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Timelapse and Hyperlapse Photography

Unit 1: Introduction to Timelapse

Milestone Guide to complete a timelapse video.

1) Pick a timelapse subject

Pick a subject for your first timelapse. Remember that the best timelapse subjects are usually moving or undergoing a change. I recommend picking something around your favorite landmark in or around your hometown. It could be a statue at a local park, a busy street, or even just a skyline scene. The important thing here is to find a setting that's readily accessible and includes a great subject that's undergoing some sort of constant change.

Some great timelapse subjects include:

- traffic, especially at rush-hour or at night
- busy areas with crowds, parties or events
- sunrise and sunset
- shadows, particularly at sunrise and sunset
- clouds and other weather
- the moon and stars
- construction projects

Remember that it's the change that's interesting, not necessarily just the fact that the subject is moving. If you're having a hard time picking a subject, slow moving clouds are usually a great start, especially when paired with your favorite local landmark.

2) Pick Your Time-lapse Tools

Grab a camera and a tripod for your timelapse. Your camera can be any digital camera. Even if it's just your smartphone. Here are some helpful tools to make your timelapse creation easier:

Intervalometer

Also consider picking up an intervalometer or a phone app that enables interval timer shooting on your camera. An intervalometer allows you to automatically trigger your camera to take a photo at a set interval, perfect for long timelapses. Check your camera's manual to see if your camera has an interval timer built-in.

If using a smartphone, I recommend Camera Awesome. It has an intervalometer and advanced features like locking focus and exposure. It also saves all the photos at full-resolution so we will be able to create a high definition video. It's available for both iOS and Android.

Don't forget the memory.

Also remember to free up some space on your camera or smartphone's memory. We'll be trying to capture hundreds of photos in a short amount of time so we'll need plenty of space. I recommend trying to have at least 2GB to 4GB free.

Charge up!

Finally, remember to charge your battery! Most smartphones especially have a limited battery when shooting photos. Having a fully charged camera battery and even carrying along an extra battery will be very helpful.

Try the hacks and tips

Large Sensor Cameras with built-in intervalometers

Here's a list of all the large sensor cameras available that have built-in interval timer functions.

Hack your Canon point and shoot to enable a built-in intervalometer.

Canon Hack Development Kit (CHDK) is a firmware hack that allows owners of Canon point and shoot cameras to enable advanced features on their point and shoot cameras. This includes a built-in intervalometer function for timelapse photography.

- **CHDK User Manual and Installation Guide**
- **CHDK FAQs and List of Supported Cameras**

Hack your Canon EOS camera to enable a built-in intervalometer.

Magic Lantern (ML) is a firmware hack for Canon EOS cameras that enables advanced features including a built-in intervalometer. I use ML on my Canon EOS cameras since it's much more convenient than carrying an accessory intervalometer.

Check out the download list below to see if your camera is supported in the stable releases. If it's not listed, you may be able to find a nightly build that supports your camera but keep in mind that nightlies usually are not fully developed and may be unstable or missing some features. I have personally had good luck with the nightly builds for my Canon EOS M and Canon EOS 6D but your experience may vary.

- **Download Magic Lantern for Canon EOS Cameras**
- **Features of Magic Lantern**

3) Choose your time-lapse interval

You should program your intervalometer to a timelapse interval based on the speed of your subject: the faster the subject, the shorter the interval.

Fast Moving Subjects: (1-2 seconds)

- traffic
- crowds
- parties
- fast moving clouds

Medium Speed Subjects: (2-5 seconds)

- sunrises
- sunsets
- slow moving clouds

Slow Moving Subjects: (10-30 seconds)

- assembly builds
- construction projects
- stars in the night sky

Prepare to capture 240 frames.

I recommend 240 because it will result in a video that's 10 seconds long when played at 24 frames per seconds which is the standard frame rate for most motion pictures.

If your intervalometer supports it, set the frame number to 240.

But my intervalometer only allows 99 frames. What do I do?

Some intervalometers only allow 99 frames maximum on their frame counters. If that is the case, just set it to "00" or "--" to enable "infinite" shooting.

Calculate your timelapse duration

You can figure out how many minutes you need to wait for your timelapse to finish by multiplying the number of frames by your interval in seconds and dividing by 60:

timelapse duration = (number of frames) × (interval in seconds) ÷ 60 seconds/minute

4) Set and lock your exposure

In Camera Awesome

In Camera Awesome, simply tap the screen with two fingers to separate the focus and exposure metering points. Drag them to your subjects in the frame and tap them again to lock them in place.

On a camera with manual exposure mode

If you're using a DSLR or camera with manual controls, set the camera to "M" mode for manual exposure control.

ISO:

Most of the time you should set the ISO to a relatively low number. Since we're using a tripod, we don't need to worry too much about speed so a low ISO sensitivity will work well and give us the best image quality. I recommend starting with ISO 100 or ISO 200.

If you're shooting at night or in the dark, you may need to increase your ISO accordingly in order to keep the shutter speed shorter than your chosen timelapse interval. Just remember that higher ISOs will result in noisier/grainy photos.

F/Number (Aperture):

Most of the time, you should set your f/number to a relatively high f/number in order to get the maximum sharpness in your photos. Most lenses are sharpest at f/8.0 or f/11. The higher the f/number, the smaller the opening in the lens and the less light that the camera lets in for any given time.

If you're shooting at night or in the dark, you may need to lower your f/number in order to allow more light into the camera.

Shutter Speed:

Finally, set your shutter speed so that your camera's exposure meter is roughly centered. Take a test shot and check to see if your exposure looks good.

Sunny 16 Rule

If you're shooting your timelapse in sunlight, it's often good to try setting your exposure using the Sunny 16 Rule:

Set your f/number to f/16 and then set your shutter speed to the reciprocal of the ISO or 1/ISO.

For example:

f/16, 1/100, ISO 100

or

f/16, 1/200, ISO 200

Try it out, take a test shot and adjust accordingly.

5) Decide RAW, Jpeg, and White balance models

There are pros and cons for either RAW or JPEG. I generally recommend shooting in RAW to allow for better results when editing. RAW allows you to push the photos more in post processing and even allows you to change the white balance later.

RAW Pros

- change white balance in post processing
- more flexible editing
- higher image quality

RAW Cons

- photos require editing or they will look worse than JPEG straight out of camera
- large file sizes will fill up memory cards and hard drives faster, especially when shooting timelapses
- must be exported to JPEG after editing in order to compile into a timelapse

JPEG Pros

- JPEGs generally look better than RAW straight out of the camera
- file sizes are much smaller

JPEG Cons

- lower quality than RAW
- cannot accurately change white balance in post processing
- heavy editing can result in poor image quality and artifacts such as **posterization**.

There are different opinions on white balance for timelapse. Some photographers prefer to just leave their camera on Auto White Balance (AWB) and then tweak their RAW files in post processing. Others would rather set a custom white balance. There are Pros and Cons for both.

AWB Pros

- Can be changed in post production anyway.
- Easier to just leave it on AWB
- Will adjust for changes in light such as during a sunset or sunrise

AWB Cons

- automatic changes can cause flickering in the timelapse due to small changes in white balance

Custom White Balance Pros

- Prevents small changes in white balance than could cause flickering
- Can be more accurate than AWB.

Custom White Balance Cons

- dynamic situations like sunset or sunrise will be pushed out of balance as the lighting changes.
- it's often more difficult to set than just leaving the camera to AWB.

Whether you choose Custom White Balance or just leave your camera on AWB, shooting in RAW will allow you to change the white balance in post processing.

6) Lock your focus

In Camera Awesome

In Camera Awesome, simply tap the screen with two fingers to separate the focus and exposure metering points. Drag them to your subjects in the frame and tap them again to lock them in place.

On a Digital SLR

Focus on your subject with autofocus and then switch the lens to manual focus.

Alternatively, use manual focus with live-view mode and the magnify function to check for critical focus.

7) Start your time-lapse

Now that you have your interval, duration, exposure and focus set, you should be ready to program your intervalometer and press start.

8) Batch Processing your images

Edit your first frame

Use Adobe Lightroom to edit the first frame in your timelapse sequence.

Download a Free Trial of Adobe Lightroom

[Adobe Lightroom 5.4 Trial for Mac](#)

[Adobe Lightroom 5.4 Trial for Windows](#)

Open Source Alternatives to Adobe Lightroom

Lightroom is the absolute best program for batch processing your timelapse frames but some users, especially those using Linux, might want to know about some free and open source alternatives that can also process large amounts of photos at the same time.

LightZone

- **[LightZone for Windows V4.0](#)**
- **[LightZone for Linux V4.0](#)**
- **[LightZone for Mac V4.0](#)**

DarkTable

- **DarkTable for Linux and Mac**

9) Apply your edits to all of your frames

Sync Settings

Once you are finished editing your first frame, select all the frames in your timelapse sequence and use the "Sync Settings" button to synchronize the edits across all of your frames.

Copy-Paste

You can also copy and paste your settings by opening the frame with the edits you wish to copy and pressing Ctrl/Command+C or right-clicking and selecting:

Settings/Develop Settings>Copy Settings...

Then, select all the frames (In Library Grid mode (G) click on the first frame, hold Shift and then click the last frame) and press Ctrl/Command+V or right-click and select

Settings/Develop Settings>Paste Settings...

10) Check your frames

After synchronizing the settings across all your photos, scroll through all your frames to make sure that the edits are properly applied.

11) Export your frames to JPEG

Now that your edits are applied you should be ready to export your images.

Export to Hard Drive

- 1920 pixels wide for "full HD resolution"
- 95% for a good compromise between image quality and resolution
- sRGB color space

Remember to rename your photos with a Sequence Number so that they will be ordered in the proper sequence. Mac usually handles this pretty well but Windows can improperly order the files if they do not include leading zeros (e.g. photo-0001.jpg, photo-0002.jpg, photo-0003.jpg, etc.)

Bulk File Renaming

Timelapse assembly requires all your frames to be in chronological order. This can be a problem if your camera resets the file naming back to zero mid-timelapse. Usually exporting with Lightroom and adding a sequence number to the file name on export will alleviate this problem. But sometimes, particularly in Windows, this can be a problem if you don't include leading zeros in your file names. (e.g. photo-0001.jpg, photo-0002.jpg, photo-0003.jpg, etc.)

Here are some programs that will help you rename files quickly.

Windows:

Rename Master

Bulk Rename Utility.

Mac

Automator Re-Naming Finder Items

12) Compiling your Timelapse Video

Compile your photos into a time-lapse clip

Use **Time Lapse Assembler** for Mac or **PhotoLapse 3** for Windows to compile all your edited and exported frames into a timelapse video.

13) Add music to your video

Add some music to your timelapse clip(s) in your favorite video editing program. iMovie, Windows Movie Maker, Adobe Premiere and Apple Final Cut are all programs that can help you cut your timelapse clips into a complete movie with music.

In the video lesson I use Jamendo to find a song (**Prequel by While They Were Sleeping**) licensed with a free culture license under the **Creative Commons Attribution Sharealike** license. Jamendo is probably the best and easiest to use site for open music but here are a few more great resources for finding free music to use in your timelapses:

<http://www.jamendo.com/en/>

<http://ccmixter.org/>

<http://incompetech.com/music/>

<http://www.musopen.com/>

<http://opsound.org/>

14) Upload your time-lapse to Vimeo or Youtube

My personal favorite site for sharing my finished timelapse videos is Vimeo. It features a clean interface and keeps your movies looking great. Upload your finished timelapse to either **Vimeo** or **YouTube** and share the link on your project page.

Share: Make sure to include a link to the video file or upload a .gif for your timelapse in your student project section.