Earth and Space Science Term Project

Summary: The high school science curriculum requires students to conduct and share authentic, independent scientific research. Earth and Space Science students have the option of doing different projects each term ***or*** one major project worthy of competition in the school science fair.

Topic: Any topic covered in the course is acceptable. Topics in the realm of environmental science and environmental engineering are also acceptable.

Format: Each term project can be any of these formats:

- ❑ Write an **essay** (800 - 1000 words (3-4 pages))
- ❑ Make and present a PowerPoint **presentation** (15-25 slides)
- ❑ Write and demonstrate a multi-step **experiment*** to share with the class.
- ❑ Build a scientific **model*** for classroom display.
- ❑ Make a **poster*** (only for creative types)
- ❑ Etc.*

** Topics for Experiments, Models, Posters, etc: Ask first. Pre-approval required.*

Concept: The project should be focused on one of these general concepts:

- ❑ Compare competing solutions for a real world problem. (Examples: oil versus natural gas; meat vs artificial meat, etc.)

- ❑ Describe or illustrate the relationships among one of Earth's systems and society (The interaction between society and the Carbon Cycle, etc.)

- ❑ Evaluate an innovative technological solution (solar roof tiles, Electric Vehicle batteries, hydroponic farming, etc.)

- ❑ Construct an argument for or against a common scientific topic (Evaluating the Impact of Anthropogenic Global Warming, etc.)

- ❑ Engineer a solution to a real-world scientific problem.

Research Criteria: Authentic research involves reading from multiple sources about a topic and synthesizing (in your own words) what you have learned. It should be obvious from your work that you consulted at least three primary sources for your information, spent a considerable time generating your work product, and that your work is indeed your own. Each term project should take the average student approximately 4 hours to complete, exclusive of reading/research.

Rubric Summary:

- ❑ Not plagiarized or recycled from a prior assignment.
- ❑ Related to Earth Science, Astronomy, or Environmental Science or Engineering.
- ❑ Writing is scientific in nature, with proper use of scientific and academic language, proper use of mathematics, includes supporting graphs, tables, and/or formulæ.
- ❑ Summarizes a complete and correct scientific argument in a concise manner.
- ❑ Demonstrates thoroughness, creativity, attention to detail.
- ❑ Has a Title, Summary or Thesis statement, a well-developed central theme, and a Summary/Conclusion.
- ❑ Uses in-line citations and a separate Bibliography with at least three primary sources in either APA or MLA format.
- ❑ Composed in a standard, easy-to-read format
    - ❑ Essay = 12-point Times New Roman, double-spaced with 1" margins.
    - ❑ PowerPoint = 7 lines/page max, contrasting colors
    - ❑ Other formats in standard, easy-to-read format
- ❑ Evident that work took 3-5 hours to complete.

Additional Notes:

1. Projects exhibited in the school science fair earn credit for the 1st *and* 2nd term. Science fair projects that advance and compete in the county fair will earn credit as 3rd term projects; projects that advance and compete in the regional fair will earn credit as 4th term projects.

2. Each student must work independently unless prior approval is granted.

3. 2019-2020 Due Dates:

Term Project	Science Project
Term 1 = Fri, Oct 11	Research Plan = Fri, Oct 11
Term 2 = Mon, Dec 9	School Science Fair = Thu, Dec 5
Term 3 = Fri, March 6	County Science Fair = Sat, Feb 1
Term 4 = Fri, May 8	Regional Science Fair = Tue, Mar 17

4. *Do a good job!* Term projects count ***10%*** toward your final grade.