



Module 4: **Shutter Speed**

Module overview

In this module you'll learn about the following:

- Introduction to Shutter Speed
- Capturing Action
- Motion Blur and Camera Shake
- Using Shutter Speed Creatively
- Shutter Speed Tips



“Photography takes an instant out of time, altering life by holding it still.”

Dorothea Lange
(1895 – 1965)

Tip: if your camera has bulb mode but you're not sure how to find it, then it will either be on the mode dial (look for B). If it is not on the dial, then set your camera to either manual mode or shutter priority mode and keep setting the shutter speed to its highest setting; after 30s or 60s, you will see a B on the display.

4.1 Introduction to Shutter Speed

When you press the shutter button on your camera, the shutter opens and exposes the sensor to light. If you're using auto mode, the camera will calculate how long the shutter is open. There are two ways to take control of your shutter speed; the first is to switch to manual mode (M on the mode dial) or you can use shutter priority mode (S or TV on the mode dial, depending on which camera you're using).



The different speeds are measured in seconds, including fractions of a second, which are the most commonly used speeds. The fastest shutter speed for most DSLR cameras is 1/1000s (which is one-thousandth of a second) and the slowest is usually 30 seconds, although many have a setting known as bulb mode. This allows you to keep the shutter open for as long as you want; however, if you want to use this mode, you will need a tripod and cable release to be able to keep the shutter open.

As with aperture and ISO, setting your shutter speed is all about light and how much is available. The most important thing to consider when setting your shutter speed is whether you are trying to capture movement. If something is moving quickly and you want to freeze that action, you will have to use a fast speed.



Here's what happens when you get the settings wrong. Using an aperture of f/2.7 and 200 ISO, the shutter speed in this situation was half a second, which is too slow to shoot hand-held at night. What's the solution to this problem: use a higher ISO setting to reduce the shutter speed.

Tip: if you want the action to be perfectly frozen, then use the fastest shutter speed possible, which will depend on your aperture and ISO settings.

4.2 Capturing Action

If you're shooting something or someone that is moving and you want freeze that action, you'll have to use a shutter speed between 1/125s and 1/1000s. This will depend on how fast your subject is moving; obviously the faster the movement is, the faster your shutter speed will need to be.

In the examples below, a shutter speed of 1/400s was used; as you can see, this freezes the action with no motion blur. As the daylight was reasonably good and the aperture was set to f/4.5, it was possible to capture these images with the ISO set to 100.



When trying to capture a fast-moving subject using a fast shutter speed, it can be advantageous to apply continuous shooting mode, also called burst mode. To find this on your camera, you might need to consult the manual; you can also use sport mode.

By keeping the shutter pressed down in this mode, the camera will shoot a series of continuous images; how many will depend on the camera. The camera used for these images had a maximum range of six frames per second.

Tip: to use faster shutter speeds, you usually have to have to use a larger aperture. This can create issues with focusing, as you'll be dealing with a lesser depth of field and sometimes the autofocus will select the wrong area to focus on.

Try experimenting with your AF (autofocus) points setting. It may be preferable to have a single autofocus point in the centre of the frame. However, this will depend on what you're shooting.

This can allow you to capture more images and give you more choice when it comes to selecting images; or if you're feeling more adventurous (and if you use a tripod), you can create something like this.



With some basic Photoshop (or other editing software), it possible to combine action shots into one image.

4.3 Motion Blur and Camera Shake

When using slower shutter speeds, two things can occur – camera shake and motion blur. Although the effects can look similar, they are not the same. Motion blur is not always a bad thing (more on that later), but camera shake is, and sometimes even the tiniest amount of movement from your camera can ruin a photograph.

Camera Shake

This is caused by many things, but usually it's a result of using a slower shutter speed when the camera is not in a fixed position. There are many ways to reduce camera shake: using a faster shutter speed, using a tripod or improving your hand-held camera technique.

Tip: for fast-moving objects, such as cars, motorbikes and trains, a shutter speed of 1/1000s is recommended to freeze the action.



A hand-held shot taken at a 1/13s (one-thirteenth of a second): the focal length is extended to its maximum zoom, which can exaggerate even the slightest movement.



Here's the same shot, using the same setting but this time using a tripod. With the camera now in a fixed and steady position, the camera shake has been eliminated.

Even when using a tripod, it's a good idea to use either a remote shutter release or a shutter release cable. With slower shutter speeds, even the act of pressing the shutter can cause the camera to move slightly.

Tip: many professional photographers will carry a beanbag – why?

Because if you need to steady your camera quickly on an uneven surface, then a beanbag is perfect. Simply place the bag on the surface, then place the camera on the bag, press down slightly and your camera will be level.

Remember, not every problem has a high-tech solution and it's not uncommon for photographers to use home-made accessories.

Why spend large amounts of money on something, when you can make it for a fraction of the price?

Improving your hand-held technique will also help. Many people will naturally hold the camera with their elbows pointing outwards, especially when using the live view screen; this adds to the instability which causes camera shake.

In situations like this, it's better to use the viewfinder. Also, bring your elbows in and keep them tight against your sides, keep your forearms close to your chest, and hold the back part of the lens with your left hand. If there's a wall or structure you can lean on, this will also help to stabilise the camera and minimise camera shake.

Other techniques are to get down on one knee and then rest the camera on your other knee or you can place the camera on a flat surface (if one is available).

Motion Blur

Your camera can be solidly fixed in position and you take your shot using a shutter release; the camera has not moved, yet the image looks blurry.



In this instance, the blur is caused by a breeze moving the leaves. This is motion blur, which means your shutter speed is too slow.

Tip: if you're shooting hand-held, take a breath before you release the shutter, hold it, press the shutter and then breathe out.

Sometimes the simple act of breathing can cause camera shake.

Here's the same shot taken with a faster shutter speed



In the magnified version, we can see how much difference a slight breeze can make.



1/20 second

1.5 seconds

You might have drawn the following conclusions: camera shake should be avoided, motion blur should be avoided. For camera shake, that's true; but for motion blur, that's not always the case. In fact, when used correctly and creatively, motion blur can add something to a photograph.

Tip: many landscape photographers use slower shutter speeds when photographing rivers, streams and waterfalls. This creates a motion blur with the water, which is usually a more appealing look.

4.4 Using Shutter Speed Creatively

This photograph was taken using a shutter speed of 1/6s (one-sixth of a second); and while it was perfect to capture the relative slow movement of the two street food vendors, it was technically too slow to freeze the motorbike driver.



If you had shot this image, would your first thought be: “I have motion blur, I need to use a faster shutter speed”?

Now, imagine that this photograph had been shot at 1/250s or 1/400s; the motorbike rider would probably be frozen (depending on how fast he was travelling), but would it make the image better?

That’s a matter of personal preference, but in this photograph the motion blur gives a sense that the motorbike is moving at high speed when, in reality, he wasn’t going that fast. Added to the fact that he’s driving on the pavement, it creates the idea that a reckless motorbiker is speeding along the pavement with no regard for people’s safety. Had this action been frozen, it might have been difficult to tell if he was actually moving at all.

So remember that freezing action is not always the best choice. It can work well in the right situation, but if you want to convey a sense of movement, then motion blur can be very effective.

To get the full effect of motion blur, it’s helpful to use a tripod (unless you have an excellent hand-held technique) – because to get the full impact of the motion blurred subject, the rest of the image needs to be static.

Tip: monopods are very useful for shooting sporting events; because the camera can rotate from side to side more easily, you can track the action but also keep your camera stable.

How about using faster shutter speeds creatively?



Take a look at this example do you notice anything strange?

The two subjects jumped while retaining the look of people casually looking at a magazine; capturing them at the highest point of the jump (using a shutter speed of 1/400s) gives the impression that they are levitating. The shadows also reinforce this by showing that both people are off the ground.

As well as aperture, shutter speed can be used to alter completely the dynamics of a photograph. This is why taking control of the manual setting is so important, since it gives you the opportunity to create images that cannot be captured using auto mode.



4.5 Summary

- When the shutter opens, it exposes the sensor to light.
- The length of time the shutter is open for is called the shutter speed.
- Shutter speed is measured in seconds and fractions of seconds.
- Fast shutter speeds are needed to freeze action.
- Usually 1/125s is fine for action, but if your subject is travelling very fast, then you will need to increase it.
- Motion blur is not always a bad thing and can be used creatively.
- Camera shake is bad and should be avoided.
- For mid-range shutter speeds, a tripod is not always necessary but usually advisable.
- Look at the way you hold your camera; is there something you can do to improve it and achieve more stability?

Assessment 4

- 1) Which camera mode is used for very long exposures?
- 2) When using a shutter speed of 1/2s, do you need to use a tripod?
- 3) What is continuous shooting mode?
- 4) Give one example of when you would use a fast shutter speed?
- 5) Give one example of when you would use a slow shutter speed?
- 6) If you're shooting in low light, what can you do to increase shutter speed?
- 7) Can you control the aperture when using shutter priority mode?
- 8) If your subject is moving at high speed, what shutter speed would you use?
- 9) True or False? Motion blur should always be avoided.
- 10) Name one disadvantage of using fast shutters speed in low light?

4.7 Assignment

Using either shutter priority mode, sport mode or manual mode (or try all three), go out and shoot something that moves fast. It can be cars, motorbikes, trains, anything – as long as it's fast.

Use the continuous shooting mode and try tracking your subject while keeping your finger on the shutter; this will create a series of rapid-fire images that follow your subject on its trajectory.

Then switch to single shot mode and, without tracking, try to capture your subject as it enters the frame. This is more difficult than it sounds and in some cases (depending on the speed of your subject) the subject might have vanished from the frame before you even press the shutter. This will take several attempts and you might find yourself pressing the shutter earlier than you might have thought you would, in order to get the shot.

A tripod is not required for this assignment; but if you have one with you, try shooting at slower shutter speeds to create motion blur.