



March 24, 2017

Hola everyone

The following is information for the LAPC Digital Infrared Class for those of you either considering the class or have already signed up. I want to make sure that you are prepared and ready for an intensive weekend with a converted digital infrared camera and processing the images. Be prepared for FULL days.

Required: A converted digital camera (I recommend LifePixel (please use this link <https://www.lifepixel.com/?ar=23> to order your camera conversion). If you are sending a DSLR, please send a lens with the camera for calibrating the focal plane or convert your camera to focus using the LCD screen. If you are sending a mirrorless camera then this is not important, as you have accurate focusing directly on the sensor.

The brand of camera is not important; you can use an older digital camera, sitting forlorn in your closet, which has been replaced by a newer model, or you can use a micro four-thirds camera. There are several conversion choices so I suggest that you read the site thoroughly to understand the differences. I use the Standard Conversion (I like the subtle tones) but if you prefer a different conversion that is your choice. More info later in this letter.

If you use LifePixel I would appreciate it if you would use this link <https://www.lifepixel.com/?ar=23> for ordering your camera as it is linked to my account. There are other companies that specialize in digital infrared conversion, such as Spencers Camera & Photo www.spencercamera.com

What camera should I use?

As I said in the blurb above, you can use convert almost any camera. However, older compact cameras are not advised. If you are considering using one of these please email me.

Honestly, mirrorless cameras are better for infrared because you focus on the sensor and therefore it is accurate. DSLRs are tuned to read visible light. Since mirrorless cameras use the same sensor for exposure and focus decisions as for the final image, it is more accurate with infrared light. I am currently primarily using a converted Olympus OM-D EM-1 and a Sony a7rII. However, I have used a Canon 5D Mark II and Mark III in the past; I love those cameras but the inaccuracy of focusing is a problem for me.

Refer to this webpage <https://www.lifepixel.com/camera-considerations>

I prefer if everyone photograph using RAW and not jpeg. I will be gearing the demonstrations and assignments for this format. If you are not used to RAW please become very familiar before you arrive. I will be demonstrating using **Adobe Lightroom CC** and occasionally Photoshop CC.

Please note that this workshop has a lot of classroom time dedicated to Infrared Processing. We do have two shooting sessions but honestly learning how to correctly process Infrared images is the keystone.

Please know how to make a Custom White balance for your camera before you arrive! This is critical. You MUST to learn how to do before the class. I suggest creating two to see which one you like – one off a white piece of paper in the sun and another off green foliage. Make sure you fill the frame with the paper and the trees. Some cameras can hold more than two Custom White Balances. And, there are a few rare cameras that are incapable of creating a Custom White Balance. If you are having a problem please contact Lifepixel or whoever converted your camera.

When you import your RAW image into Lightroom or open in Adobe Camera RAW you may see your image go from what it looked like through the viewfinder to solid magenta. That is because Adobe does not have the color temperature range to deal with a custom IR white balance. I will be teaching you how to deal with that using Adobe Profile Editor. For now, if you want to see the true IR white balance in Lightroom or Photoshop, then either use RAW + Jpg or just practice with Jpegs. If your RAW ending is .dng then you are fine.

What conversion should I make?

This is not a straightforward question to answer. There are number of factors to consider. If you look at the Lifepixel site you will see that there are a number of filter choices: Standard IR, Enhanced IR, Super Color IR, Super Blue IR, Full Spectrum IR, Deep BW IR, or Full Spectrum. I would suggest that you look at all the choices so that you have an idea of what they look like.

I have found that the Standard IR conversion is the most versatile for me but it is more muted than the other conversions. It is the one I started with and the one I still use the most. It is also the best choice if you do not have Photoshop, only Lightroom. The other color conversions require that you have Photoshop to swap Color Channels.

If you are adept in Photoshop, your next choice might be the Super Color IR. You will need Photoshop to swap the red and blue color channels (although it is not necessary to swap the channels for your image, it is a personal choice). If you look at the video on the Lifepixel site you will understand what I mean.

Another choice could be the Deep BW IR if you know you only want black & white images without any tones for all your digital infrared photographs. But then you are missing a lot of the fun of infrared.

You can also convert a camera to shoot both visible and IR, called Full Spectrum but it requires changing filters on your lenses. <https://www.lifepixel.com/infrared-photography-primer/ch4-internal-filters-for-modified-cameras-full-spectrum-uv-visible-ir-filter>

What lens should I bring?

This is an important consideration because not all lenses work on an infrared camera. LifePixel explains it best:

“A lens hot-spot is the most common problem encountered when shooting infrared light. They usually manifest in the form of a bright circle, sometimes in the shape of aperture leaves directly in the center of the image. The problem is exaggerated as you stop down (increase f stop number), with the spot becoming more prominent and defined.



Captured with a Canon T2i and 50mm 1.4 prime lens at f22.

Hot spots can be caused for a variety of reasons, the most common of which is the coating on the inside of the lens barrel being reflective in IR light. Another frequent reason is light interaction between the coatings of the lens elements. A less common reason is light interaction between the lens elements and the imaging sensor (usually the micro-lenses) in the camera. In this case using the lens on one camera model may have no hot spot issues and on another model there could be prominent hot spots.

Unfortunately, if your lens has this issue the only solution is to simply use a different lens altogether. Fortunately the majority of lenses don't have this problem or the problem is very minor and normally not visible in images. We are compiling a list of lenses we recommend people avoid as they have been proven to have hot spots with every model and lens copy:”

Canon Lenses	Nikon Lenses
50mm 1.4 lens	24-70mm 2.8
16-35mm 2.8	35mm 1.8
16-35mm 2.8 II	
20-35mm 2.8	
28-70mm 2.8	

On my Olympus OM-D EM-1 I use an Olympus 24-70mm f/2.8 or the 24-100mm f/4. I find that I cannot go above f/7.1 or f/8 or I will get a slight hotspot. I cannot use the Olympus wide angle without a severe hotspot. On the Sony a7rII I also use the Sony 24-70mm f/4(although it is not as sharp as it should be for the cost!) the 24-70 f/2.8 has severe hotspots. I use a Canon 24-105mm f/4L IS USM on my 5D MarkII camera with the Standard IR filter. I also have the same lens for my 5D camera with the Super Color IR. I not know about Fuji cameras.

I suggest you also test your lenses with your converted camera so you aren't surprised when you get to the workshop and find hot spots. Some lenses I can only use from f/8-f/4. The higher f/stops tend to create hotspots.

Should I send a lens with my camera when I make the conversion?

If you are converting a DSLR you have a choice of sending a lens with your camera when you make the conversion if you want to focus through the viewfinder or you can choose to use your LCD for accurate focusing. Again, referring to Lifepixel:

"IR light is longer in wavelength than visible light and focuses differently. Regular photographic lenses are made for visible light photography without any regard to what happens when photographing "out of band" light like IR. Therefore each lens design and focal length, even each focal length within a zoom lens will focus IR light differently. To complicate things further, DSLR AF sensors (and our eyes as well) only "see" visible light and focus only on visible light. For these reasons we calibrate converted digital cameras to help attain proper focus."

So you have a choice of focusing through the viewfinder, as most cameras do OR using your LCD (called Live View on Canons) if your camera offers this. Live View can be more accurate but I have found this is best when you are using a tripod. Since I hand hold 98% of my images, I sent in my lens with the camera and asked them to calibrate it at the 35mm mark. I am a wide-angle maven! And, usually I keep my camera fixed on f/8 or higher aperture since the focus can be wonky.

So that explains why I have switched from using my Canon converted cameras for Infrared and now only use mirrorless cameras.

So I hope this helps! Please feel free to email me with any questions. nevada@nevadawier.com

Please be sure to bring your camera manual with you; the actual manual, not just a book about the camera. Don't forget to read all the LACP material carefully.

Excelsior!

A handwritten signature in cursive script that reads "nevada wier".

Nevada Wier