

AST195 PROJECT

FINDING AND VIEWING PLANETS – SPRING 2020

In this project you are to locate three of five possible planets in the sky (Mars, Saturn, Venus, Jupiter, Mercury), and view them with your telescope at high and low magnification. If you are successful, you will be rewarded with a view of Saturn's rings and perhaps a moon or two (but do not expect a spectacular view with a small telescope), a view of brilliant Venus, of Jupiter and its moons, and of reddish Mars. You can try for Mercury, too, but it really does not look like much.

Here are the guidelines for this project:

- **You are to observe at least three planets.**
- **You must have at least five observations.** If you observe all four planets, then you must do a second observation (on a different night) for *one* of the planets. If you observe three planets, then you must do a second observation (on a different night or nights) for *two* of the planets. You may turn in three observations (all on different nights) for Jupiter, but you may turn in no more than two observations for any planet other than Jupiter.

Once you think you have found a planet with your eyes, it is time to find it with your telescope. You will need your **red light** and your **clipboard** for this. You will need a **sharp pencil** and **eraser**. You will also need to make sure that your **finder** is in perfect alignment for this. You will need your **small aperture mask**, too. **Thus you must complete the "Telescope Purchasing", "Basics A", "Basics B", "Basic Observing Equipment", and "Aperture Masks" projects prior to attempting this project.**

You will know when you have found Saturn with the telescope -- it will have a distinct disk and the rings should be obvious if the telescope is focused (adjust your focus until Saturn looks as **small** and as **sharp** as you can get it -- out of focus things tend to look like large circles). If there is no disk (if it looks like a sparkly diamond) and no rings, then you are aiming at a **star** -- try again.

You will know when you have found Venus because, again, it will have a distinct disk, but only a portion of it will be illuminated. Again, adjust your focus until Venus looks as small and as sharp as you can get it (out of focus things tend to look like large circles). If there is no disk (if it looks like a sparkly diamond), then you are aiming at a star -- try again.

You will know when you have found Jupiter because, again, it will have a distinct disk. It will also have several moons lined up with it (the ones Galileo saw). Again, adjust your focus until Jupiter looks as small and as sharp as you can get it (out of focus things tend to look like large circles), and so the moons look like tiny points. If there is no disk (if it looks like a sparkly diamond), then you are aiming at a star -- try again.

You will know when you have found Mars because, again, it will have a distinct disk. It will also have a reddish hue. Again, adjust your focus until Mars looks as small and as sharp as you can get it (out of focus things tend to look like large circles). If there is no disk (if it looks like a sparkly diamond), then you are aiming at a star -- try again.

Mercury will have a small disk and possibly may show a phase. Don't try it unless you just want to brag about how you did it.

Once you have found the planet, observe it with high and low magnification. Make a drawing of it using the Advanced Project Drawing Sheet (either at high or low magnification – you decide). ***Make the drawing before you take any photographs.***

Take a photo of the planet (again, either at high or low magnification – you decide). Planet photos can be tough -- don't expect too much, and do the best you can.

Now put the ***small aperture mask*** on the telescope and observe the planet. You are seeing something like what Galileo would have seen. Again make a drawing. No need for a photo.

Your drawings should show each planet as it appears in the eyepiece -- the larger circle on the drawing form will be the field of view of the eyepiece, so your drawings of each planet should fill as much of the circle as the planet fills of your eyepiece. Do a good job and draw **only** what you see. Your grade is based on how well your drawing represents what **your** telescope shows (I have a pretty good idea, so don't go find some professional picture and try to guess what you "should" see).

In three short (typed) paragraphs, discuss what you saw and what you thought of the planets as seen with the naked eye and the telescope. Were you impressed? Disappointed?

Turn in:

- Your two drawings of each planet (without aperture mask and with aperture mask). You should have ten drawings total (5 planet observations, each with and without the aperture mask).
- Printouts of your photos of each planet. You should have five photos total, one from each observation.
- Your three short (typed) paragraphs, discussing what you saw and what you thought of the planets as seen with the naked eye and the telescope, and whether you were impressed or disappointed.

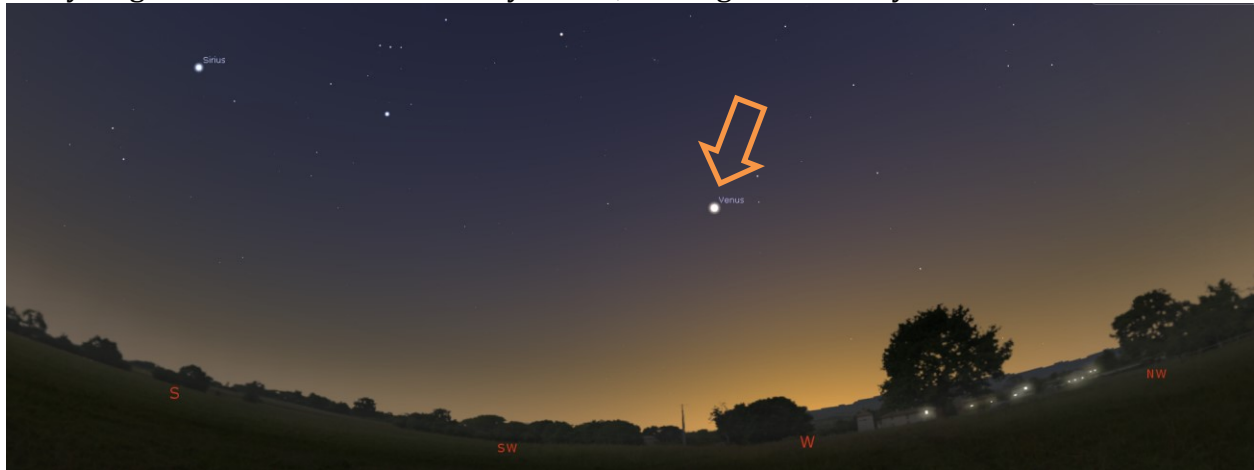
Make sure your name is on everything.

On the following pages are finder charts for the planets. Note that you may decide to use another method to find these planets. For example, finder charts are available on the Internet, or you may use computer software or phone apps that will show you their locations. If you wish to use those instead, that is fine.

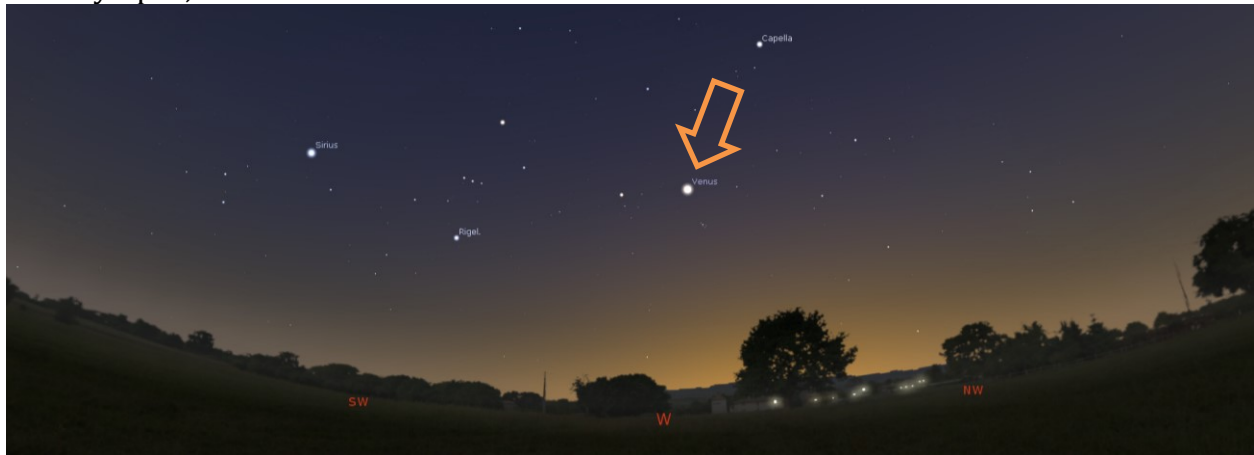
FINDER CHARTS:

*You will need to know where **North, South, East, and West** are when you do your observations.*

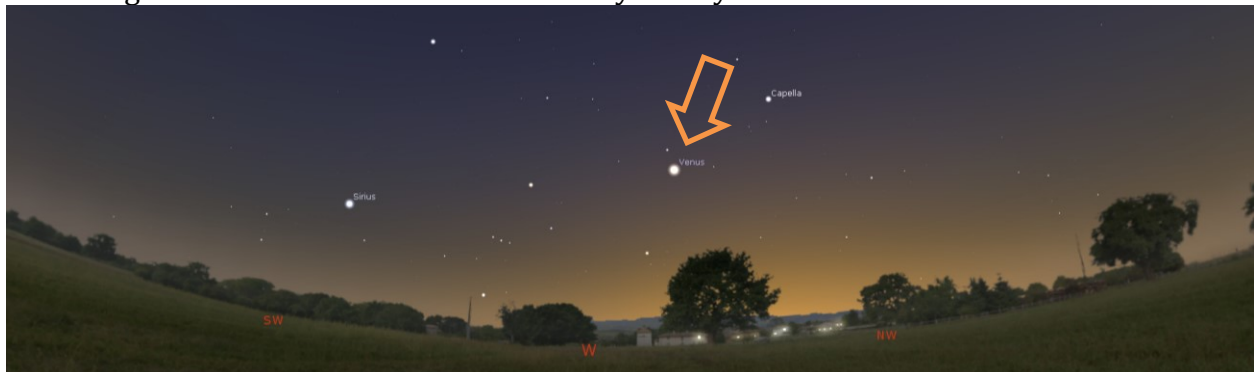
In Spring 2020 the **evening sky** features Venus in an easy position for viewing. Venus is really bright. Here is the view in early March, looking west shortly after sunset:



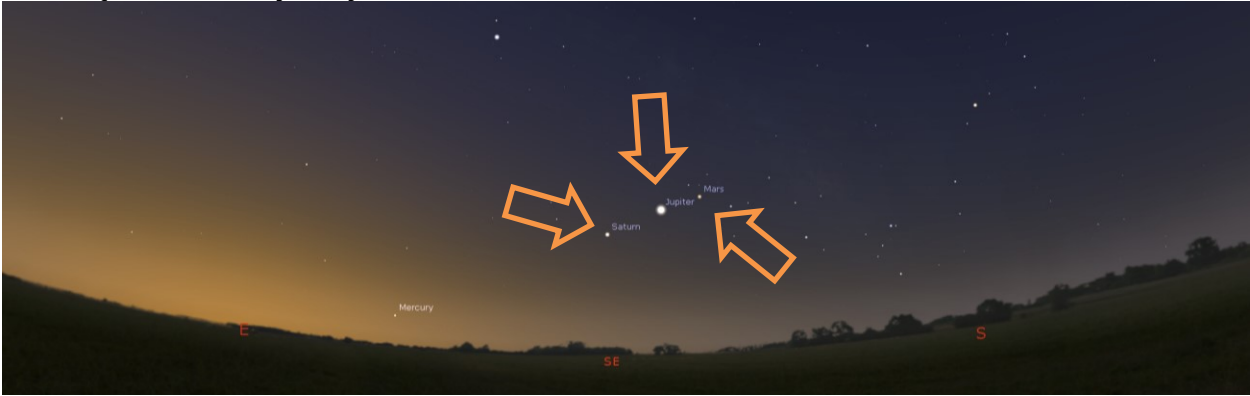
In early April, Venus is still there in the west after sunset:



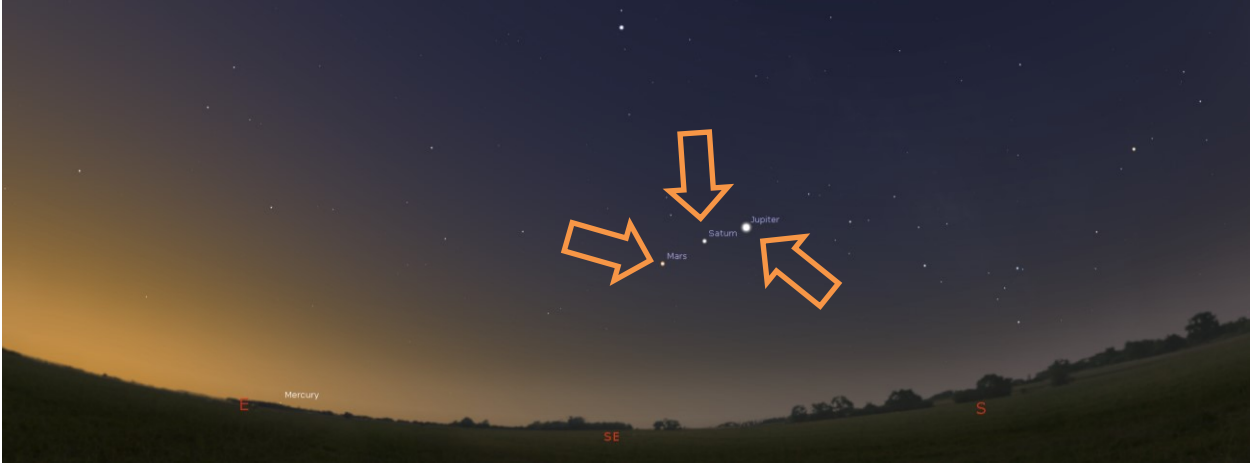
And things are about the same on the first day of May:



The Spring 2020 **morning sky** is where the action is. All semester long Mars, Jupiter, and Saturn are visible in the morning sky toward the east before sunrise. Here they are in early March (with Mercury, too):



Here they are in early April (note how they are changing position):



And here they are at the start of May:

