

Still Shoot Your Camera on Auto?

Photography Basics for Novices

Presenter: Dr. Daniel C. Hyde



- Lewisburg Photography Club Business
- Part 1: Eight Tips to Taking Better Photos
- Part 2: Basics of Digital Cameras
- Part 3: Three Case Studies

Tip 1: Know your Camera

- Read your camera's manual
- Experiment with different features
- Practice different shooting situations
 - Indoors
 - Outdoors
 - Macro
 - Low light
- Practice! Practice! Practice!
- Ask for help!

Tip 2: Minimize Camera Shake

- Learn how to stand and shoot
- Hold breath and slowly press shutter button
- Use **view finder** – 3 points of support
 - Hand under lens, other hand holds camera, cheek
- Lean against something, e.g., a tree
- Place camera on some sturdy object, e.g., a back of a chair, a roof of a car, a bean bag
- Use a **tripod** and **cable release**
 - Critical for macro, telephoto and low light work
- Use **image stabilization**

Tip 3: Focus on the Subject

- Our eyes seek out the part of an image that is in focus.
- Most cameras auto-focus on the center.
- BUT auto-focus can be fooled. Learn to use **focus-lock**!



On left, camera focused on chair in center. On right, I aimed at Sneaker's face, pressed the shutter half way down to activate the **focus-lock**, then moved camera to recompose the image and shot.

Tip 4: Try Different Camera Angles

- Shoot close up, medium, and wide angle
- Hold camera vertically
- Shoot high – stand on a chair
- Shoot low – for kids and pets get down at their level



Tip 5: Keep Horizon Level

- People find it annoying if you don't!
- Use grid lines on screen.



Tip 6: Use Flash

- Use **flash** in low light to remove shadows and avoid unwanted blur.
- Use flash for fill, especially if back lighting.



- In image on left, the light from the window confused the camera and the people are under exposed. I used fill flash on right image.

Tip 7: Use Good Lighting

- Have the light fall on the front of subject. Front lighting.
 - “Sun at photographer’s back” rule.
- Also, experiment with other lighting – side lighting, back lighting
- Lighting is better in early morning and late afternoon.
 - Less harsh shadows
- Light at sunrise and sunset has golden glow.
 - Photographers call “magic hour.”
- Change **White Balance** if needed.



Sunlight shines through the leaves.



I moved so green lamp shines thru ice.

Tip 8: Check for “Clutter” in Background

- On every shot, check for annoying background clutter, especially around the subject.
- Move objects or your body to eliminate any distractions.



Part 2: Basics of Digital Cameras

- Digital cameras are a marvel of electronics. (One without case)



Our goal is to learn only enough about digital cameras to take better pictures.

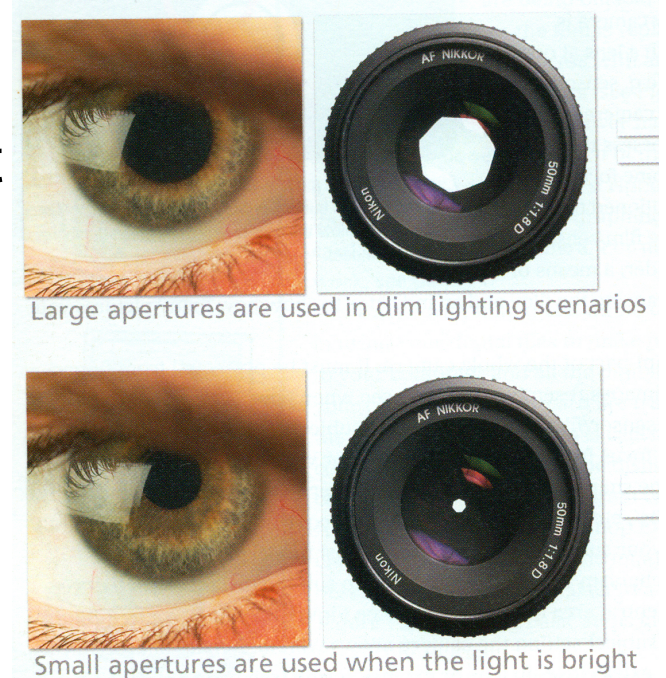
Lens



- The lens optically focuses the subject on the digital sensor.
- Most cameras have an auto-focus mechanism that moves the lens to focus on the subject.
- More expensive cameras allow manual focus for better control.
- Many cameras have a zoom feature that adjusts the angle of view (wide angle to telephoto).

Aperture

- Usually behind the lens, the aperture controls the amount of light that shines on the film or sensor.
- The aperture opens and closes like an eye's iris.
- Most cameras have a light meter that measures the light and adjusts the aperture automatically. Can control manually in some cameras.



Aperture's sizes have been standardized to "f-stops."
Changing f-stop f2.0 to f2.8 **halves** amount of light.



Shutter

- When the shutter button is pressed, the shutter, in front of the sensor, opens for a **brief** amount of time to expose the sensor to the light.
- Most cameras have a wide range of shutter speeds, e.g., 1/30, 1/60, 1/125, 1/500, 1/1600 seconds.
- The shutter speed is adjusted automatically and depends on the mode, e.g., “sports,” “night,” “fireworks”
- More expensive cameras allow you to set shutter speed.
- Note if you **double the shutter speed** (say 1/30 to 1/60) and **reduce aperture one f-stop** (say f8 to f4), the same amount of light falls on the sensor. **This is an important relationship!!**

ISO

- Originally, ISO was a rating for the sensitivity of a roll of film. Photographers purchased film of ISO at 100 for general use and ISO 1600 (high speed) for low light conditions.
- For digital cameras the same rating is used but ISO refers to how much the signals from the sensor are amplified. A high ISO, say 1600, will allow you to shoot in low light conditions. BUT usually with colored speckles (noise) all over the image. A better camera will have less noise.
- Usually, we let the camera select the ISO setting by using “ISO Auto.”
- Note with a film camera, if you want a different ISO you need to change film, say by going into a dark closet. With a digital camera, one just changes the dial or the item in a menu.

White Balance

- We don't notice it much but different **sources of light** look very different. The light from the sun (day light) is very different from light of a regular light bulb (tungsten). And both different from light from a fluorescent lamp.
- White Balance refers to the compensation you want on the lighting in the image. Usually we let the camera try to decide and use Auto White Balance (AWB). Sometimes AWB is way off!
- Sneaker was “shot” four times under fluorescent lights.



AWB on, no flash

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Day Light WB; no flash

Lewisburg Photography Club-Dan Hyde



Tungsten WB; no flash



AWB on; flash

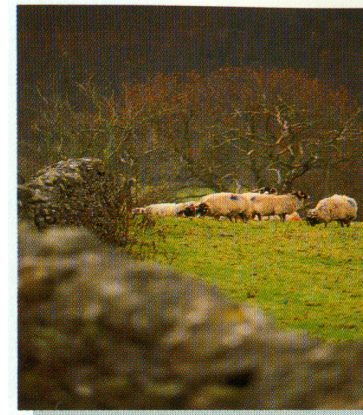
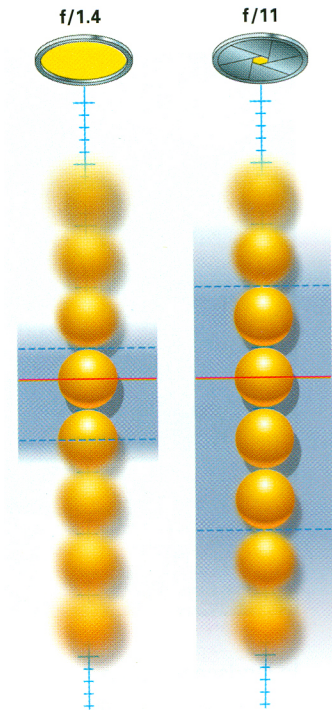
15

Depth of Field

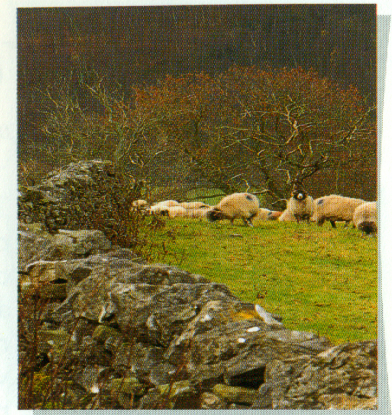
- The size of the aperture effects the depth of field (zone of focus), i.e., the zone of acceptable sharpness. At a wide aperture (left) the depth of field is shallow. When a small aperture is used, the depth of field expands, i.e., more of the foreground and background is acceptably sharp.

Since most point-and-shoot cameras select the aperture automatically, you have little control over the depth of field.

More expensive cameras allow you to select an aperture setting (f-stop) and to control the depth of field (Av setting).



Taken at f2



Taken at f16

Stopping and Blurring Action

- With a slow shutter speed (less than 1/60 second), any movement of the subject will appear as a blur.
- With a fast shutter speed (say 1/500 second), one can stop or freeze the action. In the “sports” mode, a shutter speed as fast as possible is selected by the camera.
- Better cameras allow you to set shutter speed (Tv setting).



Slow shutter (1 sec.)
blurs the action



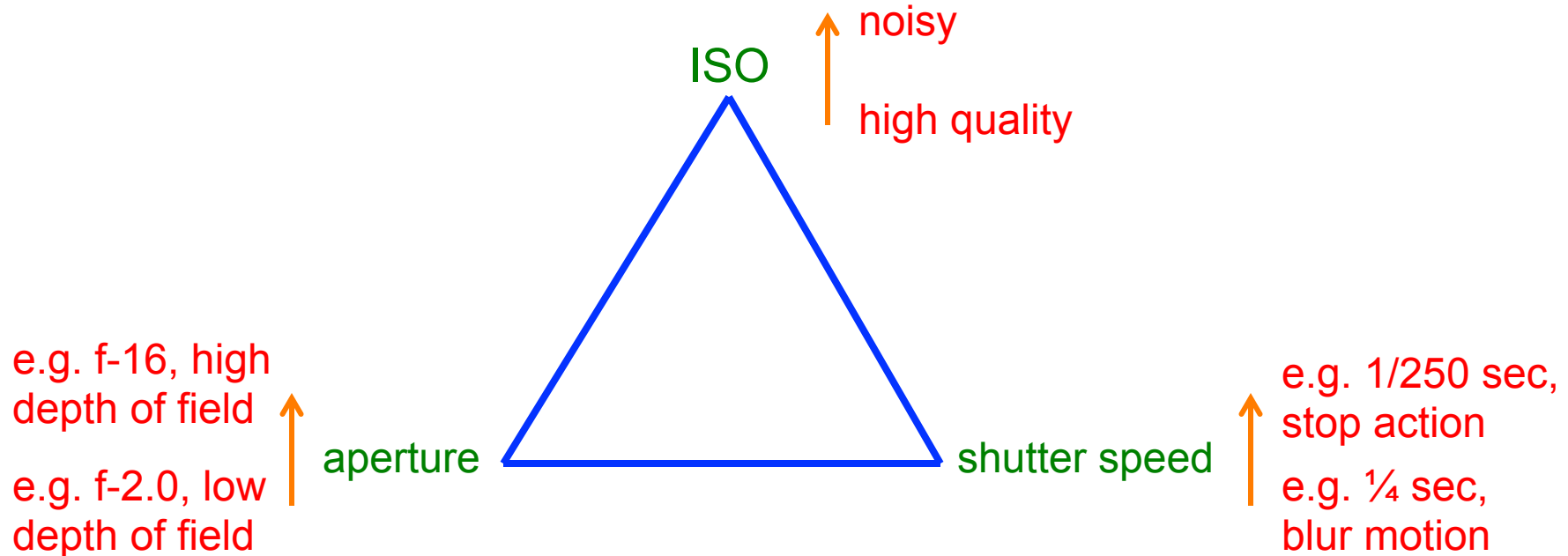
Fast shutter (1/500 sec.)
freezes the action

Combining Depth of Field/ Blurring and Freezing Action

- Left picture taken at 1/30 second at f2.8.
- Right picture taken at 1 second at f16.
- Both are correctly exposed but very different in appearance.



Triangle of Image Exposure



- **Exposure Triangle** of aperture, shutter speed, and ISO. All three play a part in correct exposure. Adjust one then one or both must change.
- **Auto** means camera does it.
- For creativity, you need to learn how to set one, two, or all three.
- To fix aperture, use **aperture priority** (Av) mode.
- To fix shutter speed, use **shutter priority** (Tv) mode.

Part 3: Several Case Studies

It's problem solving! – Given a situation, how best to photograph it?

1. How to **stop action** at a tennis match?
2. How to throw a **distracting background out of focus**?
3. How to make a waterfall have a **silky look**?

How to stop action at a tennis match?



Solution: Use **Tv mode** to set a fast shutter speed, e.g., 1/800 sec to stop action.

How to throw a distracting background out of focus?



Solution: Use a narrow depth of field. Use aperture priority (Av) and set aperture to lowest f-step of lens, in this case f-5.6. Let camera chose shutter speed.

How to make a waterfall have a silky look?



Solution: Use a very slow shutter speed to blur the water. You can't hand hold a shot for a half second. You must use a **tripod** and **cable release** (or if no cable release, use camera's **2-second timer**) to eliminate camera shake. To allow longer shutter speed, I used camera's lowest ISO and the lens' narrowest f-stop, i.e., f-22. If I needed a longer shutter speed, I could have used a **neutral density filter**.

Exercises

I encourage novices to try the following exercises for practice. Please feel free to ask if you have any questions. You may send me your “solutions” if you wish me to comment. Dan hyde@bucknell.edu

Ex 1: Line up several small objects such as toy figures on the long way of a table. Shoot a shot with a short depth of field. Shoot a second shot with a large depth of field. Shoot with the camera in same place.

Ex 2: Take shots of a waterfall (fountain or faucet). One shot should stop the action. A second shot should create a blurry silky look.

Ex 3: Take five pictures of a sunrise or sunset where you set your camera’s **exposure compensation to** -2, -1, 0, +1, and +2 f-stops. Read about exposure compensation in your camera’s manual.

Typical exposure compensation scale

