital Single Lens Reflex,** this means we use the lens on the camera to both capture an image and compose the image we want to take in the viewfinder. Reflex refers to the way in which the image is reflected via the mirror and prism in the top of the camera body into the viewfinder.

There are two settings that affect the way light enters the camera, the aperture size and the shutter speed. If we use the automatic mode the camera decides on the size of the aperture and the length of time the shutter remains open to allow the image to be recorded on to the sensor. This generally results in a well exposed image although rarely pays attention to the type of image we are taking. This may result in a fast moving subject being blurred or a landscape image being unsharp in the background. An image that is too bright is said to be overexposed and an image that is too dark is said to be underexposed.

To become creative and proficient photographers and achieve good results we need to firstly understand the effect these settings have on our images. Shutter speed is used to freeze or show movement in an image and the aperture controls depth of field, which in simple terms is whether the background is sharp or blurred. During this course we will explain how to use shutter speed and aperture to create images that you will be proud to display.

Understanding your DSLR

To start with we are going to show you the basic mechanics of a DSLR camera. When we push the shutter release button to take a shot we hear mechanical noise from inside the camera body. Basically a few things happen simultaneously, the aperture in the lens closes down to the size we have chosen, the mirror inside the camera which reflects the image up into the viewfinder via the prism lifts up to allow the image to travel towards the back of the camera where the shutter opens and the image is recorded by the sensor. The red line in the diagram below represents light.



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The effect of the aperture in our images

The image on the right shows a large depth of field, everything is sharp from the foreground through to the background. This image was taken with a small hole in the aperture f16. This will become much clearer as you progress through the course.

The image on the left shows a small depth of field, the owl is sharp and the background is blurred. This image was taken with a large hole in the aperture f5.6. Again this will become much clearer as you progress through the course.

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The effect of the shutter speed in our images

The image on the right was taken with a slow shutter speed 1/60th second and shows the movement of the helicopter rotors.

The image on the left was taken with a fast shutter speed 1/1000th second and freezes the movement of the helicopter rotors.

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The Correct Exposure

The correct exposure is when the image is not overexposed or underexposed. Too bright or too dark.

Think of the sensor on your camera as a glass, we need to fill it to the brim to get a correctly exposed image. When the sensor is only half full of light our image will be underexposed, when it is overflowing with light it's overexposed.

With the aperture in the lens set to a large hole there is lots of light entering the camera via the lens so the shutter only needs to open for a short period of time to fill up the sensor with light.

When we select a small hole in the aperture, light is entering the camera at a much slower rate so the shutter will have to remain open for a longer period in order to fill up the sensor with light.

Under Exposed

Correctly Exposed

Over Exposed

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Camera Familiarisation - Finding Your Settings

In this section we will show you where all the camera controls that you need to adjust are located. You may find it useful if you have your camera with you while reading this section. Don't worry about which settings you need to set to capture an image at this stage, we just want you to be able to find the important controls on your camera amongst the hundreds of settings in the menu which are all ancillary to these! We will show you where they are located on this camera but you may find it easier if you take a look in your camera manual to locate and adjust them in your particular model. We will explain White Balance, ISO and Exposure Compensation in the next module. You will need to be able to find and adjust the following on your camera:-

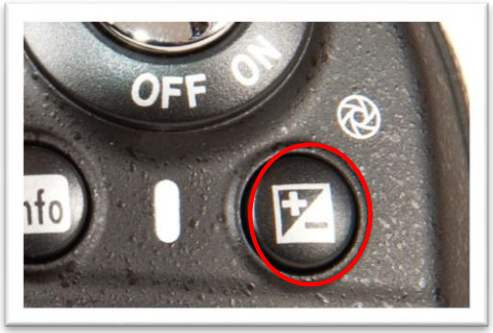
White Balance – ISO –Shutter Speed – Aperture – Exposure Compensation

WHITE BALANCE

ISO

CANON MODE DIAL

NIKON MODE DIAL



EXPOSURE COMPENSATION

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Photo Training

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Camera Familiarisation - Adjusting Your Settings

Most of the camera settings can be adjusted by holding down the appropriate button and turning the wheel on the back of the camera as indicated by the arrow below. This may be different on some DSLR and bridge camera models so check your handbook for specific instructions. Once you have looked at the example below try and adjust your White Balance and ISO using this method

ADJUSTMENT WHEEL

COMMAND DIAL

EXAMPLE

To adjust the white balance on this camera, hold down the WB button and the white balance adjustment options will appear on the rear screen, as you can see from the example below. In this example the camera is set to 'Auto' white balance. To change to one of the other options just turn the adjustment wheel/command dial whilst holding down the WB button and you will see the yellow highlighted area move to the option you have selected.

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Camera Familiarisation – Shooting Mode Selection Dial

The shooting mode selection dial on our camera allows us to select various shooting modes. The most important shooting modes that you will use from now on are ‘S’, ‘A’ and ‘M’ on Nikon, Sony, Olympus and Panasonic models or ‘Tv’, ‘Av’ or ‘M’ on Canon and Pentax models. The remainder of the options are automatic settings in which you have absolutely no control of the camera!

SHOOTING MODE DIAL

NIKON

SHOOTING MODE DIAL

CANON

‘M’ Manual Mode

Manual - In this mode we select both the shutter speed and the aperture.

S and Tv Mode

Shutter Priority or Time Value. In this mode we select the camera shutter speed and the camera will automatically select the appropriate aperture.

A and Av mode

Aperture Priority or Aperture Value. In this mode we select the aperture size and the camera will automatically select the appropriate shutter speed.

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Camera Familiarisation – How to Select Shutter Speed

- Switch your camera on and set the shooting mode selection dial to S or Tv, depending on your camera type.
- Remember in this mode we select our shutter speed and the camera will automatically select our aperture.
- Press the shutter release button (the button we press to take an image) halfway down, this will fire up the display and metering system in the camera.
- Now look at your display on the back of your camera it should look something like the one below but the appearance does vary between manufacturers. This is a Canon display and shows the camera is in Tv mode, shutter priority and the shutter speed, highlighted in red, is set to 1/125 second. The camera has automatically selected an aperture of F5.6
- Now turn your command dial and you will see the shutter speed changes.

TASK 1

See what range of shutter speeds are available on your camera from the slowest to the fastest. On most DSLR's the fastest is 1/4000th of a second and the slowest is 30 seconds. When you see the inch sign (") appear this means you are selecting shutter speeds of whole seconds, e.g. 10" means the shutter will stay open for 10 seconds.

TASK 2

Set your camera to a shutter speed of 1/60th of a second.

This is the minimum shutter speed at which you can hand hold the camera!

When you want to use shutter speeds slower than 1/60th second then you will need to use a tripod to avoid camera shake.

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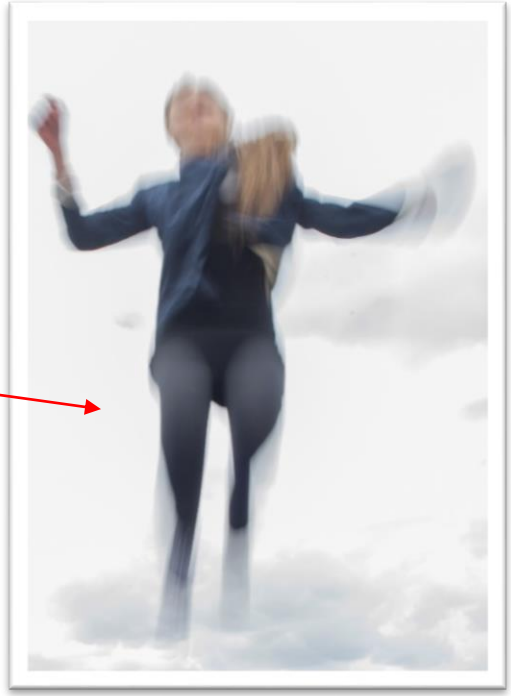
Camera Familiarisation – Understanding Shutter Speed

If we are taking a shot of a child bouncing up and down on a trampoline and we want to freeze the child in the air we need to use a fast shutter speed which means the shutter is only open for a very short period of time. A shutter speed of 1/1000th second will do this. If we choose a shutter speed of 1/60 second, which is a slower shutter speed, then the child would be blurred as its moving. At 1/60th second we can take images of stationary objects, as soon as that object starts to move we need to increase our shutter speed to freeze any movement. 1/60 second is the minimum shutter speed at which we can hand hold the camera. If the shutter speed is allowed to drop below 1/60s we will get camera shake so in these circumstances we need to use a tripod bearing in mind that if there is anything moving in the image then it will blur at this speed. There is much more on shutter speed in the next module module.

The image on the left was taken in shutter - priority mode with a shutter speed of 1/60th second. As you can clearly see, the subject is blurred as 1/60 second is not a fast enough shutter speed to freeze her movement.



The image on the right was taken in shutter - priority mode with a shutter speed of 1/1000th second. As you can clearly see, the subject is frozen in the air.

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Camera Familiarisation – Holding Your Camera

You need to hold the camera as steady as possible. Hold the camera's handgrip in your right hand and cradle the camera body or lens with your left. Keep your elbows propped lightly against your torso for support and place one foot half a pace ahead of the other to keep your upper body stable. This is a steadier position than holding the camera away from your face and will eliminate the chance of camera shake affecting your image.

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Camera Familiarisation – Adjusting Your Viewfinder

It is important that we can see both the image we are about to take and also the camera settings clearly when looking through the viewfinder. We can adjust the viewfinder to our eyesight by turning the diopter adjustment wheel or slider. Instructions on how to adjust this will be found in your camera manual. We find that the best way to carry out this adjustment is to switch the camera on and set the mode dial to shutter priority, S or Tv. Half push your shutter release button to fire up the camera metering system you will now see your shutter speed and aperture settings displayed in the bottom of your viewfinder. While these are displayed adjust the diopter wheel until the numbers become crisp and clear and are easy to read. If you wear glasses or contact lenses remember that the adjustment will only apply to what you are wearing when carrying out the adjustment.

Viewfinder diopter adjustment wheel

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Recommended Accessories

Tripod

A good tripod is a fundamental part of any photographer's kit, and is well worth its weight in gold - especially since tripods are getting lighter all the time. A quality tripod can provide you with the sharpest possible pictures from your expensive camera and lenses, and allow you get those shots you've only dreamed of - giving you time to think more carefully about composition. In fact it will probably improve your hit rate more than any other piece of equipment you use. The old saying "you get what you pay for" could not be truer than when it comes to tripods. You can definitely find cheaper products but be aware, you will be sorry. A cheap tripod will move in a slight breeze and cause unsharpness in your images. You will need a tripod later on in the course when taking images at slow shutter speeds, below 1/60th second. Please contact us if you require assistance with tripods we recommend starting at around £60.00.

Cable Release

A cable release is used in conjunction with a tripod and prevents movement of the camera when pressing the shutter release button and therefore aids the capture of pin sharp images. We recommend that you purchase the corded type as shown in the image as the wireless versions can be a bit temperamental. Check the accessories page of your handbook for the one that your camera manufacturer recommends for your particular model.

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Camera Familiarisation – Summary Module 1

At this point you should be able to:-

- Understand the basic mechanics of a DSLR and be able to identify the various parts on a diagram
- Understand the effect of shutter speed
- Understand the effect of the aperture in relation to depth of field
- Understand shutter priority mode S or Tv
- Be able to adjust shutter speed on your camera
- Understand the minimum shutter speed required for hand holding the camera
- Be able to adjust ISO (Detailed information on using this comes in the next module
- Be able to adjust White Balance
- Be able to adjust Exposure Compensation, ensuring at this stage that it is set to ‘0’
- Understand how to hold your camera correctly
- Understand how to adjust your viewfinder to your eyesight
- Understand what an overexposed image is
- Understand what an underexposed image is
- Understand the use of a tripod and a cable release