PLTW Gateway
Science of Technology | Unit Outline

Creamier ice cream, stain-resistant clothing, and solar powered vehicles...

Students use tools such as the engineering design process, an engineering notebook, computer simulations, and prototyping materials to invent and innovate.

Learn how creative thinking and problem solving can change your world!

In the Science of Technology (ST) unit, students explore how science impacts the technology of yesterday, today, and the future. Students apply the concepts of physics, chemistry, and nanotechnology to STEM activities and projects, including making ice cream, cleaning up an oil spill, and discovering the properties of nanomaterials.

ST Lesson Summary

Lesson 1	Applied Chemistry
Lesson 2	Nanotechnology
Lesson 3	Applied Physics

Lesson 1: Applied Chemistry
Chemical engineering is the profession that combines chemistry and engineering concepts to help solve problems related to world hunger, pollution of our environment, creating new materials, or meeting demands for energy. Chemical Engineers are instrumental in the production of virtually all pharmaceuticals as well as life-saving devices such as the artificial kidney or angioplasty catheters. They are working on ways to recycle plastics, reduce pollution, and develop new sources of environmentally clean energy. Chemical engineers have the background knowledge of chemistry coupled with an understanding of chemical processing that allows them to tackle most any chemical problem, from waste minimization, to environmental remediation, to pollution prevention, to clean-up of stack gases, to purification of drinking water. Most major chemical companies hire chemical engineers to fill their technical positions in environmental engineering. In this unit students will explore the chemistry behind making ice cream, creating adhesives, and cleaning up an oil spill.

Lesson 2: Nanotechnology
Nanotechnology is a multidisciplinary field of discovery. Scientists and engineers working in physics, chemistry, biology, information technology, metrology, and other fields are contributing to today's research breakthroughs. The worldwide workforce necessary to support the field of nanotechnology is estimated at 2 million by 2015. In this lesson students will be introduced to the many facets of nanotechnology, and they will explore nanomaterials and their application.

Lesson 3: Applied Physics
Throughout the ages humans have sought to make life easier through innovation and invention. At the beginning of civilization, hand tools were used exclusively. These hand tools were comprised of one or more of the six simple machines: lever, wheel and axle, pulley, screw, wedge, and inclined plane. Modern machines that are run by electricity have many of their moving parts based on these simple machines. This lesson will provide students with an understanding of machines and how they are used to create motion. This understanding will prepare students to analyze and improve the mechanisms society uses today.