Guide by Allen Kingsbury

The Canon 80D kit (which is reserved for certain classes only) contains a 18-135mm f/3.5-5.6 IS USM lens.

#1 - The first ring on the lens controls focus.

#2 - The second larger ring controls zoom.

The 18mm - 135mm dictates your focal length. The f-stop is the "aperture" opening on a camera lens and controls how much light you are allowing to pass through the lens. It can also affect how much is in focus in front of or behind the subject. The USM feature on the lens stands for Ultrasonic motor. This motor allows for much quieter and faster auto-focus.

Note the switches on the side of the lens.

#3 - There is switch to change the focus being Auto Focus (AF) and Manual Focus (MF). This can override the auto focus setting that are set on the body of the camera.

#4 - There is a stabilizer on/off switch with adds image stabilization to the lens.

#5 Finally, there is a lock switch to prevent and lock the zoom wheel from moving.

Here are the physical buttons on the back side of the camera.

#1 - On/Off switch (#1 on attached picture). Simply flip the switch over to the right to power on.

#2 - This switch sets the mode to record in. Options are either Photo mode or Video mode.

#3 - This button start and stops a video recording. Can also be used to take a photo depending on the mode.

#4 - The quick menu will display the most commonly used camera settings on the touch screen. More on that later.

#5 - The playback button to review photos or video that was captured.

#6 - The LCD display is also a touch screen. This LCD will preview your video. To enable a live LCD preview of a photo in photo mode simply tap the start/stop button. The display also rotates around 180.

#7 - Selection wheel. This wheel will help navigate the menus. The larger wheel around the outside allows easy scrolling through images.

#8 - Set button - press this button to confirm a menu selection. Or use the touch screen instead.

#9 - Magnify buttons. These buttons will allow you to zoom in and see a more detailed view on a photo. During video mode it will magnify the image which can make it easier to set your focus.

#10 - AF-ON button. This button acts as if you press the camera shutter halfway down. It will lock in the autofocus. You can also tap on the touch screen to focus on something specific.

#11 - Menu button. This button will bring up all of the menu options on the touch screen.

#12 - Info button. Will display detailed info depending on what mode your in. Can be used to toggle on/off certain overlays.

#13 - Trash button. This item will delete a file in playback mode.

#14 - Lock switch. This switch will prevent any settings from changing during recording.
The dial in the upper left changes your camera to different modes. Simply press the button in the middle of the dial down and rotate the dial to the preferred mode.

Line up the dial with the white marker to set the mode. The available modes are:

#1 - Full Auto mode with auto scene detection. Everything is in auto mode; exposure, white balance, shutter, aperture, audio, etc.

#2 - P is Program AE. Auto setting of shutter speed and aperture. Other settings can be configured manually.

#3 - Tv is Shutter priority. Adjust shutter speed manually. Other settings are in auto. Shutter speed can make moving subjects look still with a faster shutter or capture motion blur with a slower shutter.

#4 - Av is Aperture priority. Adjust aperture manually. All other settings are in auto. Aperture can be used to let more or less light into the camera. Aperture can also be used to blur the background to make subjects stand or our keep both the foreground and background in focus.

#5 - M is Manual exposure. This mode allows manual options for all settings. Set shutter speed and aperture manually for full control.

#6 - B is Bulb exposure. Allows timings to be set for different flashes and strobes.

#7 - C1 is custom settings 1. Allows for any custom settings and saves those preferences to this dial.

#8 - C2 is custom settings 2. Allows for any custom settings and saves those preferences to this dial.

#9 - Creative Filters mode. Applies various filters such as vignette and color filters.

#10 - SCN is Special Scene. Different scenes depending on the type of shoot. Portrait, Landscape, Night time, Sports, Close-Up, HDR are a few options.

#11 - CA is Creative Auto mode. Simplifies settings for applying various techniques such as background blur.

#12 - Flash mode off. Flash is turned off.
Camera (Top Right)

#1 - Shutter release button. Pressing this button will take a picture. Lightly pressing the button halfway first will lock the focus and exposure and then the rest of the way will take the picture. Pressing and holding the button will take a series of images in rapid succession.

#2 - AF operation. One shot AF, AI Focus AF, and AI Servo AF are the 3 options here. One shot AF is the name of Canon's Single-Servo autofocus system, that focuses on a subject once, and then stops focusing. The acquisition of a focus lock is often indicated by a beeping sound from the camera. AI Focus AF behaves identically to One Shot AF with one exception. The camera will achieve focus and emit the confirmation beep, which, allows you to go ahead and capture the shot. However, the critical difference is that the camera will continue to monitor the distance to the subject, and if it changes, will attempt to refocus. AI Servo AF should be used for photographing moving objects or if you are moving while filming. As long as you are half-pressing or fully pressing the shutter release, (or using the popular AF-ON technique) the camera's autofocus system will continuously track whatever subject is under your selected focus point. In video mode/live view photo mode you can enable face tracking, and a multi-zone or a single point zone.

#3 - Drive. This button will change how many pictures you will take at once. You can set to single shot or different amount of high speed or low speed continuous shots. It also includes a 2 second and 10 second timer.

#4 - ISO. This setting allows you to change the image sensitivity of the image sensor. The lower the number the less sensitive your camera is to light. The higher the number the more sensitive. Higher ISO's are prone to an increase in noise (grain) so be careful not to set this value too high unless noise doesn't matter to you. With a higher ISO you can also then use a higher shutter to help freeze movement in photography.

#5 - Light metering type selection. This button determines which areas of the frame are used by the camera to measure subject brightness and how the camera sets exposure. Evaluative metering, partial metering, spot metering, and center weighed average are the options. In evaluative metering, the camera breaks the frame into a number of zones, measures the amount of light in each zone, and then uses the findings to determine the ideal exposure. Spot metering is where the camera determines a proper exposure not on the average brightness levels of the whole frame, but just of one specific spot. Partial metering is useful for handling backlit subjects. The metering is weighted according to the very center of the shot. Center weight average measures the whole scene but places extra emphasis on the light values in the middle. Unlike partial metering it does take into consideration the surround portions of the shot.

#6 - Focus point type selection. This button allows you to change where the autofocus points are. There is a grid containing 45 autofocus points that can selected as individual points (1 of 45), zones (a block of 9 points), large zone (a group of 15 either in the middle, left or right), and finally auto selection from scanning the whole image. This will tell the camera where to focus. You can also press the touch screen to choose an object to focus on. You need to enable live preview on the LCD first for that.

#7 - Selection wheel. This wheel is used to change the options in the above menus.

#8 - Backlight for display. This button lights up the display on the top right of the camera.

#9 - AE Lock. AE lock will lock the focus and exposure and prevent it from changing on you as you move the camera around.

#10 - Magnify button. This button will magnify your image on the LCD screen to assist with focusing. Tap multiple times to magnify further into the image. In photo mode it acts as the focus point type selection.

#11 - Focus wheel for viewfinder. This wheel will adjust the focus for the viewfinder.

To format the memory card, click on the menu button and then scroll over to the wrench tab. Scroll down to format card. This will erase the memory card and setup the proper folder structure on the card for your camera.
Pressing Q while in Photo Mode along with live view will bring up this menu. To enable live view in Photo Mode, press the start/stop button.

This menu will show all your current settings. You can double tap each setting on the touch screen to quickly make changes to them. Use the scroll wheel to the right to change a setting and press set to finalize it.

These are a lot of the same functions that can be adjusted with physical buttons on the sides of the camera. They can also be adjusted within the menu shown here.

Pressing Q while in Video Mode will bring up this menu.

You can double tap each setting on the touch screen to quickly make changes to them. Use the scroll wheel to the right to change a setting and press set to finalize it.

The most common quick menu settings to change in video are the face tracking, the frame rate and image quality, the microphone level, the headphone level, and the white balance setting (AWB).

The three main factors in exposing an image are aperture, shutter speed, and ISO. To understand these techniques better please check out these 3 videos.

https://lts.lehigh.edu/services/explanation/advanced-dslr-shutter-speed-aperture-iso-explained

From the Video mode Quick menu you can set your frame rate for video. Either 29.97 or 24fps.
From the Video mode Quick menu you can adjust the microphone volume. Make sure you don't clip the audio by exceeding 0 decibels. A healthy audio recording would fall between -12db and -6db. If you go above 0db it will cause the audio to sound distorted. Simply adjust the slider here to change the sensitivity of your microphone. The audio meters on screen will show you what decibel level you are reaching.

Use the slider under the headphone menu to increase the volume of your headphones. It's always recommended to use headphones when using an external microphone.

White Balance. Our cameras have a sensor that determines what the color cast of the light is. White Balance is the process of removing unrealistic color casts so that objects that appear white in person are rendered white in the photo. You can choose a custom white balance from the quick menu or use the Kelvin menu to manually dial in a color temperature.
To custom white balance you’ll need to first take a picture of an object that should be white. A white piece of paper will work too. Then you’ll need to browse to the menu and choose Custom White Balance.

Custom white balance part 2. Then once you are there browse to the photo and choose use WB data from this image.

According to Wikipedia, here are the color temperatures for various light sources.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700 K</td>
<td>Match flame, low pressure sodium lamps (LPS/SON)</td>
</tr>
<tr>
<td>1850 K</td>
<td>Candle flame, sunset/sunrise</td>
</tr>
<tr>
<td>2400 K</td>
<td>Standard incandescent lamps</td>
</tr>
<tr>
<td>2550 K</td>
<td>Soft white incandescent lamps</td>
</tr>
<tr>
<td>2700 K</td>
<td>“Soft white” compact fluorescent and LED lamps</td>
</tr>
<tr>
<td>3000 K</td>
<td>Warm white compact fluorescent and LED lamps</td>
</tr>
<tr>
<td>3200 K</td>
<td>Studio lamps, photofloods, etc.</td>
</tr>
<tr>
<td>3350 K</td>
<td>Studio “C” lights</td>
</tr>
<tr>
<td>5000 K</td>
<td>Horizon daylight</td>
</tr>
<tr>
<td>5000 K</td>
<td>Tubular fluorescent lamps or cool white/daylight \ compact fluorescent lamps (CFL)</td>
</tr>
<tr>
<td>5500 – 6000 K</td>
<td>Vertical daylight, electronic flash</td>
</tr>
<tr>
<td>6200 K</td>
<td>Xenon short-arc lamp[5]</td>
</tr>
<tr>
<td>6500 K</td>
<td>Daylight, overcast</td>
</tr>
<tr>
<td>6500 – 9500 K</td>
<td>LCD or CRT screen</td>
</tr>
<tr>
<td>15,000 – 27,000 K</td>
<td>Clear blue poleward sky</td>
</tr>
</tbody>
</table>

These temperatures are merely characteristic; there may be considerable variation.

These are the most commonly used settings.

Feel free to stop by the Digital Media Studio if you have any questions.