C1M ACADEMY

# Introduction to Digital Photography

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## Why we do what we do:

Digital photography can be overwhelming. It can feel like there are too many buttons, too many things to remember, and no way to guarantee a good outcome. We're here to help. We focus on demystifying the camera, and we bend over backwards to be patient and kind. After all, no one can learn well when they're getting yelled at or made to feel like their questions aren't welcome. We keep all our courses and classes family-friendly, comfortable, and fun.

## Just the basics

- Lens - used to focus the scene
- Aperture - inside the lens
- Shutter - in the camera body
- Chip - behind the shutter; records the image
- Viewfinder - what you look through to see what the camera is seeing

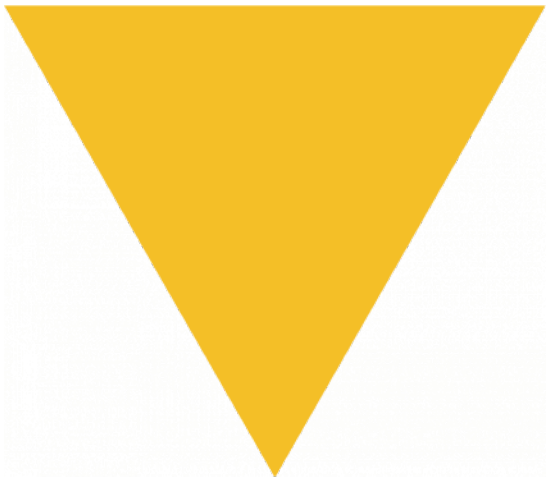
If you have a point and shoot or phone camera, rather than a DSLR, your "viewfinder" is usually a screen, which can be hard to see in bright daylight. The viewfinder on a DSLR allows you to see through the lens what is happening in front of the camera, and works better, even in bright daylight.

If you have a DSLR camera, you will be able to remove the lens. When you put a lens on, make sure you hear the click that indicates that the lens is properly seated. If you don't hear a click, you may hear a crash, instead, as your lens plummets to the ground. That is a sound you definitely want to avoid.

It's also important to note that while the lens is off of your camera, dust could get into either the lens or the camera body. When changing lenses, it's best to be as swift as you can, while still being careful. If dust does get into your lens or camera body, you can try using a bulb puffer to blow it out. If that does not work, consult a professional. It will be worth it, trust me.

## The Exposure Triangle

Shutter
Light & Blurring
Class 2 in
Photography The Basics



Aperture
Light & Fuzziness
Class 3 in
Photography The Basics

ISO
Sensitivity & Noise
Class 4 in
Photography The Basics

The exposure triangle attempts to explain how the three systems of your camera - shutter, aperture, and ISO - work together to manage the light entering your camera. Shutter and aperture both control the light entering your camera. The shutter controls light by the length of time it's open. The aperture controls light by how wide it is opened.

The ISO is similar to the volume knob on your radio. The higher you turn it up, the more sensitive your camera will be to the light. But the more sensitivity, the higher the chance of noise in the shadowy areas of your image.

If this isn't making sense yet, don't worry. It will in the Photography The Basics course.

## The Shutter and Light

We've already said that the shutter controls light that enters the camera by the length of time it remains open. However, there is a risk: if your shutter is open for too long, you may get blurring in your image. In the example below, the blurring is obvious. This image was taken with a technique called panning, in which you move your camera along with a moving subject.

When you do it right, your subject will be relatively sharp, but the background will be blurry. Blurring is caused by motion of the camera while the shutter is open. Knowing that, you can probably understand why a faster shutter speed, which reduces the amount of time the shutter is open, can reduce blur. It limits the amount of time during which movement can occur.

## The Aperture and Light

The aperture controls the amount of light entering the camera by increasing or decreasing the size of the lens opening, similar to the way the pupil of your eye works.

If your camera's aperture is wide open, you will have a shallow depth of field. The subject will be sharp, but the background will be fuzzy. If you choose a smaller aperture, the background will be sharper. Sometimes, a nice soft background is desirable. In the image above, I think it works rather well.

It's important to note the difference between blurring and fuzziness. If you look back at the image of the skateboarder, you can see that there is a grain to the background. That is blur. In the image above, the background is generally soft, with no grain to it. Why is it important to know this? So that if your image isn't sharp, and you want it to be, you know whether it's the shutter or the aperture you need to adjust to fix it.

## ISO Sensitivity and Noise

ISO controls your camera's sensitivity to light. Higher sensitivity may also introduce noise into your photos.

When we talk about noise in an image, we mean this red and green speckling that can be seen on the house in the image above. You can see that completely dark areas, like the roof and the window frames, don't have much noise. Nor do the very bright areas, like the lights in the windows and outlining the house. It's the in between areas where your camera struggles when the ISO is high.

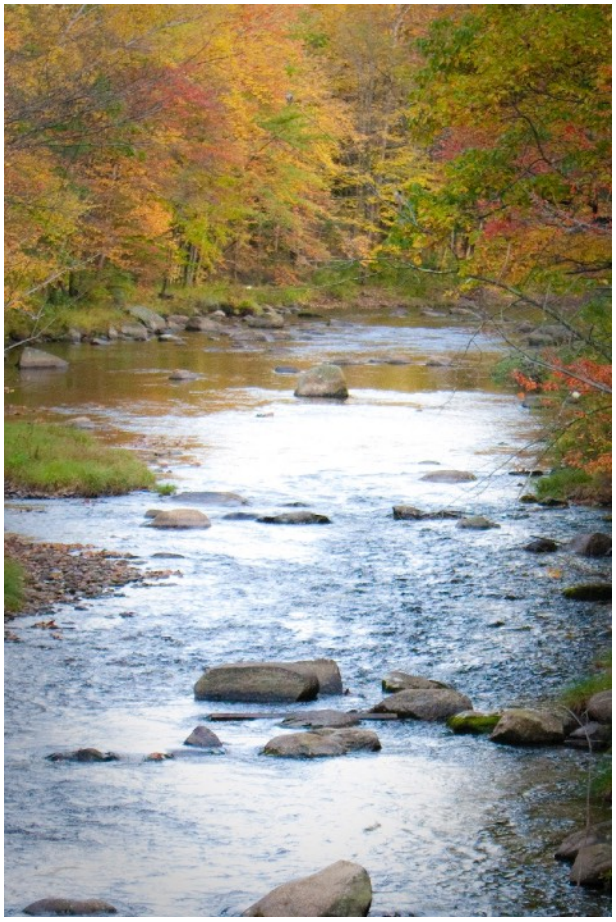
I often tell people that while, yes, noise is unsightly, it's not the end of the world. At least you got the shot. And it can sometimes be cleaned up a bit in editing. That's not true with blurring.

The quick overview of your camera's systems should be more than enough to get you started. If you want to dive in deeper, it might be good to know that in our Photography the Basics course, we spend a whole class on each of the camera's systems - what they do, how they do it, why you should care, and how to use them artistically.

## On Lenses …

Now that we've covered the camera body, let's talk a bit about lenses. When considering lenses, there are two factors to pay attention to: focal length and aperture. First, focal length. Focal length is expressed in millimeters. As you can see from the examples below, the larger the focal length, the larger the rocks. With the smaller focal length, the rocks are smaller, but much more of the scene fits into the frame.

50mm



200mm

You can purchase zoom lenses - lenses that are capable of a range of focal lengths - or prime lenses, whose focal lengths are fixed. A good rule of thumb is that zoom lenses that exceed a factor of 1:3 (in other words the largest focal length the lens is capable of is more than three times the smallest focal length it's capable of) will result in images of lower quality with more distortion. An 18-300mm lens might sound great, because it promises so much range. The images it produces, however, will be poor. This is because lenses can be optimized for only one focal length; every other focal length will be a compromise. This is why professionals typically choose prime lenses. That said, a 70-200mm lens is a coveted and widely used item.

f/2.8

f/8

The other factor to consider in choosing lenses is the aperture. Aperture is expressed as f/ followed by some number that tells you how wide the aperture opening will be. The larger the aperture, remember, the softer the background will be. As you may or may not have noticed from the examples above, the larger the aperture opening, the smaller the f/ number. Because a lens with an aperture of f/2.8 has a larger diameter, it is heavier and more expensive, and it will take a picture like the one on the left.

The more affordable lenses are usually smaller, more lightweight, and don't let in as much light as the larger ones. Lenses like this are what would typically come with your camera when you purchase it. They will take pictures more like the one on the right. Nice, but I personally prefer the background effect I get with the f/2.8. Depending on what you're hoping to get out of your camera, it can be worth investing a little bit more.

Generally speaking, the smaller the f/ number, the more the lens will cost.

## 5 Common Mistakes …

… that can lead to very frustrating results.

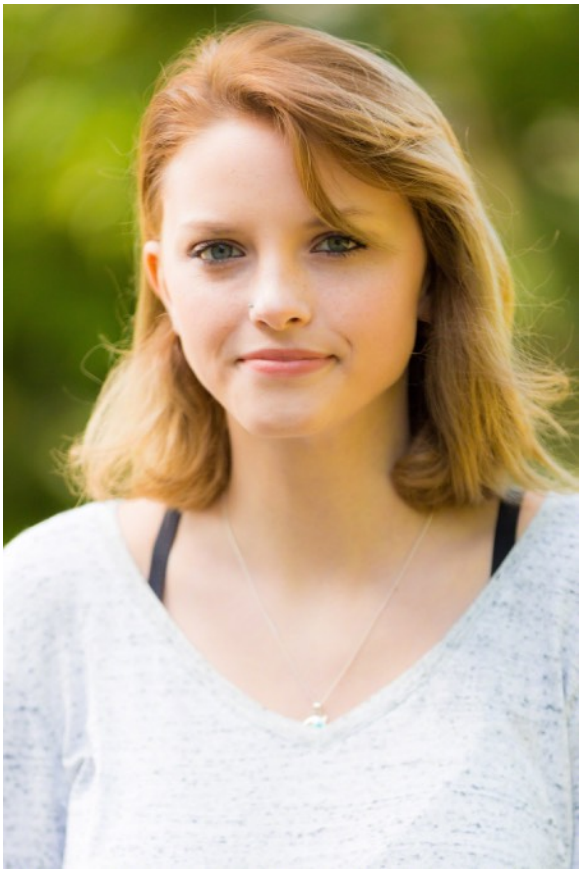
Your subject is standing in the sun.

It's important to remember that your eye and your camera do not see things in quite the same way. And putting your subject in the sun is the surest way to make this apparent. Your eye and brain work together to automatically compensate for the drastic contrast of light and shadow that happens when your subject is in sunlight. A camera will not, and you'll get results like the photo on the left. Unsightly, and almost impossible to correct after the fact.

If you're photographing outside on a sunny day, your results will be much better if you can place your subject in the shade. You'll still get the feeling of a light, bright outdoor setting, without shadows that obscure your subject's face.

You are standing too close to your subject.

It's good to remember that there is a difference between zooming in on a subject and getting closer to them.



We all want the subject of a photo to take up an appropriate amount of the frame. But, when you try to accomplish this by walking closer to your subject, you can end up with a "fish-eye" effect, as is seen in the image on the left. Getting too close to your subject produces distortion.

If, rather than physically moving closer to your subject, you use your camera's lens to zoom in, your subject will appear bigger in the frame without any warping of their features. Much nicer, don't you think?

Cutting off your subject's feet

Obviously - unless maybe you're selling shoes or manicure services - a subject's feet are not going to be the focal point of your image. That doesn't mean you should cut them off, though. As you can see, lack of attention to this small detail makes an otherwise very nice photo look, well, a little weird.

The same could be said for, say, a stray trash bag in the background of an image, or a branch protruding from an odd angle. Anything that could draw attention away from your subject should be avoided. And that means that you, as photographer, need to train your eye to attend to those things when you set up a shot. (Believe me, that takes practice, so don't beat yourself up if you don't get it right immediately. Just keep working at it.)

You frame your subject so that everything is in the middle

It is tempting to place your subject in the center of your frame. It even makes a kind of logical sense. Important things are meant to be “front and center” right? Well, not so fast …

Let’s take a minute to talk about composition, and how thoughtful compositional choices can make a dramatic difference in the impact a photo can have.

Here we have a beautiful shot of two nesting eagles hanging out in their tree. The tree itself is interesting and eye-catching, with its windblown look. The sky is kind of pretty, too, with the pattern of blue sky peeking through the clouds. There’s a lot going on for the eye to snag on and for the brain to process. And the eagles, relative to the size of the image, are a little small. But the photo is really about them, and not the tree or the sky, so it would be good to zero in on them a little.

Ah, this is nice. Now we have a photo of eagles in a wind-twisted tree, rather than a photo of a wind-twisted tree with eagles in it. See the difference? The eagles are the focus, now, and that's what you want, and they are no longer smack in the middle of the image, where they get a little lost.

But now, we have to talk about how the eye reads images. Just as when reading text, we "read" images from left to right as well. When you start at the left edge of this image, the first thing your eye encounters is the upright tree trunk. It's a visual barrier, actually, that your brain has to force your eye to skip over before it gets to the subject.

As we continue to "read," we see the beautiful, majestic creatures that we should be focusing one, and as we reach the right edge of the image - we find open sky. There's nothing to keep us from mentally falling out of the image. As viewers, we're now ready to move on to something else, just that quickly. There's nothing left to look at, and the viewer's brain is going to go seek more input elsewhere. So, what should we do to this image so it holds the viewer in thrall a little longer?

It’s amazing what you can accomplish just by flipping an image. (It can be so powerful a change, in fact, that I recommend if you have a photo you love that seems to be missing that “little something,” try flipping it.)

Let’s “read” the image now.
Starting from the left, we have this nice open space to funnel the eye further into the image, straight to the true subject: these gorgeous eagles. The branch arching above now frames the eagles, communicating the shelter the tree provides in this clearly wind-swept area - the wind-sweptness being demonstrated by the bowed and twisted branches.

And now, with the image flipped, the trunk provides a barrier to exit for the eye, rather than a barrier to entry. The eye is bounced back into the image, traveling the curving path of that arching branch again, and taking in more and more detail, really connecting with the majesty of these birds. And maybe connecting a little, too, with the sense that the eagle on the right is lecturing the eagle on the left. A mating pair perhaps, where Mr. Eagle has done something he shouldn’t have? See … now we have a story…

# Camera Accessories

Once you understand a little about  your camera's systems and have chosen the lens that best suits your shooting style and budget, you may think you're all ready to go. But, not quite. Without something to power your camera, and something to record your images on, you won't get far. That's why I want to spend a few minutes talking about SD cards and batteries.


Your camera kit should include a battery. Having a spare or two is always a good idea, though, and is not cost prohibitive. You should be able to find 2 batteries and a charger for less than $30 online. That's fairly cheap insurance against missing a photo because of a dead battery.

Spare batteries will say on them what camera they are compatible with. You can see on the label of this battery that it says "Fits CAN. LP-E6." An LP-E6 battery is what typically comes with some Canon cameras. (The CAN on the label stands for Canon, which you probably figured out.)

If you have a Canon DSLR and you pop the battery out, you may see that it has a voltage rating on the label of 7.2v. And you may note that the battery pictured above is 7.4v. While you do need to pay attention to these numbers, don't worry — this .2 volt difference is not enough to blow your camera up.

The other number you do want to make note of is the mAh number. mAh stands for milliamp hours. What's important to remember, though, is not what it stands for, but what it means to you. Generally speaking, the larger the mAh number, the longer your battery will last.

In addition to a battery, you'll need an SD card - at least one. Having spares of these isn't a bad idea, either. There are several things you'll need to be aware of when choosing SD cards.


Taking this example, first note the large red 64GB. This indicates how much data your SD card can hold. It is possible to get an SD card so large (in terms of storage capacity, not physical size) that it is not compatible with your camera.

If you aren't sure what size SD cards your camera can handle, you can find that information in the Technical Specifications section of your camera's manual. And if your manual isn't handy, you can always ask the Google.

Next, let's talk a bit  about the MB/s rating that's printed towards the upper left of this SD card. This one is 95MB/s. (That stands for megabits per second, if you're wondering.) What this number is telling you is how fast your SD card can read and write data.

You can find faster cards, but for digital photography, 40MB/s is plenty. Faster cards than that are intended for video work. It is possible to get a card that is not quite fast enough for what you're trying to do. If, for example, you have a slower card and take a series of photos in quick succession, you may find that the camera tells you to wait because it is writing to the card. That is a frustrating reason to miss a great shot, so it is worth paying some mind to getting an SD card with the right read/write speed for you.

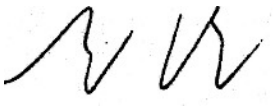
If you're concerned about how you will know whether you're getting a fast enough card, don't be. That information is on the card, too. See the white 10 inscribed within a C under the MB/s? That indicates that this is a Class 10 card. And that is fast enough for digital photography.

## Next Steps

I hope this information has helped you feel more confident about embarking on your digital photography journey. If you've enjoyed learning with us and would like to continue, we'd love to have you. Most of our students feel that starting with Photography the Basics is right for them. We run this course a few times per year, so there's sure to be a session that will fit your schedule. Look for Photography The Basics on our web site.

If you'd like to take a look to see what else we have to offer, please visit C1Macademy.com. There, you'll find all our classes, courses, and workshops and the most up to date scheduling information.

I love helping people,



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