

Module One: Digital Cameras

Image Capture

Instead of film, a digital camera uses a device called a CCD (charge coupled device). The CCD is a light-sensitive chip that converts light into a digital (electrical) signal. The CCD is made up of thousands of individual sensors that are sensitive to green, red, or blue light. The sensors are also known as pixels (picture elements)

CCD Sensitivity

The CCD is designed to have options similar to using different film speeds (ISO settings). The higher the number or ISO setting, the greater the sensor's sensitivity to light. At an ISO of 800 or more, the camera's aperture only needs to be open for a short time in order to create an image, whereas using lower numbers means that the sensor needs more light to reach it in order to record a properly exposed shot.

<http://micro.magnet.fsu.edu/primer/digitalimaging/concepts/images/ccdanatomyfigure2.jpg>

Image Resolution

Resolution is explained as the number of horizontal pixels multiplied by the number of vertical pixels. The more pixels there are, the higher the resolution. In addition, the higher the resolution the more space (memory) your image requires.

File Formats

The Jpeg (Joint Photographic Experts Group) is the standard image file format for the Internet. Subsequently most digital cameras create this file format for each image taken. Jpegs are a compressed file format, which allows for easy viewing and storage. It's best to set your camera to the largest image size and the smallest compression option this will give you the highest quality image, however it will also means you can store fewer photos on your memory card.

Metering

Correct exposure happens when your photograph has the same range and intensity of tone as the scene being photographed. Underexposure occurs when the sensor does not receive enough light, and overexposure occurs when the sensor receives too much light. Sensors on the camera measure the amount of light reflecting back off the subject, then the camera uses this information to calculate the exposure – a process known as metering.

All metering systems are calibrated to average the reflected to an 18% grey. Colors similar in density (value) to 18% grey are referred to as the mid-tones, these include green foliage, brown brickwork and concrete.

Two main types of metering systems are used in digital cameras, center-weighted average metering and multizone metering. As the name would imply, center-weighted average meters take an average of the entire frame but gives most emphasis to the central area of the frame. The down fall of this system is that it has difficulty exposing correctly for very bright or very dark scenes in addition to backlit subjects. When the frame is divided into a number of zones, as in the multizone meters, an exposure reading is taken for each zone. It then uses the individual readings to calculate the overall exposure. It too has difficulty with backlit subjects. However, is more successful in coping with more situations than the center-weighted system.

Aperture and Shutter Speed

Proper exposure also depends on finding the right combination of aperture (the amount of light allowed into the camera) and shutter speed (how long the light is allowed to enter the camera). Aperture controls the amount of light much like the iris of a human eye, widening and constricting to let in more or less light depending on exposure needs. Apertures are shown in f/numbers. When viewed in sequence each f-stop lets in twice (or half) the amount of light.

Aperture choice will also change the amount of the final photograph that appears to be in focus. This is referred to as Depth of Field.

Shutter Speed is measured in fractions of a second. For example 250 is 1/250th of a second, 2 is ½ (half) a second and 1 is a full second. Again each step is called a stop, and represents the doubling or halving of the amount of light entering the camera. Shutter Speed can be manually controlled to alter how motion (a moving subject) is captured in your photographs.

TRANSFERRING AND STORING FILES

Memory cards initially store your images. Using either a USB cord or a Memory Card Reader you can transfer your images to a computer. Our Macs will assume that you want to store your images in iPhoto. You can override this by closing iPhoto and navigating to an alternative storage location (i.e. your network folder or a Flash drive) then click and drag the files you wish to transfer. Be sure that you copy instead of move the files if you want them to remain on your camera! If you store your images only in iPhoto other people can view and alter your images.

Online Photo Sharing: We will be setting up a Flickr account.

Module One Assignments:

1. Demonstrate the ability to change the ISO, Aperture and Shutter Speed on your camera. (4 points)
2. Set up your Flickr account using your school e-mail (lastnamefirstname@mhasd.k12.wi.us)
3. Upload an image to your Photostream. (4 points)
4. Set up your VoiceThread account using your school e-mail (lastnamefirstname@mhasd.k12.wi.us) (4 points)
5. Upload an image to your VoiceThread "Portfolio" . (4 points)
6. Transfer an image from your camera to either your network folder or a Flash drive. (4 points)

Module Two: Composition

The bee becomes the focal point due to the contrast of his black rear on the white flower. Because he is half in the flower the viewer then sees the flowers. The focused flowers point to the unfocused flowers which then bring your eye to the large green leaf in the foreground. This visual path is what we call movement in art.

Focal Point

The focal point is defined as the center of interest, where your eye goes first when looking at a piece of art. The focal point does not have to be the subject, but it must only keep the viewer's eyes for a moment of rest before moving on to view the entire image. A focal point may also give a sense of scale or visual balance, like a lone tree in a landscape.

Rule of Thirds

The Rule of Thirds is the most common compositional guideline used by artists. Imagine the scene divided in thirds both vertically and horizontally, creating 9 equal sections. Where these lines intersect is the location you should place your objects of interest. Most people think that centered is best, when in actuality it creates a static (boring) image.

Framing

To increase interest or to provide information about scale you can utilize the technique of framing. Using objects to create borders (frames) around your subject.

Angle of View

“Normally” photographs are taken from between 3 and 6 feet from the subject and from the viewpoint of the photographer’s eye-level. One of the easiest ways to add significance to your images is to change your viewpoint. Lay on the ground to gain an ant’s perspective or climb a tree to use a bird’s eye view.

Using the Elements and Principles of Art and Design

The Art Elements are basic aspects of art that are present in all art. The elements include: line, value, color, shape, texture, space and form. The Art Principles result when you use the Elements successfully. They are characteristics that make your works “good art”. The Principles are: movement, emphasis, contrast, pattern, rhythm, balance and unity.

Color

The ability to use color is a huge advantage to digital photography; please view the Color document in order to complete the color theory photograph. Also, visit the site(s) to gain better understanding of the various theories.

Gestalt Principles

Check out this link and get a grasp on what each principle tells us about the visual organization of art.
<http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm>

Module Two Assignments:

1. Take a photograph that utilizes framing. (20 points)
2. Take a photograph that is taken from a perspective that is “unusual” (Angle of View). (20 points)
3. I would like you to choose one of the color theories and take a photograph that demonstrates it well. (20 points)
4. Take a photograph that demonstrates one of the Gestalt Principles. (20 points)

Module Three: Studio Lighting

Characteristics of Light

There are four characteristics of light to be concerned with, Intensity, Diffusion, Direction and Type.

Light Diffusion is involved with how disturbed the light particles are when they reach the subject. If the light particles are spread apart (diffused) when they hit the subject the shadows will be less defined. This is called soft lighting. When there is nothing spreading the light particles apart before the light reaches the subject is it called direct or harsh lighting, this creates harsh well-defined shadows. Objects that can diffuse light are clouds for natural light and shades for artificial light.

Perhaps most important of the characteristics is Light Direction. Front light, Cross-light and Back light give your photograph very different results. Front light, light that strikes the subject from the direction of the camera, flattens and minimizes value and texture. Cross-light is probably the most desirable because it successfully increases the visibility of the textures and helps the objects feel three dimensional. Back light is fun to use, but use it wisely. You lose all detail within the outer shape of your subject. Your subject is silhouetted and may have a halo around the edge.

Second most important is Light Type, again, Natural, Existing and Artificial will all give you a vastly different look and mood to your photograph. Natural light is created by natural means, sun, moon and fire for example. It is unpredictable, unchangeable and possible inconsistent. In order to successfully use natural light you may have to move your subject and camera to get a good shot.

Existing light is what already occurs in buildings and on streets. You can't necessarily manipulate the streetlights or the lights in the school hallway. So with existing light you have to do what you can. This type of light is generally low which poses some additional obstacles.

Artificial light is what you would have in a studio setting. You can manipulate all the characteristics, intensity, diffusion and direction. Generally in a studio setting photographers are taking Portraits, photographs of people of animals, or series of photographs of a Still Life, an arrangement of inanimate objects placed specifically for photographing.

There are also unusual light sources that can create interesting photographs. Think outside the box on this one, but be safe!

Tips

In many of these situations you will be required to use low light, use a tripod to avoid blurring pictures due to camera shake.

Module Three Assignments:

1. Take a portrait or a self-portrait using studio lighting. (20 points)
2. Take a still life shot using studio lighting. (20 points)
3. Take a photograph that utilizes an "unusual" light source. Experiment with your camera's built in Modes to create an image you like. (20 points)
4. Take a photograph that is considered "candid" (photography of subjects acting naturally or spontaneously without being posed using natural or existing light). (20 points)

Module Four: Motion

Shutter Speed

To review, shutter speed is the camera setting that controls the amount of time the light that is allowed to enter the camera. The speed of the shutter will primarily affect how motion (subject movement) is recorded. The faster the shutter (1/500) the more "frozen" your movement will be. Using a slower speed (1/30) will create the motion to be blurred.

There are three ways to capture motion in your photographs. Stop motion, blurred motion and panning.

Stop motion is done using a fast shutter speed, your goal is to "freeze" the motion. The background as well as the subject should be focused (unless the aperture creates shallow depth of field).

Blurred motion is done using slower shutter speeds, your goal is the blur some movement while not losing the vital information that the subject offers. The background in a blurred motion photograph should be focused. Only the motion should be blurred in blurred motion.

Panning is a technique in which you move the camera along the subject's path. When looking at a photograph that demonstrated panning you will see a reasonably sharp subject and a background that is blurred in striations that are parallel to the direction that the camera was moved, generally horizontally.
Out of focus blurred image

Module Four Assignments:

1. Use Shutter Speed priority or Action Mode on your camera to capture a stop motion photograph. (20 points)

2. Use Shutter Speed priority or Action Mode on your camera to capture a blurred motion photograph. (20 Points)
3. Use the panning technique to capture motion in a photograph. Strive to "freeze the motion"...a small amount of blur is alright (20 points)
4. Use the "Motion Mode" on your camera to re-shoot one of your previous motion photos. Compare the settings and visual results. Post your observations (thoughts) in the comment field for one of your motion uploads.

Module Five: Depth of Field

Aperture

To review, aperture is the camera setting that controls the amount of light that is allowed to enter the camera. The size of the aperture will primarily affect how much of the scene is in focus, the depth of field.

The larger the opening (f/2) the shallower the depth of field will be (your subject will be in focus but the area behind and possibly in front of your subject will be blurry).

Using a smaller opening (f/16) will create deep depth of field (almost everything is reasonably focused). Again, the two types of depth of field are shallow and deep.

Modern cameras have a Portrait mode and Landscape mode. These modes are like "automatic depth of field modes". Portrait will throw your background out of focus and Landscape will make sure that everything is in focus.

Most cameras have a Macro (close-up) mode that allows the photographer to get much closer to the subject than is otherwise possible. Some cameras allow the lens to touch the subject, which creates lighting issues. A true macro is one where the image is captured at a scale that is life-size or larger. Loosely, the term refers to any photography done within a range that is considered closer than the "normal" 3-6 foot subject distance, the distance between the subject and the camera.

Abstract Photography is the photographic art that is not representational of real objects in the natural world. Read the Abstract Photography Article. It should clarify things for you as well as give you usable suggestions on how to create an abstract photograph.

Module Five Assignments:

1. Use aperture priority on your camera to capture a shallow depth of field photograph. (20 points)
2. Use aperture priority on your camera to capture a deep depth of field photograph. (20 points)
3. Use the macro mode on your camera to capture an abstract (close-up/macro) photograph. (20 points)

Module Six: Themed Photo Series, Time Lapse Photo Set or Sequences

Themed Photo Series:

Select a theme that is significant to you. Take 4 images that demonstrate some aspect of the theme. Keep a written record of:

- ✓ Location (usually the same for each shot)
- ✓ Time of Day (should be the same for each shot)
- ✓ Camera settings (may be different)
- ✓ Observations (your personal thoughts about capturing each image)
- ✓ Written description of how the theme is personally significant.

Time Lapse Photo Set:

Our world is filled with natural and man-made "changes"; metamorphoses, processes, and transformations. Brainstorm where, when and how these amazing and perhaps mundane events occur. Take a series of at least 4 photographs that record your chosen "event". This "event" should take place over a month or longer (i.e. a flower growing). So you would take a photo a week of the same subject as it changes!

Keep a written record of:

- ✓ Location (usually the same for each shot)
- ✓ Time of Day (should be the same for each shot)
- ✓ Camera settings (may be different)
- ✓ Observations (your personal thoughts about capturing each image)

Sequence:

This option is similar to the Time Lapse, however your time frame is MUCH shorter! This sequence of shots that covers an "event" should capture something that happens in less than 20 minutes. Also expected to be 4 photographs.

Keep a written record of:

- ✓ Location (usually the same for each shot)
- ✓ Time of Day (should be the same for each shot)
- ✓ Camera settings (may be different)
- ✓ Observations (your personal thoughts about capturing each image)

Module Six Assignments:

1. Select one of the above options. Discuss your selection with the teacher so she is aware of your intent and can offer some direction.
2. Plan and take at least 4 photographs that will create your series project choice. (40 points)
3. Turn in your written observations and thoughts about the process of photographing your chosen event or process. (4 points)

Module Seven: PhotoShop Introduction (Use Links)

Open an image

Opening, renaming and saving as an alternative file format

Tool bar overview

PhotoShop Tool bar

Desaturate an image

Turning a color image into an Achromatic (black, white and grey tones) image by desaturating (pulling the color out).

Toning is the same as turning an image into a monochromatic (various values of one color) image. You first need to follow the steps for the desaturation of an image. The rest of the steps for this assignment are on the Toning Page

Layer Modes

As you saw when following the directions for toning an image there are a number of Layer Modes as time allows experiment with these options.

Module Seven Assignments:

1. Open an image in Photoshop, rename it and save it as a .psd (photoshop document) in your network folder or on your Flash drive. (4 points)
2. Choose one of your images that you think would make a successful black and white image (achromatic), desaturate following the above directions. Upload the original image as well as your Achromatic image to Flickr. (20 points)
3. Choose another image that you think would be successful as a monochromatic image, desaturate and then tone using the above directions. Upload the original image as well as your Monochromatic (Toned) image to Flickr. (20 points)

Tip: An image that will make a good achromatic (black and white) or monochromatic (only values, lights and darks, of one color) generally starts out with few colors or similar colors. If what "makes the image" is the use of color then it's probably not a strong candidate for these assignments.

Module Eight: PhotoShop Filters

How to get to and use filters: [Example page \(Link\)](#)

Module Eight Assignments:

ALWAYS SAVE THE ORIGINAL IMAGE SOMEWHERE

1. Choose an image that would not lose its interest if you applied a filter.
2. Open the filter gallery as described in the direction link above.
3. Spend some time "playing" with the filters and evaluating what they would do to your image. While you are playing keep notes of the steps you are taking and filters you are using. The notes will be a part of your grade, see Record assignments on your Assignment Spreadsheet. (4 points)
4. When you arrive at an image you are happy with save it as "Objective Filtered Image" in your folder or on your drive. The viewer should be able to tell what the original image was of. Upload the original image as well as the objective filtered image. (20 points)
5. Use the same original image or select a new one, this time you are to create an "Abstract Filtered Image". Have fun with filters and don't worry about maintaining the ability to tell what the photo is of! Upload the original image as well as the abstract filtered image. (20 points)

Module Nine: Image Adjustment

How to get to and use Image Adjustments ([Link](#))

Module Nine Assignments:

AS ALWAYS KEEP THE ORIGINAL IMAGE SAVED SOMEWHERE

1. Choose an image that you think would create an interesting unrealistic crazy colored photograph.
2. Open this file in Photoshop and play around with the options in the Image Menu:
"Image>Adjustments>Hue/Saturation" or
"Image>Adjustments>Color Balance " or
"Image>Adjustments>Channel Mixer "
3. When you get an image you are satisfied with record your settings, save and upload to Flickr the image as "Unrealistic Color ". Also upload the original image to Flickr. (20 points)
4. Also under Image>Adjustments is "Invert".
5. Choose an image that would look cool with inverted colors. You may need to try a few before you find one you are happy with. You may adjust the colors in the original before applying the Invert if you so choose.
6. Open the file apply the invert and save and upload to Flickr as "Inverted". Also upload the original image to Flickr. (20 points)

Module Ten: Photomontage

This Module will force you to develop your skills by using the selection tools and settings in Photoshop.

A Photomontage is a "photographic image" that is created by cutting and joining portions of a number of other images.

Use feathering, quick mask and various other PS tools to create an image that fit together to create a composite image.

Use the selection tools to select the area you'd like to keep in color or you can use Select>Inverse. Once you have the area you'd like to turn black and white (Image>Adjustments>Desaturate)
Select portions of at least 3 different images.

You could also Desaturate the entire photo and apply local color to individual objects. Put your color on a separate layer and apply COLOR layer mode to the layer (just like you did for the Monochromatic image).

Leave a portion of the image black and white! The contrast in monochrome and color areas in what creates interest...

Module Ten Assignment:

1. Select an image to turn into a "Faux Handcoloring" project. (40 points)
2. Once you have an created an image you are happy with save it as "Photomontage". (40 points)

Module Eleven: Digital Paintings

Document for creating a Pseudo Watercolor Painting

The Master Remix Project is another opportunity for you to experiment with image Adjustments and Filters within Photoshop.

Select an image that is similar to a "Master Artwork/Painting". By similar I mean the subject matter and composition look alike. Using your knowledge of the filters and color settings try to make your photograph look more like the painting. The steps, layers and techniques will be different for everybody!

Module Eleven Assignment:

1. Create a Pseudo Watercolor Painting from one of your Digital Photographs. (40 points)
2. Create a Master Remix Image from one of your Digital Photographs. (40 Points)

Module Twelve: Portfolio

We'll be using VoiceThread to create individual portfolios that will consist of your 10 favorite images from the semester.

You will then be added to a class group and will be expected to comment on each of your classmates portfolios. Please give feedback for 3 images in each person's VoiceThread Portfolio.

Give one + positive comment and a - suggestion or critical comment.

The comments will only be graded if they are appropriate for school and about the work itself. This activity is not for you to personally attack another student artist.

Module Twelve Assignmenst:

1. Upload 10 of your best or favorite images to your VoiceThread. (40 points)
2. Once the class group has been established view your classmates VoiceThread Portfolios and comment on 3 images for each person. (40 points)