

# Century Timeline

Suggested Grade Level(s): 7-12

Estimated class time: 2 to 5 class periods depending on how much detail and information you put on the timeline. 2 periods would be sufficient to locate and post science events for each decade and still give time for discussion of the events. Up to a week of class time would be needed for groups to locate events in every strand of the timeline and report out to the class.

## Summary

Students will create a timeline of the world events from 1905 until 2006. Students will find key dates from the Cosmic Times poster series and world events that fit into the three strands of Cosmic Times and the into categories of Science, Culture, and World Events/Politics.

The story strands are the Expansion of the Universe/Nature of the Universe, Size of the Universe, and the Nature of Supernova.

The timeline will allow students to see how the technology and the data that scientists have used over the past 100 years have brought together the information and cosmological knowledge we have today. Students will also see the historical place of scientific discoveries and theories in the context of world events.

## Objectives

- Students will describe the scientific breakthroughs that trace our understanding of the nature of the universe, ending with the discovery and implications of dark energy.
- Students will trace the strands of the Cosmic Times Posters from 1916 when Einstein presented his Theory of General Relativity to the present day by determining the key dates of what was presented.
- Students will relate the findings in science to world events in areas of culture, world events, and politics.
- Students will research and present their findings to their classmates.
- Students will view scientific discoveries as one strand in world history.
- Students will identify the key discoveries, breakthroughs, theories, and concepts that altered our view of the universe.

## **National Standards**

### **National Social Science/World History Standards**

- NSS-WH.5-12.8 Era 8: A Half-Century of Crisis and Achievement, 1900-1945  
The student in grades 5-12 should understand
  - reform, revolution, and social change in the world economy of the early century.
  - the causes and global consequences of World War I.
  - the search for peace and stability in the 1920s and 1930s.
  - the causes and global consequences of World War II.
  - major global trends from 1900 to the end of World War II.
- NSS-WH.5-12.9 ERA 9: The 20<sup>th</sup> Century Since 1945: Promises and Paradoxes  
The student in grades 5-12 should understand
  - how post-World War II reconstruction occurred, new international power relations took shape, and colonial empires broke up.
  - the search for community, stability, and peace in an interdependent world.
  - major global trends since World War II.

### **National Science Standards**

- NS.5-8.1 SCIENCE AS INQUIRY  
As a result of activities in grades 5-8, all students should develop
  - Abilities necessary to do scientific inquiry
  - Understandings about scientific inquiry
- NS.5-8.2 PHYSICAL SCIENCE  
As a result of their activities in grades 5-8, all students should develop an understanding
  - Properties and changes of properties in matter
  - Motions and forces
- NS.5-8.7 HISTORY AND NATURE OF SCIENCE  
As a result of activities in grades 5-8, all students should develop understanding of
  - Science as a human endeavor
  - Nature of science
  - History of science
- NS.9-12.1 SCIENCE AS INQUIRY  
As a result of activities in grades 9-12, all students should develop
  - Abilities necessary to do scientific inquiry
  - Understandings about scientific inquiry

- NS.9-12.2 PHYSICAL SCIENCE  
As a result of their activities in grades 9-12, all students should develop an understanding of
  - Motions and forces
  - Interactions of energy and matter
- NS.9-12.4 EARTH AND SPACE SCIENCE  
As a result of their activities in grades 9-12, all students should develop an understanding of
  - Origin and evolution of the universe
- NS.9-12.7 HISTORY AND NATURE OF SCIENCE  
As a result of activities in grades 9-12, all students should develop understanding of
  - Science as a human endeavor
  - Nature of scientific knowledge
  - Historical perspectives

### **Knowledge Prerequisite**

Students should have read the articles in the Cosmic Times posters or newsletters.

### **Teacher Background**

It is suggested that teachers be familiar with the content of all of the Cosmic Times posters, including the teacher notes, and be familiar with the website [hyperhistory.com](http://hyperhistory.com).

### **Materials**

- Cosmic Times (newsletter versions and preferably the posters)
- Computers or library for research
- Colored index cards – one color for each strand that is being researched and presented to the class
- A timeline divided into decades or time periods for as much time as the class is researching
- Some photographs or drawings representing key events in the last decade – include at least one scientific photograph

### **Procedure:**

#### **I. Engagement**

Hold up a photograph or drawing of a key event over the last century.

- Ask students what is different from today.  
*Students may notice clothing, transportation, etc.*
- Ask students what they think is happening.

*Students may be able to determine key events in history – a World War, a classic movie, a rocket launching, or something familiar from their parents or grandparents time.*

- Ask students how they might find out more about this time period.  
*Books, library, etc*
- If students are not familiar with Cosmic Times:  
Explain to them that Cosmic Times is a series of posters that are made to be the front page of a newspaper in six different years. These years were chosen because they were significant in our understanding of our universe.
- Tell students that by the end of this lesson they will have a timeline of key events in science and the world.
- Explain that they will research events as a group and prepare note cards to place on the timeline.
- Explain that they will tell their classmates about their findings in a discussion period at the end of the research period.

## **II. Exploration**

- Give each group of students a different edition of Cosmic Times newsletter version.
- Ask students to read it and “talk to the text” by underlining key passages, circling words that need definitions, and designating which events are important in this edition of the newsletter.
- As a group, students will make a list of what scientific discoveries need to be on the timeline.
  - Students will research these events and find the dates when they occurred.
  - Students will then divide these events into the three strands (Expansion of the Universe/Nature of the Universe, Size of the Universe and the Nature of Supernova)

*Be aware that events on the poster did not always occur in the year of the poster!  
See Appendix A for examples of key events that students will find in their research.*

## **III. Explanation**

This section of the lesson may be simple or expanded depending on the needs of the class and the time constraints.

- A **simple lesson** would ask for one event for each category below for the time span of the lesson.
- An **extended lesson** will ask for multiple events per decade or even multiple key events per year.

The time may be broken up whatever way it works best for the class.

- Dividing the time by decades works well, but does not correspond to poster years and is useful for a larger number of groups.
- Students can also be assigned times based on the posters in the Exploration section.
- One problem is that **the length of time from poster to poster is not even.**

Suggestions include:

1915 – 1919 for the 1919 poster

1919 – 1935 for the 1929 poster

1935 – 1955 for the 1955 poster

1956 – 1970 for the 1965 poster

1971 – 1993 for the 1993 poster

1994 – present for the 2006 poster.

These times go beyond some posters, but make the number of years more even. An alternative is to assign 2 groups to one poster for 1955 or 1993 – with each group responsible for different categories.

After students have placed the science of the poster in chronological order they will research and make cards for key events in the areas of:

- other scientific discoveries
- culture
- politics/world events.

Color-coded cards will help trace the history of each category across the century timeline.

Ask students to write a one or two sentence explanation of the event to share with the other groups for the discussion day.

*The teacher may prepare different levels of scaffolding for differentiated learning. Some groups and students will do well with a minimum of direction. Other groups will need some organizational help.*

*See Appendix B for suggestions to differentiate this lesson based on ability and some key events that occur during the decades. The events on the timeline in Appendix B are just examples of what students may find in their research and is not meant to be an exhaustive list.*

The source used for the information in Appendix B is:

[http://www.hyperhistory.com/online\\_n2/History\\_n2/a.html](http://www.hyperhistory.com/online_n2/History_n2/a.html)

#### **IV. Extension**

This section gives students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real world situation.

Students may write Cosmic Times articles for events that are not in the original posters. These may be a different year or “page two” of the newspaper and may be about science or different topics.

#### **To extend this activity beyond the individual classroom**

Students can work together within their discipline, their grade level, or their school to post the timeline in the hallways or a school lobby to involve and inform the entire school. If the timeline could be in place during a time when the community is visiting the school such as conference days or a school concert, community members can view the product as well.

#### **V. Evaluation**

As the teacher goes along the timeline, each group in turn will explain their findings to their classmates – one or two sentences maximum to keep the feedback to a reasonable length of time. Students will take notes during the presentations so they can process and synthesize this information.

After viewing the timelines and hearing the presentations, students should identify the key discoveries, breakthroughs, theories, and concepts that altered our view of the universe by writing a one to two page paper based on their notes. This paper should show how the technology and the data that scientists have used over the past 100 years has brought together the knowledge about the universe that we have today.