

Review your camera manual to locate the controls and menus for changing the settings.

## **Section I, Exposure, How and Why**

Four basic factors determine the exposure.

1. **White Balance** - Telling your camera how to calibrate the colors.
2. **ISO** – Determines how sensitive your camera is to light.
3. **Shutter speed** - Determines how long the shutter is open.
4. **Aperture** - How much light is allowed through the lens iris when the shutter opens.

**What is Color Balance.** (AWB, Sunlight, Cloudy, Shade, Tungsten, Fluorescent, etc.)  
In the Film world, you select daylight or tungsten film, or use filters to change the color hue to record the colors correctly on the film. In the Digital world, you simply set the camera's White Balance (WB) to sunlight, tungsten, fluorescent, cloudy or whatever the light source is for your subject. Auto White Balance (AWB), works pretty good in most situations and in changing light sources. If your camera WB is set to the wrong setting, your subject will be off color.

**What is the ISO.** (50, 100, 200, 400, 800, 1600 etc.)

ISO settings determines how sensitive your camera is to the light. In dark areas, there may not be enough light to get a correct exposure with the aperture wide open and the shutter speed very slow. Raising the ISO will allow your camera to "See" more light and get a good exposure.

**What is Shutter Speed.** ( 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000, etc.)

The shutter speed determines your camera's ability to "freeze" motion. Shutter speed is measured in fractions of a second. The longer the shutter is open, the more likely you are to have a blurry image. Moving objects is one type of movement. Camera shake is another. A higher shutter speed can minimize or eliminate movement causing blurry images.

**What is the Aperture.** ( f/2.8, f/5.6, f/8, f/11, etc)

The Aperture controls the amount of light entering the camera. Like the Iris of your eye, it senses when the light is bright and closes to a smaller opening when the camera is in the auto mode. In low light, to get a correct exposure, it opens to allow more light in, just like your eye.

The aperture also controls the depth of field. If you focus the camera at 5 feet and the aperture is wide open (f2.8), the range of sharp focus may only be one inch. If the F Stop is less (f16), the range of sharp focus or Depth of field will be several inches or feet. If you have trouble focusing with your eyes, you squint to see clearer, the same is true for your camera. When the iris or aperture gets smaller, more subjects closer and farther from your focus point will be sharper. This is called Depth of Field and is controlled by the aperture.

These are the primary and basic controls used to capture images.

**Exercise:** Take several pictures in different light. Adjust settings accordingly.

## **Section II, Control the Camera**

Pick up your camera, make the following changes. Refer to your camera user manual if you are not sure how to make these changes.

1. Set Shooting Mode to Manual
2. Set White Balance to Auto
3. Set ISO to 200
4. Change Shutter speed to 1/200 second
5. Change aperture to F8
6. Set lens focus to Auto
7. Set lens/camera Image Stabilization to On
8. Set view finder Focus point to Center

## **Section III, Use the Camera Meter**

Aim the camera at the **ground**; press the shutter release half way to wake up the meter.

- Look at the meter in the viewfinder
- Line up the indicator with the center of the scale by changing the **shutter speed**.

Aim the camera at the **sky**, press the shutter release half way.

- Look at the meter in the viewfinder
- Line up the indicator with the center of the scale by changing the **aperture**.

Aim the camera at several different subjects and adjust the settings for correct exposure according to the camera's meter.

**Exercise:** Take several pictures in different light. Adjust settings accordingly.

## **Section IV, When, What and Why to Adjust.**

**Action or moving objects** require a faster shutter speed so the movement can be "frozen". If you are trying to get a shot of the kids or pets running around the yard, your shutter speed should be fast enough to freeze the action. So how fast is fast enough?

If nothing is moving and you have a very steady hand and your lens is not zoomed in, you may get by with a shutter speed of 1/60 or 1/30 of a second, with a lot of practice. You should try to use 1/120 to 1/200 of a second if you have enough light. When you are chasing the kids, 1/250 to 1/500 of a second might stop them just long enough to keep them from blurring. If the kids are in their go-carts, better set that shutter speed up to 1/1000 or faster.

**Foreground, subject and background**, how far apart are they? Inches, feet, miles? Which one do you want in focus? Just the subject or all 3? Your choice of aperture will help determine what's in focus and what's not. When the lens iris is wide open at f/2.8 to f/4, your Depth of Field (DoF) will be small. When the iris is small or stopped down to f/11 or f/16, more of the foreground and background will be closer to sharp.

Say you are sitting outside at one end of your picnic table and take a picture of granny on the opposite end of the table. She will be about 8 feet away. If you focus on her and use an aperture of  $f/4$  (very open), the watermelon in the middle of the table and the house about 50 ft away will be a bit blurry because you have chosen a narrow or small depth of field.

Change your aperture to  $f/11$  (much smaller) and everything from the watermelon to the house across the street will be much sharper. Think of the aperture in fractions as well,  $f/4$  is more light than  $f/11$  or  $f/16$ .

You might have noticed by now, when you change the shutter speed, the aperture needs to change or the exposure will not be correct. The same is true if you change the aperture, the shutter speed needs to be adjusted to maintain the correct exposure. Think of the shutter speed and the aperture as a balance scale, when one goes up, the other must go down an equal amount, to maintain the correct exposure. For every picture, learn to ask yourself; Do I need faster shutter speed or a greater depth of field? Most of the time you have to settle for one or the other unless you have a lot of light or can bump up the ISO.

## **Sensitivity of Light, ISO.**

If you really need that extra speed or depth of field, but the amount of light is too low to get the correct exposure, you can change how sensitive your camera is to light. In Section I, we set the ISO to 200. If we want the camera to be able to shoot in less light, we need to change the ISO to 400, 800, 1000 or more, until we can get a correct exposure with our chosen settings, (shutter speed and aperture). There is a small penalty to boosting the ISO too high, your pictures will get noisy or grainy. A noisy and grainy picture is better than a blurry picture or no picture. You will have to determine how much noise is too much.

**Exercise:** Take several pictures in different light. Adjust settings accordingly.

## **Section V, Camera Shooting Modes.**

**A or the green box, Auto:** you point the camera and shoot. The camera makes all decisions for you. The camera is very smart but can be fooled. The camera just wants a correct exposure and does not consider motion so the shutter speed may be too low to freeze any movement. *AUTO should not be used in low light or when shooting action.*

**P Program:** Point and shoot. You can adjust the exposure to be brighter or darker. Shutter speed and aperture are still controlled by the smart camera but you can at least make some adjustments. *Should not be used in low light or when shooting action.*

**AV Aperture Priority:** You set the aperture based on the DoF you need and the camera selects the correct shutter speed. *Should not be used in low light or when shooting action.*

**TV Shutter Priority:** You set the shutter speed based on the action. The camera adjust the aperture. Use this mode to chase the kids around the yard.

**M Manual:** Finally, you are in charge. You get to make all decisions about depth of field and shutter speed for every shot. If you really want to learn how to control you camera and your results, Manual mode is where you want to be.

When shooting in any mode, monitor your camera meter in the viewfinder. These are the basic guidelines (not rules) and can be tweaked when you want to get more creative.

**Exercise:** Take several pictures in different light. Have fun. Have lots of fun.