DIGITAL PHOTOGRAPHY FOR OBJECT DOCUMENTATION GOOD, BETTER, BEST

INTRODUCTION

This document will introduce participants in the techniques and procedures of collection documentation without the necessity of hiring a professional photographer. While working with a professional photographer will yield the best results, a smaller institution's budget may not be able to sustain the costs. Below you will find an outline of basic camera skills and some key concepts in regards to documentation.

FILE FORMATS

You should always document your collection utilizing the highest quality means the camera will allow. **JPEG** and/or **RAW** will likely be the most common means of digital capture file types. **RAW** is the best file type to use, however, it does require some special software and post-production experience to utilize effectively. **JPEG** is likely the most user-friendly. However, it should always be set at the highest available quality and size available on your camera (typically *JPEG / Fine / Large* depending on the camera manufacturer).

WHITE BALANCE

This refers to the color temperature of the light in which a photograph is taken. All situations, whether indoors or outside, have a particular color temperature that affects the color cast of a photograph. It is possible to counteract these color shifts by adjusting the white balance on your camera.

For instance, if you are taking your images in open shade, then the 'shade' setting will properly balance your photograph so as not to appear with unwanted color casts. If your lighting is tungsten (standard indoor light-bulb) then set the white balance on your camera to the 'tungsten' setting. If your camera has white-balance controls they will be found in the camera controls menu.

CAMERA SETTINGS

There are several camera "modes" you can use to document your work. Most cameras offer options ranging from fully manual to fully automatic. Ideally, you should photograph in manual mode since this offers the most control; however, this mode can be complicated for beginners. Hence, a semi-automatic mode called Program mode.

P = Program automatic-assist

P = gives photographers a bit more control than a full Automatic Mode. P allows you to manually override some settings, such as focus, while the camera adjusts for exposure automatically. **P** mode is recommended for users who want good shots without thinking too hard about it, but require just a bit more control than is offered by the full Auto Mode.

In **P**, the ISO and white balance can be adjusted or left on automatic.

- Make sure you turn off your camera's flash feature and utilize a tripod.
- Set a low ISO setting (not greater than 400 ISO) on your camera to ensure image quality and avoid unwanted digital noise.
- Just make sure there is plenty of light available and a tripod to avoid camera shake.

Set a white balance appropriate to the given lighting conditions (i.e. cloudy, open shade, automatic, etc.).

CAMERA BUYING GUIDE

Digital Camera Suggestions

Remember, good photography is not about your camera—it is about the photographer's vision. If you are in the market for a new digital camera definitely consider Canon or Nikon (long-time industry leaders). Whatever you choose should have manual controls over shutter speed and aperture. For digital point-and-shoot cameras look for something with strong *optical zoom* capabilities and the ability to shoot in RAW format.

The best option is to consider a **DSLR camera**. The Canon Digital Rebel series has been a long-time favorite for beginning photographers. Nikon's D-series also offer some fantastic pro-sumer choices for beginners and semi-pros. All these cameras are great to learn on and many are available used for reasonably low prices. Starter kits (which include camera and lenses) are also available for both Nikon and Canon. Talk to your camera retailer for more suggestions.

Lens-wise, kit lenses are not the best lenses but they're good to learn on. A good lens can put you in the $1000 range easily for pro-quality. If it is your first lens, a kit lens is not bad. They typically cover a large focal range (wide to telephoto) which offers you the opportunity to discover what sort of photographer you are, and then you can buy lenses accordingly. For shooting collection objects, you can get away with a cheaper lens and a polarizer filter (helps remove glare from glass and/or shiny objects). However, a cheaper lens contains more distortion. This can be corrected in post-production given the proper software and skill set. A higher quality lens is typically sharper and contains less distortion.

Camera buying articles:
http://www.adorama.com/alc/0008102/article/Buying-Guide-The-best-starter-DSLRs-right-now
http://www.cnet.com/topics/cameras/best-digital-cameras/dslr-for-beginners/

Vendors and Reviews:
Also, places like **Adorama**, **B&H**, and **Calumet** offer educational programs to get discounts on gear. KEH is also fantastic if you are shopping used. **Digital Photography Review** (http://www.dpreview.com/)is a great resource as well. You can compare camera specifications side by side and read unbiased reviews for each model.

Additional Resources:
http://www.tomsguide.com/us/best-dslrs,review-2218.html
http://www.techradar.com/us/news/photography-video-capture/cameras/best-dslr-top-cameras-by-price-and-brand-944543
http://www.cnet.com/topics/cameras/best-digital-cameras/midrange-dslr/
http://entry-level-dslr-camera-review.toptenreviews.com/

GOOD (BEGINNER) DIGITAL PHOTOGRAPHY: OUTDOOR/NATURAL LIGHTING

REQUIRED GEAR

- Digital camera (DSLR recommended)
- Tripod

OPTIONAL GEAR

- Remote trigger (to fire without touching camera)
- Multiple lenses and/or camera filters
- Camera bag

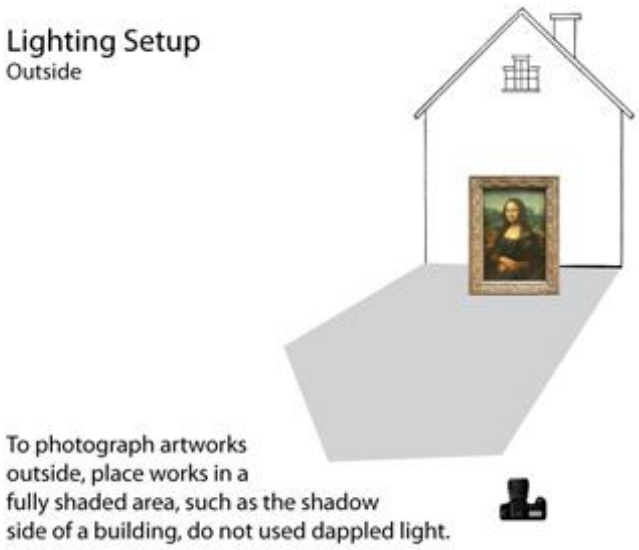
LIGHTING

Mid-morning to mid-afternoon is typically the best time to photograph. Lighting doesn't change frequently, there is plenty of light available, and colors will be rendered most accurately.

- Use diffused daylight; bright, overcast skies are best for photographing objects outdoors.
- Cloudy, windy days are not recommended since it renders inconsistent lighting.
- During bright and sunny days:
    - Photograph in open shade (avoid photographing in direct sunlight).
    - You may utilize a circular polarizing filter to help cut down on glare or try readjusting the angle of the object toward the sky.
    - Adjust your camera's White Balance setting for proper sunlight under changing circumstances (i.e. cloudy, open shade, automatic, etc.).

DOCUMENTING OBJECTS OUTSIDE

1. Use a tripod to steady the camera.
2. Set your white balance and ISO appropriately.
3. Use the shady side of a building on a sunny day in a neutral color area where there is smooth even light and no shadows. If your object is two dimensional (say a flat painting) then photograph somewhere where there are no shadows, but if you need to photograph a sculpture or something that is three dimensional then it is OK to move out into sunlight which will give you shadows that will in turn show how the work has depth and form.
4. Keep the work free of distracting backgrounds and fill the frame.



BETTER (INTERMEDIATE) DIGITAL PHOTOGRAPHY: INDOOR LIGHTING

REQUIRED GEAR

- Digital camera (DSLR recommended)
- Tripod
- Hot lights (tungsten, quartz, or halogen bulbs) and stands (2 lights for 2D objects, 3 for 3D objects); cheap tree style floor lamps or lamp lights from the hardware store fitted with as bright of natural spectrum bulbs.
- A space free of light pollution from other sources.

OPTIONAL GEAR

- Remote trigger (to fire without touching camera)
- Circular polarizer filter (to reduce glare on reflective surfaces)
- Multiple lenses and/or camera filters
- Camera bag

LIGHTING

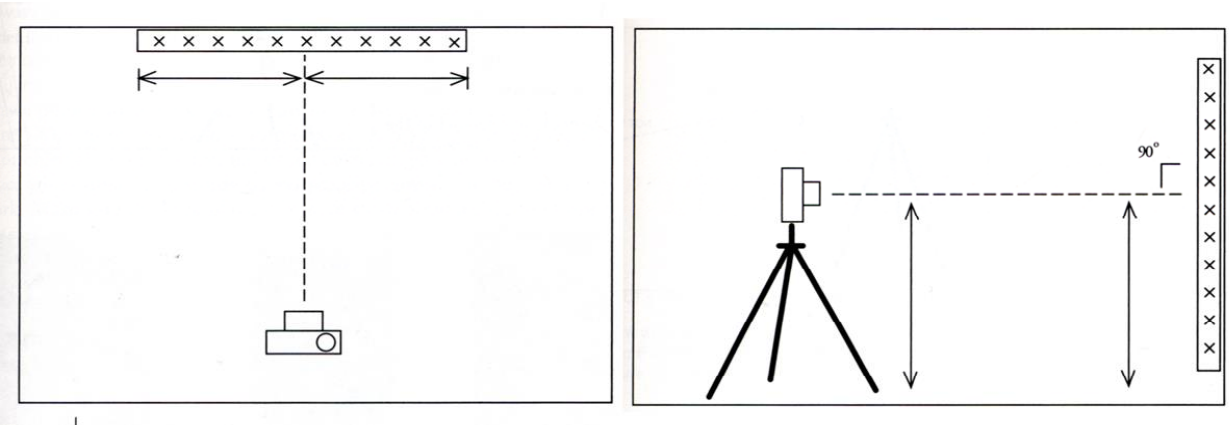
- Almost any room can serve as a studio, although the clearer floor space there is around the subject, the better. All-white walls may be a temptation, but if the one or central part of that wall facing a 2D object is black, or non-reflective black (like velvet or felt), you'll get fewer reflections or less glare. Opaque curtained windows make it easier to only have one light source illuminating the subject.
- When using lights on a stand to light a work, place them at a 45-degree angle either side of the work so as to eliminate shadows. Make sure your light is evenly distributed in all four corners, and center, of object (you can use a single light source if you wish to produce shadows).
- If you use lights you will have to set your balance to reflect the appropriate light source (typically tungsten for basic hot lights).
- Keep the work free of distracting backgrounds and fill the frame with the object.
- Use the camera's timer mode to minimize camera shake (if no remote sensor or cable release is available).

CAMERA SETTINGS FOR INTERMEDIATE SHOOTERS

- Set the camera to shoot in JPEG (or RAW if familiar).
- Set the ISO to 400 or lower.
- Set the camera to "P" as recommended above.
- Set the white balance (Tungsten, Fluorescent, Daylight, Custom, etc.). If you have mixed lighting you can create a custom white balance.

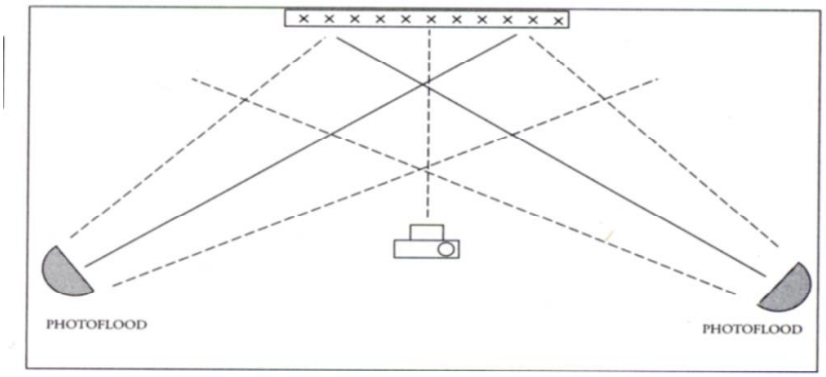
SETTING UP THE CAMERA

1. Set up the camera on a tripod; make sure the tripod and camera are leveled.
2. After attaching the camera, bring the lens to the exact height of the middle of the object (this is the measurement you took when hanging the 2D object).
3. Place the tripod at a distance where the object fills almost the entire view, yet you are not too close to get distortions (See the attached diagram).



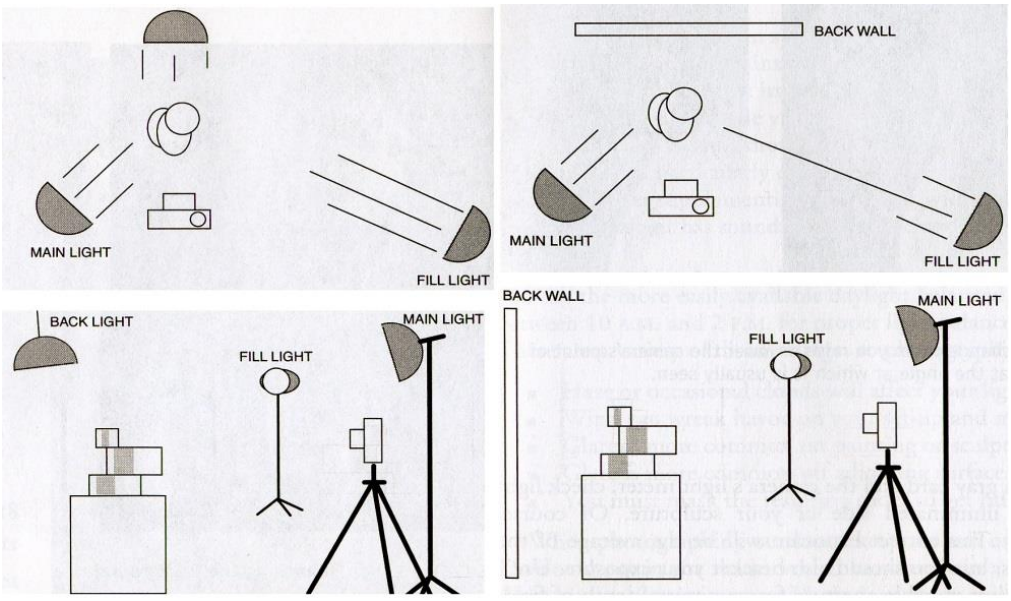
DOCUMENTING 2D OBJECTS

1. Place or hang your art level on a flat surface (like a wall) with a grey, black or white background.
2. The lights should be placed at a 45 degree angles from the art, half way between the art and the camera, this will give even, diffused light.
3. Get the entire image in the frame with a bit of background and focus your image.
4. Press the button and let go of the camera, the timer function will open the shutter and take the shot.
5. Review on LCD prior to changing settings or moving object. Leave the tripod in place in case you need to come back and shoot more images.
6. Make sure to capture your piece from multiple angles if needed.



DOCUMENTING 3D OBJECTS

1. Set-up using the above guidelines.
2. For smaller objects, place on a flat surface with a neutral colored background. Don't place it too close to the background, give it some space. **Note:** If your object is small enough and you want even diffused light, use a tabletop soft-box.
3. At first, place the lights at 45 degree angles from the object, half way between the object and the camera, this will give even, diffused light.
4. Then move one of the lights around to start creating shadows, once you have reached a desired shadow leave the light and begin shooting.
5. Some 3D objects need three lights to create dimensionality. If needed, add a third light as a fill, but be conscious of the additional shadows.



BEST (ADVANCED/PROFESSIONAL) DIGITAL PHOTOGRAPHY: STUDIO LIGHTING

REQUIRED GEAR

- Digital camera (DSLR recommended)
- Tripod
- A space free of light pollution from other sources

OPTIONAL GEAR

- Table covered with backdrop paper
- Remote trigger (to fire without touching camera)
- Circular polarizer filter (to reduce glare on reflective surfaces)
- Multiple lenses and/or camera filters
- Strobe or floodlight kit and accessories
- Backdrop and stands
- Camera bag
- Studio lighting

The best option for object documentation is to have the object photographed in a studio, by a professional. The difference is that the professional will have access to equipment that will provide the best possible quality and will be produced by an individual who knows how to use the equipment properly. Therefore, Option #3 highlights camera and lighting tips for those "in-the-know." Lighting position will be exactly the same as Option #2 (Better) and is therefore covered in that section.

Lighting Tips

- B&H has numerous low-cost light kits you can choose from. The minimum you need is two lights with stands and accessories like umbrellas or soft boxes.
- On-camera or built-in electronic flash is a problematic light source, especially when used too close to the subject, because it tends to over-expose highlight areas and create under-exposed shadows under protrusions on objects.
- Lighting is set-up in the same positions as in Option #2 (Better). Only this time, greater attention is given to camera controls.
- For 3D works, incorporate a third light as a fill light in which the light sources is bounced (i.e. using umbrellas) or diffused (i.e. using a soft box).
- For reflective surfaces consider utilizing a circular polarizer filter to remove glare. You can also attempt moving to remove the glare off the object. Or, consider positioning the camera so the glare appears in an area that is non-distracting.

Camera Settings for Advanced Shooters

1. Set the camera to shoot in RAW (this will give you the most digital information).
2. Set the ISO to 100 (this will reduce "noise" in the digital image).
3. Set the camera to "aperture priority" (this will keep the aperture locked) or even better, photograph using "manual mode" and bracket your exposures.
4. Set the aperture to f/8 or higher (this will put more of the image in focus).
5. Set the white balance if shooting in JPEG or TIFF (Tungsten, Fluorescent, Daylight, Custom, etc.) If you have mixed lighting you can create a custom white balance.
6. Set the camera to timer mode (this is to minimize camera shake) or utilize a cable release or remote trigger.
7. Choose a hi-quality professional lens. It is good practice to avoid wide angle lenses as these provide more distortion. Also, most lenses have a "sweet-spot" in reference to their aperture settings.

Additional Tips

- Fill the frame
- Check focus after every shot
- Use your camera's histogram for exposure accuracy.

- Use depth of field and your camera's aperture to your advantage. Particularly if you have multiple objects in the same photograph. Make sure you are "stopped down" to a point where your main subjects fall in the same field of focus, but not far enough that it reveals unnecessary details on your backdrop or in your surroundings.

POST PROCESSING

- The photographer should capture all images in camera RAW format.
- In post-production, the photographer crops and edits the images and creates JPEG files that would later be used for display in an online repository or collection database.
- These images, along with the original RAW and DNG files, were renamed, embedded with usage rights metadata, and placed into storage.
- Conversion to other preservation formats such as TIFF may be considered at a later date.
- It is important to consider file size of whatever format you choose, as this will affect the amount of server space that you dedicate to storage.
- This process requires knowledge of image editing software such as Photoshop, Lightroom, and/or Adobe's Creative Suite.