

# Cinematography Course Notes

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## Introduction

### 1. What is cinematography and why is it important?

According to the internet. It's the art of capturing motion picture photography. But that is so boring, so here's my take on it... Cinematography is about:

1. Creating style
  2. Driving emotion
  3. Telling a great story
  4. Setting the pace
  5. Absorbing the audience
  6. Keeping a forward flow
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But most importantly, cinematography is about understanding **instinct vs stimuli**.

Instinct is running away from a hungry grizzly bear that wants to rip your face off because you want to protect yourself. The stimuli, is the hungry grizzly bear itself. Shooting great video is about controlling that stimuli. You get to choose what hungry grizzly bears to throw at your audience. In other words, the more you learn and apply the rules of cinematography, the more control you have of the viewer's response. Cinematography is about knowing **WHAT** to look for and **WHY** to look for it in order to take better video that your viewers will not want to take their eyes off.

## **The Camera Atlas - Truly Understanding Your Camera**

### **1. What is Video Resolution?**

RESOLUTION = QUALITY

Common Resolutions (in order): 4K, 1080p, 720p, 360p, 144p.

Let's take 1080p for example. The P stands for *progressive scanning*, which is the method that the video is drawn onto the screen in front of you. Progressive scan means that each line of video is drawn in sequential order frame by frame. While the opposite of this is 1080i or *interlaced scanning*, where every OTHER line is drawn frame by frame. MOST modern day cameras shoot with **progressive scanning**. So just stick to the P and you'll be safe.

The number represents the amount of lines that make up the height of the video. Or even simpler, the amount of pixels tall. The more pixels stacked on top of each other, the higher the resolution will be.

So a 1080p video is 1080 pixels tall by 1920 pixels wide. Aka 1920 by 1080.

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But there's another number that is higher quality than all of these... called 4K. 4K is basically 4000 pixels tall. Well...In actuality, it's 3840 pixels tall, but 4K sounds a lot sexier rolling off the tongue.

I ALWAYS shoot in AT LEAST 1080p or even jump up to 4K to get the best resolution I can out of my video. If you're planning to play your movie on a giant movie theater screen, you're better off shooting in 4k res. Because the bigger the screen, the higher quality video you'll need. The smaller the screen, the lower the quality you can get away with. But shooting in higher resolution is always better because you have room to work with while editing.

### **3. What is Aspect Ratio?**

Aspect Ratio is exactly what it says it is, it's a RATIO. More specifically, its the *ratio of width to height for your video*.

The most common aspect ratio is 16:9. 16 being the Width, and 9 being the height. Naturally making this into a rectangular shape.

iPhones, modern TVs, and movie screens are built in a 16:9 aspect ratio.

If you were alive before the 1990s and capable of cognitive thought, you probably remember most tv and computer screens being more of a square shape. These are 4:3 aspect ratio.

There's no reason to use 4:3 nowadays. If there's any mark of an amateur, it's the 4:3 dunce cap you don't realize you're wearing...

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A movie theater screen AND an iphone are both 16:9 aspect ratio.

2 very different SIZES that require different resolutions, but both are the same ratios.

#### **4. Understanding Frame Rate**

Frame Rate is the frequency at which video frames are recorded per second. This is also called Frames Per Second or FPS.

Frame: a single picture in your video.

So a video is just a series of pictures played in a sequence. So Frame rate is how many of those pictures are recorded into a single second of video.

The lower the frame rate, the less frames you have. The higher the framerate, the more frames you have.

**THIS IS IMPORTANT FOR GOOD CLEAN SLOW MOTION!**

Because with LESS frames per second, the less information we have while editing the footage.

The human eye can only process life somewhere around 30-60fps. Any more than that, and your eye won't even notice a difference. When you're editing later your eye will still be processing the screen at around 30fps, so NOW a 30fps video slowed to half speed, plays at 15 fps appearing choppy and amateur looking.

While slowing down a higher frame rate such as 60fps to half speed, now plays at a nice smooth 30fps matching the average rate of your eye.

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TO GET TRULY CLEAN SLOW MOTION, YOU NEED A HIGH FRAMES PER SECOND!

Frame rate also determines motion blur in your video. 24fps will have more of movie theater style motion compared to a high frames per second like 120fps.

THIS DOES NOT MEAN YOU HAVE TO SHOOT IN 24 FPS!

## 5. The Lens

Every lens has what's called a focal length and focal length is measured in *millimeters*.

You have very wide lenses and you have very telephoto lenses. And you have zoom lenses that can do both.

In order to know what lens to use, you have to think about what you're shooting...

Wide lenses are great for:

- Interior Rooms
- Entire Landscapes,
- Low Light Conditions
- Music Videos
- Action Sports

Telephoto lenses are great for:

- Subjects that are far away

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-Shallow Depth of Field

-Macro Shots

-Interviews

-Weddings

-Wildlife

REMEMBER: TELEPHOTO LENSES CUT OUT MORE LIGHT

The most versatile lens you can buy is an 18mm-135mm zoom lens.

iPhone Users: The WORST thing you can do is use the digital zoom function on the iPhone camera, it greatly reduces your image quality into a pixelated pile of poop. Don't use it...

## **Exposure**

### **1. Intro to Section: What is exposure?**

Exposure in the simplest terms is how bright or dark your video is. THAT'S IT!

### **2. Aperture for Cinematography**

Everytime you take a video with your DSLR, there is a ring inside your camera lens that can be opened or closed to let more or less light into your video. The diameter of the hole in this ring is called *Aperture*.

The larger the hole, the more light comes in making your image very bright. The smaller the hole, the less light comes into the camera, making your image darker.

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Aperture is measured in *F-stops*.

F-stop is RATIO of the focal length and aperture. SIMPLY, F-stop is the amount of light that passes through your lens. F-Stop is measured BACKWARDS!

So basically the larger hole his labeled as a smaller number and the smaller hole is labeled as a higher number.

Okay, so when you change the aperture on your camera, you also have to change THE SHUTTER SPEED.

The shutter speed works a lot like frame rate, where it fires several times a second. Except that it determines how much light enters your video.

The faster the shutter fires, the less light gets in. The slower the shutter fires, the longer it stays open allowing more light to enter.

This also affects motion blur. Slow shutter speeds creates more motion blur, while a faster shutter speed decreases motion blur and allows for sharper movement.

### **3. Why Shooting Darker is Always Better Than Too Bright**

In some scenarios, you'll come across a shot where in order to properly expose your subject, the rest of you image is very bright and blown out. *Blown out* meaning that there is so much light you're starting to lose the image behind it.

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In this case, it's ALWAYS better to underexpose a little to retain detail in the light areas.

Don't worry if your subject is a little darker than you'd like. There always ways to bring brightness and detail out of slightly darker areas later in editing. But it does not work backwards.

ONCE YOU SHOOT TOO BRIGHT, YOU CANNOT RECOVER ANY DETAIL.

#### **4. How Frame Rate and Shutter Speed Affect Exposure**

Something to keep in mind about frame rate, is that it affects exposure exactly like shutter speed. But shutter speed and frame rate are NOT the same thing. Frame rate as I said before is the amount of frames per second. While shutter speed is how long the shutter is open during EACH of those frames in that second.

So a shutter speed of 400 is actually 1/400th of a second.

So at a frame rate of 30 frames per second, this means the shutter is open for 1/400th of a second 30 TIMES in one second.

ALL YOU HAVE TO KNOW is that the HIGHER the frame rate and shutter speed, the DARKER your image will appear.

### **What Is in My Camera Bag?**

1. DSLR + Battery + Charger
2. Lightweight Tripod
3. Laptop (for transferring footage and editing during off-time.)

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4. External Hard Drive + Cable
  5. Portable Battery / USB Charger
  6. Shower Curtain
  7. Microphone + Case & Cables
  8. Battery Powered Light
  9. Lenses
  10. Osmo Mobile / Stabilization
  11. 12v USB Car Charger
  12. Snacks / Water

## **Shot Composition for Professional Cinematography**

### **1. Intro to Section: What is shot composition?**

A shot is just a frame arranged with objects and shapes to make up a composition. So *shot composition* is arranging those objects and shapes with purpose.

### **2. The 6 Perspectives and Storytelling**

Perspective is all about angles and camera position.

Low Angle: Low Angle brings your audience back to a child's perspective and makes your subject look very superior. It's like being an ant inside a jungle. Everything you look at has power at this angle.

High Angle: High angle can make your subject appear smaller and add a lot of depth to a video. It can make them look weaker and powerless if that's what you're going for.

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1st Person Pov: This is the perfect perspective for bringing the audience into your shoes. This perspective is like you're looking through the eyes of the character in the video, and can help add some realism. Often you'll see arms and legs in the shot that help convey that realism. This perspective looks great for sports, action videos, and travel videos where you want to immerse the viewer in your surroundings and make them feel like they're really there.

Long shots: can be used to show a subject in relation to its surroundings. It can be used to make the subject stand out from the rest of the environment and reveal a lot of depth and vastness.

During Conversation:

Close Ups: Close ups are most used when the conversation gets really serious or intense. THE EYES ARE ALWAYS MOST IMPORTANT. This is because our eyes give away the most emotion. You can also use close ups for product shots and macro shots of nature.

Medium Shot: Regular conversation / banter.

### **3. Vantage Point**

Vantage point is a point or area of focus created by leading lines. Your eyes like to be guided. So as cinematographers, we use lines in everyday life to steer or lead the viewer to a single point or even to a subject. These leading lines start at the outside of the frame and travel inwards, all meeting up in a single area.

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Aside from guiding your eye swiftly through the image, they also connect the foreground to the background. *The foreground being the closest area to the camera.*

Think of these lines as bait for your eye. The split second your eyes see an image, these leading lines do their job of guiding you from one part of the image to another.

There are 2 types of leading lines:

1. Geometric lines: are found in urban areas where there are lots of buildings and streets. These lines are straight and very obvious to follow.
2. Organic lines: are often found in nature and a little harder to follow sometimes. They tend to bend and curve a lot more than geometric lines. They could be a mountain range, a river bend, a line of trees, or really anything that creates a line.

Vantage point can help tell the story of where your subject is going or that there's an unknown journey ahead of them, by using lines that lead off into the background. Vantage point can also provide you with perfect symmetry to balance your shot evenly.

#### **4. Rule of Thirds**

The concept is to split your image into 9 different parts, but most importantly 3 columns. Rule of thirds balances multiple subjects in one scene and drawing attention to the entire composition AS A WHOLE, rather than one centered point of focus.

Depending on which direction your subject is facing, Rule of thirds can help tell a story about what they're looking at or where they're going. And as I said earlier about taking in the

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composition as a whole, it can even help the viewer identify what environment the subject belongs to.

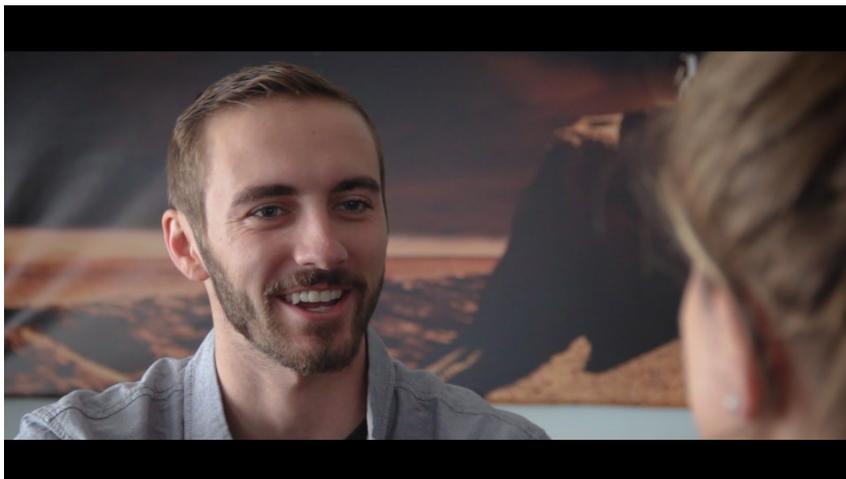
### **5. The 180 Degree Rule**

Used in conversations with 2 people.

Think of it like you're the 3rd wheel on a date. If you're watching the person on the right talk, they should be looking to the left side of the screen.



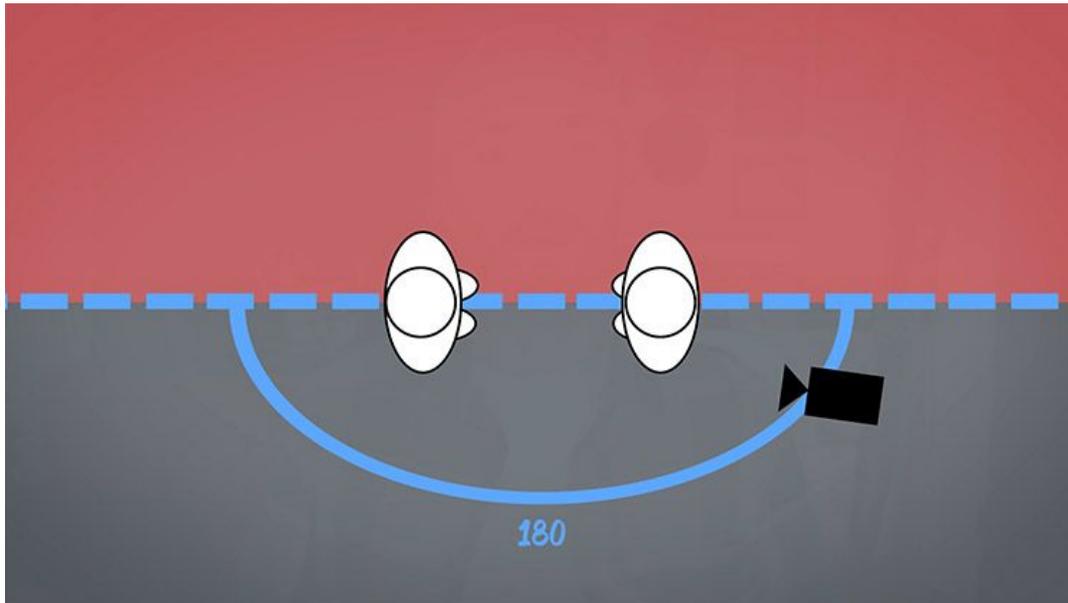
And when you switch to the other person, they should be looking to the right side of the screen.



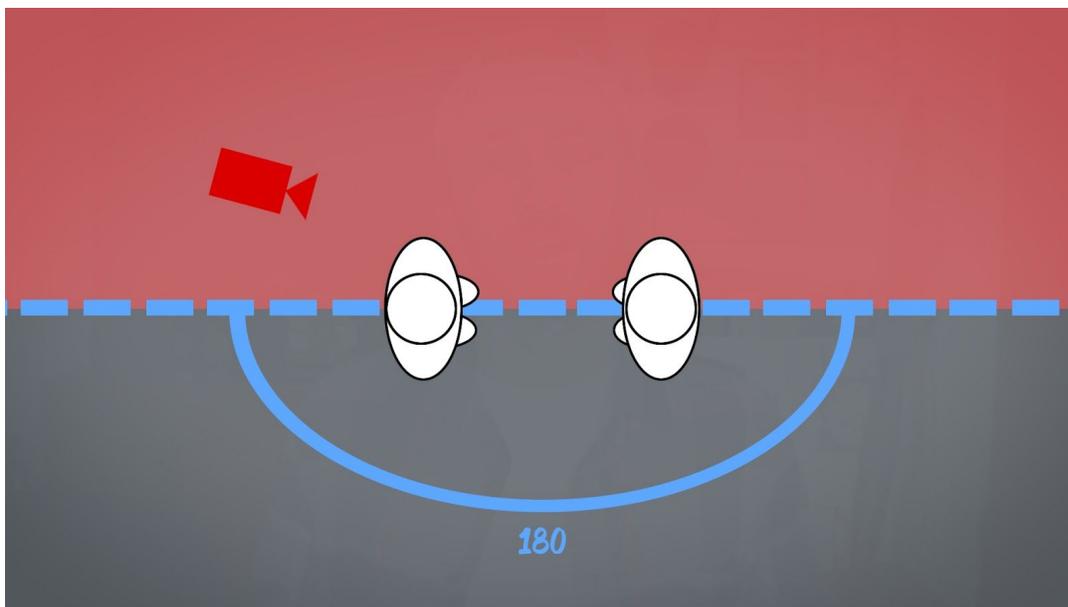
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This gives the impression that they're talking to each other.

The 180 rule states that when you switch the camera between the two, you have to stay within a range of 180 degrees on one side of the conversation.



The moment your artsy fartsy ego passes beyond 180 degrees, you've know thrown off the viewer completely.



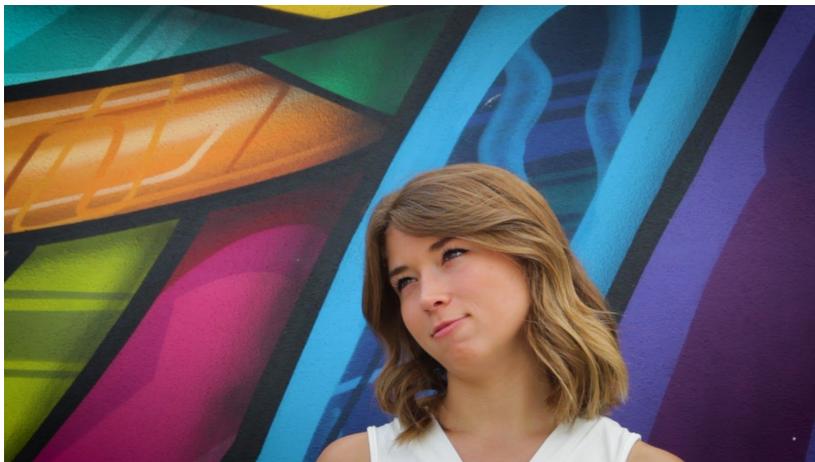
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## 6. Head Room and Lead Room

Head room is literally what it says it is. It is leaving the appropriate amount of room above the head.



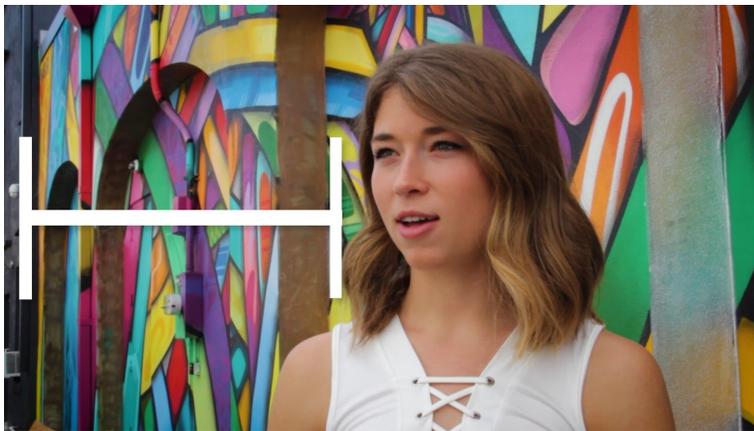
Too much and the subject looks too small and the balance of the composition is thrown off.



Too little and you're just cutting off the top of their head and the viewer's focus is more on their torso.



Lead room is the name of the space that you leave on either side of a the frame so that a subject has room to exit the shot or adjust their position.



Having too little lead room can throw off the balance of the shot and just looks unprofessional.



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## **Movement: Why Great Cinematography Needs It**

### **1. Intro to Section: Move With Purpose**

Photo and video are different for one simple reason. MOVEMENT. It isn't called motion picture for nothing. So the more you move, the more realism and interest you can add to your scene. Movement isn't just for adding flare and style, but it's also used to help tell the story and guide the viewer from scene to scene as seamlessly as possible.

### **2. Handheld Vs. Stabilized Shooting**

Shaky Footage is ONLY good for when the scene is hectic and full of action, such as a car chase for instance.

Stabilized: You can make your own glide cam by putting your camera on your tripod and attaching weight to the bottom. After attaching weight, just grab it below the camera itself and walk swiftly by rolling from your heel to your toe with one foot in front of the other.

iPhone Stabilization: The iPhone has built in stabilization but you can also get a DJI Osmo Mobile:

[http://click.dji.com/AFc0c1wZ3iSV\\_WG-qA?pm=link](http://click.dji.com/AFc0c1wZ3iSV_WG-qA?pm=link)

### **3. Types of Movement**

Dolly: a push in or pull out. A push in is great for building suspense. A pull out can be used to reveal a lot of depth in a scene, telling a story about the subject fading into their environment or being just small piece of a bigger puzzle.

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POINT OF INTEREST: Think of your camera being attached to a string with a ball at the end. Wherever that ball is placed, is the spot that doesn't move regardless of where you move the camera. The camera is fixated on this one point.

Revolve: moving left to right AROUND an object, So keep your point of interest focused on that one subject. The revolve is great for product shots and showing off all sides of a subject.

Rise Up: Moving the camera from a low angle up to a high angle. It can be used when you want to transition your subject from being tall and confident to being weaker and scared.

Drop Down: Moving the camera from a high angle down to a low angle. It is used as a transition when a character grows stronger and more superior. Or it can reveal what your subject is looking at or how huge a piece of architecture is. It's a great reveal shot for when your character reaches their ultimate destination.

Pan: when your point of interest moves from left to right but the camera stays in one spot. This is the tourist shot.

Lateral Movement: where you're strafing left to right (or vice versa) Strafing is where you're moving sideways while keeping the camera fixed forward at your subject. The point of interest and the camera move in unison.

#### **4. Starting and Clearing the Scene**

Starting and clearing is basically just a fancy pass-by transition from one shot to the next. This style of transition takes a little bit of stitching in editing. I usually start a by setting and

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locking my focus and exposure on the subject, (example) then moving back behind the object of my choosing. I slowly and smoothly make my camera motion while keeping my point of interest on the subject, and then move behind a second object to clear the scene. If you do it right, you can stitch 2 shots together later to make a seamless transition.

## **5. Drone Cinematography**

They're great for:

1. Establishing shots
2. Pull out shots for the ending credits
3. Follow shots
4. Lateral moves

They're always smooth and stabilized because there is nothing to cause bumps in the sky.

I recommend practicing how to fly AND controlling the gimbal at the same time.

The gimbal is what tilts the camera up and down.

DJI is my favorite brand for drones and high tech film equipment because they make compact portable drones with amazing 4k cameras on them.

I use the DJI Mavic Pro:

<http://click.dji.com/AJUTsnH36n-TE1VQnOWu?pm=link>

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## **Lighting**

### **1. Into to Section: Why is lighting important?**

Lighting determines production quality. If I were to have really poor lighting while trying to professionally explain a concept to you, you'll feel less inclined to listen what I have to say as opposed to good lighting. Because good lighting shows that the individual or company has put some time or money into their delivery. Lighting can also be used to set the entire mood of any scene.

And lastly, quality lighting saves you time in editing later. The worse your lighting is, the more time you'll spend boosting the exposure and messing with the color and the shadows and still come out of it sub-par.

### **2. Shooting Outdoors with Natural Light**

GOLDEN HOUR is the best time to shoot! Golden Hour is the hour just before sunrise and sunset. The light is softer, warmer, and more evenly displaced. There's a reason sunsets are watched all around the world since the beginning of time.

You can also use the sun as a backlight for your subject to separate them from the background.



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This adds a nice orange glow around the edge of your subject if you're shooting during golden hour.



You can also adjust your exposure setting to get a really nice silhouette effect. Golden hour is the only time to make this look really cinematic.

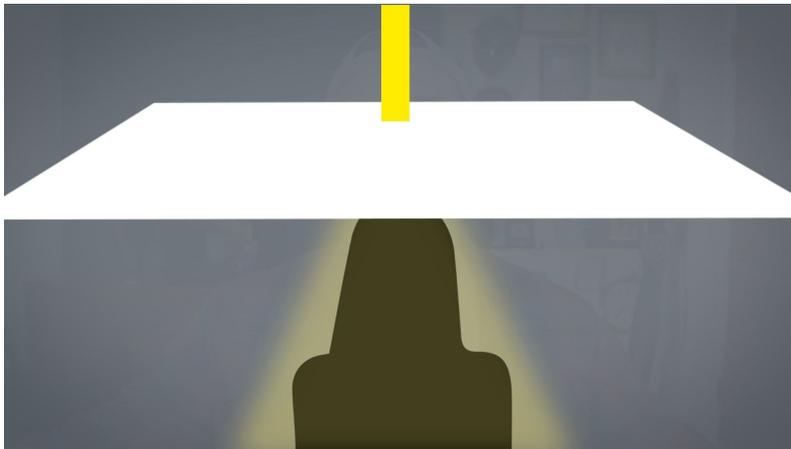


By changing your shooting angle to shooting WITH the sunlight, you can automatically fill your subject and background with light.



If you're shooting around noon when the sun is directly overhead and casting very harsh light, you can use a lightweight shower curtain to diffuse the light and create a softer look.

Diffusing just means the light rays are being broken up and displaced, which creates softer shadows.



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Harsh light before shower curtain:



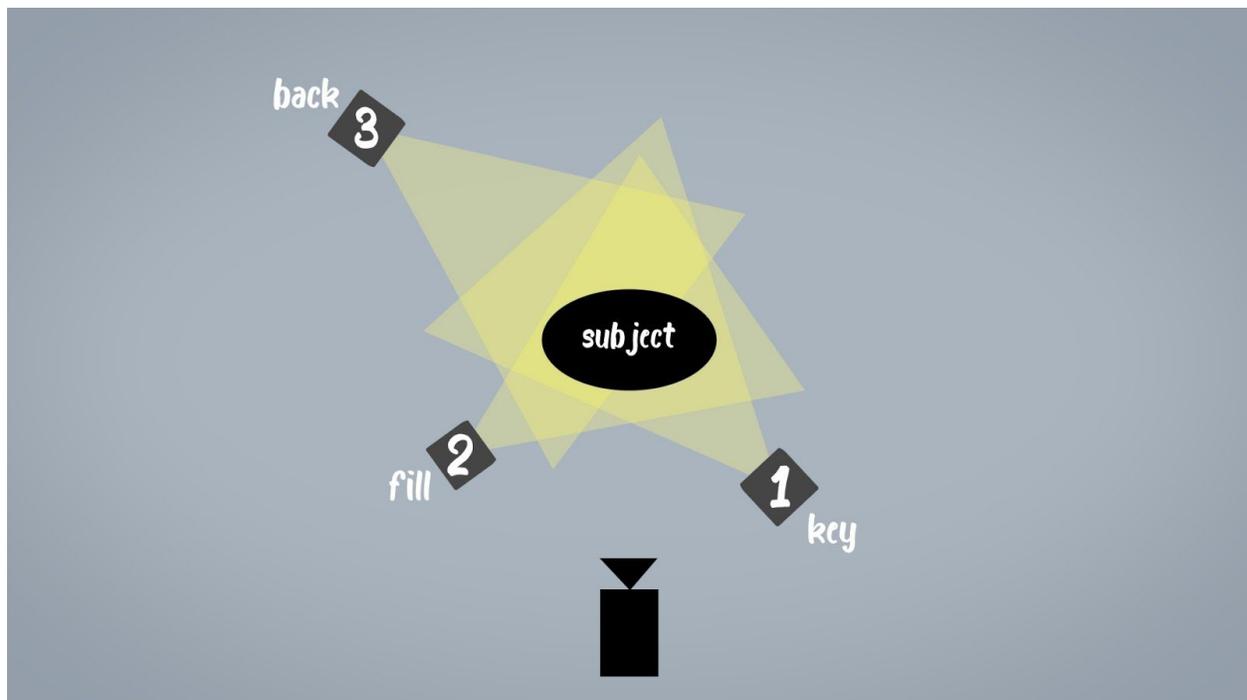
After the shower curtain:



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### 3. Shooting Indoors with Controlled Light

3 Point Lighting Setup: Key, Fill, and Back Light

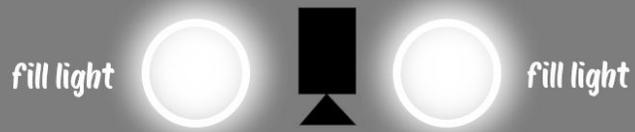


VLOG Lighting: Two fill lamps on either side of the camera to evenly light the face and another lamp on the floor pointed up at your background. The floor lamp helps separate you from the background and gives a nice vignette look to the background.





# vlog lighting



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#### 4. Understanding White Balance/Color Temperature

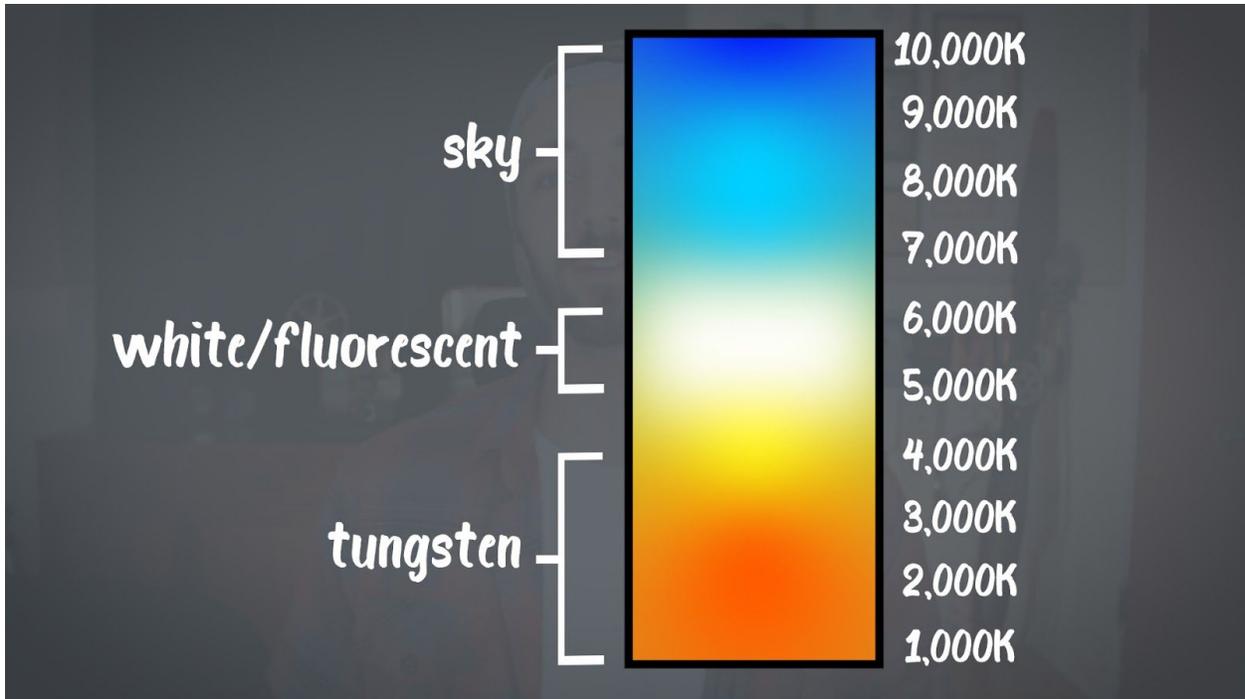
White balance is what we set to counteract certain color temperatures created by different lights.

Color temperature is basically how warm or cold your scene looks.

Tungsten light is the most common household bulb. It emits a very ORANGE light. The color temperature of tungsten light ranges from about 1000 to 4000kelvin. Kelvin being a unit of measure for absolute temperature.

A lot of newer fluorescent bulbs emit a whiter and colder temperature of about 5000 to 6000 kelvin. This color temperature is a lot better for studio lighting and product shots.

6000 kelvin to 10,000 kelvin is pretty much the range of our blue sky.



Wattage: Maximum operating power.

Check your lamps to see what the maximum wattage output is, and make sure you get bulbs that are at or below that number. Otherwise YOU COULD START A FIRE!

Lumens is basically how bright the bulb will be. It's usually better to buy a bulb with higher lumens, and you can always cut down or diffuse the light with a shower curtain.

The bulbs i'm using for my VLOG lighting setup is:



## Location Scouting

### 1. Visualize The Scene

Location scouting is about finding the most well-fitting and best looking places to shoot.

Questions to ask yourself when location scouting:

#### 1. What does the lighting look like in your vision of the scene?

*Is it a sunset?*

*Is it soft and romantic?*

*Is it contrasty and dark?*

*Is it white light or warm light?*

#### 2. What shot composition does it involve?

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*Would it look best with a vantage point?*

*Is it low angle or high angle?*

*Close up or long shot?*

3. Does it involve movement?

*Does it have objects to start and clear the scene with?*

*Will I need room to push in or pull out?*

## **2. Why The Time of Day Matters**

The time of day will determine how much traffic there is, how many tourists are in your shot, what the lighting looks like, how much background noise there is in your audio, and whether or not you can even get access to your shooting location.

Business typically open at 9am and close at 5pm so this is something to keep in mind. 7:30am to 9am is peak rush hour traffic too. So if the sun comes up during the time where you live, then that may inhibit your ability to catch a sunrise shot. Same with sunset between 5 and 7pm.

Typically the most beautiful and photogenic places in the world, are also bustling with other tourists who are all trying to get the perfect picture too. Sometimes you just have to wake up at the butt crack of dawn to beat the crowds, or you'll have to be patient and wait for a window of opportunity when there's no people in the shot.

**Happy filming! Don't forget to find me on instagram and show me some of your shots:**

**@dalemcmanus**

**Or feel free to check out my Photography course:**

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<https://www.udemy.com/iphon photography>