Introduction to Digital Photography
Ed Ruth : www.edruthphoto.com
edruthusa@yahoo.com

Introduction:

Homework

Different Cameras

Restroom

Questions after class

101:

Camera 101 Basic Tips

- Read, no STUDY, the camera's manual cover to cover
- Buy a well padded, protective case or pack for your camera
- Use a sturdy and comfortable camera strap
- Read reviews online to buy quality lenses compatible with your camera
- Clean lenses very carefully to avoid damaging their coating
- Use a lens hood, a lens cap and high-quality skylight or UV filter
- Do not let laser light enter the lens
- Keep lens on camera and be mindful of dust when changing lenses
- Protect the camera from overheating (vehicle interiors etc.)
- Protect cameras from water, humidity, and sudden temperature changes
- Don't get ammonia, insect repellent, solvents or seawater near your gear
- Camera anatomy
- Lens anatomy – Prime vs. Zoom
- Lens FOV – Field of View = Crop Factor
- Sensor – Photosite – Pixels – Megapixels RGB
- Exposure Triangle: ISO, f-number, Shutter speed (Exposure time)

Introduction to Digital Photography

This class meets for two nights, bring this information with you.

Some goals for this class:

1. Learn to take command of your camera by moving away from automatic mode.

2. Learn to use your lens' aperture to control depth of field in your compositions.

3. Know the buttons and dials on your camera. Learn how they work together.

4. Become familiar with navigating through menu options in your camera.

5. Use your camera's eyepiece effectively and Know where your camera is focusing.

6. Understand exposure by learning how aperture, shutter speed, and ISO work together.

7. Learn to use the histogram and use exposure compensation.

Optional but very, very useful Homework: A tripod will be very handy but is not required.

Remember every change you make to the camera's controls remains until changed again.

A. Using **Aperture Priority** mode take photographs outdoors of an object about five-feet from your lens. Arrange the scene so that there is a background about ten-feet behind the object. Turn the command dial to scroll through all available apertures. Do you observe the differences in depth of field with each aperture?

B. Take photographs of an object in a dimly lighted room. Scroll through the **ISO** settings available to you. Compare the images you have taken on your computer. At what point does a high ISO result in unacceptable noise? Try the same thing outdoors on a bright day. What do you notice about ISO noise in a bright location vs. a dimly lit location?

C. Using Tv (**Time Value** - Canon) or S (**Shutter Priority** – Nikon) Photograph moving objects such as bicycles or vehicles (don't get run over!). Try moving from very slow shutter speeds to faster shutter speeds by turning the command dial. Can you obtain a pleasing sense of motion while not blurring the object beyond recognition?

D. Your camera has three (Nikon) or four (Cannon) **Exposure Modes** that correspond to: 1) everything in view, 2) the center of the view, and, 3) a spot at the center of the view. Find these options in your camera and photograph the same object using them. Remember to "work the scene" to get different perspectives. What do you notice about the different exposures that result from this experiment?

E. Find the **Exposure Compensation** button on your camera (this button works with the command dial) on some cameras Exposure Compensation is a menu item. Change the Exposure Compensation up (+) to move the exposure toward brighter and study the resultant image and **histogram**. Change Exposure compensation down (-) to move the exposure toward darker and study the resultant image and histogram. Every change + or – changes the exposure value. Do you like your images brighter or with deeper tones?

1. Accept an assignment to photograph _____ .

2. Complete Hold Harmless agreement or Model Release if applicable.

3. Envision the shooting environment (hot? Wet? Dusty?) and envision the image beforehand.

4. Select the proper clothing, camera, camera bag, and lens or lenses for the job.

5. Bring a tripod, external flash, camera rain cover, and collapsible light reflectors as needed.

6. Bring a Polarizing Filter or Neutral Density Filter as needed.

7. Format your SanDisk memory card in the camera after backing up images (newest 90MB/s).

8. Review equipment checklist and safety precautions for the environment you will work in.

9. Select Aperture Priority (A or Av), Shutter Speed Priority (S or Tv), or Manual (M) as needed.

10. Select the aperture and shutter speed combination you wish using the command dial.

11. Select options such as “Active D Lighting” or “High ISO Noise Reduction” from the menu.

12. Select the proper color space: sRGB or Adobe RGB from camera’s menu.

13. Select Vibration Stabilization or Image Stabilization, if available, in the menu or on lens.

14. Select image size (typically Large) often from the camera’s menu and....

15. Select RAW or JPEG or RAW and JPEG, or sometimes TIFF as an image file from the menu.

16. Select a metering mode: Matrix, Center Weighted or Spot from menu or camera button.

17. Select an initial ISO from menu or camera button for the lighting environment you are in.

18. Select the Kelvin temperature or “White Balance” for color of the dominant (ambient) light source i.e. sunny, shade, or artificial light. What direction is the dominant light source coming from?

19. Select the number and location of Focus Points required for your subject of interest.

20. Select Single Servo or Continuous Servo (lens focusing).

21. Select the point of focus required to enhance the visual communication you intend.

22. Select options such as time delay, sequential shooting, or fast or slow burst shooting.

23. Determine your distance (prime lens) or zoom for proper field of view for your subject of interest.

24. “Work the scene.” Look up, Look down, look all around. Move, look, move again.

25. Hold the camera steady or, perhaps, brace yourself against a wall or use a tripod. Use the viewfinder effectively to frame your subject. Hold that camera still!

26. Adjust Exposure Compensation if needed after referencing the histogram to determine the best exposure. Remember: darker is to the left, lighter to the right. Adjust to eliminate any flat lines on histogram. An EV is 1 Exposure Value (+ or - one “stop”) or half or twice as much light.

27. If desired, use “Bracketing” to vary EV (Exposure Value) using Exposure Compensation.

28. Perhaps, use a Gray Card to obtain a true white balance.

29. Perhaps, use a camera calibration tool for color accuracy (X-Rite).

30. Alter settings such as aperture and shutter speed as desired and take as many photographs as you wish. Remember to be safe and not be completely distracted by these procedures.

31. NOTE: f/1.4 to f/2.8 narrow depth of field, f/5.6 to f/11 wider depth of field, f/16 to 22 some image quality loss due to diffraction but still a viable selection.

32. Composition:

A. Rule of Thirds. “Rule”

B. Direction of light

C. Hard or Soft light

D. Near vs. Far, Up vs. Down, Leading Lines, Framing

E. Sometimes center sometimes not

F. Remember foreground, background and corners.

Point of view... Look up, down & all around. Work the scene.

Simplicity... The subject of interest gets the most attention, pay close attention to foreground and background. The essence of beauty is simplicity, drama, and anticipation of a desired state of being.

Rule of thirds... Divide the field of view into a “tic tac toe” design. Place circles at intersecting lines. Position your center of interest over the circle that provides the composition with the greatest sense of balance.

Lines... Look for lines in a composition that draw attention to the center of interest (leading lines) or that add to the viewer’s understanding of or appreciation for the center of interest or that help develop a feeling of anticipation or drama or that add to an overall theme or design.

Diagonal lines are dramatic. Leading lines direct us to the center of interest or toy with our sense of perspective. “S” curves make powerful leading lines.

Balance... Better to prevent imbalance than worry to much about what Balance is.

Framing... Using foreground to emphasize the center of interest.

Mergers.... Don’t let plants grow out of people’s heads.

33. Post Production (Photoshop Course):

Raw Plugin:

A. Adjust White Balance

B. Make lens adjustments.

C. Boost mid-tones if needed.

D. Make color adjustments

E. Reduce high ISO noise

Photoshop:

A. Set Bit-Depth to 16-bits

B. Check Color Edit Settings

C. Set image black and white point.

D. Adjust Contrast

E. Adjust saturation and Layer Mask.

F. Correct color using Curves Adjustment Layer

G. Sharpen using Unsharp Mask

H. Crop

I. Resize as needed

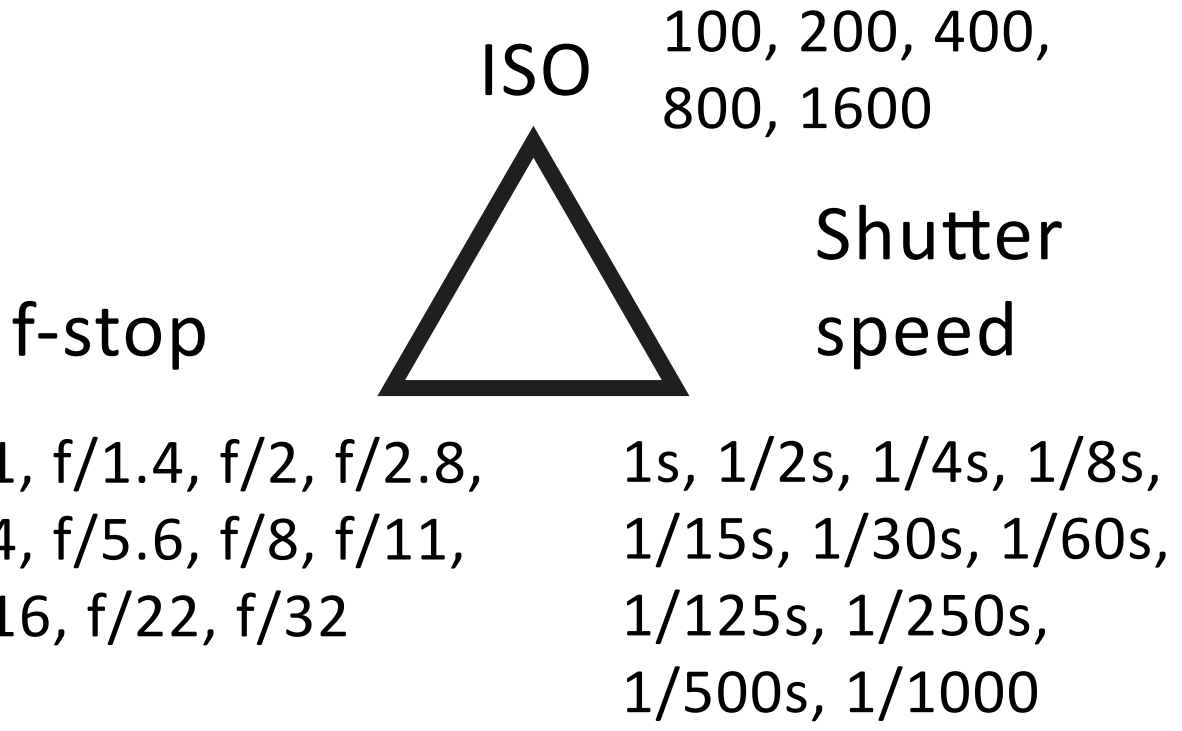
J. Final Sharpening is conservative

K. Print (300 PPI) or publish on WWW by pixel dimensions L x W

34. Archive or backup images.

The “Exposure Triangle” illustrates the relationship between ISO, f-stop (aperture), and shutter speed. The ISO determines sensor sensitivity to light. Set the ISO for the shooting situation you are in. An ISO of 100 is the “native” ISO of many digital cameras and is often just right for a sunny day. A high ISO invites digital noise especially in low light. Shadows and three-quarter tones reveal digital noise more than the lighter tones of an image.

Ask yourself what shutter speed you need to stop or emphasize motion in your composition. Determine which f-stop provides a depth of field that best emphasizes your subject of interest. Ideally, an exposure having the shutter speed and aperture you want will be available. If not, boost ISO conservatively.

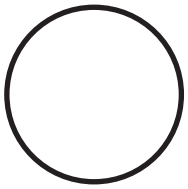


The ISO sequence listed above doubles or halves the sensor’s sensitivity to light. Moving from ISO 400 to ISO 800 represents one “stop” or one EV (exposure value). The f-stops given are traditional f-stops that halve or double an aperture's size and, consequently, halve or double the amount of light allowed into the camera. The shutter speeds are traditional shutter speeds that halve or double the amount of light striking the sensor. The relationship between aperture and shutter speed is known as “reciprocity,” as one goes up the other must go down by an equal EV.

Aperture, shutter speed, ISO and depth of field.

Camera settings (Equivalent Exposure or Reciprocity, these settings all result in the same exposure).

f/1.4, 4000/s, ISO 100
large aperture, narrow depth of field.



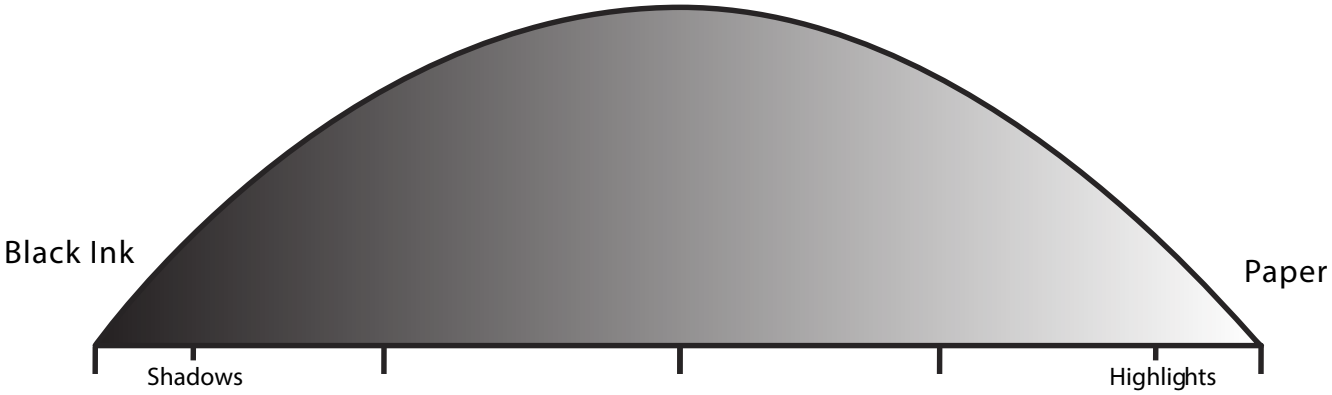
f/2.8, 1000/s, ISO 100
Somewhat large aperture, less narrow depth of field.

f/5.6, 500/s, ISO 200
Medium aperture, wider depth of field.
“Sweet Spot” for many lenses.

f/11, 250/s, ISO 400
Small aperture, wide depth of field.

f/22, 125/s, ISO 800
Very small aperture, maximum depth of field.

Histogram of the distribution of tones similar to a grassy meadow.



Camera meters are calibrated to 18% gray which is 50% brightness.