

# Photography information

## General photos

1. **Aperture priority.** Use aperture priority to control depth of field.
  - a. Use the largest aperture (lowest f/stop) for minimum depth of field. Items in front of, and behind, the focus point will be increasingly out of focus.
  - b. An f/stop of 10 or 11 is good for most shots.
  - c. Use the smallest aperture (highest f/stop) for maximum depth of field. Almost all items will be in focus.
  
2. **Shutter priority.** Use shutter priority for action shots.
  - a. Use high shutter speeds (1/1000 sec, for example) to stop and capture the moving object or person.
  - b. Use low shutter speeds (1/30 sec, for example) to cause blurring of the moving object or person. A tripod may need to be used.
  - c. A shutter speed of 1/125 sec is often typical for general photos
  
3. **ISO speed** (light sensitivity of the camera). Use the lowest ISO (100 is usually the lowest choice) that provides the desired combination of aperture and shutter.
  - a. Some cameras may show unacceptable grain or electronic noise (degrading the image quality) at ISO speeds of 400 or higher.
  - b. Cameras with larger sensors (such as DSLR) have larger pixel sensors so they can more easily sense the light in an image, enabling them to use a lower ISO number and thus have a better image at higher ISO numbers. The pixel density in a DSLR camera may be 3MP/sq cm or lower, while the pixel density in a point-and-shoot camera may be 35MP/sq cm or higher, so the point-and-shoot camera has very small pixel sensors and gathers very little light per pixel sensor. Because of the small amount of light per pixel sensor, the light signal must be highly amplified. Any electronic noise in the circuit is also highly amplified, degrading the image quality.
  
4. **Flash**
  - a. When using flash, it is best to use an external flash unit that is away from the camera, with a diffuser on the flash unit. If you are in a room with a low ceiling, then point the flash towards the ceiling. If you are in a room with a high ceiling, or you are outside, then point the flash 45 to 90 degrees up and use a diffuser on the flash unit.
  - b. The second best flash method is to use an external flash unit that is mounted on the camera, with a diffuser on the flash unit. If you are in a room with a low ceiling, then point the flash towards the ceiling. If you are in a room with a high ceiling, or you are outside, then point the flash 45 to 90 degrees up and use a diffuser on the flash unit. Using the camera in a vertical format may cause a shadow behind the object being photographed, so it is best to use the camera in a horizontal format.
  - c. Don't use direct (on-camera) flash, if possible. It is harsh, and can easily leave a shadow behind the object being photographed.

## Photography information

### Composition

1. **Choose** your subject matter.
2. **One point/subject** in the picture should draw the eye, focusing the photo.
3. **Pick the orientation:** vertical, horizontal, or square.
4. Watch the **background**.
5. **Fill.** Fill the image area with interesting items.
6. **Tilt.** Tilt the camera for a unique view.
7. **Polarizer filter.** Use a polarizer filter to make the sky a darker blue.
8. **Eye level.** Take photos at the eye level of the person/animal being photographed.
9. **Focus point.** Focus on the closest eye of the person/animal being photographed.
10. Use **lines & curves** to direct the viewer to the main center of interest (focus point).
11. Divide the frame into **thirds** horizontally and vertically, then try to have important objects, particularly the center of interest, at one of the four intersections of the imaginary lines.
12. Have people, animals, and statues **face the camera** or into the frame.
13. **Moving objects** should be heading into the frame.
14. **Look behind the subject** at objects in the background, to avoid trees and poles from growing out of a subject.
15. Watch and use **depth of field**.

### Portraits

1. **Smallest aperture.** Use the smallest aperture for minimum depth of field, leaving objects behind the person as out of focus.
2. **Focal length.** Use a longer zoom focal length (such as 75mm) to minimize image distortion caused by short focal length lenses.
3. **Focus.** Focus on the person's closest eye.
4. **Flash.** If using flash, use a diffuser and aim the flash up. See the Flash discussion on page one.
5. **Reflector.** If outside, have the person face away from the sun so the sun highlights the edge of the person's hair. Use a reflector (white, silver, or gold) to light the face. A reflector can also be used indoors, for additional light.

### Zoo

1. **Crop,** to get the "zoo" look out of every photo.
2. **Inside.** Use full manual inside, for most photos.
  - a. **Aim.** Aim the camera at an angle to any glass, to minimize room reflection or reflected flash.
  - b. **Lens hood.** Use a flexible rubber lens hood, pressed against the glass, to minimize room reflection or reflected flash.
  - c. **Flash.** Use indirect flash aimed up, with a diffuser.
3. **Outside.** Use aperture priority for most photos, but shutter priority for fast-moving animals such as monkeys.

## Photography information

### Fireworks

1. **Full manual** everything.
2. **Manual focus.** Set to infinity.
3. **Manual aperture.** Set to an f/stop of 10.
4. **Manual shutter speed.** Set to BULB.
5. **Shutter release.** Remote release is preferred, to avoid camera shake.
6. **ISO.** Least sensitive ISO – 100.
7. **Tripod.** Absolutely necessary.
8. **Scenery.** Take photos of some scenery, near dusk, as a background. You will probably need to adjust the exposure 2-5 f/stops below what the camera's metering system is calling for, so there is only a dim sky. Be sure to reset the exposure back to normal before the fireworks start.
9. **Bursts.** Start the shutter at the beginning of the vertical stream, and stop the shutter at the end of the burst, when there is no more light from the burst.
10. **Photoshop.** Use the scenery as the background, then overlay several bursts with the background/sky removed.

### Flowing water

1. **Goal** is to reduce the light coming through the lens so a longer exposure time is required.
2. **Manual aperture.** Set to a high f/stop of 20-32 to reduce the size of the aperture. This also has the side effect of keeping all portions of the water and scenery in focus.
3. **Automatic shutter speed.** .
4. **Shutter release.** Remote release is preferred, to avoid camera shake.
5. **ISO.** Least sensitive ISO – 100.
6. **Neutral density filter.** Use to reduce the light that hits the camera's sensor.
7. **Tripod.** Absolutely necessary.
8. **Exposure adjustment.** May be needed to reduce the exposure 1 or 2 f/stops.

## Photography information

### Carnival

1. **Daylight**
  - a. **Aperture priority** for general views
  - b. **Shutter priority** for action rides.
2. **Darkness**
  - a. **Full manual.**
  - b. **Manual aperture.** Try f/stops from 10 to 29.
  - c. **Manual shutter speed.** Set to BULB. Exposure time is usually 1 – 10 seconds.
  - d. **Shutter release.** Remote release is preferred, to avoid camera shake.
  - e. **Manual ISO.** Try ISO 100 – 400.
  - f. **Auto focus.** Usually okay.
  - g. **Tripod.** Absolutely necessary.
3. **Experiment.** You will need to try variations of aperture, ISO, and shutter speed (or exposure time), to find the desired result.
4. **Flash.** Use a flash in conjunction with a long shutter time or BULB, to catch a person or object with the flash and the background or spinning object with the long shutter time or BULB.

Mike Hagan, the course instructor, half-jokingly says that if he catches anyone using the camera's Program Mode, he will stomp on that camera. Mike asks "Why would you want to take a photograph where you have no control over the outcome?!"