CIOS 258 TW1 Lesson Outline Week 2

Photographic techniques are tools used to fulfill your photographic intention. Cameras are a means to an end. Every decision that you make in setting the camera is a compromise, there is something gained and something lost. All cameras involve the same set of compromises. The choices that a camera presents are intertwined. For every choice you make when using a camera there is a compromise.
A camera does not see like a human. A camera does not have the dynamic range of the eye. A camera does not have depth perception. A camera abstracts what a human sees. It takes experience to be able to translate what you see into a photograph. To be able to express your intention, to be able to capture what you see, you must master camera technique. What is in your head, what you intended to do, or even the memory of the event is not the same thing that is in the photograph. Photographic techniques are the tools you use to bring your intention, what you wanted to show, closer to the photograph, what you actually showed. Turning what you see in your mind into what people see in the photograph is the art of photography.

9/20	9/27	*Bring your camera and your camera manual to class* Look up three reviews of your camera and summarize their conclusions. Use http://www.dcviews.com/ to find information on your camera. List the three review sites and also list **three** strengths and **three** weaknesses about your camera to the course web log. **AND** Read your camera manual and answer the following questions. Not all cameras will have specific settings for these tasks. If you do not have the manual you can probably find one using a Google search. How do you adjust the ISO? How do you adjust white balance? How do you adjust the exposure compensation? How do you set file size and compression? How do you set the exposure meter mode? How do you set the camera for macro focusing? How do you turn off the flash redeye reduction? You do not need to post your answers to the course web log. If you are having difficulty finding these settings ask me.	**200**	**40**

Lesson Outline

- Essential Camera Concepts (Bedrock Concepts)
- Applying the Essential Concepts (How the camera concepts work together)
- Digital Enhancements to the Essential Camera Concepts
- Photo Walk to Creamer's Field

How to learn about your camera, joining a community of experts.

- Forums
- User Groups
- Searching
- RSS feeds
- Manufacturer's web site

Some Stuff I will not cover in this course

Generally, if I can do it on the computer I will not cover some digital camera features in this course. Software in most cases can do better printing and editing. Video cameras and still cameras take two different frames of mind.

- In Camera Editing
- Printing directly from the camera
- Video mode
- Using sound or making sound notes attached to your photograph

Essential Camera Concepts (Bedrock Concepts)

The Photographic Problems: From what we see to what we take!

- Dynamic Range and contrast
- Plane of focus and depth of field
- Perspective and focal length
- Subject and camera movement
- The color we see and the color the camera sees
- The multiple possible uses of an image

Technical Limitations

- Motion Blur/Subject Blur
- Depth of Field
- ISO Quality
- Location Limitations
- Visual Distraction and Junk

Camera Tasks

- Correct Exposure
- Correct Focus
- Sharp Photographs
- Correct Color
- Framing the image

Kinds or classes of Digital Cameras

- Point and Shoot: Cheap, Compact, Adjustable Settings
- Super Zoom
- SLR: Entry Level, Intermediate, Professional
- Medium Format and larger cameras

Sensor and Sensor Size

- Point and Shoot
- APS
- Full Frame

Sensors and Resolution

- Megapixels are not alike!

Exposure

- Dynamic Range
- ISO
- Aperture
- Shutter Speed
- Exposure Meter
- Sunny 16 Rule

Meter Mode

- Matrix, Spot or Center Weighted
- ISO
- 18% Grey
- Incident or Reflective Metering
- Histogram

Exposure Modes

- Easy mode
- Program

- Aperture Priority
- Shutter Priority
- Manual
- Exposure Compensation
- Scene Modes

Lens

- Focal Length
- Depth of Field
- Hyper Focus Distance
- Sensor Size and Depth of Field
- Focal Length and Subject and Camera Blur.

Focus Setting

- Manual
- Auto
- Single
- Continuous
- Release Priority
- Focus Priority

Depth of Field

- Focal Length
- Focus Distance
- Hyper Focus Distance
- Sensor Size

Framing the image

- SLR
- LCD
- EVF
- Viewfinder
- Live View
- Focal Length (Zoom)
- Depth of Field

Digital Stuff

- File size and compression
- Sensor Size
- Megapixels
- Noise

Sharpness

- Shutter Speed
- ISO
- Motion Blur
- Subject Blur

Dynamic Range

- Contrast
- Exposure
- Aperture
- Shutter Speed
- ISO
- Histogram
- Analysis
- Metering Mode

- Quality of the Light

White Balance

- Color Temperature of Light
- Pre-set Color Balance
- Custom Color Balance
- Automatic Color Balance

Camera Compromises

- Motion Blur
- Subject Blur
- Poor Color
- Poor exposure
- Poor framing
- Poor focus
- ISO/Noise or Grain
- Plane of focus (Depth of Field)

Applying the Essential Concepts (How the camera concepts work together)

Technical Problems

- Subject Blur
- Motion Blur
- Depth of Field
- Over exposure
- Under exposure
- Color balance
- Poor focus
- Image Noise
- Dynamic Range

Resolution

- Camera Mega pixels
- PPI (Pixels per inch)
- DPI (Dots per inch)
- Cropping
- Print Size

File Formats

- JPEG
  - Compression
  - Resolution
- RAW
- DNG
- TIFF

Noise

- Chroma
- Luminosity

Exposure Metering

- 18% Gray
- ISO
- Dynamic Range
- Aperture
- Shutter Speed
- f16 rule

Methods of Metering

- Matrix
- Spot
- Center Weighted
- Reflective
- Incident

Camera Modes

- Aperture Priority
- Shutter Priority
- Program Mode
- Easy Mode
- Scene Modes

Lenses

- Focal Length
- Depth of Field
- Aperture
- Zoom
- Variable Aperture Lenses

Lens Concepts

- Distortion
  - Pin Cushion
  - Barrel
- Chromatic Aberration
- Sharpness
- Vignette
- Bokeh

Camera Motion and Camera and Subject Blur

- The relationship between focal length and shutter speed
- Macro Problems
- Breathing
- Coffee
- Holding the camera
- Bracing the camera
- Sometimes camera motion can be beautiful

Lens Multiplier 35mm/Digital

- APS Size
  - 1.5 Nikon
  - 1.6 Canon
- 35mm Full Size
  - 1:1 Canon
- Four Thirds
  - 2.0 Olympus and Panasonic

Focal Length Equivalent and Crop Factor

Film	Digital Eq 1.5	Digital Eq 2.0
11	17	22
12	18	24
17	26	34
18	27	36
20	30	40
24	36	48
28	42	56
30	45	60
35	53	70
45	68	90
50	75	100
60	90	120
75	113	150
85	128	170
105	158	210
135	203	270
180	270	360
200	300	400
300	450	600

Lens Focal Length and visual perspective

Here are some rules of thumb for pre-visualizing the lenses you will need.

- 21mm - all of your peripheral vision with both eyes
- 35mm - your field of view with your eyes facing forward
- 50mm - the part of the 35mm scene you can remember a minute later
- 85/90/100mm - the field of view of one eye.

Consumer Lenses vs. Professional Lenses

- Speed
- Weight
- Weather Sealing
- Construction
- Price
- Re-sale Value
- Quality

Creating a Lens Kit

- Intended Use
- Wide Range
- Normal Range
- Telephoto Range
- Macro
- Prime vs Zoom
- All-Purpose Lens

Digital Camera Concepts (Camera Instruction Books)

I read through some of my camera manuals and made lists of the concepts. Most digital cameras have a similar set of concepts with a few variations. Once you understand the concepts it is easy to figure out how a digital camera works. In a sense it is developing a set of expectations for what a camera should do. Digital cameras actually are much more complex then older manual cameras, the underlying concepts are the same, but the process of automating and making simpler is actually more complex

Digital Camera Settings

You set up a camera to meet your photographic needs. Some settings are stable, like date and time, other settings depend on the shooting session, or intended use, file compression, location indoors or outdoors, tungsten light or daylight. Still other settings are made for each photograph, focus, frame or view, focal length.

Stable Settings (Setup)

- Date and Time
- Image Parameters
    - Contrast
    - Sharpness
    - Saturation
- Image Size
- Compression
- Color Space
    - sRGB
    - Adobe RGB
- Camera LCD
- Beep and Lights!

Shooting Session Settings

- ISO
- Color Balance
- File size and compression
- Focus Setting
- Metering Mode

Individual Photograph Settings

- Focal Length
- Exposure

Maintenance Settings

- Formatting the memory card

Digital Camera Settings and Concepts

Some camera have features that we will not cover in this course

- Video mode
- Using sound or making sound notes attached to your photograph
- Printing directly to the camera
- In Camera Editing

Customizing the JPEG image

- Color Saturation
- Contrast
- Sharpness
- Black and White
- Slide Color or Extra Saturation
- Automatic Dynamic Range adjustment.

RAW or DNG

Dust removal

Memory Cards

- Kinds of Memory Cards
- Card Readers
- Connecting the Camera to the Computer

Viewfinder or LCD Information

- Status lights next to the optical viewfinder
- Focus Indicator
- Macro or Infinity Setting
- Sound or Beep

Control

- Direct Access Buttons
- Shortcut or Function Menu
- Rear LCD Control
- Top LCD Control on some cameras

Metering

- Exposure Compensation
- The Histogram and "exposing to the right"
- Backlight compensations
- Thoughts on using exposure compensation
    - Do not use Matrix if you want to compensate
    - Underexposure for richer colors
    - Blown out highlights are the worst
    - Immediate feedback with digital
- Metering and 18% Grey
- f16 rule
- Problem Exposure Compensation with a Matrix Meter
- Backlight Compensation
- Enrich Color
- Snow and Beach (Blown Highlights)
- Histogram
- When in doubt underexpose (sometimes!)
- Incident
- Reflective
- Faking Incident Reading with selective area metering and exposure lock or manual exposure setting

Picture Playback

- Deleting Photographs
- Formatting the memory card

Camera Setup

- Date and Time
- File Numbering
    - Continuous
    - Reset

Shooting Settings

Focus Concepts

- Continuous Mode
    - Release Priority
- Single Focus Mode
    - Focus Priority
- Live View
- Face Detection
- Blink and File Detection (UGHHHH!!!!!!!!)

Direct Button Access

- ISO
- Shortcut Buttons

IS and VR

- Focal Length and Subject Motion
- Continuous
- Shooting Only
- Panning

Burst or High Speed Mode

- Memory Buffer
- File Formats

Bracketing

- Exposure
- White Balance
- Flash
- Color Balance

Scene Modes

- Portrait
- Sports
- Landscape
- Easy

Exposure

- Locking Exposure
- Exposure Compensation

Focusing

- Beep
- Lights for Confirmation
- Macro Mode
- Infinity
- Manual Focus
- Spot Focusing
- Area Focusing
- Closest Subject
- Continuous Focusing
- Shutter Lag Issues

Metering

- Evaluative
- Center Weighted
- Spot
- Using a Histogram
- Blinking Shadow
- Blinking Highlights
- Long shutter speeds
- Noise Reduction
- Contrast
- Sharpness
- Saturation

White Balance

- Degrees Kelvin
- Color Temperature
- Auto White Balance
- Custom White Balance
- Manual White Balance

Battery Issues

- Manufacturer
- Third-Party

Direct Access Buttons

- Customizing Direct Access Buttons

PASM

- Program
    - Program Shift
- Aperture Priority
- Shutter Priority
- Manual Mode
- Easy or Auto Mode

Digital Zoom (Forget It)

Self-Timer

Remote Control

Panorama Mode

Playback Mode

- Evaluating
- Magnify
- Index View
- A bunch of editing choices, but why?
- Protecting a photograph
- Slide Show
- TV Output

Erasing or Formatting Memory Card