Science at Delta

I. Introduction – Nature of the Discipline

Science is a collaborative human endeavor to explore and understand the natural world. As an enterprise, science has individual, societal, and institutional implications. Scientific literacy entails awareness that science, mathematics, technology, and the humanities are interdependent human enterprises. A scientifically literate citizen has the ability to use scientific knowledge and processes in physics, chemistry, biological sciences, and earth/space sciences for informed decision-making. Engaging in science requires incorporating scientific knowledge, processes, and habits of mind to make individual and societal decisions in three main areas: science in life and health, science in Earth and environment, and science in technology.

The Delta High School science program will enable students to develop interdisciplinary thinking, an understanding of science in society, and the ability to think like a scientist. Throughout the program, the emphasis will be on the distinctive characteristics of scientific inquiry and other research-based instructional practices. These characteristics include knowing that the purpose of a scientific inquiry is to explain and predict natural phenomenon. Scientific explanations are continually reviewed and revised; they are not automatically accepted. They demand empirical evidence and change over time as new evidence emerges. A scientific investigation should be designed to remain unbiased in the collection, analysis, and reporting of data. Above all, scientific inquiries reflect a blend of logic and imagination. In this program, students will not only recognize these features of scientific inquiry, but they will also experience them directly in personally meaningful ways.

II. Overarching Goals and Purposes

The overarching goal of the science program of study is for each student to experience the richness and excitement of exploring and understanding the natural world. Therefore, students will react thoughtfully to scientific claims and engage effectively in public discourse and debate about scientific and technological concerns. Students who successfully complete this program of study will do each of the following:

- Understand and incorporate essential features of science into their knowledge base and decision-making processes
- Recognize the relationship of science and society and how science requires thinking across mathematics, technology, engineering, and humanities

- Connect academic learning to the world beyond the classroom;
- Have the scientific knowledge required to pursue any field for future studies/careers;
- Have the knowledge and skills for success in science focused post-secondary education and/or careers; and
- Be prepared to enter and succeed in the innovation pipeline and increase their economic productivity in the community, region, and country.

III. Course Sequence

Within science, students will tap their inquisitiveness and genuine curiosity about how the natural world is ordered and how it functions. This course sequence is designed to honor the nature of scientific inquiry through a logical approach to learning science. Science disciplines are interrelated and do not have fixed borders. For example, some concepts in biology require an understanding of certain concepts from chemistry and physics. The Stem High School approach respects each scientific discipline in its own right while interweaving the science disciplines with each other as well as with mathematics, technology, engineering and the humanities.

In the first two years, students progress through science in a purposeful sequence of physics, chemistry, biology and earth/space science. In this progression, Science I focuses on physics and then chemistry, with biology and earth/space science concepts included as appropriate. Science II focuses on biology, followed by earth/space science with supporting concepts from physics and chemistry included as appropriate. In each science course, students are encouraged to probe the workings of the world in which they live and are stimulated to look for meaningful connections with other content areas. This approach provides a rigorous foundation in all four areas of science so that students are sufficiently prepared to succeed in advanced science courses of their choice during their third year. In their fourth year science experience, students have opportunities to choose seminars and/or internships. Through these experiences, students apply what they've learned during the first three years and continue their science education through personally relevant and community-based projects.

IV. Big Ideas

Unifying concepts provide conceptual focus for the study of science by facilitating connections among science disciplines. These concepts also have implications for deepening the understanding of mathematics, technology, engineering, and humanities. Unifying concepts include:

- Systems
- Patterns
- Models
- Evidence and Explanation
- Change, Constancy, and Equilibrium

VI. Cornerstone to Capstone Experiences
The science capstone experience must be organized around the conceptualization, design, and actual conducting of a scientific inquiry. This project will be student-driven and meet the standards established by the school to complete the graduation requirements. The Science team expects these requirements to include the following: a written component to document the intellectual effort and reflection, a public presentation to share key findings and analysis, and collaboration with someone in the community to enhance the student's learning experience.