Tips for simple astrophotography with a camera and lens.

* Always shoot at least in RAW format to get the full amount of data to process. When stretching images you need the greatest BIT depth possible to give the maximum number of tones to stretch.
* Use a tripod / beanbag or some other form of camera rest.
* Use a remote control or use the cameras self timer to open the shutter.
* Experiment with ISO settings, apertures and shutter speeds as they all affect the brightness of the image and are inter-related
* Use the “high ISO noise reduction” function on the camera if you don’t intend to stack pictures or process RAW files.
* Remember focus is everything!
* If possible, use magnified live view for focusing, but don’t leave it on too long, as the sensor will heat up and may interfere with the image. If using exposures of between 1:10 and 10 seconds however, live view will help to prevent mirror vibration if you don’t have a mirror lock on the camera.)
* Always focus manually when taking pictures of anything but the moon.
* Modern lenses nearly all go past infinity. If you can, focus on something when it is light and then tape up the focus ring (but beware of some zoom lenses which rotate the focusing ring when zooming).
* Stopping the lens down one stop from fully open helps to give a sharper image and increases chances of being in focus.
* Set the colour temperature at 4000k or less to minimise orange light pollution colour cast. (Try incandescent or fluorescent light pre-sets) or use a light pollution filter.
* Always carry spare batteries.
* Cold weather gives less digital noise from the sensor, but, uses up batteries quicker.
* All digital cameras record EXIF data along with the picture.
* If you have a tracking mount, Long, low ISO exposures are generally better than short, high ISO ones. (Less digital noise).
* Always cover the viewfinder when taking long exposures.
* Use the “400 rule” (400/focal length of lens) to check the maximum exposure time to prevent trailing, (however see below)
* Stars move faster nearer the horizon than they do overhead.

* The maximum exposure time to avoid stars trailing using a wide angle (18mm) lens is 30 seconds. The longer the focal length the shorter the possible exposure.
* Any lens longer than 20mm will really require a tracking mount to give acceptable results.
* Watch out for condensation on the lens. This can be prevented by heat (dew heaters or hand warmers) or air circulation (portable hair dryer or fan).
* Try to include some foreground objects to make the picture more interesting.
* Foreground objects can be "painted" in with the flash or a torch.
* Photos can be taken as one long exposure, or "stacked" from several shorter ones using suitable software.
* Either take separate dark frames or get the camera to take one automatically to prevent coloured "hot pixels" and "glow" from the sensor.
* Experiment with the software supplied with the camera (digital photo professional for Canon), or download GIMP (freeware) and have a go at improving the images.
* Good settings to start.
    - Widest angle lens
    - Aperture 1 stop in from fully open
    - ISO 1800 / 3600
    - Exposure 20 to 30 seconds.

If you want to expand your horizons try making a barn door tracker (instructions on our website). Lens wise the 14mm Samyang is fantastic value for money (£220-£250 second hand) and is used by many photographers for those wonderful Milky Way shots you see.

David Murton