Introduction to Digital Photography

Workshop Script

- WORKSHOP FOCUS
  - The intention of this workshop is for you to become familiar with the options available in your camera menus. If your intention is to take “snapshots” to share with family and friends then you may want to use settings that are different from the settings you would use for photos that you plan to print and frame.

  - For example:
    - Low resolution JPEG files may be your choice for snapshots and other uses that require no additional processing – just “shoot and share”
    - High resolution RAW files may be your choice for creating prints intended to frame and hang.

  - One of the primary goals in photography is to achieve optimum exposure, so we will discuss related settings.
  - This workshop should impart an understanding of how to achieve the optimum exposure, with “optimum” being what you are trying to achieve.
Before exploring camera settings/menus, I would like to briefly discuss a few basic photography concepts that directly influence exposure settings. (These concepts may be new to some, or a “refresher” for others.)

The two documents that accompany this workshop – **COMMON TERMS** and **CAMERA MODES** - provide additional details...

Documents available on Library website: https://www.currypubliclibrary.org/services-spaces/techlab/

### COMMON PHOTOGRAPHY TERMS

(See PDF titled **COMMON TERMS** for more)

- **Exposure Triangle** is an illustration of how the *relationships* between **Aperture**, **Shutter Speed**, and **ISO** influence exposure.

  **[CAMERA MODES, page 1]**

- Exposure settings determine the quality of the details in the lightest and darkest portions of a photo.
  - Underexposed = too dark, details lost in overly dark areas of the photograph
  - Overexposed = too light, details lost in overly bright areas of the photograph

- The document titled **CAMERA MODES** covers the Exposure Triangle in depth.
- **Aperture** is, in most cameras, a setting that can be controlled by the photographer.
  
  [CAMERA MODES, page 1 and 2]
  
  - **Aperture** is the physical opening in a lens diaphragm.
  
  - **Diaphragm Blades** open or close to control the amount of light reaching the sensor.

  [COMMON TERMS, page 7]
  
  - Because aperture also influences **Depth of Field** it is considered the most important camera setting.

- **Shutter Speed** is, in most cameras, a setting that can be controlled by the photographer.

  - **Shutter** is a device, located inside the camera, that covers the image sensor until the photographer presses the shutter button.
  
  - **Shutter Speed** is the amount of time the camera shutter remains open, allowing the sensor to be exposed to light.
  
  - **Shutter speed** also influences image sharpness because it can “freeze” motion.

- **ISO** is, in most cameras, a setting that can be controlled by the photographer.

  - **ISO** (“International Organization for Standardization”) is, in a digital camera, a setting that changes the “sensitivity” of the sensor to light.
• The higher the ISO setting, the less light is required to result in a proper exposure.
• The higher the ISO setting, the more prone to record noise or grain, which is a tradeoff.

• **Depth of Field (DoF)** is the range of the scene in front of the camera that will be in focus. Many photos will have the subject in focus while portions of the scene in front of, and behind, the subject are blurred. The range of that “in focus” portion is called DoF.
  
  ▪ DoF in influenced by the lens aperture. A wide aperture will result in a shallow DoF, a narrow aperture will result in a deep DoF.
  
  ▪ It is possible, by setting a very narrow aperture, to achieve a nearly infinite DoF.

• **Illustrate DoF:**
  
  • Landscape - field with grasses & wildflowers, a lone tree, and background mountains
  
  • Subject is the tree, lens is focused on the tree
  
  • Narrow aperture results in a deep DoF, the grasses and wildflowers in foreground and mountains in the background are in focus
  
  • Wide aperture results in a shallow DoF, the grasses and wildflowers in foreground and mountains in the background are out of focus
• One more variable - Camera position, relative to the subject - also influences DoF. The closer the subject the shallower the DoF, regardless of the aperture. A close subject and wide aperture can create extremely shallow DoF, even resulting in portions of the subject being out of focus.

• **Equivalent Exposure** is a combination of the settings for Aperture, Shutter Speed, and ISO that produces a particular Exposure Value
  ▪ Changing the setting for any one will require adjustment to one, or both, of the others to produce the **Equivalent Exposure Value**

  ▪ **Example**: Same landscape as above. Highlights and shadows are well exposed, but there is motion blur
    • Can increase Shutter Speed to freeze motion, but may the result in underexposure
    ▪ Can increase ISO (sensor sensitivity to light) to correct the Exposure Value, but also results in noise/grain
    ▪ Can widen the aperture (more light reaches sensor) to correct the Exposure Value, but can result in shallow DoF (mountains out of focus)
ADDITIONAL TERMS

• **Bokeh** refers to the quality of the out-of-focus regions caused by a shallow Depth of Field.

• **Chromatic Aberration** refers to color “fringing” that can occur when light coming through the lens is split, much like what can be seen when light is split by a prism.

  [COMMON TERMS, page 4]

• **Crop Factor** refers to the images’ “Field of View” based on the camera’s sensor size, relative to a 35mm (full frame) sensor. A sensor smaller than 35mm will “crop” the resulting image, and the image will appear zoomed-in.

  [COMMON TERMS, page 5]

• **Field of View (FOV)** refers to the area of the scene in front of the camera that is focused onto the sensor. FOV is influenced by the lens being used (wide angle lens has greater FOV), the zoom factor (for a zoom lens), and the sensor size.

• **High Dynamic Range (HDR)** refers to optimizing the range of tones, from lightest to darkest, by combining more than one “bracketed” photo of the same subject.

• **Bracketing** refers to taking more than one photo of the same subject, each with different exposure settings. The resulting photos can be combined to create an HDR image.

• **Polarizing Filter** refers to a filter that contains two pieces of polarized glass that can be rotated independently to block “scattered” light, resulting in reduced glare and reflections.

  [COMMON TERMS, page 12, 13, 14]
• **Rule of Thirds** refers to a *suggested* compositional approach where the image is divided into thirds – horizontally and vertically (like tic-tac-toe) – and then important image elements are placed at the intersections or along the lines. The idea is that doing so will result in a pleasing composition. This is generally, but not always, the case.

**COMMON TERMS, page 20**

**CAMERA MODES**

• **CAMERA MODES** are a method for the photographer to choose which settings are *automatically* determined by the camera and which are *manually* determined by the photographer.

**CAMERA MODES, page 4**

  o Many cameras have a “Mode” dial that can be set to positions labelled **P**, **A**, **S**, and **M**
    • **P** stands for Program Mode
      • The photographer chooses the “exposure value” and the camera automatically sets the aperture and shutter speed.
    • **A** (or **Av**) stands for Aperture Priority Mode
      • The photographer chooses the aperture and the camera automatically chooses the appropriate shutter speed.
    • **S** (or **Tv**) stands for Shutter Speed Priority Mode
• The photographer chooses the shutter speed and the camera automatically chooses the appropriate aperture.

  ▪ **M** stands for Manual Mode
    • The photographer chooses both aperture and shutter speed, the camera does not automatically choose anything.

  ▪ *NOTE:* ISO (in most DSLR cameras) does not automatically change in the above camera modes; it is set manually. If your camera has an “Auto ISO” feature it can be enabled.

  ▪ In addition to the standard shooting modes there may be extra “scene” modes, represented by icons.

  ▪ The document titled *CAMERA MODES* covers Camera Modes in depth.

**YOUR CAMERA**

• There are far too many cameras, each with their own way of presenting settings, to provide a prepared set of instructions or recommendations. Here are some basics:

  o **DSLR** cameras, depending on make and model, generally have many buttons, dials, and menus that allow the photographer to change settings – either permanently or “on the fly”
- Changeable lenses, focus ring / zoom ring
  - Point-and-Shoot cameras have fewer methods
  - Phone and Tablet cameras also have reduced methods, but may have options not available on DSLR or Point-and-Shoot models

- **Start** by searching for, and opening, your camera **User Manual** (usually available as a PDF).
  - Image Resolution
  - Aspect ratio
  - RAW, JPEG
    - Why RAW?
  - Filters

**POST PROCESSING**

- Post Processing means making changes to a photo file after capture, using image editing software such as Photoshop.
  - Most photos can benefit from Post Processing
  - Snapshots captured as JPEGs are generally processed automatically by the camera, but may still benefit from Post Processing
  - Simple post processing includes Resize, crop, color correction, contrast adjustment, darken/lighten, etc.
  - Extensive post processing includes *developing* an image from a RAW file, making edits in Photoshop or other
image editing software, such as stitching photos together, applying artistic filters, preparing an image for printing, preparing for web, etc.

- **Introduction To Photoshop** workshop sessions
  - Coming back later this spring and summer
  - Register on the Library website

- Individual guidance is available