



# Gateway: Science of Technology 8<sup>th</sup> Grade

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Reviewed by the Curriculum Advisory Committee  
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Approved by the Board of Education  
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COURSE TITLE: Gateway – Science of Technology

GRADE LEVEL: 8<sup>th</sup> Grade

CONTENT AREA: Career and Technical Education

### Course Description:

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 nano-materials.

*Taken from [www.pltw.org](http://www.pltw.org)*

### Course Rationale:

Through topics like robotics, flight and space, and DNA and crime scene analysis, middle school students engage their natural curiosity and imagination in creative problem solving. PLTW's Gateway program is a strong foundation for further STEM learning in high school and beyond, challenging students to solve real-world challenges, such as cleaning oil spills and designing sustainable housing solutions. Using the same advanced software and tools as those used by the world's leading companies, students learn how to apply math, science, technology, and engineering to their everyday lives.

*Taken from [www.pltw.org](http://www.pltw.org)*

### Course Scope and Sequence

Unit 1: Applied Chemistry (6 days)	Unit 2: Nanotechnology (10 days)	Unit 3: Applied Physics (29 days)

### Essential Terminology/Vocabulary

**Unit 1:** adhesive, alternative energy, atom, catalyst, chemical change, chemical engineering, chemical properties, chemical reaction, chemist, chemistry, compound, electron, element, environment, environmental engineering, fauna, flora, mixture, molecule, neutron, nucleus, periodic table, petroleum engineering, pharmaceuticals, physical change, process, proton, synthetic material

**Unit 2:** alloy, angstrom, atom, atomic force microscope, billionth, buckyball, clean room, hexagon, hydrophilic, hydrophobic, magnification, metrology, micrometer, microscope, molecule, nano, nanometer, nanotechnology, nanotube, patent, pentagon, scanning probe microscope, surfactant

**Unit 3:** applied physics, closed loop system, conservation of energy, diameter, energy, evaluation, fabrication, force, friction, fulcrum, gravity, inclined plane, input, joule, kinetic energy, lever, mechanical advantage, mechanism, model, motion, newton's laws of motion, open loop system, output, potential energy, prototype, pulley, radius, screw, simple machine, speed, subsystem, system, test, torque, velocity, wedge, wheel and axle, work

**Approved Course Materials and Resources:**

- Gateway to Engineering: Rogers, Wright, Yates, ©2010 ISBN-13: 978-1-4180-6178-4
- Project Lead the Way's *Learning Management System (LMS)*