Chapter Twenty-Two: Stars and Galaxies
Lesson 1: The View from Earth

Lights from towns and cities can make the night sky too bright to see stars.

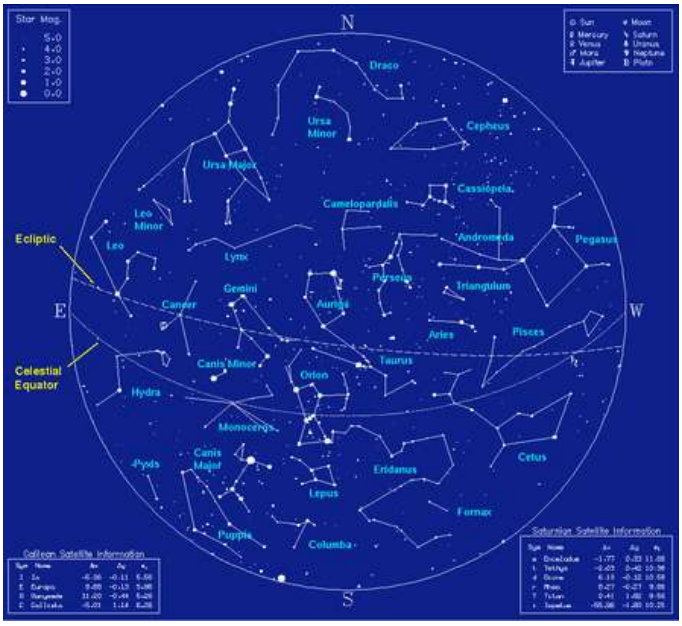
Earth spins (rotates) once every 24 hours.

- Because Earth rotates from west to east, objects in the sky rise in the east and set in the west.
- Earth spins on its axis, an imaginary line from the North to South Pole.
- The star Polaris is almost directly above the North Pole.

Naked-eye astronomy: gazing at the sky with just your eyes (without binoculars or a telescope).

- People observed stars to tell time and find directions
- Learned about planets, seasons, and astronomical events by watching the sky

The astronomer Ptolemy:

- He identified dozens of star patterns.
    - These patterns resembled people, animals, or objects (Orion or Draco)
    - Ancient constellations
    - 

The electromagnetic spectrum is a continuous range of wavelengths.

- Long wavelengths have low energy (Radio or microwaves)
- Short wavelengths have high energy (Gamma or X-rays)

Spectroscopes: spreads light into different wavelengths

- Can study star's characteristics (temperature, composition, and energy)
    - New stars emit mostly radio and infrared waves (low energy)
    - Exploding stars emit ultraviolet waves and X-rays

Parallax: the apparent change in an object's position caused by looking at it from two different points.

- Hold up your thumb at arm's length. Close one eye and look at your thumb. Now open up your other eye and close the one that was open. Did your thumb move?

Astronomical unit: the average distance between Earth and the Sun, about 150 million kilometers.

Light-year: the distance light travels in 1 year.

- Light travels 300,000,000 meters/second
- Nearest star is 4.2 light years away. Therefore, the light we see now left that star 4.2 years ago.

Apparent magnitude: an object is a measure of how bright it appears from Earth.

Luminosity: the true brightness of an object

- Measures the star's temperature and size (not its distance from Earth)