

# Optional American Museum of Natural History Field Trip

This optional field trip can count as two observation sessions or significant extra credit depending on report depth and length: Attach ticket stubs and/or receipts as proof of your visit. Be prepared to spend the day or at least 5 hrs there. When visiting the museum, pick up a floor plan map. You will explore in this trip the Rose Center for Earth and Space at the American Museum of Natural History at Central Park West and West 81<sup>st</sup> Street. The main highlights include the New Hayden Planetarium, “Big Bang Theater” and the Cullman Hall of the Universe. Take notes whenever possible and answer questions and prepare summaries of your experience as indicated below.

1. Visit and experience the space show at the Planetarium. Tickets for the space show can be reserved by calling 212 769 5200.
  - A. Summarize the science behind the show you see (1 or more full pages — take notes during the show when possible).
  - B. What are the features that make this Planetarium and its Zeiss Star Projector unique.
2. Visit the bottom half of the Great Sphere and explore the “Big Bang Theater” — a dramatic re-creation of the origins of the universe.
  - A. Discuss your findings about the beginning of time and space, and the dramatic, multisensory re-creation of the first moments of the universe.
3. Continue from the latter on a journey that chronicles the evolution of the universe by following the Cosmic Pathway — a sloping walkway that takes you through 13 billion years of cosmic evolution.
  - A. Summarize the highlights of this walk.
  - B. What is humanity’s importance in this perspective?
4. The Cosmic Pathway leads you to the Hall of the Universe, on the bottom level of the Rose Center, underneath the sphere.
  - A. Examine and study the Kinetic sculptures, computer visualizations, and dramatic projected images that illustrate the processes that led to the creation of our galaxy, stars, and planets. Note that the topics are presented in thematic clusters called zones.

Briefly answer the following questions about the modern discoveries of astrophysics.

- A. How did the universe evolved into galaxies, stars, and planets?
- B. How did the atoms from which we are made get created in cosmic events?
- C. Where did the matter necessary for life come from?
- D. Discuss what you find out about (supermassive) black holes?
- E. Watch the video shown in an adjacent mini-theater and discuss the nature of the extreme forces of gravity and the warping of space & time found near a black hole.
- F. Note the video sequence of two colliding galaxies that appears to hang in space above the Galaxies Zone, and discuss this phenomenon.
- G. In the Stars Zone, the rare circumstance of an entire star exploding as a supernova is featured. Discuss this event.
- H. The Planet Zone features the Willamette Meteorite. What is the significance of this ancient cosmic debris?
- I. How does the “Ecosphere,” found in this Hall answer questions about where life could exist in the universe and how we are searching for it?
- J. From the “Astro Bulletin,” summarize the latest news, and events from space — especially, what are the current space missions?