

# Mystery of the Cosmos: Life's Place in the Universe

*Teacher's Reference Material*

## Program Terminology

Those terms indicated in boldface are included in the "Terms to Define" section of the Student Guide. Additional terminology that you may want, or need, to explain to your students is provided below.

- **amino acid**
- alpha proton X-ray spectrometer -- device that determines the elemental composition of substances by comparing the spectrum, and its intensity, produced by a sample, to the spectrum produced by a known source
- **asteroid**
- carbonaceous -- of or containing carbon
- **comet**
- Copernican -- refers to Nicolaus Copernicus, who is given credit for our heliocentric (sun-centered) view of the solar system
- cosmology -- study of the origin of the universe
- **cosmos**
- **evolution**
- **galaxy**
- **greenhouse gases**
- **inner space**
- **meteorite**
- polarized light -- light waves, which consist of an electric and a magnetic field, are polarized when they vibrate in a single plane; all known biological molecules rotate light to the left (described as left plane-polarized light), suggesting a common origin
- **prebiotic**
- terra-forming Mars -- changes made to the atmosphere and surface of Mars that would enable it to support aerobic life forms

## Integration Guidelines

The program content and associated explorations map to the following disciplines and topics.

- ASTRONOMY
  - origin of the universe
  - exploration of the universe
  - characteristics of the components of the universe
  - search for extraterrestrial life
  - development of the United States space program
  
- BIOLOGY
  - biological evolution and the origin of life
  - characteristics of living organisms, and requirements to sustain life
  - possibility of extraterrestrial life
  
- ENGLISH/LANGUAGE ARTS
  - creation myths and explanations of other natural phenomena
  
- GEOLOGY
  - Earth's origin and its history
  
- HISTORY/SOCIAL STUDIES
  - relationship between science and religion
  - the Cold War and its impact
  - the roles of science and technology in society
  - the decision-making process within societies
  - values and quality of life
  - achievement and its attributes

### **Correlation to National Standards**

Content of this episode of Achievement Television correlates to the national education standards, grades 5–12, which have been developed for history, science, and social studies. Link to the standards themselves for more information.

- [National Standards for United States History](#)  
(National Center for History)

- ✘ Era 1, Standard 1B: The student understands changes in Western European societies in the age of exploration.
- ✘ Era 6, Standard 2B: The student understands "scientific racism", race relations, and the struggle for equal rights.
- ✘ Era 7, Standard 3A: The student understands social tensions and their consequences in the postwar era.
- ✘ Era 9, Standard 1C: The student understands how postwar science augmented the nation's economic strength, transformed daily life, and influenced the world economy.
- ✘ Era 10, Standard 1C: The student understands major foreign policy initiatives.
- ✘ Era 10, Standard 2C: The student understands changing religious diversity and its impact on American institutions and values.

- [National Standards for World History](#) (National Center for History)

- ✘ Era 1, Standard 1A: The student understands early hominid development in Africa.
- ✘ Era 6, Standard 2D: The student understands how the Scientific Revolution contributed to transformations in European society.
- ✘ Era 6, Standard 6: The student understands major global trends from 1450 to 1770.
- ✘ Era 7, Standard 5A: The student understands connections between major developments in science and technology and the growth of industrial economy and society.
- ✘ Era 8, Standard 3C: The student understands the interplay between scientific or technological innovations and new patterns of social and cultural life between 1900 and 1940.
- ✘ Era 8, Standard 5: The student understands major global trends from 1900 to the end of World War II.
- ✘ Era 9, Standard 1B: The student understands why global power shifts took place and the Cold War broke out in the aftermath of World War II.
- ✘ Era 9, Standard 2E: The student understands

major worldwide scientific and technological trends of the second half of the 20th century.

- [Expectations of Excellence: Curriculum Standards for Social Studies](#) (National Council for the Social Studies)
  - ✕ Science, Technology and Society, Strand VIII: Social studies programs should include experiences that provide for the study of relationships among science, technology, and society.
  
- [National Science Education Standards](#) (National Research Council)
  - ✕ Grades 5–8, Content Standard C: All students should develop understanding of diversity and adaptations of organisms.
  - ✕ Grades 5–8, Content Standard D: All students should develop understanding of Earth's history.
  - ✕ Grades 5–8, Content Standard F: All students should develop understanding of risks and benefits as well as science and technology in society.
  - ✕ Grades 9–12, Content Standard C: All students should develop understanding of biological evolution.
  - ✕ Grades 9–12, Content Standard D: All students should develop understanding of the origin and evolution of the earth system as well as the origin and evolution of the universe.
  - ✕ Grades 9–12, Content Standard F: All students should develop understanding of natural and human-induced hazards, as well as science and technology in local, national, and global challenges.
  - ✕ Grades 9–12, Content Standard G: All students should develop understanding of historical perspectives.