

# Understanding the Phases of the Moon

## Due Wednesday, June 24

**Importance Notice:** This is about as easy as observational astronomy gets. And yes, there are websites that help you determine the phase of the Moon and its elevation angle above the horizon and its azimuth. But the point of this project is to **GO OUTSIDE AND LOOK AT THE ACTUAL MOON**. Why is this written in bold capital letters? Because 15 percent of people who turned in this project (as an obligatory assignment) in previous semesters made up some or all of their Moon “sightings”. Guess what? There are ways of discovering if you made up a lot of your data. So do a good job, and make it honest!

If you’re not an observational astronomer, you probably take the Moon for granted most of the time. Sometimes there is a pretty crescent Moon to see right after sunset, or while coming home from some evening event you see a nearly full Moon high in the sky.

Given that there are so many sunny days in College Station, there are also many nights when we can see the Moon and stars. Over the course of the semester keep track of when you see the Moon, what phase it has, and where it can be found in the sky. On any given occasion this might take 3 minutes of your time.

1. First, you must know the cardinal directions (north, south, east, west).
2. Second, get a feeling for how high above the horizon is 15 degrees, 30 degrees (one third of the way from the horizon to the zenith), 45 degrees (halfway to the zenith), 60 degrees, etc.
3. New Moon occurs on May 22 and June 21. The Moon is not visible one or two days either side of new Moon.
4. The third quarter Moon rises about midnight. If you always go to bed early, can you ever see the third quarter Moon? Yes, because the Moon can be seen during the daytime. On June 13th, for example, in the middle of the morning, you should see the third quarter moon 90 degrees to the right of the Sun. Looks kind of small in the daytime sky, doesn’t it?

**To do and turn in:**

A. Find the Moon on twelve (12) dates during May and June. At least one of these sightings should be during the daytime. All observations do not have to be made in College Station. You might put in a note such as: “All observations were made in College Station, except where otherwise noted.”

B. Note the Moon’s phase (new crescent, first quarter, waxing gibbous, full, waning gibbous, third quarter, waning crescent). Make a drawing of the shape of the Moon, or better yet, obtain digital images with a camera, exposed so that one can see the phase.

C. Write down the month, day, year, and approximate time of day for each sighting of the Moon.

D. Note approximately how high the Moon is above the horizon, and which direction (W, SW, S, SE, E, NE, N, or NW) it is in. (If you see the Moon in the north part of the sky, somehow or other you happen to be in the southern hemisphere.)

E. Make a note of anything else interesting in the sky, such as bright stars or planets you can identify. For example, Saturn is visible in the evening sky after sunset, to the left of the star Spica. Also, note any meteors, satellites, flying saucers, and other interesting objects.

F. Turn in a summary of your observations, containing date, time, Moon phase, Moon direction in the sky, and other noteworthy observations. (“Moon not in sky,” or “Too cloudy to observe” is not an observation.) Your summary should also contain some *prose* at the end. What would this prose describe? The purpose of the exercise and what you gained from doing it.

G. If the weather is typical, it should be possible to see the Moon on 12 occasions. Do not make up data! Honest scientists and Aggies do not do this.

H. This will be graded on a 30 point scale. *Your prose at the end is worth 5 points.* The 30 points maximum will then be scaled to a fraction of four percentage points for the whole course. That’s almost half a letter grade.