Astronomy Outreach for Retention and Recruitment

a PhysCon 2019 advisor workshop

Finding your way around the night sky

- SkyMaps.com http://www.skymaps.com/
- Sky and Telescope's Observing Tools http://www.skyandtelescope.com/observing/
- HeavensAbove: Satellite pass prediction https://www.heavens-above.com/

Finding Astronomers

- Night Sky Network http://nightsky.jpl.nasa.gov/
- Sky & Telescope Club and Organization finder https://www.skyandtelescope.com/astronomy-clubs-organizations/
- Cloudy Nights Forum http://www.cloudynights.com/page/index.html

Software

- Stellarium: a planetarium for your computer http://www.stellarium.org/
- Some top astronomy apps for mobile: https://www.digitaltrends.com/mobile/best-astronomy-apps/

Weather Resources

- Clear Sky Clock http://cleardarksky.com/csk/
- Intellicast (cloud maps) http://www.intellicast.com now a part of Weather Underground which has great hourly cloud forecasts

Optical Telescopes

- Galileoscope http://galileoscope.org/
- Celestron http://www.celestron.com/
- Orion http://www.telescope.com/
- Meade http://www.meade.com/

Additional Activities

- Itty Bitty Radio Telescope: http://www.aoc.nrao.edu/epo/teachers/ittybitty/procedure.html
- RadioJove: https://radiojove.gsfc.nasa.gov/
- Pocket Solar System: https://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=392

Tips for Smartphone Astrophotography

- If your phone doesn't allow manual control download a 3rd party app.
    - NightCap (IOS): www.nightcapcamera.com
    - Moment (IOS, Android): www.shopmoment.com/moment-pro-camera-app
- Use tripod with phone mount, use headphones with volume rocker to remotely trigger shutter.
- Manually set exposure to max, ISO to max, focus to infinity.
- Take X number of back-to-back photos of the sky (~>10, but <50).
- Take the same number of photos with a cloth over the lens.
- Average light frames, average dark frames, then subtract dark from light.
- Reduce image noise then boose contrast.
- Python code to perform these operations: www.github.com/rileytroyer/smartphone-astrophotography
- Questions: riley-troyer@uiowa.edu