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PHOTO 120 DIGITAL PHOTOGRAPHY EXERCISE 1 NOTES

EXERCISE 1: GETTING TO KNOW YOUR CAMERA.

EXPOSURE

A perfect exposure is the combination of the correct aperture, shutter speed and ISO.

ISO is the film or sensors Sensitivity to light

- 3200 makes visual noise, indoors
- 1600 makes visual noise, indoors
- 100 200 400 800 1600 3200
- 100 is great for outdoor on a sunny day and 3200 is great for night photographs. I also use between 400-800 ISO for shooting indoors.

APERTURE – size of the hole in your lens that lets in light. Controls depth of field.

Depth of Field – area in a photo from nearest to furthest appears acceptably sharp; how much of any scene is in focus.

A or Av Setting Aperture Priority- Aperture Priority Mode is an excellent way to control depth of field. You set an aperture and ask the camera to set shutter speed.

Each jump from one full aperture value is a f/ stop.

Most light to Least Light

2.8 4 5.6 8 11 16 22 32 64 (whole f/stops)

Diaphragm – an arrangement of flat, thin, overlapping pieces of metal within the lens.

Wider apertures have a shallow depth of field

Smaller apertures have a greater depth of field.

Depth of field varies depending on the lens-to-subject distance. The closer the subject is to the lens, the more you'll notice the depth of field effect of the aperture.

Depth of field seems to vary depending on the length of the lens being used. Telephoto lenses appear to have less depth of field than wide-angle lenses.

SHUTTER SPEED

Shutter speed is the length of time the shutter remains open.

1 ½ ¼ 1/8 1/15 1/30 1/100 1/125 1/250 1/500 1/1000 (whole stops)

Each jump from one full shutter speed value is a stop.

S or Tv Shutter speed priority – Shutter Speed Priority, you choose shutter speed .

Camera chooses equivalent aperture.

Capture motion – high Shutter Speed, to blur motion use a slow shutter speed.

EQUIVALENTS

How do shutter speed and aperture work together?

If you use f/4 @ 1/60, an equivalent exposure is f/5.6 @1/30. How does this work?

Aperture: f/stops 1.4 2.8 4 5.6 8 11 16 22 32

Shutter speeds: 1 ½ ¼ 1/8 1/15 1/30 1/60 1/125 1/250 1/500 1/1000 1/2000

Take a light meter reading by holding down the shutter release.

Set your ISO.

What do you want the image to look like? Do you want to stop motion or control depth of field? For example we are shooting in Bryce Canyon. Not alot moving around. We want depth of field, set your camera aperture to f/22, when you take a light metering reading, and you are using aperture priority, A, AV, the camera will give you an equivalent shutter speed. We will talk about shooting modes next. You could choose to use: f/22 @ 1/500

OR- any of these shutter speed and aperture EQUIVALENTS!
f/16 @ 1/1000
f/11 @ 1/2000
f/8 @ 1/4000

For example:
You want to stop the motion of your epic racing wiener dog.
Switch your settings from aperture priority to shutter speed priority. This is indicated by TV, S on your camera dial.
You pick 1/125, press down the shutter release ½
The camera says hey! Use f/22 @ 1/125
f/32 @ 1/60

Program settings:
APERTURE PRIORITY: you choose the aperture, take a light meter reading and the camera will determine a proper shutter speed. A, AV on the camera dial.
SHUTTER SPEED PRIORITY: you choose the shutter speed, and take a light meter reading and the camera will determine a proper aperture. TV, S on the camera dial.

Break up with these two settings:

- Auto: you don't have any control, the camera chooses the aperture and shutter speed settings for you.
- Program AE: allows you to manually set parameters other than the shutter speed and the aperture value.

WHY CHOOSE WHAT?

- If depth of field is the most important concern of your composition, choose AV or aperture priority.
- If shutter speed is the most important concern of your composition, choose TV, or shutter speed priority.
- Manual is a great setting and you will be working toward being more comfortable working this way.

SCENE MODES

What are all those scene modes? The little picture icons that don't tell you the shutter speed or aperture settings. These are presets and here is my guide to what they mean.

- Smile Detection: Select this mode to automatically capture an image when a smiling face is detected.
- Anti-shake: This mode minimizes the influences of hand shaking when you want to capture an image. May increase the shutter speed.
- Panorama: Select this mode when you want to capture a series of shots then stitch them together with software to make a single photo on the computer. This may cut the bottom and top of the image off. Don't use this setting, just move your body around.

- Portrait Man: Select this mode when you want to capture an image that makes a man stand out against a blurred background. Shallow depth of field, large aperture, fast shutter speed.
- Portrait Lady: Select this mode when you want to capture an image that makes a lady stand out against a blurred background. Shallow depth of field, large aperture, fast shutter speed.
- Landscape: Select this mode when you want to capture an image with infinity focus, hard sharpness and high saturation. Great depth of field, small aperture.
- Sports: Select this mode when you want to capture fast-moving subjects. Fast shutter speed.
- Night Portrait: Select this mode when you want to capture people with an evening or night scene background. Wide open aperture
- Night Scene: Select this mode when you want to capture dark scenes such as night views. Wide open aperture
- Candlelight: Select this mode when you want to capture photos of candlelight scene, without spoiling the ambience. (insert 70's music here.) Wide open aperture, fast shutter speed
- Fireworks: Select this mode when you want to capture fireworks clearly with optimal exposure. The shutter speed becomes slower, so using a tripod is recommended.
- Text: Select this mode when you want to capture an image that contains black and white subjects like printed documents. You'll probably never use this. Unless you are a spy/James Bond.
- Sunset: Select this mode when you want to capture a sunset. This mode helps keep the deep hues in the scene. Longer shutter speed or wider aperture, "deep hues" means under exposed.
- Sunrise: Select this mode when you want to capture a sunrise. This mode helps keep the deep hues in the scene.
- Splash Water: Select this mode when you want to capture photos of splashing water. High shutter speed.
- Flow Water: Select this mode when you want to capture the soft flowing water. Slow shutter speed.
- Snow: Select this mode when you want to capture clear snow scenes without darkened subjects and bluish tint. Adjust your white balance to daylight.
- Beach: Select this mode when you want to capture bright beach scenes and sunlit water surfaces.
- Small aperture, fast shutter speed
- Pets: Select this mode when you want to capture your pets. Shoot from their eye level. Super fast shutter speed.

WHITE BALANCE

White balance (WB) is the process of removing unrealistic color casts, so that objects which appear white in person are rendered white in your photo. Proper camera white balance has to take into account the "color temperature" of a light source, which refers to the relative warmth or coolness of white light.

Our eyes are very good at judging what is white under different light sources, but digital cameras cannot. An incorrect WB can create unsightly blue, orange, or even green colorcasts. The photograph will appear unrealistic, very blue or orange! You also have presets: auto, tungsten, cloudy, fluorescent, daylight, custom. Experiment with each of these settings so you can see the difference.

I recommend AWB or Auto White Balance.

For a comprehensive list of color temperatures > click below!

<http://www.cambridgeincolour.com/tutorials/white-balance.htm>

FILE FORMATS

- RAW format
- Contains the data gathered by the camera's imaging sensor BEFORE any post capture processing

is applied to it.

- No compression.
- Think of it as film before it is developed.
- You can compensate for many deficiencies in the capture later during processing, using Camera Raw as the digital darkroom. You cannot simply open a RAW image in Photoshop or Preview.
- You need a conversion program, and that is what we will use with Photoshop Camera Raw. I also use Lightroom.
- Not ideal for all shooting situations, say if you are shooting your kid's birthday party, things will probably be moving fast and hairy! RAW takes longer to save the memory card.
- Perfect for product shots, portraits, and tripod shooting.
- We will be converting proprietary formats to a DNG, Adobe's universal raw format.

JPEG / JPG

- Most consumer compact cameras offer only one choice of file format. Make sure to choose the lowest compression possible- best or fine quality.
- These are compressed image files.
- Once an image is captured and recorded in the JPEG format, all of the camera settings, such as sharpening, saturation, contrast, white balance and exposure, are applied to the photo.

How does JPEG compression work?

I rely on Katrin Eismann's brilliant explanation in her book "Real World Digital Photography."

- JPEG compresses its incredibly small files by using a clever compression scheme that modifies the pixels in an image so they can be described using less data.
- A JPEG "sees" your image by breaking it up into 8x8 pixel blocks.
- It compares the color variation between pixels in the block to identify the average color.
- Once it determines the average, it examines the rest of the pixels in the block and throws out information that will be imperceptible to the human eye.
- If a pixel is close to the average color, then its color will be changed to match to the average.
- Those pixels that are far from the average will be adjusted to also them a closer match.
- Why isn't this more noticeable when you look at a jpeg?
- Because human perception is less sensitive to changes in color than in luminance or brightness. And JPEG compression averages the color more than it changes the luminance values.