

Space Science/Astronomy/Meteorology – Honors

Credit - ½

Term(s) – 1 Semester

Text: Earth Science, 10th edition, Tarbuck and Lutgens

Prerequisites: none

Course Description:

Honors Space Science is designed for college-bound students. It provides an opportunity to use the scientific method and to use various types of lab equipment. Additionally students work with real time weather data.

Course Content:

Stars including constellations, stellar spectra, stellar evolution, galaxies, the universe; the sun and solar system; the moon; Earth's motions; weather variables including, heat, pressure, water; weather systems, weather prediction; and severe weather.

Course Format:

Course content is presented to students using a variety of methods including lecture notes, laboratory activities and experiments, reading current theories and findings, and independent research.

Course expectations:

Honors level Space Science involves an independent study project that is presented to the class, students will be expected to regularly read information pertaining to the content that is written at a higher reading level than standard classes, topics and labs will involve more content as well as more depth than the standard level course.

Grades:

Grades are a composite of homework, labs, quizzes, and tests. The independent research project is a part of the final exam grade for sophomores and juniors; seniors will have the independent research project grade calculated as part of their fourth quarter grade.

Course Objectives

13A.904 Demonstrate an understanding of ethical decision making in the sciences at grade appropriate level

13A.905 Demonstrate an understanding of the proper development and use of scientific information at grade appropriate level

13B.702 Demonstrate an understanding of the relationship between science and technology at grade appropriate level

13B.703 Demonstrate an understanding of the impact of science on our society at grade appropriate level

- 11A.601 Evaluate data from experiments using graphs and other appropriate analytical tools at grade appropriate level
- 11A.602 Apply problem-solving skills to scientific situations at grade appropriate level
- 11A.501 Demonstrate appropriate laboratory skills and equipment usage, applying accepted practices at grade appropriate level
- 11A.502 Demonstrate the use of appropriate scientific tools to measure accurately using the metric system at grade appropriate level
- 11A.603 Conduct research on science topics using a variety of accepted sources at grade appropriate level
- 11A.604 Communicate scientific understandings effectively in written and oral presentations at grade appropriate level
- 11A.701 Conduct an appropriate controlled scientific investigation at grade appropriate level
- 11A.901 Differentiate between a scientific theory, hypothesis, opinion and fact at grade appropriate level
- 11A.902 Demonstrate an understanding of science as an ongoing process open to the collection of new data and the reevaluation of existing data by critically analyzing scientific theories for supporting and non-supporting evidence or by explaining how theories are formulated, accepted, rejected, and changed over time at grade appropriate level
- 11B.903 Design and conduct a controlled scientific investigation at grade appropriate level

Weather and Climate

- 12E.986 Diagram the energy flow of the atmosphere.
- 12E.987 Explain the causes and differences of the greenhouse effect and the ozone hole.
- 12E.988 Explain the development of local weather phenomena.
- 12E.989 Make weather forecasts given basic weather data

Astronomy

- 12F.990 Explain the current astronomical theory on the origin of the universe
- 12F.991 Describe the scientific methods, data, and assumptions on which this theory is based and identify at least one piece of data, from those explained in class, that provides for differences in how the theory is interpreted
- 12F.992 Diagram and recognize constellations and prominent stars
- 12F.993 Create a telescope, explain how it works, and compare it to the other types of scopes in use
- 12F.994 Compare historical importance of astronomy with modern concerns
- 12F.995 Describe the internal workings of stars using the physical laws that govern star lives
- 12F.996 Create a scale model of the solar system from calculated data
- 12F.997 Describe and calculate using the laws of planetary motion
- 12F.998 Compare the processes involved in the life cycle of stars
- 12F.999 Describe and compare the chemical and physical characteristics of galaxies and objects within galaxies