Fundamentals of Videography

Class description:
Get behind the camera while learning the fundamentals of videography in this hands-on course. In this class you will learn how to properly capture video by controlling camera settings like focus, frame rate, white balance, and more. Participants will also get a chance to use the tools of the trade such as a video tripod and clapperboard. 970West Studio’s Intro to Digital Photography is recommended prior to taking this class but is not required.

Overview of typical project layout:
1) Development
   a) What are we going to shoot? Who will be our audience? What’s the message? What brand are we promoting?
2) Pre-Production
   a) Writing script, storyboards, acquiring actors/subjects, acquiring/securing equipment and gathering necessary crew.
      i) Charge batteries
      ii) Empty removable media like SD cards or CF cards
3) Production
   a) Setting up camera equipment
      i) Attaching camera to tripod
      ii) Setting proper frame rate, exposure, and white balance
      iii) Attach microphone and/or external audio-capture devices
   b) Capture clean video and audio
   c) Creative impulses and collaboration
4) Post-Production
   a) Upload and organize media.
   b) Create project using a video editor. Specify file name and location for easy access later.
   c) Editing
      i) Cuts, fades, intros, exits, etc.
      ii) Add audio effects, music, voiceover, etc.
      iii) Add special effects or color corrections
      iv) Add titles and credits (if applicable)
5) Distribution
   a) Youtube, DVDs, TV, personal home video, etc.
Frame Rate

- Frame Rate is the frequency at which frames/images are displayed and is commonly referred to as **FPS** (frames per second). Determining a video’s frame rate should be one of the first settings chosen prior to shooting.
  - **24 fps**
    - Most common frame rate for theater projectors
  - **23.98 fps**
    - This is 24 fps slowed down by 99.9% for easy transfer from film to *NTSC video. Many high definition video formats (and some SD formats) can record at this speed, and is usually preferred over true 24 fps because of NTSC compatibility.
  - **29.97 fps**
    - This has been the color NTSC video standard since 1953. This number is sometimes falsely referred to as 30 fps.
  - **30 fps**
    - **Some high definition cameras have the ability to record at 30 fps. Before color was added to NTSC video signals, the frame rate was truly 30 fps. However, this format is almost never used today.**
  - **59.94 fps**
    - High definition cameras can record at this frame rate, which is compatible with NTSC video. This number is sometimes referred to as 60 fps.
  - **60 fps**
    - High definition equipment can often play and record at this frame rate, but 59.94 fps is much more common because of NTSC compatibility.

- There are some cameras that can be set at even higher frame rates. Typically, higher frame rates are used for slow motion. There are more frames for every second, therefore more data to stretch those seconds out in post-production.

*The broadcasting standard for North America is **NTSC** (National Television System Committee).*

Many people round 29.97 fps to 30 fps for convenience. Since it’s much more common to use 29.97 fps rather than 30 fps, it’s a good idea to ask for clarification to help the post-production process.
Shutter Angle

Note: Most video camcorders will have the shutter angle pre-determined automatically.

Scenario: You are about to shoot a video. You have prepared the lights, acquired the actors and have even decided on a frame rate. As mentioned, frame rate is the frames per second. But how long should each individual frame be exposed to light?

This concept serves to describe a term known as shutter angle. Contained within old film cameras were flat rotary disc shutters; the disc had an angled opening that would spin parallel to the film inside the camera. With each frame, the disc would rotate, blocking the light from getting to the film until it would reach the angled opening. The bigger the angle, the longer that frame of film was exposed to light.

![Diagram showing shutter angle](image)

Although there are no longer any literal rotary shutter discs inside modern cameras, the shutter angle terminology is still used to describe shutter speed relative to the frame rate.

In the fundamentals of photography, shutter speed can also control the appearance of motion. The same is true for video. Longer shutter angles produce images with more motion blur, while faster shutter angles reduce motion blur. Our eyes are accustomed to seeing motion blur due to retinal persistence. The trick with film and video is to simulate motion blur in a way our eyes naturally see.
180 Degree Shutter Angle Rule

The shutter angle should be half the duration of a single frame.

\[
\frac{1}{(2 \times \text{FPS})}
\]

- **Example #1:**
  - 29.97 frames per second
  - \(29.97 \times 2 = 59.94\)
  - Round up to the nearest shutter speed setting
    - Answer: 1/60 of a second

- **Example #2:**
  - 23.97 frames per second
  - \(23.976 \times 2 = 47.952\)
  - Round up to the nearest shutter speed setting
    - Answer: 1/50 of a second

Common Shutter Angles using the 180 Degree Rule:

- **23.976 fps = 1/50**
- **29.97 fps = 1/60**
- **59.94 fps = 1/120**

This “rule” is sometimes broken to create desired in-camera effects.
**Histogram**

- Most beginning videographers/photographers use the reproduced image on the LCD screen to dictate their exposure. This is not always the best option for determining exposure because the brightness on the LCD screen can vary depending on the shooting scenario.
  - For example, if a camera operator was shooting outside during daylight hours, they might look at a dim LCD screen and think that the image was underexposed. The operator could easily overexpose the footage because of the false assumption that the image was too dark, when in fact it was the LCD screen that was dim.
    - Note: Even adjusting the LCD to the brightest setting can still make the image look dim when working outdoors. Also, some cameras can adjust the LCD brightness automatically. This automatic feature can often be disabled.

- The histogram is graphical representation of the **luminosity** *(shadows, midtones, and highlights)* of an image.

- Some photographers and videographers might argue that the histogram above is the most desirable. This isn’t entirely accurate. The histogram doesn’t always have to be perfectly balanced. In some cases, you wouldn’t want it to look like this, such as scenarios of intense darkness (night time) or brightness (white snow). The histogram may also lack a “peak” in the center if there are high contrasting objects. See the histogram examples below:
The grey part of the histogram is the luminosity average of the image. The color peaks are referencing the color of the image.

Note: Some cameras may not have the color histograms. If they do, they will be separated by the colors red, green, and blue (RGB).
In the image above, the camera operator was exposing for the benefit of the model. The model is wearing a dark jacket and is under bright lights in front of a white backdrop. Because of this, the image is dark with subtle highlights.

The exposure of the image above was chosen to the benefit of the operators in the image, rather than the model. The operators are in shadow relative to the model. The highlights of the image are overexposed/clipped, which can lead to potential loss of detail in those highlights that can't be altered. There is also a peak in the shadows portion of the histogram. This is caused by the man's black shirt; a good example of how an object's reflection, or lack of reflection, of light can alter the histogram.
White Balance
Most people will probably remember “The Dress” from 2015. This item of clothing had everyone on social media in disagreement about the true colors of the dress. Was the dress #whiteandgold or #blackandblue?

It all comes down to the differences in human perception as well as the limitations of digital cameras compared to the human eye. If everyone saw the dress in person, there would’ve been no debate. Our eyes and our brains automatically compensate for different light temperatures.

The reason we adjust cameras for proper white balance is to get the colors in the image as accurate as possible. The color accuracy of an image is based on one simple question: What is white?
Incorrect white balance will make the image appear blue/cool or red/warm.
- A common mistake for beginners is to set the white balance for one location and then forgetting to change it with new lighting conditions.
- Outdoor light can quickly shift, especially if there’s partial cloud cover.

Color grading is the process of digitally altering or enhancing the colors of a motion picture, video image, or still image. Color grading includes both color correction and the art of color effects. Generally, you would want to capture the correct white balance and then color grade in post-production, rather than attempting color effects within the camera.
The icons in the diagram above are white balance presets. The accuracy of the presets may vary depending on the camera’s brand. For the most accurate color, use custom white balance. All you need is a white sheet of paper.

Note: Some camera manufacturers have a dedicated custom white balance button. However, there are some cameras that require that setting to be toggled within the camera’s operational menu.

Color temperature is usually conveyed in **kelvin** using the symbol K. Color temperatures over 5000K appear to the eye as cool, while lower color temperatures around 2700K to 3000K are seen as warm. If you know the temperature of a light source, like a studio light, you can dial that light’s kelvin temperature into your camera.
Audio Tips

● **Use External Microphones**
  ○ Most cameras have poor built-in audio quality.
  ○ If your camera doesn’t accept audio inputs, consider using a field recorder.
    ■ Sync your external audio source and video by creating a **clap-sync** which can be done by clapping your hands or using a clapperboard. Match the spikes in the audio to sync the video using a video editor.

● **Levels**
  ○ It’s better to be a little soft rather than too loud. If the levels are too loud, they will clip. Clipping is a loss of digital information which will sound like distortion.

● **Get close to the action**
  ○ The best audio is recorded when the mic is close to the subject.

● **Record Room Tone**
  ○ Room Tone is the ambient sound of a room or location. Recording about a minute of uninterrupted room tone will help while editing if there are problems with the audio.

● **When air makes sound**
  ○ If you’re recording outside while it’s windy, the sound will be picked up by the microphone. Use a windsock to help reduce wind noise. Don’t want to purchase a windsock? Purchase some cheap faux fur and experiment.
  ○ The air from your mouth can make sound too. A pop filter or pop shield is a noise protection filter for microphones. It serves to reduce or eliminate popping sounds caused by the mechanical impact of fast moving air on the microphone during recorded speech or singing.

● **Record random sounds whenever possible**
  ○ You never know when a sound could be useful.
    ■ Foley Artists

● **Wear headphones whenever possible**
  ○ You may hear something undesirable while wearing headphones that you wouldn’t notice without them.
    ■ Air conditioning or vibrations of a table.
**Camera Composition**

Some of these tips may come naturally to some beginners. These techniques are as old as film and are often ingrained in how we watch videos today. These methods are apart of what’s known as film grammar or film language. And just like in grammar or language, the main objective is to communicate. As a videographer or filmmaker, it’s important to ask yourself, “how do I properly communicate to my audience?”

- **180 Degree Rule**
  - If two people are in a scene together, the camera should stay within a predetermined 180 degree arc, relative to the individuals.
    - The example below shows the bird’s eye view of a girl and a boy speaking. The over the shoulder shots of the girl and boy are maintaining the left-right relationship of the conversation. In other words, with this axis chosen, the girl wouldn’t be seen on the right side of the frame.
    - This rule is to help the viewer understand the relationship of the two individuals within the frame. If the 180 degree rule is ever broken, it would appear as if one or both individuals had instantly teleported.

You can get around this rule by filming the camera’s physical act of passing over the invisible axis. This action must be shown to convey to the viewer that the relationship between the individuals didn’t change, but instead, the viewer's perspective has.
- **Rule of Thirds**

  Aligning subject(s) with the vertical thirds, horizontal thirds, or the intersection of vertical and horizontal points allows for a well balanced image.

- **Lead Room**

  Leave space in the direction that the subject is facing or moving. This compositional rule is commonly referred to as **leading room** or **room to look/move**.
Additional Resources:

- “Film: History, Production, and Criticism” Playlist by CrashCourse (YouTube)
- “Basic Lighting Techniques” by Film Riot
- Peter McKinnon (YouTube Channel)
- Cinematography 101: What is Cinematography?
- “How To Read a Camera Histogram” by ZY Productions
- “How to Read Your Camera's Histogram” by Todd VorenKamp
- “Music rights for video explained” by Audio Network
- Lynda.com (Library Resource)
- “Shutter Angles & Creative Control” red.com/learn/red-101
- “7 Quick Tips That Can SAVE YOUR LIFE” by Aputure - Videography Safety Video (YouTube)
Videography Vocabulary

1080i
A scanning method and resolution of a digital video or monitor. The i stands for interlaced, which means that a complete frame is formed from two interlaced scanning fields. Each field consists of 539 ½ lines. As with traditional NTSC analog television systems, the 1080i produces 60 fields at 30 frames per second.

1080p
A scanning method and resolution of a digital video or monitor. The p stands for progressive, which means that each complete frame consists of 1080 lines that are scanned consecutively from top to bottom.

4K
The resolution of a digital video or monitor, 4,000 horizontal pixels.

additive primary colors
Red, green, and blue. These colors are the primary colors related to the property of light. They are referred to as additive because, as these colored lights are intermixed, the resulting light becomes purer, eventually becoming white.

AGC
Stands for automatic gain control. Regulates the volume of audio or video levels automatically, without using pots (potentiometers).

ambient sound
Sounds in the background in the location where recording occurs. Ambient sound is added to the video production to keep the realism of the recorded material.

amp hours (Ah)
The amount of storage capacity of a battery. The higher the Ah, the longer running the battery before needing to be recharged.

analog
Relating to or the use of signals or information represented by a continuously variable physical quantity such as spatial position or voltage.

aperture
The iris opening of a lens. Aperture settings are usually measured in f-stops or t-stops.

aspect ratio
The ratio of the width to the height of an image or screen. Aspect ratio is expressed as two numbers separated by a colon, x:y. The most common aspect ratio in video today is 16:9 but cinemas often use 1.85:1 and 2.39:1.

audio
Sound, especially when recorded, transmitted, or reproduced.

audio mixer
An electronic device that blends sounds from various sources.

audio track
An audio channel or audio track is an audio signal communications channel in a storage device, used in operations such as multi-track recording and sound reinforcement.
**auto focus**
Automatic focusing system included in most, but not all, camera and lens models.

**auto iris**
Automatic control of the aperture (lens opening)

**bidirectional**
A microphone pattern where the sounds can be captured best from the two opposing sides.

**binary digit (bit)**
The smallest amount of information a computer can store and process. A charge is either present, represented by a 1, or absent, represented by a 0.

**boom/fishpole**
An adjustable length pole designed to hold a microphone and held over a scene for sound recording.

**broadcast**
The transmitting of a program or information by radio, television, or the internet.

**camcorder**
A portable combined video camera. The word camcorder is derived from two words - camera a recorder.

**cant**
Tilting the camera sideways. Also called a dutch-angle.

**cardioid**
A microphone with a unidirectional pickup pattern.

**CCD**
Stands for charge-coupled device. An image-sensing element that translates the optical image into a video signal.

**chroma key**
A special effect that uses a selected, specific color (often blue or green) to replace a background areas of a video with transparency so that another video layer can be substituted in its place. The result is having elements of the top video layer appear in front of the bottom video layer.

**chrominance**
The colorimetric difference between a given color in a television picture and a standard color of equal luminance.

**close-up (CU)**
A subject that is seen in close range and framed tightly. The close-up can be extremely close (ECU) or somewhat close - a medium close-up (MCU).

**color bars/SMPTE bars**
SMPTE (Society of Motion Picture and Television Engineers) color bars is a television test pattern used where the NTSC video standard is utilized. The components of this pattern are a known standard. Comparing this pattern as received to the known standard gives video engineers an indication of how an NTSC video signal has been altered by recording or transmission and what adjustments must be made to bring it back to specification. The pattern is also used for setting a television monitor or receiver to reproduce NTSC chrominance and luminance information correctly.
**color temperature**
The relative color of light measured in degrees Kelvin. The common temperature for indoor lighting is around 3200K, for outdoors, 5600K. Color temperatures over 5000K are described as "cool colors" (bluish white), while lower color temperatures (2700K–3000K) are described as "warm colors" (yellowish white through red). "Warm" in this context is an analogy to radiated heat flux of traditional incandescent lighting rather than temperature.

**composition**
The arrangement of the elements in a video frame.

**compression**
The action of compressing data for ease of storage, access, or transmission.

**condenser microphone**
A high-quality, sensitive microphone for critical sound pickup. A condenser microphone requires an additional power source such as a battery or phantom power.

**consumer quality**
Lowest quality grade of video equipment.

**continuity**
The maintenance of continuous action and self-consistent detail in the various scenes of a movie or broadcast.

**contrast**
The differences in luminance or color that makes an object (or its representation in an image or display) distinguishable.

**cut**
(1) The immediate change from one shot to another. The cut is used as the transition between shots about 90% of the time.
(2) The director’s signal to interrupt the recorded action during production.

**cutaway**
A shot of an object of ever that is connected to the present shot but not present in the current frame. A cutaway is used to intercut between two shots.

**cutting on the action**
Varying your shots based on the movement sequence of the action being recorded.

**depth of field**
The area in which all objects located at different distance from the camera appear in focus.

**dolly**
(1) To move the camera toward (dolly in) or away (dolly out) from the subject.
(2) A platform with casters that enable freely rolling motion that a tripod can be attached to.

**dynamic microphone**
A relatively rugged microphone. Needs no separate power source.

**edit controller / program**
A video editing machine that sets edit-in and edit-out points between two separate video sources. Today this is often a computer with specific editing software.

**edit master**
The tape or device that contains the final, edited production.
**edit decision list (EDL)**
A listing of the edit-in and edit-out points of all shots, take, scenes, and sequences that will be used in the edited production expressed in timecode. Included in the listing are transition selections and cutout notes.

**electronic news gathering (ENG)**
Making use of portable camcorders, lighting, and sound equipment for unscripted production of daily news stories. ENG is usually done for live transmission or immediate post production.

**establishing shot**
A video shot that identifies the location of the forthcoming scene. Also referred to as a long shot.

**fade**
The gradual appearance (fade-in) or disappearance (fade-out) of a video image.

**fader**
A volume/lighting control that varies the energy of the source through the action of sliding button along a slotted guide.

**fader bar**
A lever on a switcher that activated the buses and can produce superimpositions, dissolves, fades, keys, and wipes of different speed or durations. Also referred to as a T-bar.

**falloff**
The decline in illumination with distance. The closer an object is to a light source, the brighter. The further an object is to a light source, the dimmer. A single object can have falloff due to the surface area not being consistently equidistant to the light source.

**field**
One-half of a complete scanning cycle, with two fields needed for one television frame. There are 60 fields per second for a 30 frame per second frame.

**field log**
A record/note of each take during the production.

**field of view**
The portion of a scene visible through a particular lens. Describing how the subject(s) appears within the frame, it’s often using in symbols, such as CU for close-up, LS for long shot, etc.

**field production**
Any video production that occurs outside of the studio.

**fill light**
Additional light on the opposite side relative to the camera from the key light to lessen shadow areas and to reduce falloff.

**filter**
Any device placed on a lens or light source that alters the characteristics of the passing light.

**floodlight**
A lighting device that produces diffused light, a soft light with neither the intensity nor the glare of direct light. It is scattered and comes from all directions. Thus, it appears to wrap around objects. It’s softer and does not cast as harsh of shadows.
floor manager
A person in charge of all activities on the studio floor, such as setting up scenery, getting talent into place, and relaying the director’s cues. Floor managers may also be referred to as floor directors or stage manager.

fluid head
A hydraulic cushioning system in the head mount of better video tripods that allow for smoother camera movement.

focal length
The distance between the center of a lens its focus. The lens’ focal length is described as either millimeters (mm) or optical zoom magnification (2x, 3x, etc.).

foot-candle
The unit of measurement of illumination. One foot-candle is the amount of light from a single candle that falls on a 1-square foot area located 1 foot away from the light source.

frame
A frame is one of the many still images which compose the complete moving picture. The term may also be used more generally as a noun or verb to refer to the edges of the image as seen in a camera viewfinder or projected on a screen.

frame within a frame
When a natural or man-made object is used with the video frame to direct the viewer’s eye toward the subject.

Fresnel spotlight
A common spotlight which has steplight concentric rings on its lens. Named after its inventor, Augustin-Jean Fresnel.

f-stop
A camera setting corresponding to the size of the aperture, the opening of the lens which lets light into your camera.

gain/ISO
The camera setting used to control the light sensitivity of the image sensor. Gain, unlike ISO is expressed in decibels (db). The lower the gain, the less sensitive your camera is to light and the finer the grain. Higher gain settings are more commonly used in darker situations.

gel
The generic name for the color filter placed in front of various lighting devices to give the light beam a specific color cast.

greenscreen/bluescreen
A solid-color backdrop used in video and film composition and chroma keying.

graphics
Artwork or titling most commonly created in post-production but also live broadcasting.

H.264
This is a digital video codec noted for high data compression while maintaining high quality.

HDMI
Stands for High-Definition Multimedia Interface. A standard for connecting high-definition video devices.
HDTV
Stands for *high-definition television.*

headroom
The space between the top of the head and the edge of the upper frame.

hypercardioid
A microphone with a very narrow pickup pattern that has a long reach. It can also pick up some sounds coming directly from the back.

in-camera editing
Using the recording camera to create a partial or total edit of the production.

industrial quality
Video gear manufactured for professional use.

interlaced scanning
The scanning of all odd-numbered lines (first field) followed by the scanning of all even-numbered lines (second field). The two field make up a single frame.

iris
Adjustable lens opening mechanism. Also known as a lens diaphragm.

ISO/gain
Stands for *International Standards Organization.* The camera setting used to control the light sensitivity of the image sensor. The lower the ISO setting, the less sensitive your camera is to light and the finer the grain. Higher ISO settings are generally used in darker situations.

jack
A socket/receptacle for a connector.

jogging
Frame-by-frame advancement of a video clip.

jump cut
A shot to shot change that changed very little and results in an undesired visual jump in the image. This can be avoided by changing the angle and size of the composition between shots.

Kelvin degrees (°K)
The standard scale for measuring color temperature. 3200K is the standard temperature for indoor light and 5600K is the standard temperature for outdoor light.

key
An electronic effect in which the keyed image blocks out portions of the base picture (background) and therefore, appears to be layered on top of it.

key light
Principal source of illumination

lavaliere
A small microphone that is clipped onto clothing. Also called a lapel microphone.

lead
A camera technique that directs the viewer to the main point of emphasis in the shot.
**lead Room**
The space left in front of a laterally moving object or person.

**LED**
Stands for *light-emitting diode*. LEDs have many advantages over incandescent light sources, including lower energy consumption, longer lifetime, improved physical robustness, smaller size, lower heat emission, and faster switching.

**lens**
The optical focusing device of a camera. Some lens configurations can be within the camera (fixed), or outside the camera (interchangeable). Lenses can serve a variety of shooting scenarios based on the design and configuration of the lens such as focal length, focal distance, aperture range, auto-focus, and more.

**level**
(1) Audio: sound volume
(2) Video: video signal strength

**linear editing system**
Uses videotape as the editing mechanism and does not allow for random access of clips.

**line monitor**
Also known as the program monitor, the line monitor shows only the line-out images that go out live or become exported. The line monitor essentially serves as the finished result prior to distribution.

**line-level input**
A device that operates at line level either has a very strong output signal, or only functions properly when you feed a very strong signal into it.

**line-out**
The line that carries the final video or audio output.

**live-on-tape**
The uninterrupted video recording of a live event for later unedited playback.

**live-stream**
Transmit or receive live video and audio coverage of (an event) over the Internet.

**long-shot (LS)**
A shot where the subject is seen from far away or framed very loosely. Variations are the extreme long-shot (ELS or XLS) and the medium long-shot (MLS).

**looping/dubbing**
The process in which the original recorded dialogue is replaced in the studio. Used to clean up audio in which background noise drowns out the actor, change one actor’s voice with another actor’s voice, or to make a minor change in the dialogue without having to reshoot the scene.

**lossless compression**
Rearranging but not eliminating data during digital storage and transport.

**lossy compression**
Throwing away redundant data during digital compression. Most compression methods are lossy.

**lumen**
The light intensity power of one candle (light source radiating in all directions).
**luminance**  
The brightness (highlights and shadows) information of a video signal.

**lux**  
The European standard unit for measuring light intensity. Roughly 10 lux = 1 footcandle.

**macro lens**  
A lens type that can focus at a very close distance. Allows for small subjects to appear large.

**matte key**  
The key is filled with gray or a specific color.

**medium-shot (MS)**  
A shot when a subject is seen from a medium distance. Also referred to as a wait shot.

**mic**  
A shortened form of the word, microphone.

**mic-level input**  
Input channel on mixer or audio console for relatively low-level audio sources, such as a microphone.

**mini plug**  
1/8” connector used for consumer level audio equipment.

**mov**  
QuickTime Movie Format

**MPEG/MPEG-1**  
A digital standard for encoding and compressing video images. Developed by the Moving Pictures Experts Group. MPEG-1 uses a data rate of 1.2 Mbps, the speed of CD-ROM.

**MPEG-2**  
A digital standard for encoding and compressing video images. MPEG-2 supports a bitrate from 1.2 to 15 Mbps.

**MP3**  
is a digital audio format that is designed for high compression of audio files while maintaining high audio quality.

**MP4**  
MPEG-4 is a versatile file format that can include audio, video, images and animations.

**multimedia**  
The use of a variety of artistic or communicative media.

**narrow-angle lens**  
Same as a long-focal-lens. Also called a telephoto lens.

**noise**  
(1) Audio: unwanted sounds that interfere with the intentional sounds such as hisses, hums, and buzzes that are generated by the equipment.  
(2) Video: electronic interference that shows up as snow. The way to describe the quality of footage shot at a high gain or ISO.
**nonlinear editing system**
A digital editing system that allows for the random access of shots. The most common nonlinear software tools are Adobe Premiere Pro, Final Cut Pro, and iMovie.

**normal lens**
A lens with an field of view similar to the human eye.

**nose room**
The space left in front of a subject looking or pointing toward the edge of the frame. This gives the subject room to look/move.

**NTSC**
Stands for *National Television System Committee*. NTSC is the broadcasting standard for North America.

**offline editing**
Is part of the post-production process. Refers to an editing process that does not produce an edit master format. The equipment is used to produce a rough-cut or an edit decision list.

**omnidirectional**
A pickup pattern of a microphone where sound is heard equally from all directions.

**online editing**
Among the last steps of the post-production process. Produces the final, high-quality edit master format.

**over-the-shoulder shot (O/S)**
Camera is positioned over the camera-near person’s shoulder while also pointed at the other person. This is commonly a two shot setup. The shoulder and head of the camera-near person are included in the shot.

**PAL**
Stands for *phase alternating line*. PAL, which is not compatible with NTSC, is the broadcasting standard for England, Western Europe, Australia, and South Africa.

**pan**
A camera movement technique. The horizontal turning of a camera on a pivot point.

**pedestal**
A camera movement technique. To move the camera up or down via a tripod or studio pedestal.

**pedestal level**
The black color level in a television picture.

**phantom power**
DC electric power transmitted through microphone cables to operate microphones that contain active electronic circuitry.

**photo release**
This is a legal waiver used to give a photographer or videographer permission to use an actor/model’s image in a publication.

**pickup device**
In a video camera, the pickup device converts the optical image into electrical energy - the video signal. Common configurations of pickup system are CCD (Charge Coupled Device), and CMOS (complementary metal-oxide semiconductor).
**pickup pattern**
The area around the microphone that picks up the best sound.

**pixel**
Short for *picture element*. The most basic image component of raster art. Raster art is resolution dependent.

**point of view (POV)**
A camera shot from the perspective of what the subject would see.

**post-production**
Any production activity that occurs after the production (recording). Usually refers to video editing or audio mastering.

**potentiometer (pot)**
A sound volume control.

**PPI**
Stands for pixels per inch.

**pre-production**
All preparations of a video production that occur prior to production (recording). May include preparing a pitch, treatment, script, storyboard, casting actors, gather necessary crew and equipment, etc.

**preroll**
Allowing a video camera to start recording a few seconds prior to the action starting. Back in the days of film and videotape, this technique was used to get the tape/film to sync up to recording speed. Today the technique is used more to ensure that all action is caught on camera and not missed.

**production**
The actual activities in which an event is recorded or aired.

**production switcher**
A video device designed for instant editing in a production.

**progressive scanning**
The consecutive scanning of lines from top to bottom of the monitor screen.

**properties (props)**
Objects used by talent or set decoration.

**prosumer quality**
Gear between consumer grade and industrial grade in its quality.

**quick-release plate**
A tripod mounting plate that allows for the quick mounting and dismounting of the camera to and from the tripod.

**raw footage**
The initial/unaltered recorded footage prior to editing.

**refresh rate**
The number of complete scanning cycles per second.
**resolution**
The relative detail of an image. The term applies to raster digital images, film images, and other types of images. Higher resolution means more image detail.

**reveal**
A camera technique that begins with a tight shot and gradually opens wider to reveal more information.

**reverse angle**
A camera shot that violates expected screen direction. The shot views the action from the opposite side of the previous shot, usually during a conversation between two actors.

**RGB**
Stands for *Red, green, and blue*. The additive colors of light.

**RGB component video**
A system in which all three color signals are kept separate.

**ribbon microphone**
A microphone with an electrically conductive ribbon placed between the poles of a magnet to produce a voltage. A high-quality, highly sensitive microphone for critical sound pickup.

**sampling**
Taking a great number of samples (voltages) at equally spaced intervals of an analog signal.

**scanning**
A method of displaying, storing, or transmitting moving images. The two most common scanning methods today are progressive and interlaced.

**scene**
The whole of an event recorded in a single place and time.

**script**
The written record of what the audience will see and hear.

**SÉCAM**
French for "Sequential colour with memory". SÉCAM is not compatible with NTSC. First used in France, it is the broadcasting standard for Russia, Syria, and many countries in Africa.

**sequence**
The order in which shots are placed. Sometimes referred to as timeline.

**shot**
A single unit of recorded video. Shots are cut between or transitioned between.

**shot sheet**
A list of every shot the camera operator needs to get during a production. The list is often attached to the camera to help the camera operator remember a shot sequence.

**shotgun microphone/boom microphone**
A highly directional (unidirectional) microphone with a long, extended, shotgun-like barrel for picking up sounds over a large distance.

**shuttle**
To rapidly scan through recorded video material.
**signal-to-noise ratio**
The relation of the strength of the desired signal to the accompanying interference (noise). A high signal-to-noise ratio is desirable.

**slate**
(1) To identify, verbally or visually, each video “take” (recorded attempt).
(2) A board where the essential production information is written and displayed in view of the camera at the beginning of each take.

**SMPTE**
Stands for *Society of Motion Picture and Television Engineers*. SMPTE set the standard for timecode used in video editing. - 00:00:00:00 - hours, minutes, seconds, and frames.

**static shot**
A steadied shot showing no camera movement. A shot that does not have any tilts, pans, dollies, or trucks.

**Steadicam/Glidecam**
A camera mount/gimbal that allows the camera operator to walk or run with the camera while the camera frame remains steady.

**storyboard**
A series of cartoon panel sketches that represent the key shots to be used in the planned production. Can include any visual and audio cues.

**superimposition**
The simultaneous layering of two or more images on the same screen.

**sweetening**
The manipulation of recorded sound in post-production.

**swish pan**
A very fast horizontal sweep of the camera that blurs the image being recorded.

**switcher**
(1) A production member who performs all of the video switching - usually the technical director - by using a: (2) device that allows for the changing of video sources.

**take**
A single unit of video similar to a shot. Often used to describe an attempt at a scene/shot. A shot needing to be recorded multiple times to correct or improve its quality is referred to as a retake.

**talent**
The collective term for all performers and actors who appear in the video production.

**tally light**
The red indicator light located on the camera which glows when the camera is recording. Some people refer to this light as the idiot light.

**telephoto lens**
A long-focal-length or narrow-angle lens that allows for close-up focusing of objects at a relative far distance from the camera.

**teleprompter**
The name of a prompting device that projects scrolling copy over the lens so that talent can read the copy while maintaining eye contact with the camera.
**tilt**
A camera movement technique where the camera is pointed up or down.

**timecode system**
See SMPTE timecode.

**track**
A camera movement technique where the camera moves parallel and lateral to the action recorded. Also called trucking.

**tripod**
A three-legged camera mount.

**truck**
See track.

**two-shot**
The framing of two subjects in a single shot.

**unidirectional**
A microphone pickup pattern where the sound is captured best from the front.

**variable-focal-length lens**
A lens with a zoom capability.

**vector**
A quantity having direction as well as magnitude, especially as determining the position of one point in space relative to another. There are motion vectors, index vectors, and graphic vectors.

**vector graphics**
Resolution independent artwork based on mathematical calculations.

**viewfinder**
A small monitor/viewing area on a camera that displays the image being framed.

**volume**
The relative intensity or loudness of sound.

**volume-unit meter**
A device that measures the relative loudness of amplified sound.

**white balance**
The accurate calibration of the camera to the color of light.

**wide-angle lens**
A short focal length lens that provides a wide angle of view.

**windscreen/windsock**
An acoustic foam cap that is placed over a microphone to cut down on wind noise. Windsocks are often made of a furry cloth instead of foam.

**wipe**
Any video transition where the frame is replaced by another frame that pushes the former frame off screen.
**wireless microphone**
A system that transmits audio signals over the air rather than through cable connections. The transmitter sends the audio signal to a receiver unit.

**WAV**
A high quality, digital standard for encoding audio. WAV provides the same file sound quality and large file size as the original CD.

**z-axis**
Indicates screen depth.

**zoom lens**
A lens with a varying focal lengths. Focal ranges are usually described in millimeters (mm).

**zoom ratio**
The increasing intensity of enlargement capability of a zoom lens. Expressed as a ratio, such as 12:1.