

PHOTO STUDIO LIGHTING 103: HI-KEY

Jan. 7, 2012

HANDS-ON training of studio high-key strobe lighting in a large photo studio. This workshop will cover the use of a large white studio with cyclorama, lighting for the subject with a pure white background. Equipment such as strobes, stands, fan, umbrellas, softboxes, and reflectors will be used.



More advanced than Studio Lighting 102, this class will cover high-key lighting, dealing with techniques such as glamour/butterfly/loop, clamshell, hard/soft lighting, light quality, fall off, focal length, white balance, “stops,” and best settings/techniques for fashion/beauty shots.



No studio lighting experience needed. Bring a digital SLR (Canon EOS..., Nikon D... or camera with a hot shoe bracket which holds a flash). You can use images you shoot of the model for your portfolio (you agree to email your best hi-res files so models can use them).

The purpose of this class is for you to learn about lighting. We will not be concerned with taking great pictures or who is more artistic. Learn the “rules” below first, then you’re free to break them!



THE 3 VARIABLES OF EXPOSURE (OPERATING YOUR CAMERA IN MANUAL MODE)

1. ISO (100): Sensitivity of the sensor or film. Set your ISO to 100. The lower the better but images require more light. Images shot using ISO800+ can be grainy and dull. Increase ISO only as a last resort. Each increase (eg from 100 to 200, or 200 to 400) doubles the light sensitivity.

2. f-stop or aperture : Start with $f4$. The opening size of the shutter iris. $f1.8$ or less is the widest for expensive lenses, allowing the most light to enter, and having short *depth-of-field* DOF (what is in focus). A short DOF results in a blurred background, giving prominence to the subject who is in focus. A wide-open aperture is ideal for portraits, but may allow too much light in.

Group shots, where faces are at a different distance to the camera, require a smaller aperture ($f8+$). A shorter focal length has a larger DOF, which you need to make everyone in focus. Cheap lenses go down to only $f4$ or 5.6 . Some \$\$\$ lenses can open to $f1.2$ (very wide). Even with this lens, you can set it back up to $f8$. Each “stop” change ($f16, 11, 8, 5.6, 4, 2.8, 2$) is a doubling of light. If your images look dark, open the aperture by a stop or two (say from $f8$ to $f5.6$).



Since aperture affects the focus look of your image (eg blurred background), you should set this first (this is your art) and adapt lighting to that setting. This can require that your lighting have a wide range of power. If aperture is too large ($f1.8$), strobes may not be weak enough, and there is too much ambient light. We will set the lights to around $f4$. If your lens only opens to $f5.6$, increase your ISO to 200.

3. Shutter Speed: Set $1/125$ (or $1/60$). Duration of the open shutter normally determines amount of light hitting the sensor. Not important when using strobes*! Since strobes are on for only $1/1000^{\text{th}}$ sec, almost any shutter speed will let the same amount of light in. Ambient light will be relatively non-existent. No tripod needed to stay in focus, unless you want to repeat a certain setup.

*Too slow of a shutter speed ($1/10$) will allow too much ambient light to enter. Too fast ($1/180$) and the focal-plane shutter becomes a slit which moves across the sensor, allowing only a band of light to enter (part of the image w/b black). The fastest speed a camera can use with flash is referred to as sync speed. Some leaf shutters (Hasselblad) can sync to $1/500\text{sec}$.



OTHER CAMERA SETTINGS

Manual Settings: Turn off automatic devices (ISO, exposure, WB, sharpening). Auto-focus is OK.

We will use ISO, aperture, and shutter speed to control exposure. Remove any polarizing or other filters are on the lens (UV filter OK, but I never use them—it adds to lens flare and reflections). Use a lens hood if you have one—we want to minimize stray light from entering the lens. Your camera needs to have a hotshoe or PC jack to fire the strobes.



Focal Length: How large the subject will appear in the frame, or the “zoom” nature of the lens.

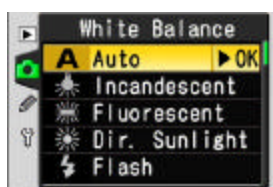


Portraits and headshots should use 85mm or higher. Some photographers use up to 200mm but you need lots of distance. My fav is 105mm. Wide lenses (35mm) make faces fat! Focal length has little to do with exposure. I own no zoom lenses, only primes (single lengths).

Focus: Disable fancy systems which look for other points of focus—control the point yourself.

Focus on the subject’s eyes. Learn to focus and “hold” so you’re not forced to have the focus point in the center of the image. Many cameras allow you to press the shutter button halfway to lock focus, and then compose your shot. Don’t make your subjects wait for you to focus—learn to focus instantly. Don’t “count” unless you’re quick about it.

White Balance setting on your camera: Set “flash” or daylight. Strobes’ temperature are cloudy sky



daylight (~6K°, bluer than direct sun). If mixed lighting is present, daylight with incandescent or fluorescent lighting, use Auto WB (AWB) or manually set WB; shoot on a calibrated gray card or pure white surface. You can adjust WB in Photoshop, but adds complication.

Gray Card: Simulates neutral color & 18% reflectivity similar to average White skin tone. Shoot this card when manually adjusting WB. Consult your camera manual. Accurate gray will have equal parts of red, green, and blue. You can also include this card in a shot to help adjust the color of your images in Photoshop.

LIGHTING

Strobe : Light device which can “flash” once, just like an on-camera flash.

These lights are triggered via a camera PC jack/hotshoe, wireless slave, or when it “sees” other flashes go off. Strobes are not automatic (TTL) so they must be set manually. Sometimes strobes are wired to a power pack. We will use “monolights” which are self-contained but heavy. Ensure the stand can hold it. Strobes also have a modeling light which simulates what the strobe will look like (I don’t use this). The other kind of light is a “hotlight” which is basically a powerful light bulb which is continuously on.



Strobes can be “better” than on-camera flashes because of their high power, fast recycle time, accommodation of various light modifiers, and position. Light coming direct from on the camera can be shadow-less and harsh (this can be desired, like what a ringflash would produce). The only important manual control is its intensity, sometimes measured in f-stop increments. It may take a second to recharge—there is danger of shooting too fast (images will be dark). Some strobes have a beep or modeling light signal to signal full recharge after each shot.

Slave: A device which conveys the camera’s command to trigger the flash. A wireless or PocketWizard radio transmitter attaches to the camera hotshoe like a flash would. A receiver attaches to one strobe. Since strobes have an electric eye, only one of them needs a receiver. Others “see” when a flash fires (like dogs-when one barks, they all bark). You can also use a cable attached from your camera’s shoe or PC jack to one strobe (set other strobes to see this flash). Worst case, someone’s point-and-shoot flash will trigger strobes, which sometimes happens at events when guests are using flash.



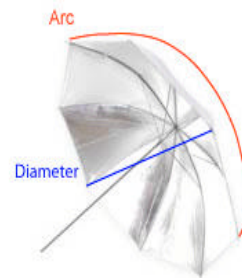
Light Distance from light source to subject. Keep source as close as possible—this “increases” the size of the light source, making shadows diffuse (soft light). If too bright, decrease strobe power. If you can change intensity by moving the strobes, the light “size” will change. Light “fall-off” effect is greater with short distances. A close light source can make one part of the face bright, and fade quickly on the far side (which can be good). A distant light will maintain a uniform light intensity across the face.

The inverse square law says doubling the distance requires 4 times the increase in light intensity. $y = 1/x^2$ (x =distance, y =intensity) so if you double the distance, increase power by 2 stops.

LIGHT MODIFIERS (BIGGER THE BETTER)

Bare Bulb: No modifier - just a pin-point source like the sun. Hard shadows. Use when desperate for light power, eg when shooting large groups. Try to bounce off walls to make a big light source.

Umbrella: A reflector which a strobe bounces against (or shoot thru) making the light source larger and diffuse. The larger the light source, the “softer” the light (shadows are less sharp). Bringing light closer to the subject makes light softer (as long as you compensate for less intensity). Umbrellas are cheap but light is not consistent across its surface. More expensive “Parabolic” umbrellas can direct light better.



Softboxes make light source larger and more diffuse, however the light is more consistent across its face than with an umbrella. Light is better controlled and has less spill. They can be mounted on strobe like an umbrella, or with a “speedring” to a specific strobe (all brands are different). Generally, the larger the “better,” for traditional portraits, up to 7’ wide. Some softboxes come 10’x20’ and can also be placed side by side.



Beautydish: This gives both a hard and soft effect. Keep close (larger light source) to subject. Good for beauty/fashion closeups. They must match the strobe brand to fit. You can tell if these dishes are used by looking at the eyes of magazine models, by a round light and black dot in the middle. A grid or sock can be placed on the dish, for different effects.



Reflector: A white/silver sheet/board/foamcore used to reflect light from other strobes, filling in shadows. While it won’t give the same intensity, it’s a cheap substitute for extra lights. A reflector can also refer to the metal cone which reflects and concentrate light towards the subject or umbrella.

Grid: a honeycomb filter which makes the strobe light “go straight.” Lighting appears softer, and there’s less spill.





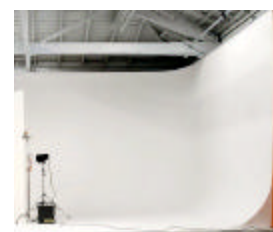
Stands: Can be the industry-standard “C-stand” or folding stands to hold lights or anything else. Always maximize the feet width—find every way possible to secure the stand from falling. Sometimes sandbags are placed on the legs. DANGER—When a knob is loosened, something will fall!

Adjusting stands is a 2-hand process. One hand to hold what will fall; the other to loosen the knob. Always retighten (firm but don’t strip the threads) loose knobs, even when unused. Let your instructor adjust these. A boom is a cross-arm used to hold stuff farther away from the stand.



HIGH-KEY LIGHTING

- “High-key” means a white background. The effect is a clean, surreal space to present your subject. A “cyclorama” is a rounded cove built in the corner (wall & floor) of the background to avoid a corner line in the image. This can also be built in a 3-plane corner.
- The background must be evenly lit by a separate set of lights. The spill from these lights can be flagged (blocked) or used as kicker lights (accent on the back of the subject). Often 1 or 2 stops above the facial reading is desired. If the face is metered at $f4$, the background lights should be $f5.6$. Too much background light will result in lens flare and loss of contrast.
- Use large opaque umbrellas or softboxes to light the background. Use “flats” (large flags) to shield light from the subject.
- Sometimes the background does not have to be fully-lit, but slightly off-white paint may look yellow if not “blown-out.” Make sure your white balance is calibrated. Balance where your subject will be. Don’t use the background as a calibration card, as it may be off-white.
- A large space will prevent reflected light from interfering with your subject lighting. Lighting the background requires lots of light and can spill. Ideally you should be able to have a completely dark subject with a fully-lit background.
- Main light is the perceived light source or sun which “makes” the shot. Can be angled slightly above camera. This lighting effect is affected by the rotation of head. Used with other lights, the main light may be 1 stop less than if it were used alone.
- There may be enough light to not need hair/kicker lights to illuminate the back of head and shoulders. Normally we need to define the head from the background and reinforce depth, but a high-key background may provide enough light. Often used with a grid diffuser—other modifiers can have different effects. Position this opposite the main light. Intensity usually the same or greater than main light.
- Catchlights in the eyes are desirable, but not at the expense of overall facial lighting. Reflectors can help.
- Maintain chin definition by having a shadow under the chin (and nose). Low angled lighting or reflector can hinder this. Keep fill light slightly high, to maintain that shadow.



- Lighting from above accentuates cheekbones, which makeup can simulate. The highlight above the cheekbone, and shadow below creates this. Watch out for blown-out highlights on forehead—use a larger light source or powder to help.
- Blonde hair: don't overblow light hair/skin. Check your exposure. Slightly dark images can be lightened in Photoshop, but you can't fix blown out whites. With hi-key bkgds, adjust the light so hair is visible against the white bkgd. FYI—both Black and White models are shot at the same exposure, however darker skin is more forgiving.
- Keep a shot of the gray card!

RULES OF THUMB FOR DOUBLING/INCREASING EXPOSURE (BRIGHTER)

- Aperture doubling of light, by stops: $f16 > f11 > f8 > f5.6 > f4 > f2.8 > f1.8$
- Shutter doubling: $1/125 > 1/60 > 1/30$ (does not apply to strobes)
- ISO doubling: $100 > 200 > 400 > 800 > 1600$
- Light distance doubling: (inverse square law) $11' > 8' > 5.6' > 4' > 2.8'$ (look familiar?)
- (If you double the distance you need 4 times the light)

AGREEMENT FROM BIG WHITE PHOTOSHOOT PARTICIPANT

I allow my images and likeness recorded by anyone at this Jan. 7 photography workshop to be used for promotional purposes without compensation. I indemnify anyone associated with this workshop, participants, owners against any damages or harm which may occur.

X _____ Date

X _____ Date
Parent

(tear off and give to instructor)