

Unit 4 – Space

Observing Celestial Bodies – Chapter 10

- Define *celestial body*
- Describe the apparent motion of celestial bodies (what is their path called, what is its shape, why do they move this way). Include:
 - Planets
 - Moons
 - Asteroids
 - Comets
 - our Sun
- What is a constellation?
 - Which ones are *circumpolar*? What does this mean?
 - What are zodiacal constellations?
 - What is an asterism?
- Recognize the following constellations on a star chart:
 - Ursa Major (Great Bear, includes Big Dipper)
 - Ursa Minor (Little Bear, Little Dipper)
 - Orion (the Hunter, includes Orion's belt)
 - Cassiopeia (the Queen)
 - Leo (the Lion)

Early Models of the Universe

- Describe the contributions of the following and how they contributed to our understanding of celestial bodies and how they move :
 - Aristotle
 - Aristarchus
 - Ptolemy
 - Nicolaus Copernicus
 - Galileo Galilei
 - Johannes Kepler (include Kepler's 3 laws of planetary motion)
 - Sir Isaac Newton.
- Define a geocentric and heliocentric view of the universe
- Describe the use of an astrolabe and a kamal
 - What are some advantages/disadvantages to knowing and/or using these methods?
 - What do we use now? Why are they better?

The Sun – Chapter 11

- Describe the sun
 - what makes up the sun
 - important characteristics including:
 - sun spots
 - solar flares
 - solar prominences
 - solar wind
 - describe how solar radiation and solar wind affect life on Earth
 - Explain how auroras are created

Our Solar System

- Be able to compare and contrast the four inner terrestrial planets with the four outer gaseous planets (size, temperature, composition, length of day, orbit)
- Explain why Pluto is a dwarf planet (name two others)
- Describe the composition of comets
- Explain where comets originate and how it affects their periodicity (length of their orbit)
- Describe asteroids/meteoroids, meteors, meteorites (what are they/where are they)
- Define impact sites
- Describe an astronomical unit

Technology in Space

- Describe the following space technologies:
 - Rocket propulsion
 - Space suits
 - Satellites
 - Probes
 - Rovers
 - Optical Telescopes
 - Radio Telescopes
- Describe contributions Canada has made to space research and exploration including our work on the ISS, the Canadarm 1 and 2 and Dextre
- Give three examples of Canadian astronauts

The Universe – Chapter 12

- Describe the two theories of how the universe originated (including Big Bang Theory and Oscillating Theory)
- Describe the two theories of how our solar system was formed (including Stellar Collision Theory and Nebular Hypothesis)
- Describe the main components of the universe including a nebula, spiral galaxy, elliptical galaxy, giant stars, dwarf stars, black holes and quasars
- Describe a lightyear
- Why is looking further into space like looking back in time?