

# Course Overview: Chemistry

Content Area: **English**  
Course(s):  
Time Period:  
Length:  
Status: **Published**

## **School Mission Statement**

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The mission of Chartertech is to provide artists the opportunity to blend principles of artistic expression with cutting-edge technology, so artists will excel in academic, career, and civic pursuits and contribute to the harmony and productivity of the 21<sup>st</sup> century.

**Artistic integration:** Performing arts will be accessible to all artists as a skill and content area and will serve as a vehicle for imparting, enlivening, and motivating excellence in all academic topics, as well as providing a platform for learning multicultural appreciation and empathy, not just tolerance.

**Technological integration:** Technology will serve as the foundation for instructional delivery systems leading to knowledge acquisition, concept understanding, and skill mastery in all academic subjects. Technology will not be studied as a separate entity but infused into the very fabric of educational pursuits, exactly as it occurs in the business world. Artists will be prepared to compete in the modern workplace or post-secondary institution.

*"Education has always been torn between vocational and utilitarian purposes on one hand and creative and holistic purposes on the other... We are rapidly entering a world that is hard to imagine. By developing the problem-solving skills, creativity, and discipline required in the arts, artists can prepare for life in the 21<sup>st</sup> century."*

From Understanding How the Arts Contribute to Excellent Education

National Endowment for the Arts, 1991

## **School Goals**

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### **Goals for Arts Education:**

**Artists will learn the knowledge, skills, and abilities necessary to turn their passions and gifts in the arts into vocations or serious avocations.**

Objective 1: Each year, each artist will take two semesters (10 credits) of career-oriented training (80 minutes per day) in their artistic major.

Objective 2: Each marking period, each artist will perform or produce frequently, in diverse settings and for diverse audiences.

Objective 3: Artistic instruction will be integrated into the study of all academic subjects.

Objective 4: Each year, each artist will complete at least twenty after-school “lab” hours in their artistic major. These will constitute career-oriented service to the school and/or community, and demonstrate accomplishment of the NJCCCS crosscutting workplace readiness standards.

**Goal for Technology:**

**Chartertech will model the technology-intense workplace and artists will be able to compete successfully and perform well in a technology-intense workplace.**

Objective 5: Each artist will routinely use technology in a workplace-like manner to acquire, analyze, communicate, and present information in every subject.

Objective 6: Each artist will have access to a computer every day, every class so that automated sources will be the main conduit for educational content.

Objective 7: All administrative and instructional functions of the school will be supported by the most modern technology available.

**Goals for Academic Achievement:**

**Artists will apply themselves in the serious pursuit of knowledge and skills, especially skills in critical thinking, problem solving, decision making, and communication.**

Objective 8: Each year, and to be promoted to the next grade each artist will pass five credits in English, Health, Social Studies, Science, Mathematics, and PE/Health. Between grades 9-12 artists will also complete 1 year of Spanish.

Objective 9: In each academic subject, each year, each artist will complete a significant project that involves critical thinking, problem solving, decision making, and communication skills, and which demonstrates cross-content workplace readiness skills.

Objective 10: Each year artists will develop a artist resume to guide his/her academic and artistic studies and to document his/her academic and artistic accomplishments. This work will be done under the mentorship of the faculty in the artist’s artistic major.

Objective 11: Academic instruction in all subjects will be highly cross-curricular, in accordance with curricula design and continuously improved by teachers, in compliance with the New Jersey Artist Learning Standards.

**Course Description**

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<b>Course Title:</b>	Chemistry
<b>Department:</b>	Science
<b>Prerequisite:</b>	General Science
<b>Number of Credits:</b>	5
<b>Grade Level(s):</b>	10

<b>Standards:</b>	Aligned to NJSLA Science Standards.
<b>Description of Course</b>	This course is designed as a physical science course focusing on chemistry and its applications. Laboratory studies will be accomplished through hands on laboratory activities, virtual labs and simulations. Real-world applications of chemistry are the goal of the course with enhancement of student understanding of aesthetics, development of quantitative skills and appreciation of scientific principles. The utilization of scientific inquiry, interactive experiences, higher order thinking, collaborative projects, real world application through labs and a variety of assessments all aid the artists in ultimately demonstrating a vast understanding of physical and chemical properties and enabling them to apply these properties to everyday life. Throughout the course, artists will be presented with opportunities to integrate the arts through projects, midterm evaluations, presentations, and other assignments. They will also solve problems that center upon the arts such as using properties and behavior of matter to understand how scientific laws affect substances and energy they work with in their major.

### Overview & Pacing

Unit #	Major Content	Expected Time
Unit 1 Chemistry and Matter	a. Properties of matter	10 instructional days
Unit 2: Measurements	a. Measurements b. Significant figures c. Dimensional Analysis	15 instructional days
Unit 3: Atomic Theory and Electrons	a. Atomic history b. Atomic particles c. Isotopes d. Electron configuration e. Light and electrons	10 instructional days
Unit 4: Periodic Table	a. History of Mendeleev b. Organization c. Classification of elements d. Periodic Trends	10 instructional days
Unit 5: Ionic and Molecular Compounds and Nomenclature	a. Ions b. Lewis Dot Structure c. Electronegativity	20 instructional days

	<ul style="list-style-type: none"> <li>d. Atom Shape</li> <li>e. Naming molecules</li> <li>f. Intermolecular forces</li> </ul>	
Unit 6: Chemical Quantities	<ul style="list-style-type: none"> <li>a. Moles</li> <li>b. Molecular mass</li> <li>c. Molecular formulas</li> </ul>	15 instructional days
Unit 7: Chemical Reactions	<ul style="list-style-type: none"> <li>a. Chemical formulas</li> <li>b. Conservation of mass</li> <li>c. Predicting chemical reactions</li> </ul>	15 instructional days
Unit 8: Stoichiometry	Balancing chemical equations	15 instructional days
Unit 9: States of Matter and Gas Laws	<ul style="list-style-type: none"> <li>a. States of matter</li> <li>b. Hydrogen bonding</li> <li>c. Kinetic molecular theory</li> <li>d. Ideal gas laws</li> </ul>	10 instructional days
Unit 10: Solutions	<ul style="list-style-type: none"> <li>a. Properties of water</li> <li>b. Concentrations</li> </ul>	
Unit 11: Acids, Bases and pH	Acid Base Reactions	10 instructional days
Unit 12: Thermochemistry	<ul style="list-style-type: none"> <li>a. Heat loss</li> <li>b. Heat gain</li> <li>c. Entropy</li> <li>d. Enthalpy</li> </ul>	10 instructional days
Unit 13: Equilibrium	State of equilibrium	10 instructional days