Introduction to Observing

Objectives:

Students will learn about the Iowa Robotic Telescope (IRT) operated by the University of Iowa, which they will use to conduct observations for their labs and final projects, and how to submit an observation request.

Checklist:

- Complete the pre-lab quiz with your team (if required).
- Compile a list of resources you expect to use in the lab.
- Work with your team to complete the lab exercises and activities.
- Record your results and mark which resources you used.
- Share and discuss your results with the rest of the class.
- Determine if your team’s answers are reasonable.
- Submit an observation request for next week (if required).
Pre-Lab Quiz

1. 

2. 

3. 

4. 

5. 

6.
Pre-Lab Follow Up Questions

1. Assume the diagram below is for Iowa City, IA, which is at a latitude of 41.6 deg (~42 deg). Identify the North Celestial Pole (NCP), Celestial Equator, Zenith, the Horizon, and the Meridian.

![Diagram of celestial coordinates]

2. If stars with a right ascension of 6 h are currently on the meridian, what is the local sidereal time (LST)?

Part 1: Learning about Iowa Robotic Telescope (IRT) and Scheduling
Using the IRT website, work with your team to find the following information.

1. Where is the IRT Telescope located? (latitude and longitude, and city)
2. Examine the table on the website that lists the times when Jupiter is above the horizon in March. When is Jupiter above the horizon at night? At what time(s) would it be best to observe Jupiter? Explain your reasoning.

3. Using the Rise and Set Calculator on the IRT website (RST Calculator), determine if the objects listed in the table below are observable by IRT tonight. Fill in the chart for each object, and if it isn’t above the horizon tonight, be sure to note that in the appropriate column. Then, research what type of object it is (Planet, galaxy, nebula, etc.) and/or its name.

<table>
<thead>
<tr>
<th>Object Name</th>
<th>Times Observable</th>
<th>Right Ascension (RA)</th>
<th>Declination (Dec)</th>
<th>Best time to Observe</th>
<th>Type of Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleiades</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M31</td>
<td></td>
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<td>Saturn</td>
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<td>M13</td>
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<tr>
<td>M57</td>
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</table>
4. The variable star UV And, which is in the constellation Andromeda, has a RA of 01h 26m 25.4s. Without using the rise and set calculator to look it up, what time of year would be best to observe UV And? Explain how you determined this.

5. What is the field of view of IRT, and what does it mean if IRT has a resolution of 2 arcseconds? Explain what these parameters mean and why they are important when setting up observations.

6. Why does the Rigel telescope have different filters? Explain specifically the purpose of the red, green, and H alpha filters.
# Part 2: Planning and Submitting an Observation

Describe the observations your group is planning using the form below.

<table>
<thead>
<tr>
<th>Object:</th>
</tr>
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What kind of object are you observing? What science questions could you ask pertaining to this object, i.e., what do you want to know about it, and how can your observations answer these questions?

<table>
<thead>
<tr>
<th>Filters used with exposure times for each:</th>
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<table>
<thead>
<tr>
<th>Times of Observations (Day, Time of Day)</th>
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