

## Offered Title: Astrophotography 3 – DSLR Two Ways

If you own or have access to a Digital Single Lens Reflex camera (DSLR) you can take astrophotography up a notch or two. A DSLR opens a universe of options for getting shots of objects in the sky.

Most DSLRs can take exposures longer than a few seconds, usually at least 30 seconds, often as long as you want. Also, DSLRs have wide ISO ranges, that is, the sensor's sensitivity to light, so you can boost the sensitivity very high. What does this mean? It means you can capture fainter objects. It gives you more control. There are a few penalties however:

- The worst is digital noise as ISO gets higher and exposures get longer. Digital noise amounts to spurious image elements showing up and can look like graininess and/or odd color spots.
- Another is dynamic range. Dynamic range is the ability of the sensor to record subtle differences in light intensity. As ISO is increased the sensor is less able to record subtle differences, resulting in higher contrast.
- Third is color rendition. As ISO increases the sensors rendering of color changes and this needs to be considered.

Fortunately, DSLR sensor and noise suppression technology have improved dramatically, as have image processing apps, minimizing the above penalties. So, let's do DSLR astrophotography.

The simplest format is popping your DSLR with lens attached on a tripod. Use manual focus, and your cameras live view if possible to get sharp stars. I suggest locking the mirror up, or if available, using a camera function that flips the mirror up and waits a few seconds before taking the exposure. Use a lens aperture one stop from its widest unless your lens can get sharp images wide open. Start with ISO 800. Take test exposures starting at 5 seconds, then longer, shooting constellations. You will reach a point where the Earth's rotation causes stars to look stretched out. If necessary increase the ISO to keep exposure times fast enough to prevent this, unless you like...then go longer! There are tracking mounts for cameras available.

Prime Focus Imaging, connecting your DSLR to a telescope is the other option. You will need an adapter for your camera. If your telescope mount tracks objects it is a great way to do some longer exposure imaging. If your mount is equatorial it needs to be level and accurately aligned with Polaris. If it is alt-azimuth and tracks objects it needs to be level, and there are limitations on time exposures due to field rotation. Some alt-azimuth mounts can correct for field rotation. To go beyond a few minutes exposure however will require high accuracy tracking and guiding. If you want to go deep ya gotta dig deep. This stuff isn't cheap.

## What's in the Sky?

May 26; 12:47 am: Another double shadow transit begins at Jupiter

May 26; Dusk: A very young waxing crescent Moon shares the west-northwest horizon sky with Mars