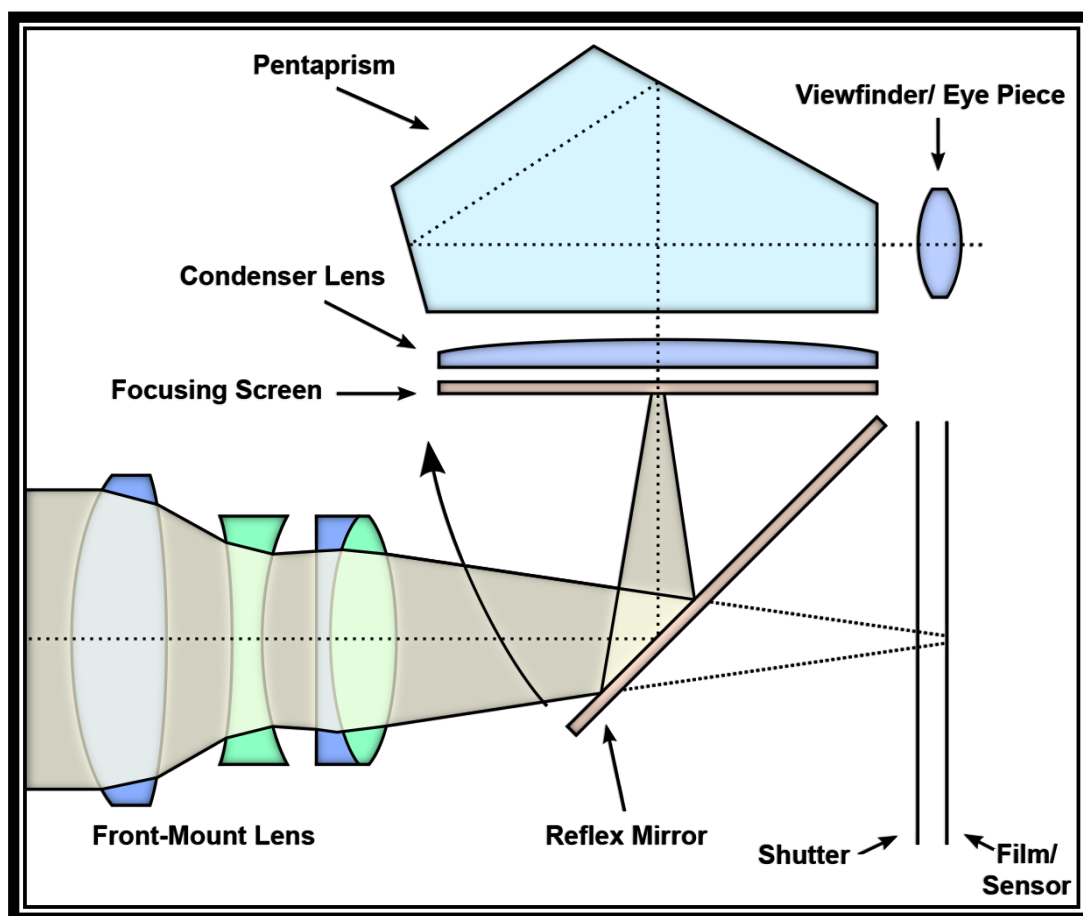


Topic 4 - The SLR

Learning Outcomes

This class focuses on SLRs and DSLRs. We will be going through an overview of what happens within an SLR and comparing it to other types of cameras. By the end of this video you will have a better understanding of the inner workings of an SLR and be able to label a diagram of the various parts within a camera.

Let us begin by taking a detailed look at the structure of an SLR.



1. **Lens elements:** This is simply an interface – mechanical and often also electrical – between a photographic camera body and a lens where light enters the camera.
2. **Reflex Mirror:** This is a *diagonal line* which acts as a mirror that redirects the light that comes in from the lens up towards the viewfinder which basically bends the light into your eyes so you can see the scene.

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3. **Reflex Mirror:** This is a *diagonal line* which acts as a mirror that redirects the light that comes in from the lens up towards the viewfinder which basically bends the light into your eyes so you can see the scene.
4. **Shutter:** The shutter opens, light is collected and falls on *film/ sensor* (DSLR).
5. **Film/ sensor:** This affects the characteristics of camera and how photos will look.
6. **Focusing screen:** Light is reflected here and it was more important back in the film days before the advent of autofocus.
7. **Condenser lens:** This helps to funnel the light into the *Pentaprism*.
8. **Pentaprism:** This optical glass reflects the light around and into your eye *piece*.
9. **Eye Piece:** This is what you look into to see the scene.



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There is a special icon on SLR cameras (film and digital) which is a circle with a line through it which indicates the location of film plane, or the sensor of the body. This is useful if you are making a pinhole camera or modifying the length of the lens of the camera body itself.

One of the problems with an SLR, a problem that doesn't really happen with a compound camera, is that it is not a closed system. For example, things are happening: the mirror needs to move up and out of the way for light to get through and eventually onto the sensor. When mirrors move up and out of the way and the sensor opens, it means that you can see the sensor on a digital SLR. It is indirectly exposed to the outside world when changing lens. Dust can get on the sensor which can cause problems. Maintenance involves cleaning the sensor of dust if you purchase an SLR. Dust will accumulate but it can be cleaned, to some extent, using software.

On the other hand, the sensor on film cameras recedes back to a film canister.



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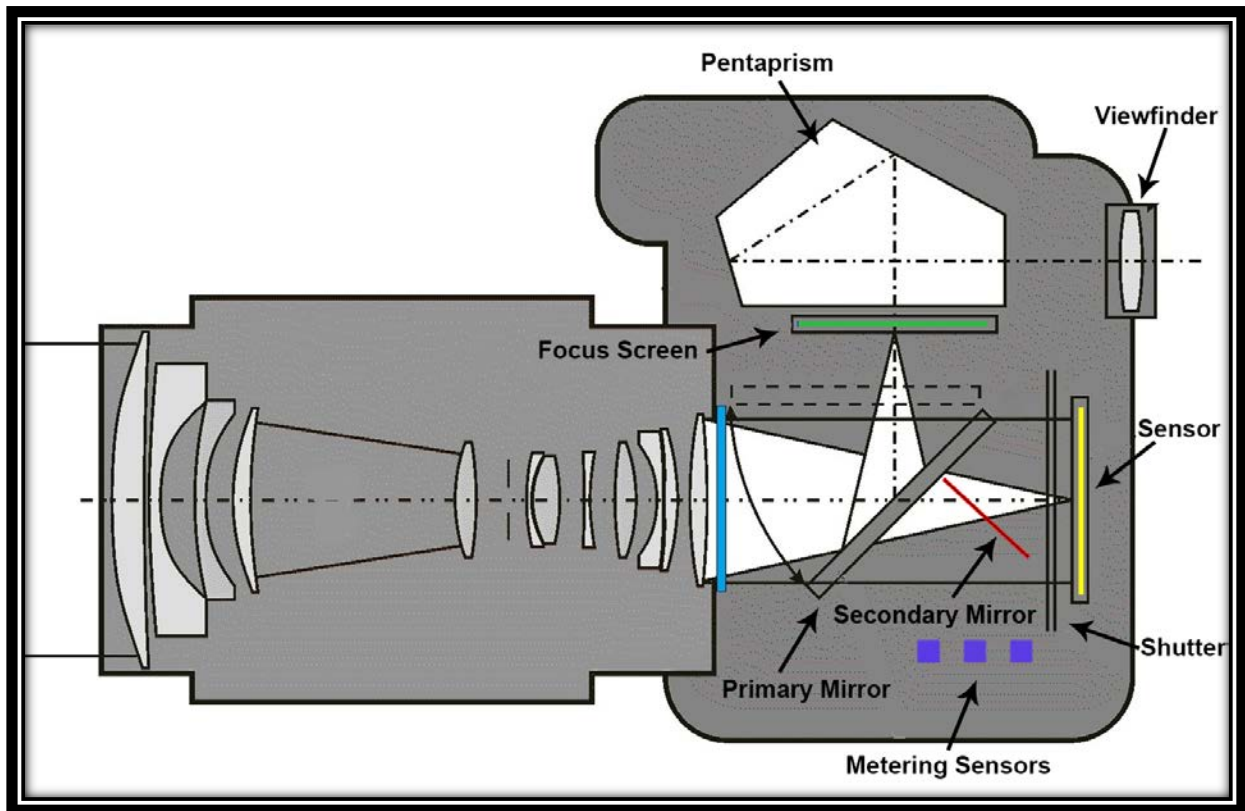
Dust falls on the filters on the sensor rather than falling on the sensor itself. Sensor brushes can be used to clean dust but do not use liquid of any kind on the sensor when cleaning. The 'Sensor clean' option on an SLR flicks open the mirror and there is a click that exposes the sensor.



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The Mirrors Within

Let us look at the mirrors within the camera:



The mirror in front of the sensor needs to move up and out of the way to expose the sensor. There is also a secondary mirror behind the primary mirror.

The Primary Mirror is responsible for sending light to the pentaprism and into the viewfinder. It is slightly transparent, meaning that light goes through.

The Secondary Mirror reflects light down which allows us to get exposure or to do autofocus.

Below this box of mirrors are sensors that the camera uses to determine metering to properly capture exposure and autofocus.



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The DSLR

So, what is a DSLR if all of that refers to an SLR? We have already said that an SLR stands for Single Lens Reflex. The D represents Digital.



These DSLR cameras will always have a viewfinder or a Liquid Crystal Display, which is also called a LCD screen. Sometimes these cameras have both a viewfinder and a LCD screen.



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Some cameras will have a Hot Shoe which is useful when adding an external flash.

Within the DSLR camera, the process involves the passing of light through the camera lens, hitting the mirror and bouncing through the pentaprism and coming out through the viewfinder.

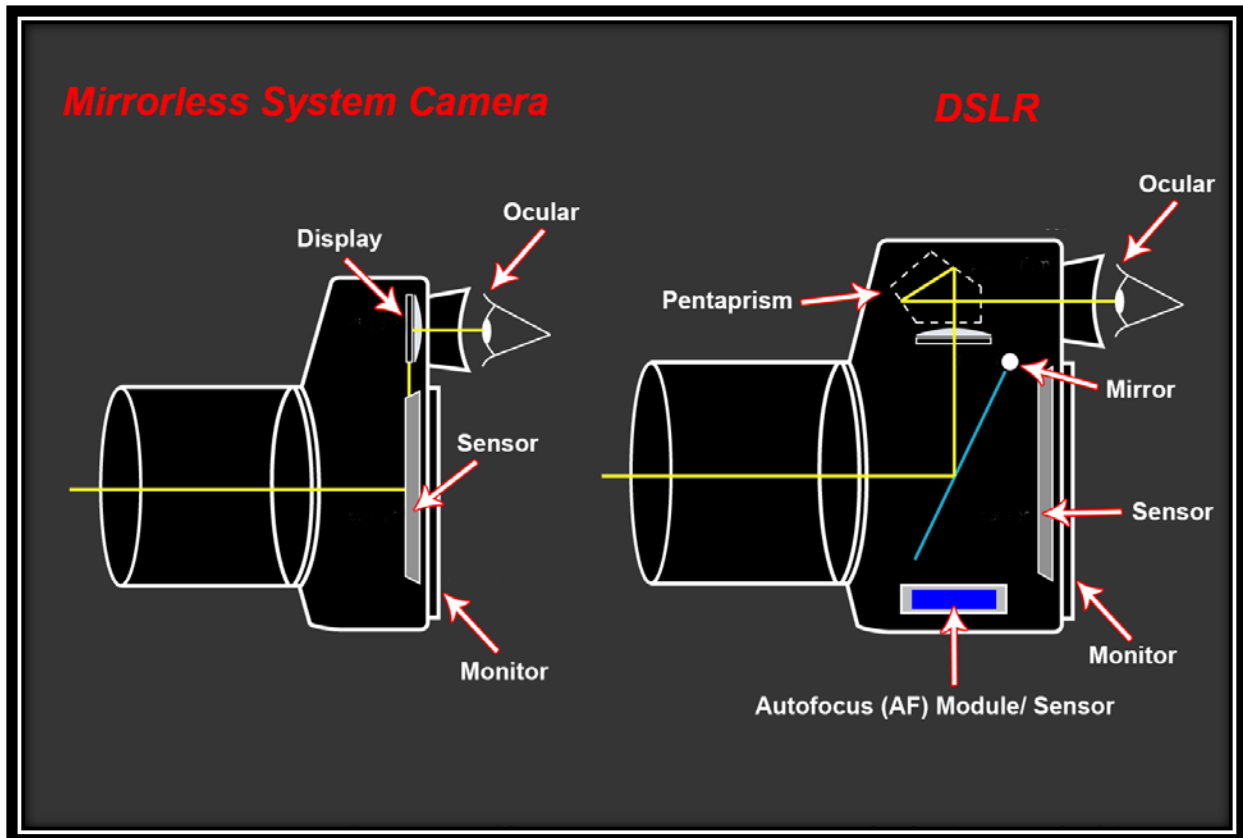
The single lens refers to the fact that the lenses are interchangeable. This is key when talking about prime lenses, which we will get to in later topics.



The Reflex aspect refers to when we take the photograph. When we take the shot, the mirror opens up, light passes through it and reaches the camera's sensor.



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Mirrorless and Bridge cameras do not have mirrors inside them. Instead, they have an Electronic Viewfinder (EVF). When light passes through the lens of these cameras, it goes straight to the imaging sensor. The sensor sends a signal to the viewfinder and we can see the image through this.

You will hear a lot about Full Frame vs Crop Sensor when browsing the market for your desired camera model. This conversation refers to the size of the sensor, therefore, they are referring to the size of the mirror box. We will be looking at this in more detail in other topics but it is important to remember that any camera is capable of taking a good photograph, it depends on how you use it.

What have we learned today? A Summary

We have learned what the main components are within a DSLR camera.

We've also learned about mirrorless and bridge cameras and the difference between these types of camera and DSLRs.

