

FUNDAMENTALS OF PHOTOGRAPHY WORKSHOP

EQUIPMENT

Cameras – The Basics

Film Camera:

Camera – Light-tight box holding light sensitive film.

Lens – Used to focus the image onto the film

Aperture – Adjustable opening in the lens

Shutter – An internal “curtain” that allows the light in.

Shutter Speed – The length of time the shutter is open.

SLR Camera (Single Lens Reflex) – A camera that uses one lens at a time.

Digital Camera:

Exposure principles of the digital camera are essentially the same as the film camera. A digital camera is a “filmless” camera with a lens, aperture and shutter speed.

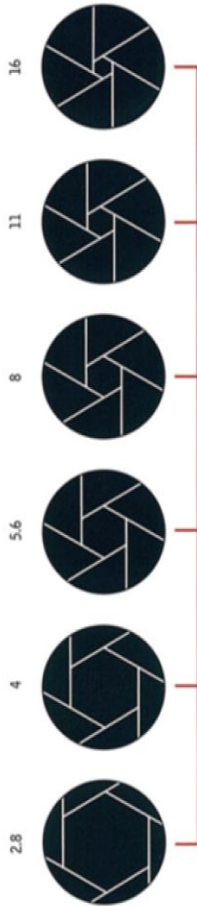
Lenses:

There are three basic types of lens: wide angle, standard, and zoom or telephoto.

The lens has a diaphragm, which can be altered in size and controls the amount of light hitting the film plane.

ISO - 100 200 400 800 1600 3200

1/500 1/250 1/125 1/60 1/30 1/15



RULE OF THUMB:

OPEN UP / SPEED UP

CLOSE DOWN / SLOW DOWN

NOTE: ALL ARE 1-STOP OR INCREMENT OF EXPOSURE

FILM SPEEDS

ISO – Stands for International Organization for Standardization

The higher the ISO number, the faster the film is and the greater its sensitivity to light.

Aperture:

The aperture opening on a camera works the same way as the pupil of an eye. If there is too much light coming in, then the size of the aperture will be reduced. If the light is dim, then it needs to be increased to let more light in. This calculation is determined by the f-stop.

F-Stop:

*Remember – The greater the f-stop number, the smaller the aperture. The smaller the f-stop number the larger the aperture and the more light will fall onto the film or CCD.

Shutter Speed:

Cameras have an adjustable shutter, which is essentially a “curtain” inside the camera that opens for a certain amount of time when a picture is taken.

Exposure Metering:

The essential aspect to develop an understanding of in order to take a good photograph is light.

Standard 50mm lens:

Wide-angle lens:

Fixed Telephoto or Zoom lens:

Note: On current consumer digital SLR's it is important to remember that because the CCD chip is smaller than a piece of film, but occupies the same position in the camera as the film would, the focal length of the lens is effectively shifted by a ratio set by the relative size of the chip. This is typically around 1.5x so that a 50mm lens gives the field of view and telephoto effect of a 75mm lens when used on a digital SLR.

Lens Filters:

Filters are glass attachments that are placed onto the front of a lens. They block or filter light to change the look of a photograph.

Daylight Filter (or UV Filter)

Polarizing Filter:

Camera Support:

Cable Release or Self-Timer and Mirror-up function:

Tripod:

DIGITAL FORMATS

The format used to save the image will determine the amount of storage space it consumes and whether the file will degrade in quality as it is used further. RAW, JPEG, and TIFF are the more common and useful digital file formats.

RAW: files are taken directly from a digital camera. They are unprocessed and the nearest digital equivalent to a film negative.

JPEG: (Joint Photographic Experts Group)

The JPEG is the most common compressed file format. JPEG files are typically 75% smaller than uncompressed TIFF's.

TIFF: (Tagged Image File)

TIFF files are usually not compressed, so they can be very large. However, this means they retain maximum quality.

DIGITAL STORAGE

Storage media for digital cameras is sometimes referred to as digital film.

Card Speed:

The newer memory cards have faster speed ratings. Older memory cards will be slower, even in a newer camera.

COMPOSITION

Arranging Key Elements:

Composition is all around you, but you must learn to look and look again. Composing your images well can create the difference between a good picture and a great photograph.

Format:

Framing and Boundaries:

Anticipating the Moment:

Sometimes you may be lucky and just happen to catch that “moment”. However, if you wish to create a true feeling of spontaneity, which also looks considered, and then you will need to do a little homework on the location and people you plan to photograph.

Texture, Pattern and Form:

Isolating elements or focusing on patterns and shapes can be a highly creative way to express your vision, catch the mood of an occasion or simply illustrate the beauty of something that has caught your eye.

GENRE

Documentary:

Photojournalism:

Landscape:

Portraiture:

Fashion:

The Photograph as Art:

MISCELLANEOUS NOTES

Photographic Terms

Aperture – A circle-shaped opening in a lens (a hole) through which light passes to strike the film or digital camera sensor. It is usually created by an iris diaphragm that is adjustable, allowing the aperture to be made wider or narrower, thereby letting in more or less light. The size of the aperture is expressed as an *f*-number, like *f*/8 or *f*/11.

CCD – Stands for Charged Coupled Device. It is the sensor at the heart of a digital camera that records an image. (The CCD has diode wells that register light. When the exposure time has elapsed, the light is cutoff from the CCD and the volume expressed as a data signal is sent to the camera's firmware that processes the input and determines the image. Overlaid on top of the diode wells is a color matrix, normally consisting of a red, blue, and two green squares in a repeating pattern. As there is only one color matrix element per diode well, the final color output is determined by the camera's firmware, which evaluates the tonal shapes recorded and adjusts the colors along the edges as it deems necessary.)

CMOS – An alternative to the CCD, the CMOS works in a similar fashion, is cheaper to produce, less prone to manufacturing errors, but produces softer pictures.

Depth of Field – This term refers to the space captured in a photograph that appears to be in focus. The distance between the nearest and farthest points that appear in sharp focus in a photograph. (Depth of field changes with lens aperture, focal length, and the distance between the camera and your subject.)

DPI - Stands for dots per inch. A measurement of the resolution of a printer or video monitor.

Exposure - The amount of light allowed to enter the camera and reach the film or sensor. The length of time and amount is controlled by the camera's shutter speed and aperture settings.

Exposure meter – A device that reads reflected light and calculates what aperture and shutter speed are required to produce a balanced, well-exposed image. (This can be built in to the camera or used as a separate piece of equipment.)

Film plane – The flat bed built into the back of a camera where the film lies across during exposure.

Film speed – The sensitivity of film or digital sensor to light, determined by the ISO number. The larger the number, the more light-sensitive or “faster” the film. (Film works by having larger grains that respond more quickly to the light falling on them. Digital works by lowering the volume threshold at which light falling in diode wells triggers the signals that record as pixels.)

ISO – Stands for International Organization for Standardization. The ISO sets and regulates standards for film speed ratings for use around the world. (Digital cameras use the ISO rating to specify responsiveness and what quality the sensor will offer.)

Optical resolution – The maximum resolution possible without resorting to interpolation. (Also describes a digital camera’s true CCD resolution.)

Pixel – Picture Element. Smallest part of a digitized image. One of the tiny points of light that make up an image on a computer screen.

PPI - Stands for pixels/points per inch.

Resolution – Measure of the amount of information in an image expressed in terms of the number of pixels per inch.

Shutter – The curtain-like camera mechanism that, when set and activated, determines the duration of exposure (the amount of time light falls onto the film.) (Works with the aperture)

SLR – Single lens reflex – A camera that uses one lens at a time. Also, what you see through the viewfinder is the light coming into the camera and that which will be recorded when the shutter is fired. The light is reflected up to the viewfinder by a mirror; when the fire button is pressed the mirror drops flat, allowing the light to hit the film or digital sensor instead.

(Taken from: The Fundamentals of Photography -

A comprehensive introduction to photographic principles. c.2005
By: Helen Drew b.1967)