

iMAG



2. Digital Photography

Go Digital



Digital photography has all but replaced traditional film cameras for many people - both professionals and enthusiasts. This revolution in picture taking has grown with the popularity of the internet and now offers possibilities unthought of only a few years ago. Not only can we enjoy prints, but we can send photos to our friends as e-mail attachments, upload them to popular sharing sites like Flickr, and share them on social networking sites such as MySpace.

Go Digital



The digital picture frame is just one of the newest example of how digital photography allows for enhanced photographic experiences.

Go Digital



Professionals continue to use photography in traditional roles for advertising, fashion, photojournalism, sports, and weddings, with the extra advantages and conveniences that digital photography provides.

Cameras



point and shoot



advanced fixed lens



digital SLR

There are hundreds of different digital cameras on the market with new models added all the time. With so many cameras available, it can get confusing.

But here is a simple way to classify them.

Cameras



The basic **point and shoot camera**, popular with most amateurs, is usually small enough to fit in your pocket. They have fewer controls than more advanced digital cameras, and while they are great for e-mail and other postings, there are limitations to the size and quality of the prints that can be made. The camera is usually held in front of you and pictures are composed in the LCD screen in the back of the camera.

Cameras



The **advanced fixed lens camera** is targeted for someone who is looking for more control and better print options than are provided in the simple point and shoots. You can take the pictures by looking through a digital viewfinder that simulates viewing through the lens.

Cameras



The **digital SLR camera** started life as a professionals-only camera. Modeled after professional film cameras, the SLR's unique features include interchangeable lenses and a true optical viewfinder. This means that when you look through the viewfinder you are actually seeing through the lens and not a digital simulation.

Cameras



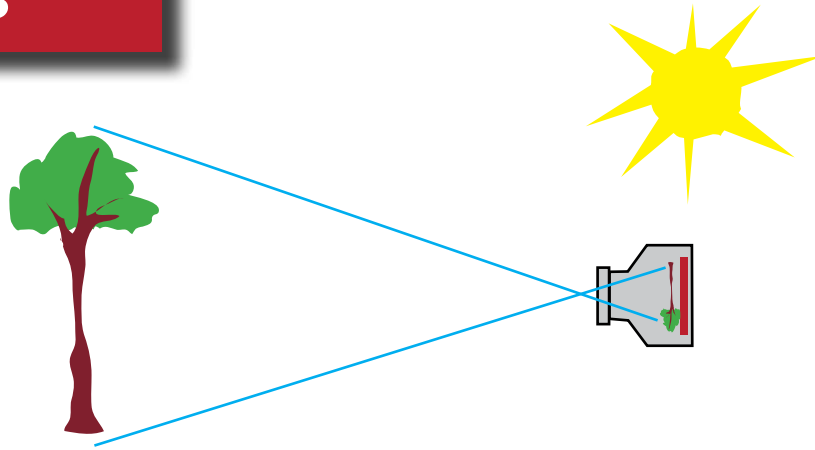
In recent years, the major digital camera manufacturers have begun to provide scaled down versions of their professional SLRs at very reduced prices. These **prosumer SLR** cameras have many of the advanced features and specifications of their professional counterparts, including manual controls, interchangeable lenses, and flash accessories.

Cameras



iMAG students will be able to use a Nikon D-40, a prosumer digital SLR camera, to complete their photographic explorations.

Basics



All digital cameras, no matter how simple or expensive, share some basic parts. A camera is a light-tight box. Light from the scene enters the box through an opening, usually a lens. The light is focused on to a photo sensitive sensor. The image recorded on the sensor is stored in some sort of memory.

Film cameras work much the same way except film is used to record and store the image.

Lens



simple point-and-shoot cameras offer only one lens choice.

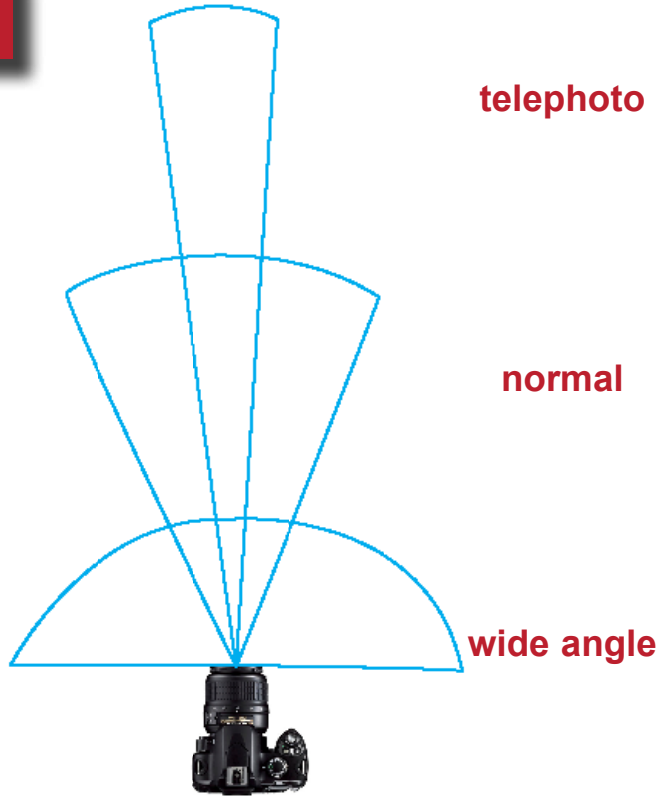


Digital Single Lens Reflex cameras have interchangeable lenses.

The camera lens can play an important role in the photographic process.

Simple cameras have a lens permanently mounted and offer only limited options. More advanced cameras allow the photographer to change the lens to suit different situations.

Lens



telephoto

normal

wide angle



Lenses are divided into **normal**, **wide angle**, and **telephoto** based on the angle of view.

Lens



A normal lens makes the image in a photograph appear in perspective similar to that of the original scene.



A wide angle lens has a shorter focal length and a wider field of view than a normal lens. They can produce very dramatic effects.

Lens



A telephoto lens acts like a telescope and makes the image appear larger and closer than the normal lens.

Lens



Zoom Lenses

Most digital cameras use lenses that have a variable angle of view. These lenses are called **zoom** lenses. Not all zoom lenses are the same. Some zooms stay within a certain range. For example, a telephoto zoom will range from a moderate telephoto to an extreme telephoto. Wide-angle zooms are also available. There are also zooms that range from wide angle through the normal and continue into the telephoto range.

Lens



Digital Zoom

Some point and shoot cameras in order to increase the zoom range of the lens, achieve an additional “telephoto effect” by cropping the image in the camera. The camera above has both an optical zoom and an additional **digital zoom** range.

Lens



14mm wide angle lens



50mm normal angle lens



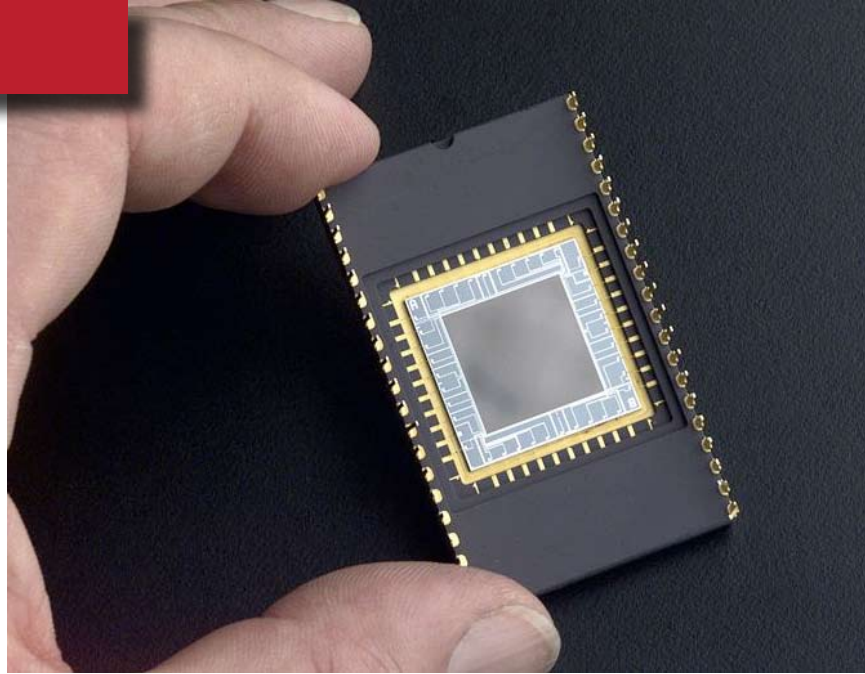
600mm telephoto lens

Prime Lenses

Many professionals prefer to use single length lenses. They are often smaller, lighter, and produce superior image quality than zoom lenses.

A single length lens is called a **prime lens**.

Sensor



Light enters the camera through the lens and is focused on to a photo sensitive sensor. The sensor replaces the film in a digital camera. The sensor is a grid of small squares called **pixels**. The number and size of the pixels effect the quality of the image captured.

Sensor

pixel



Resolution is the term that describes the number of available pixels on the sensor.

A **megapixel** equals 1 million pixels, and has become the popular term to describe a digital camera's resolution.

Sensor



A word of caution about megapixels. Many people think that the more megapixels a camera has the better. This is not always true. The size and quality of the pixels found in point and shoot cameras are not as high as in the more expensive prosumer and professional cameras. Remember the old saying: quality not quantity.

As a general rule, the higher the number of megapixels, the larger the possible print size.



The image captured by the photo sensor is quickly processed and stored on a memory card in the camera. A **memory card** or **flash memory card** is a solid-state electronic flash memory data storage device used with digital cameras, handheld and mobile computers, telephones, music players, video game consoles, and other electronics.

Processing



Images stored on the memory card can be used directly to make digital prints, sent to friends as e-mail attachments, and used in graphic layouts, presentations or web sites. But in most cases you will want to make changes and improvements to the images in a computer using digital imaging software such as Adobe Photoshop.

The terms used in this presentation are:

advanced fixed lens camera

digital SLR camera

digital zoom

flash memory card

megapixels

memory card

normal angle lens

pixels

point and shoot camera

prime lens

prosumer SLR

resolution

wide angle lens telephoto lens

zoom lenses