Digital Photography Lesson Plan 4

[2011]

[This lesson is intended to engage the students with the concepts of art in photography. We will be discussing the use of exposure and white balance, overexposure, underexposure, corrective actions, white balance settings and above all the subject. We will also review the previous lesson and discuss its importance within this weeks' lesson to help build the students comprehension of photography.]

Exposure

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Lesson: 4	**Topic:** Exposure

Introduction:

- Discuss last weeks' class:
- Drawing attention to Aperture, Shutter Speeds, and Lighting the basis of all exposures.
- Allow each student to speak of their current works and projects.

Composition and the Right Exposure:

What is the right exposure? Not to make this complicated, but exposure is a choice you have to make. The exposure you choose determines how the image looks. But, we'll start with a basic understanding and work up from there.

Exposure consists of three factors: how sensitive the film is to light (remember, I use the word "film" to refer to whatever medium used for capturing the image, whether it is the Digital Camera's sensor or actually film,) the amount of light going through a lens - called the aperture, and how long the film is exposed - called the shutter speed.

If you're camera does not have a built in meter - its really old. But, that's okay. You'll just have to buy a hand held meter. I still use a light meter to give me the reflective surface off of my object. Most times your camera will give you one reading and the light meter will give a slightly different more accurate reading in regards to the object and its reflective surfacing. If you have an SLR or advanced point and shoot digital camera, spend some time with the manual to find out how to bring up the "Histogram" which graphically shows the amount of light in an exposure.

First exercise - set your ISO to 100, set your camera to *f* 16 and the shutter to 1/125th of a second. (Some digital cameras are limited to ISO 200 - which means you have to cut your exposure by one stop, i.e. use 1/250th instead of 1/125th of a second) With this setting, take your camera out during a sunny day, put the sun behind you and shoot anything - you'll have a well exposed image. This is called the "Sunny 16" rule.

To make life interesting, and your photography more creative, you can change the setting and still have the same exposure. Try going to *ƒ*11 at 1/250th of a second. Push it a little further at *ƒ*8 at 1/500th of a second. These are all the same exposure because the same total amount of light is hitting the film.

Of course, you're not always going to shoot with the sun behind you on a sunny day. For other situations you need to be able to find out your exposure with a meter. This can be in your camera or hand held.

Looking at any scene, your meter will give you a suggestion as to what exposure to use. Most of the time this is fairly accurate. This is where the light meter will come into play.

Using your meter, take a reading off of something with mixed tones in shade on a sunny day - you'll find the exposure is two or three stops slower than the "Sunny 16."

One of the best things to do for more accurate metering is to meter the light hitting the specific subject you're shooting. If you're shooting something in a small patch of light, walk right up to it and find out what the meter suggests. Then, go back to where you're taking the picture from - and with the camera in manual - set the exposure to what was suggested.

If you're shooting a Caucasian person, you can meter of their cheek, open up one stop. If the meter said f8, then change it from f8 to f5.6, or if you want, change the speed - if it said 1/250 then set it to 1/125, etc. This is a rule of thumb and changes from person to person. With other races you may want to leave the exposure as suggested by the meter, and with darker skin you may want to close down one stop. If in doubt, take pictures a variety of exposures and make note of which one worked.

You can also use your hand to help determine exposure in a variety of situations. First - on a sunny day, do the f16 rule, setting the camera to f16 at 1/125 of a second. Hold your hand in the sunlight and meter it. You'll probably notice the meter says you should change the exposure. Note how much the meter says your hand is off from the f16 rule and keep that in mind. Lets say the meter said you should expose your hand at f22. That is one stop darker than what is actually needed. Now walk into the shade and meter off your hand again. If it says f11, you know that is one stop too dark, so set your camera to f8.

Knowing what your hand is for exposure can help you set exposure in most situations - just make sure your hand is in the same kind of light as the subject you're shooting.

A little more accurate way to do exposures is to buy an "18 per cent grey card." Most camera stores and photo departments should have these. To use it, just put it beside the subject you're shooting, and meter off of it. If you're further away than is practical to walk up to the subject - set the card in the same kind of light as the subject and again meter off the card.

As a point of reference, these are the typical "whole stops" for exposure;
Aperature - f1.8, 2.8, 4, 5.6, 8, 11, 16 and 22.
Shutter - 1 second, 1/2 second, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000.
Many cameras have more stops at either end of these scales, but these are typical. As well, most modern cameras have half stops or third stops. These make learning a little more difficult, but keep the above numbers in mind to do proper exposures.
A high-key photo is basically white on white. This style of photography conveys a feeling of lightness and clarity. Exposing for this is fairly easy.

With an in camera meter, you can measure the light hitting a white area, and open up two stops - such as changing the aperture from $f11$ to $f5.6$.

What's the Big Deal About White Balance?

White balance is one of the important distinctions between digital photography and film photography. In digital photography, white balance is critical. It can make or break your picture as much as proper focus and lighting. The wrong setting can cast an ugly tint or cast to the image that distorts natural colors.
Incorrect white balance can be very difficult, and sometimes impossible, to fix after the fact. Most people find green or red tinted skin tones quite unflattering. And dull, muddy skies and murky yellow whites don't do much for your digital prints. It's best to get the white balance right when taking the picture rather than trying to fix it later.

White balance is much more important to digital photography than film photography because to digital cameras, white colors are NOT alike. Digital cameras pick up light like video cameras, rather than film cameras.

White light has different color casts according to the light source. A misty morning is a completely different color than an orange sunset, which is different again from a yellow bulb. The naked eye doesn't see these differences because the human brain compensates for them. White looks white to humans in sunlight, under heavy clouds, or indoors — no matter if it's under incandescent or fluorescent lighting.

But it's not the same for a digital camera! The camera picks up the differences in whites produced by different sources of light. Under incandescent light (which is an ordinary light bulb), white has a yellow or reddish cast. Under fluorescent light, white has a greenish cast. Daylight has a blue cast. A sunset has a strong orange cast. Just about every different lighting situation has a different lighting cast.

Digital cameras need to be adjusted to the light source so that white appears white (not yellowish, reddish or greenish) and so that the other colors look accurate. This is called" white balance."

Most digital cameras set the white balance automatically. Many cameras also allow you to set it semi-manually by choosing from several selections. The control is usually found in the menu, but could be a button on its own.

But the automatic settings must be selected to work! One of the most common digital photography errors is picking up the camera and taking dozens of shots before realizing your camera is still on yesterday's or last week's settings, when the lighting was totally different. In my experience, seriously incorrect white balance can rarely be completely corrected by the average person. Sometimes, even professionals can't fix it. It ends up producing less than optimal digital picture prints. For natural, realistic colors, remember to set your white balance before taking the picture.

That being stated, it should also be noted that mixing the white balance with different conditions will create great effects. Such as an indoor lighting set up used out in daylight. You could create a cold blue cast photo in broad daylight.

Metering

Now, we have talked about the white balance and exposures. Let’s discuss the importance of the white balance on your cameras.

The built in meter on your camera measures the brightness in an image. However, it measures the brightness that is reflected off of your image, not the reflectiveness coming from the source (ie Sun, Flashes, etc.)

A meter cannot tell the difference among such scenes as a **dark subject in bright light, a bright subject in dim light and an average scene in average light**. It can misjudge the amount of light available in a photograph. That is why the meter is often used as a basis point for photography and the photographer will adjust accordingly. Do not expect to know exactly how a photo will work in all lighting conditions. It takes years of practice to master photograph. For now, concentrate on understanding the concept behind the metering, and be sure to apply them when taking your photographs.

Image 1: Dark on Light
Image 2: Light on Dark
Image 3: Average Colour and Average Lighting
Image 4: What is wrong with this image?

Let us discuss these images. Why's image 1 crisp and clean? Why's image 2 very blurry and the colours are not crisp and precise? Why's image 3 reflective but the colours are not bold and distinct? How would you correct the images?

Noise

Let's talk about noise. Noise is caused when an image is under exposed. It causes a film grain/ sand on your photo look when produced. This is not necessarily a bad thing. It can be used to your advantage in regards to style and effect. However, it is better to use it in post production so that you can control its effect. When the image is underexposed it will lose its colour balance. When the image becomes brightened, you will increase the visible noise. It hides well in the darks and blacks, but is extremely visible in all bright colours.
Break

Photography Practice:

- The items that you brought in today will be used as our subjects to have a mini photo shoot.
- Our intention in these exercises is to familiarize yourself with the cameras and to use them to create the image you want.
- I will talk with each of you and help guide you through the steps to alter your images and demonstrate the over and under exposed aspects of the image.
- I want you to experiment with the different settings on your camera and learn how to manipulate the camera settings to create the effects you want in pre production.

Assigned Readings and Assignment Discussion:

- **Assignment # 1 is Due Next Week at the START OF CLASS!**

Consolidation

- **Questions to ask:**
- What is the most important part of creating an exposure?
- Why do we need to focus of the depth of field in images?
- What are the 3 important parts for a proper exposure?
