



UTICA COMMUNITY SCHOOLS

Course Title: Astronomy

Course Content Expectations:

1. Understand the Earth's place in space

- 1.1 Know the earth/moon relationship including phases of the moon, tides, lunar surface and timing of the moon in the night sky
- 1.2 Know the earth/sun relationship including seasons, ecliptic, zodiacs and orbit
- 1.3 Know the solar system relationship to the milky way galaxy and the structure of the milky way
- 1.4 Know the galaxy relationship with the observed universe

2. Understand the Solar System

- 2.1 Know the process taking place in the sun and how it impacts earth and other planets
- 2.2 Know the relative order and size of the planets and moons of the solar system
- 2.3 Know the surface properties of the planets in our solar system including plates, volcanoes, core, magnetism and chances of sustaining life
- 2.4 Know surface and interior properties of Luna, Phobos, Deimos, Io, Europa, Ganymede, Callisto, Titan, Enceladus and Titan
- 2.5 Know the origin of comets, asteroids and meteors

3. Understand the theoretical explanations of our universe

- 3.1 Know the foundations of special relativity including time dilation and Lorentz contraction
- 3.2 Know the foundations of general relativity including the equivalence principle and the "fabric of space"
- 3.3 Know the foundations of Newtonian gravity
- 3.4 Know the foundations of the expanding universe and the Big Bang

4. Understand the history and future of the universe

- 4.1 Know the life cycle of stars including a main sequence star
- 4.2 Understand the H-R diagram and its explanation of stellar evolution
- 4.3 Understand the expanding universe and the process of "redshift"
- 4.4 Understand the evolution of galaxies

5. Understand the night sky

5.1 Identify by name and mythology the constellations of the northern hemisphere and the ecliptic

5.2 Identify the major galaxies and nebula visible in the northern hemisphere

5.3 Use the night or day sky to help with navigation and time

5.4 Understand the major night sky events including the northern lights, zodiac light, meteors and comets