Flash 101

The basics

Before you start taking pictures with flash, you have to determine your "sync" or synchronization speed – the fastest speed that will allow the camera's shutter to be completely open when the flash fires.

On manual cameras, the "sync" speed is usually marked by an X on the shutter speed dial (e.g. 60X) or the speed is painted a different color. Many newer cameras use dedicated flashes that automatically set the shutter to the proper speed.

The sync speed depends on the camera A few cameras sync at 1/500th of a second, some at 1/250th, some at 1/125th, many at 1/60th, a rare few at 1/30th of a second. (If in doubt, choose 1/60th of a second).

You can shoot safely at any speed slower than the sync speed.

If you shoot faster than the sync speed, only part of your image will be lit by the flash. The faster your shutter speed, the smaller the area of film that will be exposed.

Controls - the flash

Many on-camera flash units have a built-in reflective light meter, that work just like the ones in your camera. When set to automatic, the flash fires and when the flash's meter senses that enough light has been sent out to properly expose the subject, the flash shuts off.

This happens in a flash. Literally. 1/750th or even 1/10,000th of a second.

On some flash units, the photographer has to set the film speed and choose what aperture to shoot at, then set the same aperture on the camera. Some newer, more sophisticated flashes link directly with the camera's computer, automatically setting the film speed.

A rare few older flashes are totally manual. In these, the capacitor in the flash builds up a charge, and releases all the power in one burst. The photographer has to use the flash **guide number** (a slightly complicated mathematical formula) based on the distance between the subject and the flash, to set the proper aperture.

Controls - the camera

Often with flash photography, the foreground is brightly exposed, but the background falls to black By taking control over the shutter speed and aperture controls, you can control this in your picture.

The important thing to remember when using a flash is that the **aperture** controls the exposure of the flash on your **subject**.

Shutter speed controls brightness of your ambient areas (those not lit by the flash). You can make the background lighter or darker, depending on your choice of shutter speed.

Steps to good flash exposures:

1) Take an ambient exposure reading as you normally would.

2) Determine the aperture you wish to use, to get the depth of field you require for the shot. Set your flash to match.

3) Decide how much detail you want in the background.

Remember that with negative film, you will have some detail in an image that is one to three stops less than your middle exposure. So, if you are in a dining room photographing someone blowing out candles on their birthday cake, and with an meter reading of 1/30 at f5.6, you can get some detail in the background if you set your flash to 5.6 and shutter speed to 1/60th or 1/125th of a second. Digital cameras have less latitude, so you will retain detail if you shoot two and a half stops faster than your ambient exposure.

Fill flash

Sometimes it is good to use flash outside during the day, especially if your camera syncs at a high speed, say 1/250th of a second.

If you are shooting in really contrasty light, say at noon, a flash can be set to "fill" in the shadows. Make sure the flash is set at least a stop less than your exposure (if camera is set at 1/250 @ f 16 and your flash is set to f11). The flash won't affect the main exposure, but will be bright enough to ensure detail in shadow areas.

You can also use flash to make dramatic portraits at sunrise and sunset. Use the gorgeous setting sun as a backdrop and set your flash to light the person.

Color

Your flash puts out a light that is balanced to daylight – the same cool white of light at noon. It's not a very flattering color. It often isn't the same color as the ambient light.

It you are photographing in your house, lit with tungsten bulbs, the ambient light will be excessively warm. If you are shooting in an office with fluorescent light, the background light will be very green.

If you wish, you can put a colored gel over your flash to change its color to match the ambient light.

If you are shooting in tungsten light or candle light, a warm-colored gel, called a CTO, will balance the flash to match the warm candle light. A Plus Green gel will match standard fluorescent lights.

When printed, your lab can bring the color balance back to a natural daylight.

Stop action

Many professional sports photographers who need to freeze motion, but are facing dim light conditions, use flash to capture brief moments.

Most of the indoor sports photos in Sports Illustrated were made using powerful strobe packs, with lights placed high above the floor, evenly illuminating the playing area. The photographer's camera is linked to the packs using "radio slaves," transmitters that beam a signal to the strobe whenever the photographer hits the shutter button.

The strobes provide all the light for the photographer, allowing the use of slow, fine-grained film. The only thing they must do is to make sure the ambient light is three stops less than what they are shooting at -- to avoid color imbalances.

With your small on camera flashes, you can achieve a similar effect, as long as you are close (two or three meters) to the action.

Bird photographers often use multiple smaller flashes to freeze the wings of fast-moving birds. Sit under the net at a kids basketball game, and an on-camera flash will freeze the scene.

Pop-and-drag

To spice up action in dim light, you can use the flash to freeze a subject, while exposing the background at a slow shutter speed. If you pan (move the camera in the direction of the action) your subject will be frozen, while the background is blurred.

Things to pay attention to with flashes

Inverse square law: The power of the light from a flash falls off quickly. If your camera is four feet from a person, and the exposure is f8, a person four feet behind will be a stop underexposed (f 5.6).

Double the distance, and the intensity of the light is cut in half to f4.

Small sources/hard light: The rule for light quality is, that the larger the source, the closer it is to the subject, the softer the light.

Small on-camera flashes produce some of the harshest light around: flat, hard, front light, so close to the camera lens it provides no modeling. It causes people's faces to look one dimensional.

To soften on-camera flash, you can diffuse it. Even a simple kleenex over the flash head will make the light softer -- but it will also cut the intensity of the light in half.

Many press photographers prefer to "bounce" their flash off a nearby ceiling or wall. They shoot with a fairly large aperture (say 5.6) and bounce the light off a 10' ceiling. The resulting large pool of soft light will be fairly even in exposure over a wide area.

And it will be fairly flattering light.

You need a fairly powerful flash to accomplish this, however.

When bouncing your flash, also make sure you are using a white, or neutral color wall. Bounce off of hospital green walls, and your subject will be green.

Red eye

Built-in flashes are convenient, but put out a small, hard light close to the lens. Get close to a person, take a snap shot. When you get the prints back, quite often you will notice the subject's eyes are glowing a bright red.

The flash has lit the back of the person's retina.

Many consumer cameras have a "redeye" setting. Push the shutter, the camera sends out a pre-flash, which dilates the pupils. A second flash exposes the image. The eyes are no longer red, but you probably missed the shot. The light is so late arriving that the action you were attempting to record has usually passed by the time your camera has decided to record the event.

A better way to deal with red eye is to go to a camera store and buy a red eye pen. A quick dot of color on the print and the red eye is gone. (But make sure you practice on some less than favorite prints before dotting the eyes of a great snapshot!)

Assignment: Take some time to play with your flash. Use a variety of shutter speeds to make the background brighter or darker. Try pop-and-drag. Try bounce flash, try using colored gels and diffusion over the light. Try fill-flash.