

## **NUCLEAR PHYSICS PROJECT:**

### **THE INTERSECTION OF SCIENCE, TECHNOLOGY, AND SOCIETY IN HISTORICAL AND CONTEMPORARY CONTEXTS**

You, and optionally a (1) partner, will choose, research, and prepare a project that explores nuclear physics from scientific, technological, and societal perspectives in either a historical or contemporary context.

## **Topics**

You are encouraged to choose a topic in which you are truly interested. There is a great deal of flexibility in these topics as long as they can be analyzed from scientific, technological, and societal perspectives. Some suggestions follow, but **you are certainly not limited to these**.

### **Potential Topics**

- Fukushima (lots of potential angles here)
- Chernobyl
  - disaster
  - aftermath, 25 years later
- Three Mile Island
- Marie Curie
- Henri Bequerel
- Rolf Maximilian Sievert
- Manhattan Project
- University of Chicago nuclear bomb research
- Hiroshima
- Nagasaki
- Fusion research
- Cold fusion claims
- Current nuclear power plant designs
- Future nuclear reactor or plant designs
- Nuclear power plants in Illinois
- Radiation monitoring
- Robotics in nuclear plants
- Yucca Mountain
- Nuclear waste disposal
- Nuclear weapons testing
- Nuclear weapons testing treaties
- History of the Nuclear Navy
- Nuclear Submarines
- Cleaning up nuclear disasters
- The “Nuclear Nobel” Prize

## **Presentation**

After choosing and researching your topic, you will share it online such that others can view and comment on your project. Your classmates, physics students in other classes, and potentially students and professionals outside of school will view and comment on your project. Your method of presentation needs to be engaging. You will not be permitted to create a slide presentation or a traditional report. You will publish your project either directly or indirectly on the Physics wiki hosted on Wikispaces.

In order to highlight how technology influences the communication of scientific ideas and events throughout our society and how that has changed throughout history, you are encouraged to create a juxtaposition between the time period of the topic and the presentation method that you select. For example, if your topic is historical, choose a presentation method that is modern (e.g., Marie Curie and her Facebook status updates). Or, if your topic is modern, choose a presentation method that is historical (e.g., black-and-white news documentary of fusion reactor). Your presentation will most likely contain fictional elements. This is fine as long as the science, technology, and society-related content meets the requirements outlined below. Some suggested presentation methods follow, but **you are certainly not limited to these**.

## Potential Presentation Methods

- photo gallery
- music video
- series of Facebook status updates
- Twitter stream of a trend
- series of letters
- series of memos
- old-time radio broadcast
- cable news show with pundits
- newspaper article
- magazine article
- build something and demo it, make instructions, or record a video tutorial
- play
- blog posts
- series of comic strips
- graphic novel
- historical fiction short story

## Standards

You will make **at least three (3)** thoughtful and constructive comments on others' projects. Your project and comments will represent 10% of your semester grade and be assessed in terms of the following standards.

901. Describe how scientific knowledge, explanations and technological designs may change with new information over time (e.g., the understanding of DNA, the design of computers).
902. Explain how peer review helps to assure the accurate use of data and improves the scientific process.
903. Identify and explain ways that scientific knowledge and economics drive technological development.
904. Identify important contributions to science and technology that have been made by individuals and groups from various cultures.
905. Describe how occupations use scientific and technological knowledge and skills.
906. Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).

Your project will most likely not address every one of these standards. This is okay. You will need to indicate which of these standards that your project addresses. For those that your project does not address, you will need to reference those standards when providing thoughtful comments on others' projects. That is, you are assessed on these standards in the context of your project as well as your comments on others' projects.

The following criteria will be used to assess each standard. Depending on the project and on the standard, not all criteria applies to every standard. However, the project as a whole must address every criterion.

- science content
  - content is accurate, complete, relevant, coherent, and supported by references
- technology content
  - content is accurate, complete, relevant, coherent, and supported by references
- societal content
  - content is accurate, complete, relevant, coherent, and supported by references
- presentation
  - content is published online and is engaging, attractive, and creative in its presentation