**Review of Previous Lecture:**

* What is our cosmic address?
  + The Earth
  + Solar System
  + Milky Way Galaxy
  + Local Group
  + Virgo Supercluster

**Today’s Lecture**

* Read Astronomy News
  + Pluto is demote “Dwarf Planet”
  + Astronomy Picture of the Day
* *Science* is a method for learning about *nature*
* The scientific method works like this:
  + Idea
  + Hypothesis
  + Prediction
  + Test
* “Science’s vulnerability is its greatest strength” – Albert Einstein
  + Existing, accepted ideas are subject to challenge via the scientific method
* “The most incomprehensible thing about the world is that it is comprehensible”
  + Thinking about this in the form of understanding the universe

**Chapter 2**

* Our focus
  + Daily rotation of Earth
  + Annual orbit of Earth
  + Monthly orbit of the moon
  + Consequences of the above
  + Behavior of all Solar System planetary orbits
* As viewed from above the North Pole, Earth rotates counterclockwise on its axis
  + One rotation takes about 24 hours
  + How about viewed from the South Pole?
* The *celestial sphere* is a projection of Earth’s axes and equator into space
  + A useful fiction
  + Points on the sphere do not correspond to actual distances
  + It rotates around the north and south *celestial* poles each day
  + *Celestial equator:* midway between
  + *Ecliptic:* path of the sun, inclined 23.5 degrees to equator
  + *Zenith:* point on the celestial sphere directly overhead
  + *Nadir:* point on the celestial sphere directly underneath (not visible!)
  + *What is the Meridian*
* Constellations
  + In ancient times, constellations only referred to the brightest stars that appeared to form groups representing mythological figures
  + Today, constellations are well-defined regions on the sky, irrespective of the presence or absence of bright stars in those regions
  + The stars of a constellation only appear to be close to one another
    - usually, this is only a projection effect
* At Earth’s North Pole, we would see half of the celestial sphere
  + The north celestial pole is directly overhead
  + Stars rotate counterclockwise in 24 hours
  + No star rises or sets: all are *circumpolar (seen at north pole)*
  + Observers can never see the south celestial pole
* At Earth’s equator, all stars rise and set
  + The celestial poles are on the northern and southern horizons
  + Observers can see the whole celestial sphere as it rotates
* At an intermediate latitude on Earth, one pole is above the horizon
  + The angle to the horizon equals the latitude