digitalphotography
the complete course

New York Institute of Photography

How To Use A Digital Camera

Unit Two
Lesson Five

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Getting Started.

Now that we've covered some of the key features you'll want to look for when purchasing a digital camera, let's explore the actual operation of taking a digital picture.

When you first work with a digital camera you will find that there are the usual buttons and levers found on a conventional camera—the shutter release, the lens zoom control, the flash, possibly a choice of exposure modes, and so forth—plus some additional controls.

As we go through these features, please note that your camera may have some but not all of the features we are describing. With so many models available, it's impossible for us to consider the nuances of each. Our description here is intended to cover the essentials—see your camera instruction book for the details covering your particular model.

Power Supply and Memory Options.

As we've already noted, one difference between digital cameras and film-based models is that most digital cameras tend to consume a lot of power. So the first thing you'll want to do is install fresh batteries in your digital camera. As we've mentioned, you will be using quite a few of them. This means that you need to use high-performance batteries and that you'll probably want to buy several sets of rechargeable batteries that fit your camera, usually AA-batteries. If you get the rechargeable variety, we recommend NiMH (Nickel Metal Hydride) batteries. Plan to purchase one or two sets of rechargeable batteries and a charger if you don't already have one. Every camera make and model handles battery installation differently, so consult your camera's documentation to learn the specifics of your equipment.

Nikon AC Adapter. *©Jim Barthman*

AC Adapter.

As we've discussed in Lesson Four, no matter what kind of batteries you use, and no matter how efficient your camera, there will come times when it's better to run your camera off AC power in your home or on location. This is a good conservation step when you're reviewing images that you've recorded on the camera's memory. It is an essential step when you're downloading photos into your computer, because if you are in the middle of downloading while you're using batteries and the batteries fail it could ruin the entire download.

While it's true that some of the time you won't want to be tethered to an electrical cord, there will be plenty of times when you will find one indispensable. Whenever the camera is on for extended periods of time, such as during serious image review, downloading your photos into a computer, or even if you are just going to be taking a lot of photographs, the AC adapter will save you a ton of money in batteries. Plus, as we just mentioned, if you're in the middle of a long download and the batteries give out, you may have to start the download all over again and with some camera models you also run the risk of possibly damaging or losing your images. The continuous power provided by an AC adapter will avoid this.

Inserting a Memory Card Or Other Picture Storage Device.

This is another product specific operation that will require reading your camera's instructions to make sure you purchase the type of storage device that works with your camera. Your camera will use either a CompactFlash, SmartMedia, Memory Stick, CD, floppy or some other type of "digital film" onto which your images will be stored before they are downloaded into your camera.

©SanDisk

Be sure to handle all memory cards carefully. Never touch the electrical contacts with your fingers, and be careful to avoid magnetic fields, electrical shocks, and vibration, or you could lose information.

Despite the obvious differences, digital memory cards are a lot like film. Both store visual information.

With conventional cameras, the film is where your images are stored. Which film you work with determines the sharpness, graininess and color richness of the resulting photograph. There are literally hundreds of films from which to choose, and you also have the option of working with color print, color slide, or black-and-white film. These films come in varying speeds to match the action and lighting conditions you'll encounter, and each has its own personality. For example, for the best enlargements you should choose an ISO 50 or ISO 100 film; for action and low light photography, albeit with some loss of quality, choose a faster film, such as an ISO 800 speed.

With digital cameras, the memory card is where your images are temporarily stored. One big difference is that you have more options for easily altering your photo after you take it. For example, a color digital capture can be converted to black-and-white easily and effectively in the digital darkroom, eliminating the need to choose beforehand. Choosing film for its "personality" (color saturation, color bias, etc.) is also eliminated, since those characteristics can be added later in the digital

darkroom. The best advantage of a memory card over traditional film is that after you download your images into your computer or another storage device, you can erase the contents of your camera's memory and proceed to re-use it over and over again. The cost of film and processing disappears.

Check To See How Many Storable Images Can Be Made On The Installed Memory Card.

When we load a roll of 24-exposure film in our conventional camera we know that we have 24 shots we can make. With digital cameras, a removable memory card has a finite amount of storage space too. Some cards can hold 64MB of information others can hold 512MB or more. The difference is that you can download a memory card contents, erase the card and re-use it just like any floppy disk. The maximum capacity of a memory card is determined by the sum of the file sizes of the images captured. Most cameras allow you to change resolution while you're shooting, and in some cameras the difference can be between ten and one hundred pictures on the card, depending on resolution you choose.

This may sound confusing, but fortunately most cameras monitor how much room is left on the card at any given resolution. Rather than counting the number of images you've recorded, digital cameras tend to count the number left that can be put on the card. Change your setting to high resolution mode and you will see the capacity shrink. Conversely, by changing your setting to low resolution mode you will see your image capacity increase dramatically.

Important Things To Remember Are:

The space each image takes up is determined by the quality level (resolution) and compression ratio that you choose.

Resolution should be chosen according to the end use of the image.

High resolution images can produce higher quality, larger reproductions.

High capacity storage media costs more than lower capacity media.

Some photographers choose to purchase several cards with lower capacities rather than one card with a higher capacity. This will minimize the loss should a single card fail. All of these decisions are personal and depend on your work flow and needs.

Choose A Capture Model.

Let's begin with exposure considerations. Your digital camera may have only one exposure mode—Program Mode. Program Mode works by choosing both a shutter speed and the appropriate aperture to produce a good average exposure. Most basic point-and-shoot cameras utilize a Program mode leaving all of the exposure considerations to the camera rather than the photographer. This is true of film-based point-and-shoot models as well.

Capture Mode dial on an Olympus E-10.

©Jim Barthman

Better cameras may have advanced exposure modes that allow the photographer to make the key exposure decision—either aperture or shutter speed—and then permit the camera to pick the other values to give proper exposure to the scene.

In SLR cameras and some high-end prosumer digicams, you'll find the following three modes:

Shutter Priority.

This mode allows the photographer to select the shutter speed for the photograph. The camera will automatically pick the proper aperture to give correct exposure. This is very helpful when you want a very slow or very fast shutter speed. As you can imagine, shutter priority is great for blurring motion and freezing it.

©Chuck DeLaney

Same scene, two different shutter speeds.

Aperture Priority.

When you select aperture priority, you get to determine whether the aperture will be large (and you'll get shallow depth-of-field) or small (to give you great depth-of-field). The camera finds a shutter speed to match your aperture selection to give you correct exposure.

Usually, with either shutter priority or aperture priority, the camera will beep at you and refuse to take the picture if it cannot get correct exposure with the shutter speed (or aperture) that you have designated.

Manual Mode.

This is actually a bit of a misnomer. When you set your camera to manual, you are expected to control both the aperture, size and the shutter speed. Manual "mode" is nothing more than letting you set the controls without assistance, the way things used to be before all the "modes" sprung up.

©Chuck DeLaney

Same scene, two different aperture sizes.

©NYI Student Evelyn Erickson

"Program" Modes.

In between the "auto-everything" approach and the shutter and aperture priority settings, many manufacturers give users a variety of so-called "program" modes. Many of these work very well, although most professionals don't like to relinquish this much control.

Different manufacturers sometimes use different names for these features, but commonly you'll find "sports" (or action) mode, or "landscape" mode on many cameras. Consult your camera's instruction book to find out what modes are offered, what they do, and how you turn them on and off.

©NYI Student Brent Winebrenner

Sports Mode.

As you might suspect, sports mode tells your camera to use the fastest possible shutter speed to capture fast moving action. This is great for photographing a car race or a basketball game. Anytime you use this setting, you're going to get a fast shutter speed and a wide aperture to match. Exactly which speed and what aperture will depend on the amount of light in the scene and the ISO capability of your digital camera.

©Don Sheff

Landscape Mode.

This mode results in the opposite extreme. In the assumption that you want as much as possible of the scene in front of you to be in focus, the landscape setting will set your camera to a relatively small (say *f*/8 or *f*/11) aperture. This puts a lot of the scene in focus. Most cameras are programmed to avoid the smallest apertures, eventhough this will generate the greatest depth-of-field. However, small apertures will require long exposure times that might give rise to camera shake, a subject we're going to cover a little later in this lesson.

Some cameras will offer other special exposure modes that adjust the camera's settings for special lighting conditions such as backlighting, extreme close-ups or pre-programmed shooting situations such as Portrait, Flowers and Night.

Focus Mode: Autofocus Or Manual.

Many digital and film-based SLRs offer a choice of manual or automatic focus. If you have the option, you may find that there are certain situations when using manual focus will make some sense, in particular when shooting in macro mode or if the camera is having a problem focusing through bars or windows.

Another time when you'll want to turn off autofocus is where you're waiting to take a photo of a distant subject and there are objects that pass in between you and the subject you intend to photograph. If you're taking pictures in a stadium, you don't want your focus on the field to be thrown off every time the people sitting in front of you stand up or raise their hands.

©DigitalVision
An overall cast is the result of shooting daylight film under a Tungsten light source.

White Balance.

White balance is a feature not found in film cameras. White balance is a way for a digital camera to automatically "filter" the type of light in which the picture is made in order to deliver consistent, neutral colors. The human eye adapts to different types of light—whether it be daylight, fluorescent or the light from household bulbs—and sees, for example, a white shirt as a white shirt in any kind of light. Despite the fact that these different light sources vary dramatically, our eyes (abetted by our brain) don't see the differences.

Film, on the other hand, does see these differences in light temperature. In fact, each type of film is manufactured to deliver true color rendition only in certain types of light. You may have seen this when photographing with regular daylight balanced film indoors without flash—everything comes out with an amber cast, caused by the relative warmth of tungsten light bulbs.

This amber cast results from the fact that household bulbs are deficient in blue. We won't go too far into color theory, but trust us: If you subtract blue from the color spectrum of white light you get an amber color on everything. There are specialty films for use under tungsten light, but normally we all photograph with what are called "daylight-balanced" films. This can create all kinds of interesting situations when tungsten and daylight are factors in a scene. Florescent lights present special problems of their own.

We measure the appearance of different types of light by using something called "color temperature." We won't bother you with the details other than to point out that warmer types of light, such as candles and tungsten light bulbs have a lower color temperature, and cooler lighting—daylight and electronic flash, have a higher color temperature.

Many digital cameras allow you to set the white balance for a number of different lighting situations. For example, some options may include incandescent or florescent settings for indoor use, or sunny or cloudy for outdoor use. Some cameras offer advanced capabilities allowing the photographer to set a custom white balance. If a lighting temperature doesn't match any of the pre-set types, you can create your own by photographing a white piece of paper under the unknown light source and "create" the balance. (Don't worry too much if your digital camera lacks a white balance setting, many do—we'll be showing you how you can adjust for color balance later in the digital darkroom.)

Navigating Your Camera Controls.

If you know how to use a computer you know what menu commands are and how to use them. Click any word in the Menu bar and a new set of options are revealed via a "pull-down" menu. Drag down with the mouse and click any of these menu items and you will affect your file in one way or another. This process of accessing and selecting computer functions has become standardized across almost all software applications.

Digital cameras have menu controls designed to access vital functions too. Due to the rapid growth in this industry, camera controls have not yet become standardized. As a result, this has become one of the most confusing aspects of using a digital camera today. Because every camera operates a little differently, we simply can't supply you with step-by-step instructions on how to access specific camera controls. We can, however, list the controls that we deem to be most important. Before you can learn how to use them you must learn how to access them. This puts the reponsibility back on the user (you), to read the documentation that came with your camera and if all else fails, call tech support, to learn the specifics of your equipment. Here are our recommendations:

1. FOCUS MODE: default, landscape, close-up

Many digital cameras today offer three basic modes of focusing. The default mode automatically focuses on anything put in front of the lens from a set minimum distance to infinity. This mode is well-suited for many photographic situations. The landscape mode focuses the lens on infinity and turns the flash off. Shooting a scene through glass window is a perfect situation for landscape mode. Primarily because it will ensure that the lens not only focuses past the glass, but also eliminates the possibility of flash reflecting off the glass causing glare. The close-up mode focuses the lens on subjects that are very close to the lens allowing for sharp, magnified image capture. This is also known as macro-photography. Most digital cameras allow you to toggle between the three modes by pressing a single button. Press the button once and you are in landscape mode, press the same button again and you are in close-up mode, press it a third time and you are back in the default focusing mode. Your camera control panel should show you which focus mode is being used by displaying the appropriate symbol for the current mode choice.

While Balance button

Capture mode

Review mode

Camera On/Off

Flash button

Focus mode button

White Balance button

Select current option

Navigating Your Camera Controls.

Our top-ten digital camera features are discussed in detail over the next few pages.

Auto-Focus

Image Quality

White Balance

Image Size

Flash "On"

Current aperture size

Flash "Off"

Shutter Speed

Close-up mode

Landscape mode

Battery level

Self-timer

No. of storable images remaining

2. IMAGE QUALITY SETTING

This is one of the most important functions your digital camera can offer you. Shooting images at a quality setting that is too low for your needs and you'll get unsatisfactory results. Shooting images at a quality setting that is too high for your needs and you'll constantly be downloading bloated image files to free up memory space on your CompactFlash, SmartMedia or other storage media. You'll need to know how to adjust the Quality setting so you can capture the right amount of pixels for your end-use. Quality settings are usually accessed through a button that's marked, you guessed it, "QUALITY". To save space the designation may be "QUAL" . Again, you can typically toggle through a variety of quality setting choices by pressing the button multiple times. Image Quality designations are often unique to a make and or model camera; one may use "Basic," "Normal," and "Fine," while another "SHQ" (Super High Quality) "HQ" (High Quality) and "SQ" (Standard Quality). Not only does every manufacturer name various quality settings differently, a "Normal" setting for one camera will probably differ from the same "Normal" setting on another. What you need to understand is that each setting will yield a higher or lower quality image based on a variety of factors most notably the amount of compression. The higher the compression, the lower the quality. Better cameras capture the highest quality image as an uncompressed TIFF file. Lower quality files are saved as a JPEG files with various levels of compression. Just like a roll of film, every memory card has a maximum capacity and if you run out of storage space you have to stop shooting. At this point you must replace the memory card with an empty one or download the images and erase the card. Weigh your quality versus storage space carefully. As we've discussed, cameras display how many storable images are left. The amount of images you can capture is dependent on the size of the currently installed memory card and the current Image Quality setting. It's a good idea to keep an eye on your camera's control panel to monitor the amount of shots remaining.

Learn how your camera designates quality and compression and weigh your pixel needs.

3. IMAGE SIZE SETTING

This setting determines the pixel dimensions of the image capture. Typically a FULL setting indicates that all the pixels in the image sensor are being used to capture an image. If a camera's CCD image sensor is 2048 pixels x 1536 pixels, a FULL setting would capture an image that is 2048 pixels x 1536 pixels (that's 3-megapixels). Some manufacturers use

common monitor pixel dimension equivalents, for example, XGA (1024 pixels x 768 pixels) or VGA (640 pixels x 480 pixels). Some settings mimic the proportions (3:2) of 35mm film. The Image Size Setting in conjunction with the Quality setting will determine, among other things, the size (in kilobytes) of a digital image file. One popular digital camera requires you to hold the "Quality" button while turning a dial to access these settings. Every turn of the dial changes the image capture dimensions. The Image Size setting is usually indicated in the camera's control panel.

4. FLASH MODE: on/off

By default most cameras are set to fire the flash automatically in low-light situations. Most of the time the camera will make the right decision, occasionally it won't. As a result some cameras give the photographer the choice to turn the flash on and off manually. Suppose you are photographing a subject that is lit from behind resulting in a silhouette with no foreground detail. In this case, the camera may read the back light and determine that no flash is necessary. Chances are you will need some fill light in front, so this is a perfect time to change the mode to Flash-On and force the flash to fire despite the camera's best intentions. Occasionally the natural light in a scene, despite its low intensity, is the look you desire and the photograph will not benefit from the harsh effects of on-camera flash. Changing the mode to Flash-Off may mean you'll need a tripod to eliminate camera shake, but it will also ensure that you don't compromise the feel of the ambient light.

Flash mode changes are typically accomplished by pushing a flash button multiple times to toggle through the various modes available. The camera control panel typically represents the flash-on mode with a lightning bolt; a bolt with a circle and slash through it is the common indication for flash-off mode.

5. REVIEW YOUR IMAGES

One of the best features that digital cameras offer is the ability to review and delete image files while they're still in the camera. You can review images on your camera by setting the camera to Playback or Review mode and using the 4-way toggle most cameras have to navigate forward and backward through your photos. Playback mode is usually found on the same dial as the Image Capture mode. The designation may be the word Play or Review or sometimes just a manufacturer-specific icon. When you come across an image that you know you don't want you can usually delete it immediately by pressing a button on the camera body that is almost universally labeled with a garbage

can. Most cameras will ask you to confirm your choice by displaying a statement on the Control Panel screen that says something like "Are you sure you want to delete the image?" followed by "Yes" or "No." Using the 4-way toggle you can highlight the appropriate response and then press the OK or Select button. The camera will confirm that it is deleting the image and you're done.

6. SET YOUR CAPTURE MODE:
Automatic/Manual/Program

The Capture Mode is almost always set with a dial of some sort. Typically the first letter is used to designate a mode. For example A=Automatic, M=Manual, P=Program. Turn the dial to the Capture mode you desire. Check your dial often to make sure the Capture Mode you're in is correct.

7. BATTERY LEVEL

Another very important piece of information for the digital camera user. When your batteries give out, you're done. Keep a close watch on the camera's control panel to monitor battery usage. A flashing battery symbol usually means your batteries are nearing depletion. Some digital cameras, unlike film cameras, will cease to function as soon as the camera deems there isn't enough power. Consequently, you may find that your camera's battery usage monitor may indicate half full, but as far as the camera is concerned, you're out of power. If you think you are running low, odds are you will be out of power on your next shot.

8. WHITE BALANCE

As we discussed earlier in this lesson, your white balance setting is designed to automatically correct for objectionable color casts in a digital capture, much like a color correction filter does. Setting white balance on many digital cameras simply means pressing a button, after making an exposure under the particular lighting situation. More sophisticated cameras will display a list of specific light sources in the camera's control panel. Your choices may include fluorescent, incandescent or even the ability to set a custom white balance. Navigate the list with the camera toggle switch and choose a highlighted item by pressing the appropriate "Select" or "OK" button.

9. AUTO-OFF

This is an energy-saving feature designed to shut your camera off if it detects that it is not in use. The amount of time before shut-off can sometimes be controlled by the user. The

default time-delay is often too brief, which can be annoying if you find you're constantly turning the camera on to take a shot. This setting will most likely be found in a SET UP menu. Navigate your Menu options with the camera toggle switch and select an appropriate time-delay and see if it works with your shooting style.

10. SELF-TIMER

Many cameras have an automatic timer that delays the shutter release allowing for an unattended image capture. This function is great for producing self-portraits. The interval between the timer activation and the exposure varies from camera to camera but is usually about 10 seconds. The self-timer can also be extremely helpful when you don't have a cable release and want to eliminate the possibility of camera shake. With your camera on a tripod, using the self-timer means you don't have to physically touch the camera in order to make your exposure. This control may have its own button or may be grouped with other functions under a common button. Either way it's typically designated with the symbol of a small clock. Press the button once to access self-timer mode, press the same button again to turn the function off. Once in self-timer mode you simply press the shutter release to start the countdown process.

Digital Camera Manuals.

There are lots of specifics about your camera that require you to thoroughly read your camera's instruction manual. Since most cameras are made in Japan or Germany, instruction manuals have often been hard to decipher.

In our experience, there are two main reasons for this.

First, there is the issue of translation. In recent years, the English versions of camera manuals have improved. We have some manuals from the 60s and 70s that are "umpossible" to understand and sometimes downright funny. These days, many manuals are much better written and illustrated.

The second cause of poor manuals is more insidious. Cameras are expensive tools, and in part the manufacturers want to sell you a "magic" device that will take great pictures with very little effort on your part. That means manuals often gloss over difficult topics. If the manual hits too hard on what's difficult, some manufacturers fear you might start to have doubts about the product.

Keep in mind, that the manufacturer of your camera may have provided only a "Quick Start" guide in printed form. Often, you'll find a full reference manual in PDF form located on the camera's installation CD-ROM that will contain quite a bit of information you should know. Keep your eyes open for one of these hidden manuals.

Finally, there's a lot of basic points about photography that the manufacturers assume you know.

Clearly, it is our mandate in this Course to help you learn about your camera and about photography. For some of the details about your camera, we must refer you to your manual. But if you hit a dead end, don't hesitate to contact your Student Advisor. While we haven't used every make and model of digital camera, there are hundreds of years of collective photography wisdom on the NYI staff, and we'll do our best to help you get to the bottom of the specifics of your camera.

Resolution Choice/Quality Settings.

One of the main differences between digital and conventional photography is that with a digital camera you can choose the quality of the image before you make the shot. Many cameras offer you a choice of "quality" settings. The quality setting changes the resolution of the picture captured. The line between image size and image use is a fine one and should be considered carefully before you begin shooting.

This concept is quite different from film, and takes some getting used to. The general rule is that if you want to use the image for prints, use higher resolution settings; if you want to use the image for a Web or screen image only (or a very small print), you can choose the lower resolution. If you follow these basic rules, you will always be satisfied with your image output.

If you shoot with the high quality setting (higher resolution), you will get less pictures per memory card, because each individual image takes up more space. The upside is that each of the images will be of higher quality.

If you shoot with the low quality setting (lower resolution), you'll get more pictures per card, because each individual image takes up less space. The downside is that each image will be of lower quality.

How Do I Choose The Right Resolution?

Remember that when it comes to making photorealistic prints, you will need to capture the minimum amount of pixels necessary to satisfy the needs of your output whether it be a inkjet printer or a printing press. We've noted that you don't need nearly as many pixels (low resolution) when you take a picture for use on the Web. In fact, for Web purposes you may prefer a picture with a lower-than-maximum resolution because it won't require as much storage space in the camera, and it can be transmitted across a network like the Web much faster.

When in doubt, capture a bigger file. However, keep in mind that you can always lower the resolution of an image after you've downloaded it into your computer, so if you are not sure exactly what your intended output will be or if you plan on multi-purposing your pictures, then choose a higher resolution setting. This is another reason to have plenty of storage cards available since the major downside to shooting

higher resolution images is the space that they will take up on your memory card before you download them into your computer. Consider all your uses before making your resolution choice.

Can you control the amount of resolution of individual shots? On many cameras you can. They give you a choice of shooting pictures in different modes of resolution—for example, high-resolution mode and low-resolution mode—and the ability to adjust the resolution at any point in the time.

What's the difference between these modes? Typically, "high-resolution" or "best" mode uses virtually all the pixels on the camera's CCD chip, "medium-resolution" or "better" uses about half the pixels, and "low-resolution" or "good" mode uses only, say, one-quarter of these pixels.

For example, let's say your camera has a CCD chip with two-million pixels. In "high-resolution" mode your camera will capture most of those two million pixels to produce an image. On the other hand, if you shoot in "low-resolution" mode, you will produce an image of the same scene using only 500,000 of these pixels. The image will appear the same, on your LCD monitor except the file size will be quite a bit smaller.

What's the benefit of shooting in "low-resolution"? The biggest benefit is that you can store more pictures in the camera's memory card before you fill it up. That's because the size of the file you store is directly related to the number of pixels used to produce the file. A file containing information for every pixel requires four times as much storage space as a file that contains information recorded by only one-quarter as many pixels. And this translates directly into the number of images you can store in the camera's storage device. In a four-to-one difference, for example, if the camera can store 120 "low-resolution" pictures, it can store only 30 "high-resolution" pictures in the same space.

What does this mean to you? Several things. If you do most of your photography for the purpose of displaying photos on your Web site, then you may be able to use the low-resolution mode for the majority of your pictures. You will be able to take a large number of pictures before you must either download them to your computer or replace the full storage device with an empty one.

If, on the other hand, your photographs are destined to be high quality prints, then low-resolution mode is not a choice. For this kind of output, you simply must use high-resolution mode and accept the fact that you'll need to have a lot of

storage media at hand or the ability to download your images frequently. If you are not sure what you are going to do with your pictures then choose a higher resolution.

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File Formats.

It's a good idea to consider your file format options before you take a digital picture. File formats refer to the way the digital information in an image is arranged. While some file formats have been designed to compress images, others have been designed to do exactly the opposite and retain all the information. The file format designation appears as a 3-letter extension after the name of a file.

Some file formats are specific to a manufacturer or program, for instance, files created with Photoshop are .psd files. Other file formats have been created to be industry-standards and as result can be read by a variety of programs, across computer platforms. Still other formats are used because they create files that are intended for a specific output or end-use in mind. In many cases you will be able to change from one format to another later in the digital darkroom. Because most digital cameras today save images primarily in two formats, we'll cover them first.

TIFF stands for Tagged Image File Format. These files, for all intents and purposes, are uncompressed files. That means the total amount of information captured is retained in the saved image file. If you are looking for maximum image quality, shooting in uncompressed TIFF mode is the best way to go.

However, since these files are rarely compressed*, images saved in the TIFF format take up large amounts of space. Shooting only uncompressed TIFF files would take up too much space in your camera's internal storage. That's one reason JPEG has become the other standard format for digital imaging.

**While the TIFF format does allow the user to employ a compression scheme known as LZW compression we do not suggest using it for a few reasons which we'll explain later.*

JPEG stands for Joint Photographic Experts Group after the group that designed it and set its standards. The JPEG format is a "lossy" compression format, which means that image information is discarded in order to compress the image and make the file size smaller. JPEG is a standard compression algorithm for photographs that can be read by all computer platforms and because of their small size are perfect for the Web. The JPEG file format allows for different degrees of compression—so that your files can be compressed just a little and still be capable of producing good prints or compressed a lot so that you can store a lot of pictures on a card. With the JPEG format the choice is yours. However, JPEG is a lossy format and therefore JPEG images can suffer if you over compress, save multiple times or try to enlarge them. So, it is important to consider the amount of compression that you use.

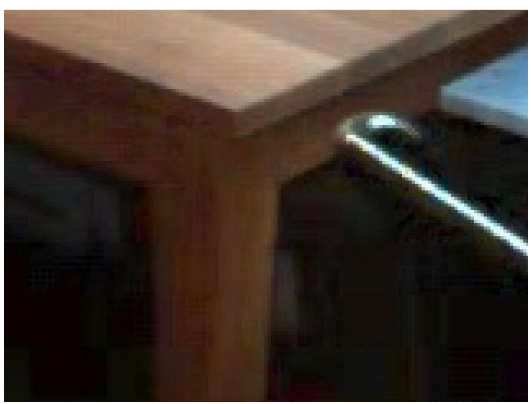
The amount of compression that is applied to an image is known as the compression ratio.

Compression Ratio.

Compression ratio refers to the size of the "raw" file compared to the size of the compressed file.

For example:
If the raw file contains 100,000 bytes and the compressed file contains only 10,000 bytes, the compression ratio is said to be ten-to-one, which we write as "10:1." If the 100,000 byte file is compressed to 20,000 bytes, the compression ratio is 5:1. If the 100,000 byte file is compressed to 50,000 bytes, the compression ratio is 2:1.

JPEG compression, for example, works by dividing the image up into 8x8 blocks of pixels and eliminating color information from that block. JPEG compression exploits a known limitation of the human eye which has trouble perceiving small color differences. Despite the reduction of color information in the compression process, JPEGs maintain 24-bit color (16.7 million total color possibilities) yielding excellent continuous-tone images.



A magnification of an image saved at a high compression ratio reveals "artifacts" or quality loss.

Conclusion: Overall, we recommend that you bu a camera that offers a choice of compressed and uncompressed formats. For example, some cameras offer Best (4:1), Better (8:1), and Good (16:1). Shooting high quality JPEGs can still produce good quality prints in most situations.

We have seen some cameras that feature much higher compression ratios than 16:1. In fact, one amateur digital camera offers only a compression ratio of 36:1. What's the result? The pictures it produces at this compression ratio are rather poor. Artifacts which show the physical damage caused by overcompression are visible, usually as jagged black pixels.

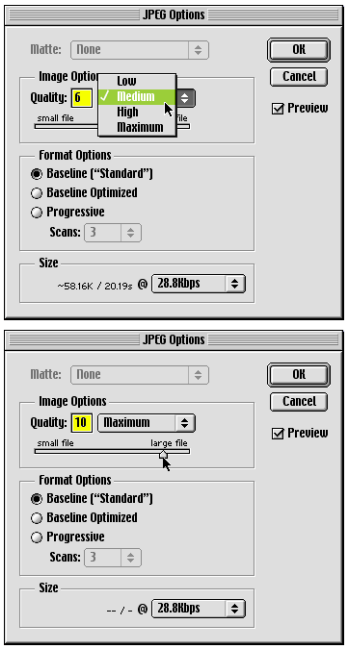
Compression vs. Resolution.

Be careful here. Don't confuse this choice of compression with the choice of resolution offered by many cameras. For example, "low-resolution mode" means that only some of the pixels on the chip are used. "Low-compression" mode, on the other hand, is independent of the number of pixels used, and can be used with any resolution. You may choose low-compression or high-compression or no compression for a picture that you took in low-resolution mode or high-resolution mode or whatever. In other words, compression mode is independent of resolution mode, although both work together to produce a certain picture quality and image file size.

What does this entire discussion of compression mean to you?

Simply this: When you choose a digital camera, don't just consider the resolution of its chip. Also consider the compression ratio at which the images will be stored. If the lowest compression ratio offered is only 10:1, be wary. If the camera gives you a choice of Compression Modes (or similar nomenclature) our advice is to opt for it because having options means having control.

Different cameras handle pixels differently. Realize that every digital camera captures and processes information a little bit differently. So it is important to use and test *your* camera's compression/resolution capabilities. Once you establish standard settings for specific situations you'll find your image quality will increase.



Two ways to apply compression to a JPEG file in Adobe Photoshop:

1.) Choose from Low, Medium, High or Maximum from the Quality pull-down menu.

2.) Click and drag the Quality slider to choose a specific level from 1-12.

Compression Choices.

You know that higher compression ratios allow you to store more images. You also know that high compression ratios can compromise the detail in your images. What do you do? As we've stated before, start by identifying how you want to use your images.

If you are going to use your images for the Web only and need to get as many images on the card as possible, you'll probably want to use one of the compressed JPEG settings. If you need 8 x 10 prints you probably want to shoot uncompressed TIFF files. You will fill up memory cards rather quickly so either download the images to your computer or buy multiple memory cards. We know of at least one photographer who went to Europe on holiday with only a digital camera. His goal was to produce 8 x 10 and 5 x 7 color prints. In order to save space on his memory cards, he shot everything as high quality JPEGs (with very little compression). When his cards were full, he went to his car where he had his trusty laptop computer waiting to download and store his images. Experience had shown him that the high quality JPEG setting output to his photo-quality inkjet printer produced very good results. This resolution choice also gave him more shooting time and less

downloading time. This sort of creative planning allowed him to spend 3 weeks in Italy shooting the countryside with only a digital camera. Because this is such a new field, creativity is not only necessary behind the camera, often times it pays to be resourceful *after* the shot too.

Now that we've gone through the different settings you'll find on a digital camera, it's time to see what happens as you take the picture.

©NYI Student Michael Haser, MD

Fundamentals of Camera Use.

Let's turn away from the head-spinning topic of resolution and compression and turn to something that has always been essential to photography. How to get a sharp, well exposed photograph.

This is one topic that hasn't changed much since the invention of modern photography. Most of the time we want to see sharp photos of clearly defined subjects. That means that the camera must be absolutely steady when the photo is taken. Let's cover how to hold a camera in your hands, and then discuss how to keep the camera completely steady using a tripod.

©Olympus

Holding Your Camera Properly.

Just like in traditional photography, holding your camera properly will ultimately yield better results. Keep your elbows tucked close to your body to help steady the camera. Be sure that your fingers aren't covering any part of the flash, lens or other image sensors. That goes for camera straps too. Camera shake translates into out of focus images. Use a tripod whenever you can. This sort of attention to detail can mean the difference between a good picture and a great picture.

When you're ready to shoot, take a breath, hold it, and then shoot to minimize camera shake.

As we discussed in Lesson Four, it may take a second or so until the camera actually captures the image in front of it. If you have performed the exercise in WebCenter Two, you should have a pretty good idea how much this delay is a factor in capturing any kind of moving subject. With practice, you should be able to learn how to press the shutter slightly before the image you actually want appears in front of the lens.

Composing Your Image.

One of the major differences between digital cameras and film-based cameras is the method you use to compose your image. Most digital cameras and all film-based cameras come with a traditional viewfinder which, if the camera is an SLR, lets you look directly through the lens at the actual image you are taking. If your digital or film-based camera is a point-and-shoot model, then the window that you look through shows you an approximation of what the lens is actually seeing.

Digital cameras add another option to the traditional viewfinder. They offer an LCD screen as well. There are times when using the LCD screen to frame, focus and compose your picture will make some sense. On some cameras, for instance, you can only use the LCD screen when you want to compose the picture in macro mode. For critical composition, the LCD panel view will be the most accurate view of your capture.

Unfortunately most LCD screens are hard to see in bright or direct sunlight. In addition, using the LCD does not guarantee that the image is in focus even though it may appear to be sharp when you look at the picture in the screen. The only way to tell for sure is after you've downloaded the photo into your computer.

There's another problem using the LCD viewfinder for taking pictures. Since you have to hold the camera out in front of you in order to see the LCD viewfinder, you will have a harder time holding the camera steady. It's much easier to do this when you're holding the camera up to your eye and using your head as well as your arms to steady it.

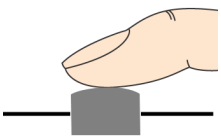
As we've explained, the most convincing reason to use the viewfinder over the LCD is battery savings. Use your LCD screen judiciously or be prepared to use a lot of batteries.

There is one time when the LCD viewfinder does become very useful while you're taking pictures. That's when you come in so close to your subject that you run up against the problem of parallax. Parallax arises when you (and your camera) are so close to your subject that you see a different image in the viewfinder than the lens, which is located an inch or more away from the viewfinder window, sees.

This subject is covered in Tape Two of the *Weekend Photo Workshop* in detail. But remember that any digital camera, whether it is a single lens reflex or a digicam, displays the exact image seen by the lens on its LCD panel. Since many digital cameras can focus very close to the subject, when you're making close-up photos you'll need to use the LCD

viewfinder to see what's actually in front of the lens.

Now, assuming you're willing to let the camera set the focus and exposure for the photograph, you're ready to start taking the picture.



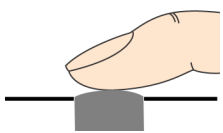
Depress The Shutter Halfway.

On most cameras today, depressing the shutter button halfway causes the camera to establish an exposure and determine focus based on your current composition.

Once you've depressed the shutter button and the camera has determined exposure and focus, as long as you keep the same pressure on the button, you have "locked in" focus on whatever object was in the center of your viewfinder. You can now recompose your image if you like, and the camera will stay focused on what was in the center of the frame even if you reposition that person or object.

This is called focus lock, a technique that we cover in great depth in Tape Two of the *Weekend Photo Workshop* and in WebCenter Two. On most point-and-shoot models, the exposure is also set when the shutter button is depressed. On SLR cameras there is usually a separate "exposure lock" button.

We'll return shortly to steps you may be able to take to exert manual control over focus or exposure, given the type of camera that you're using. Let's assume for the moment that you're willing to allow the camera to use the focus and exposure settings it wishes to use.



Depress The Shutter Fully.

When you're satisfied with your composition and are ready to capture the image, it's time to press the shutter button.

Your image is now recorded on your camera's chip and headed for storage in the camera's memory or some type of storage media in your camera.

The next portion of this lesson will deal with how to handle your image after you've taken the picture. But before we move onto that topic, let's spend a little time fine-tuning some of your picture-taking skills.

Getting Sharp Pictures.

As we've mentioned, most of the time you want sharp, well-focused photographs. If the image is soft or fuzzy, most of the time, your creative efforts will fail.

©NYI Student Caroline Kunsky

Why might this happen? There are two possible reasons:

The first is that you failed to focus sharply. We've discussed why this is important and how automatic focus will always focus on whatever is in the center of the frame. Use focus lock to make sure you've focused on what's important to you in the scene in front of your camera.

The second cause of unsharp photographs is camera shake. This is an error that can be easily avoided. You need to take two simple precautions:

First, use a shutter speed that is fast enough to eliminate any visible effects of camera shake. How fast is fast enough? We'll get back to that shortly.

Second, whenever possible, use a tripod! A tripod is an indispensable piece of equipment for any serious photographer. It's indispensable for you if you want to take top-quality pictures. And, since most digital cameras are relatively light weight, it's easy to get a tripod that will do a good job at a reasonable price.

Of course, there are situations when you can't use a tripod. There are times when it's not practical. There are places where it's not allowed. In those cases, you'll just have to hold your

camera as steady as possible using the hand holding techniques we discussed earlier. But, allow us to repeat ourselves, whenever you can, use a tripod.

Why are we so emphatic on this point? Because the greatest single failing of all the photos submitted by beginning students is camera shake. They do not use tripods and their pictures show it!

How to Select a Tripod.

The ideal tripod should be light enough for you to carry easily from place to place, yet not so flimsy that it doesn't provide a rigid support for your camera.

Weight creates stability, so when you shop for a tripod, you must strike a balance between the convenience of a light tripod and the greater stability of a heavier model. There are tripods that weigh about a pound, and others that weigh two hundred pounds. The right tripod for you to purchase is one that you're likely to use most of the time.

Points to Look for in a Tripod.

A reasonably good tripod, easy to carry and rigid enough for most uses, should include the following features:

1. A head that allows you to pan the camera, tilt the camera up or down, and use the camera in both horizontal and vertical positions.

2. All locking devices that hold the head and legs steady should provide a firm hold with no slippage.

3. The tripod legs should have rubber tips for non-slip safety and to avoid scratching or marring floors when working indoors.

4. You should be able to get the tripod to hold your camera at your eye level without having to extend the center column more than a foot or so. If the center column has to be raised too far, you lose steadiness.

5. Large, easy-to-use knobs and handles for all controls are a sign of good design.

Extra features:

6. Many tripods provide a "quick-release" head and plate. This enables you to mount your camera on a tripod in an instant, and detach it just as fast. To use this type of mechanism, you attach a quick release plate to the bottom of your camera by screwing it into the threaded hole. Then, every time you want to mount your camera on the tripod, you simply click this plate into a slot on the tripod head. There aren't too many types of photography where you'll need a quick-release head, and some photographers find them inconvenient. It's easy to lose the quick release plate. It's also easy to accidentally quick release your camera to the floor. We've got nothing against these gadgets, but we don't think they're a necessary accessory.

7. Some tripods offer interchangeable heads. Others provide a head that you can detach and mount on the bottom of the center post when you want to shoot low to the ground. This can be a useful feature.

Monopods.

Let us call to your attention one other helpful device, the monopod. There are times when you can't use a tripod but where a monopod might do the trick. A monopod resembles a collapsible walking stick. It's about one foot long when collapsed and about five feet long when extended. It is, in effect, a one-legged tripod. It can provide a steady platform for your camera when a tripod is impractical —for example in cramped athletic stands or in the tiny photographers' area at a fashion show. You may have no room for a tripod, but there's always room enough to place the monopod on the floor.

Here's a hint on using a monopod that many pros don't even know: To get the best stability from a monopod when you're standing up, don't simply position your monopod straight up and down. Rather, plant the toe of the monopod about two feet in front of you and then lean it back to your eye. Your own feet should be separated by about the same distance, so the monopod forms, in effect, a tripod with your two legs. In this position it provides you with a much more stable platform than if you just use it as a wobbly one-legged platform.

Additional Tips for Sharp Photos.

Whether you're handholding your camera or using a tripod, there are steps you can take to insure that your photographs have maximum sharpness. Let's examine some of the causes of unsharp pictures and study the remedy for each.

Camera Shake.

We repeat that this is the most common cause of unsharp pictures.

The problem may be caused by the way you press the shutter release button. Uneven finger pressure, excessive pressure, or jabbing at the button can cause camera shake. The correct technique is this: When you're ready to shoot, place your finger directly over the center of the release button and then slowly and gently apply pressure until the shutter mechanism is activated. Don't release your finger until after the photo is completed.

In addition, pay attention to your stance. Make sure that your feet are spread slightly. Keep the weight of your body over your feet. Time and again we watch amateurs that plant their feet and then upon looking at the subject in the viewfinder, decide that they should move a little bit closer or further away from the subject. That's fine, but we see photographers that do this not by moving their feet, but instead by leaning forward or backward. That guarantees you'll be unsteady. Keep your feet under you at all times.

Many photographers use one hand to support the camera from below by "cradling" it. They feel this gives more support to the camera than gripping it from both sides. Cradling is particularly useful when supporting a camera with a heavy telephoto or zoom lens. Try to brace your arms against your body to form a steady platform to support the camera.

For greater sharpness you should also be aware of body movement that can be caused by breathing. This can be particularly important when shooting at slow shutter speeds such as 1/30. When circumstances require handholding a camera at a slow shutter speed, many photographers breathe in, exhale gently, and then shoot.

If you are photographing from a seated or kneeling position, brace your arms or elbows against your knees. When shooting while lying on the ground, brace your elbows on the ground.

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Shutter Speed and Camera Shake.

To repeat once again: The greatest single fault we see in pictures submitted by beginning students is lack of sharpness due to camera shake. A handheld picture is not likely to be as sharp as one made at the same shutter speed with the camera attached to a tripod. The pictures on this page show an example.

Both were shot with the same camera using 1/60 of a second. The only difference is that the photo on the bottom was taken hand held and the one on the top was taken with the camera mounted on a tripod.

When we look at the photos in a small size, they look identical. But take a closer look and you'll see the difference. The tripod shot is sharp. The hand-held image is fuzzy.

How do you avoid camera shake? First, by using a tripod when it's practical to do so.

If you can't use a tripod, use the fastest shutter speed appropriate to the circumstances. How fast? In Lesson Four we mentioned that the conventional wisdom is that you shouldn't hand-hold a camera unless you're using a shutter speed at least as fast as 1/60th of a second. Frankly, it's better to use an even faster shutter speed, such as 1/125th.

The "safe" hand-held speed also depends on the focal length of the lens you're using. The longer the lens, the less vibration it takes to make an image fuzzy. The rule-of-thumb is that your slowest hand-held speed should be about the same fraction of a second as the focal length in millimeters (assuming we're discussing focal length in relation to 35mm film). That means a 50mm lens should not be hand-held below 1/50 second, a 100 mm lens not below 1/100, and so on.

We recommend that when possible you give yourself a margin of error and try to shoot twice as fast as the rule-of-thumb. With a 50mm lens, try to use a shutter speed of 1/100 or faster, and with a 100mm lens use 1/200 or faster. This will help assure maximum sharpness.

What If You Can't Control Shutter Speed?

If you're using a point-and-shoot film camera, one way to get a faster shutter speed is to use a faster film, that is one with a higher ISO number.

Many point-and-shoot models, including both film and digital cameras sometimes offer a variety of modes, as we discussed earlier in this lesson. Find out if your camera offers a "sports" mode of some sort. That setting will automatically push the camera to the fastest possible shutter speed for the available lighting conditions.

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Sharpness is Relative.

Here's a photo that was taken by the light of a single candle. It was made with a film point-and-shoot camera with a maximum aperture of *f*/5.6, using ISO 800 film. The camera automatically used a shutter speed of about two seconds. The photographer took five frames of the child. While this photo is far from razor sharp, it is sufficiently sharp to convey the mood. The warm color temperature from the burning candle enhances the mood of the photo.

When we ran this photo a while back on one of our Web sites in connection with an article about low light photography, we got one screaming e-mail ripping the photo for its lack of sharpness. Not long ago, we bumped into the parents of this child, and they reminded us that this photo, taken about two years ago, is their favorite portrait of their son. As Groucho Marx used to quip, "Who are you going to believe, me or your own eyes?"

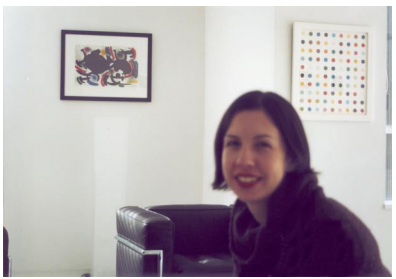
Camera Shake or Poor Focus?

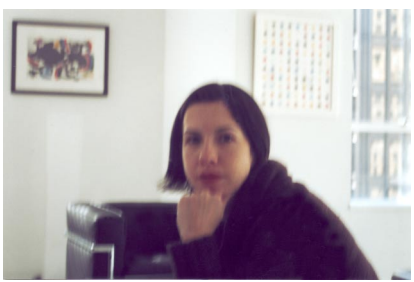
If your photos look fuzzy, you want to determine if the reason is camera shake or failure to focus sharply. Once you know the reason, you can correct it. The problem is that both errors produce fuzzy images, so how do you know which is the culprit? The answer is in your pictures, if you look closely.

Look at these three pictures. The first presents a sharp image, but the other two are fuzzy. What's the problem with them —camera shake or focus?

The second picture was not focused properly. How do you know? Because you can see that while the model is out of focus, the wall behind is in focus. That means the photographer (or the camera) focused on the wall instead of the model. In the third picture, you see a different situation. Nothing is sharp. In this situation, the culprit must be camera shake.

That's how you can tell. If something is sharp, then focus is the problem. If nothing is sharp, then camera shake is the problem.





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How To Care For Your Camera.

Your camera is a precision instrument. Treat it with proper care, and it should give you years of service. Here are a few basic suggestions:

1. Store the camera in a cool, clean, dry place. Do not use the glove compartment of your car, in which it can be subjected to oven-like heat, or extreme cold.

2. Keep the lens cap on whenever you are not taking photographs.

3. Don't try to repair your camera unless you have the training and tools for it. Bring it to an expert.

4. Keep your fingers off the lens. The acid in the oil on your skin can harm the lens surface.

5. Make sure your battery contacts are clean to insure constant power supply.

6. Keep your film-based camera clean inside and out. To clean the inside, open your camera and gently blow out any bits and pieces of debris using an air syringe. Do not use an air-pressure blower can, since this may be too violent for the delicate mechanisms.

7. Digital cameras are particularly susceptable to shock damage. Don't drop your camera, and carry it in a padded bag or wrap.

For additional cleaning information (and camera repair information should you need it), consult WebCenter Two.

After You've Taken the Picture.

After you've taken a picture, the traditional steps—finish the roll, unload the film, get it processed, and have prints made — no longer apply. This portion of working with a digital camera is completely unlike anything that you've ever done with a film-based camera.

The first big benefit starts even before you get the pictures out of the camera, since you can edit them while they're still in your camera. That means you only keep the ones that you like.

©Jim Barthman

Analyze The Preview.

As we've explained, the LCD screen on the back of your camera is really only showing you an approximation of your actual file. Use it to determine if your subject's eyes were closed during the exposure. Don't use it to try to assess image detail, such as highlights or critical focus as it doesn't have the resolution necessary to critically analyze your images.

With digital cameras you can choose to review your images either immediately after every picture is taken or after you're done photographing.

Reviewing Your Images On Your Camera—Save The File/Delete The File.

Find the place on your control dial that says "Review" or "Play" and set it. In many cases, the last picture taken appears on the LCD screen. You may also have a number of options that allow you to see all the pictures you've taken that are stored in the camera's memory or on the removable memory card. This may be indicated as "scroll", slideshow", or "review all" on your menu settings. You might also be able to see what are called "thumbnails", a set of pictures (this may range from as many as 4 to 9) on the screen at one time.

Once you look at the pictures you then have the option to save or delete images from the camera's memory. (Note: Doing nothing will save images.) The term 'save' is a bit confusing because in reality the image is already saved on the card, so you are really only choosing whether to keep the photograph or let the camera record over it. First, use the camera's controls to scroll through your pictures. (This is done with a Forward or Back toggle.) When the picture appears on the screen, you remove it from memory by hitting a Delete key on the controls. Once you delete a picture it is gone, never to be seen again, so be absolutely sure that is what you want to do.

Creating Folders And Albums On Your Camera.

Some cameras may give you the option of placing the particular picture into an "album." This option pre-sorts your pictures in file folders that can help you organize pictures later. You might define one album as "vacation shots," another as "flowers" or another as "portraits". When you download pictures later they automatically collect in one or another of those selected albums on your computer. See your camera's instruction book for information on whether this option is available on your digital camera.

Other Review Options.

Advanced cameras may also give you other review options, such as adding sound (a sound bite caption of a few seconds); or creating a sequence of shots for a slide show.

Some cameras allow you review your images right on your home TV screen. This gives you the ability to make critical save or delete decisions while looking at a larger version of the photograph. To do this, you would connect the supplied video cable to the Video Out port on your camera and to the Video In port on your TV.

Now that we've shot some pictures, reviewed them on the camera, saved them or deleted them, it's time to get them into the computer.

Image Downloading.

There are two basic ways to get your images from your camera into your computer. The first way is to download the images directly via a cable and some software. The second option is via a card reader. With a card reader you simply eject the memory card from the camera and plug it in to the reader.

When you're transferring images directly, make sure to run the camera with AC power rather than the camera's batteries. Downloading eats up power, and if you run out of power before the download is complete (which is possible, especially with a full card of pictures) the operation may have to be done all over again. Also, if you plan to download directly from the camera, set up your computer so that the cords and inputs are accessible. This little tip can save you a lot of time and frustration later. You might want to invest in a longer cords and leave them plugged into your computer so you don't have to crawl under your desk every time you want to download your photos.

Start By Connecting Your Camera To Your Computer.

When you are downloading images from your digital camera directly to your computer, the two must be connected. Most cameras come with the cable necessary to use this sort of connection.

As we've discussed in Lesson 4, your camera will likely use either a USB, Firewire or serial cable to download the photographs from the camera into the computer. How fast the transfer will be depends on both the file size of the images and which type of cable connection you have. Firewire and USB are considerably faster than serial cable for instance. You can read more about these types of connections on the Unit One WebCenter.

Note: Some older digital cameras may pre-date USB technology. Earlier cameras used the serial ports to transfer images to the computer. If you work on a Windows machine, the serial port is usually marked COM 1 or COM 2. If you work on a Mac, you can connect to either the printer or the modem port. If you use these types of connections make sure your camera and computer are off when you connect the plug.

Insert your cables gently. If you experience resistance do not force any connection. Check to see that there is no visible damage (a bent pin etc) and that the plug is lined up correctly.

©SanDisk

Download Via A Card Reader.

If your camera uses card storage, another way to transfer your pictures is with a card reader. It's probably the easiest way to download digital files and saves you the need of having your camera close at hand when you're working with your computer.

Storage media and ways to connect your camera to your computer will continue to change in the next few years. We're already seeing computers without floppy drives and printers with card slots that don't require a computer to print your photographs. Wireless options continue to grow, and the concept of transmitting images from your cell telephone or PDA to a Web site is now a reality.

Start The Download Program.

With some digital cameras, to transfer the images in your camera or the removable storage card, into your computer, you have to start the download program, and follow its instructions.

Unfortunately, every manufacturer provides their own version of this type of software so they all work a bit differently. In fact, many newer cameras may not even require separate software. You plug the camera's cable into your computer and it recognizes the camera as another drive. Then you simply copy the files from the camera and place them in your system where you want them. One thing you should keep in mind when you are downloading your photographs into your computer is that on some cameras the download process will remove the pictures permanently from the camera's storage card and in other cameras the download process simply copies the photos, leaving the pictures still on the card. Read your camera's manual to make sure that you understand exactly what is happening when you transfer your photos.

Software.

Most cameras come bundled with software programs of one sort or another. Realize that there are really two different types of software programs you will need:

1) Image download software.
A program to download your images into the computer and store them. It may be called a "download" or "camera mounter" software program, or as we've explained may not be necessary at all.

2) Digital darkroom software.
A program to edit your pictures, transmit them, or print them.

Don't confuse the two. One is meant to download the pictures, the other is to manipulate the images after you have downloaded them. You can install these programs on your hard drive by "running" the install program from the supplied CD-ROM. If you've received both types of software, install them.

Let's start with the image download software. Typically, your camera software program will enable you to do more than just download images. It may give you a choice of the following:

View the images on the computer monitor one-by-one. Download some or all of the images.

Delete some or all of the images

Show you the current status of the images stored in the camera's memory or on a card—for example, how many pictures are stored, how many more there's room for.

Show you a "proof sheet" of all the images in the set.

Rename And Save Your Files.

The name that the camera assigns to your image is typically a long number that means nothing to the photographer. Typically, the software that comes with your camera will allow you to change the name of the file to something meaningful. So an image file that comes out of your camera that's named 010010A99.jpg can be changed to Uncle Jack.jpg which will make a lot more sense when you're searching for it in the future. You can change the file name using your computer's file management controls, such as Windows Explorer, as well.

We strongly urge you to get accustomed to your camera's download software by first reading the manual that came with it (often, as a printable file on the CD-ROM). If your software offers an on-screen tutorial, use it. And we urge you to "play around" and experiment with a few test images before you start to transfer your precious photos. This way you'll know what you're doing and you won't accidentally click "Erase All" when you meant to click "Download All."

Organize Images In The Computer.

Once you have successfully transferred your images into the computer, you'll need to organize them for easy retrieval. For those of you who do word processing on a computer, the tasks are the same. You want to organize them so you can find them easily, and you want to make protection copies of your work.

Save Images To A Stable Storage Media.

It's always a good idea to back up your files to a stable storage media. One way to be sure that this happens, is to find a method that is both quick and easy. (That way it is more likely to get done.) At 100 MB, 250, or 750 MB, high capacity magnetic media can hold lots of images, and the process is as easy as copying a floppy disk.

When you want to archive for the long term the easiest and most economical method is the compact disc or CD.

CD "writers" or CD "burners" have become the storage media of choice for many reasons. First and foremost the entire CD writing process is extremely cost-effective. Consider a high capacity disk which holds a 100 MB for approximately $9.00 per disk versus a CD where 650 MB of digital information can be stored for as little as $1.00 per disk. The other part of the storage equation involves longevity of the media. Because magnetic media is susceptible to the elements including heat, water, electrical charges and magnetic fields. We have seen a few disks fail without warning. Without proper back up those files may be lost forever. This is not to say that magnetic media is no good, it just means that they do not last forever. The compact disc has a longer life span than magnetic media because it is an optical media.

Back up is important. Be smart. We'll discuss output to disk at length in Lesson Eight.

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Conclusion.

Practice With Your Camera.

If you have a digital camera, compose and shoot using both the camera's viewfinder and the LCD screen to get some practice with each. Try to get a feel for the camera. Work with the zoom, the flash, and various exposure mode options.

This is a time to experiment, and you should take lots of pictures. Shoot, improve and delete the old ones. Don't just test the effect of different camera settings. Also look at the pictures you're taking and ask yourself if they measure up with NYI's Three Guidelines.

Try out quality level settings, and see how this eats into your "pictures remaining" gauge. In short, give your digital camera a workout, and don't worry about shooting masterpieces right away. This is the only way you'll get a feel for the camera and how it works.

Now that we've covered digital camera image acquisition, we'll turn to scanners, which we'll take up in the next lesson.

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