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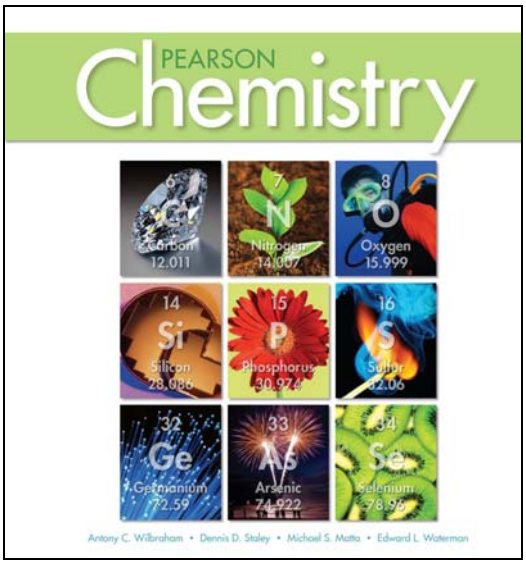

To the

Colorado Academic Standards for Science

Physical Science Standards
High School

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Physical Science Standards / High School

INTRODUCTION

This document demonstrates how ***Pearson Chemistry* ©2012** meets the Colorado Academic Standards for Science, Physical Science Standards, grades 9-12. Correlation page references are to the Student and Teacher's Editions and are cited at the page level.

Pearson Chemistry combines proven and tested content with cutting-edge digital support and hands-on learning opportunities. This program provides you with everything you need to engage and motivate your students, as well as the tools to support the varied types of learners in your classroom.

Built on Grant Wiggins' *Understanding by Design* framework, this learning model connects curriculum, instruction, and assessment to the "Big Ideas" of chemistry that develops deep understanding.

Pearson Chemistry provides all of the problem-solving and math support that students need to be successful in the course, with ample opportunity for practice both in the Student Edition and in the program's digital resources.

Pearson Chemistry helps you meet the unique learning styles of each student in your classroom with a variety of resources. A variety of assessment opportunities helps you monitor student progress ensure student success on high-stakes tests.

Pearsonchem.com provides cutting-edge digital content that engages students and teachers – anytime, anywhere, with numerous practice opportunities and visual support, including interactive art and animations. Online tutors step students through chemistry and math problems, expanding learning beyond the classroom.

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Colorado Academic Standards for Science	Pearson Chemistry ©2012
New Colorado P-12 Academic Standards	
Content Area: Science	
Grade Level Expectations: High School	
Standard: 1. Physical Science	
Prepared Graduates: Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects	
Concepts and skills students master: 1. Newton's laws of motion and gravitation describe the relationships among forces acting on and between objects, their masses, and changes in their motion - but have limitations	
Evidence Outcomes	
Students Can:	
a. Gather, analyze and interpret data and create graphs regarding position, velocity and acceleration of moving objects (DOK 1-3)	**SE / TE:** Related Content: 8, 24
b. Develop, communicate and justify an evidence-based analysis of the forces acting on an object and the resultant acceleration produced by a net force (DOK 1-3)	**SE / TE:** Related Content: 228-229
c. Develop, communicate and justify an evidence-based scientific prediction regarding the effects of the action-reaction force pairs on the motion of two interacting objects (DOK 1-3)	**SE / TE:** Related Content: 568-571, 572-573
d. Examine the effect of changing masses and distance when applying Newton's law of universal gravitation to a system of two bodies (DOK 1-2)	This physical science standard falls outside the ***Pearson Chemistry*** scope and sequence.
e. Identify the limitations of Newton's laws in extreme situations (DOK 1)	This physical science standard falls outside the ***Pearson Chemistry*** scope and sequence.
Prepared Graduates: Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions	
Concepts and skills students master: 2. Matter has definite structure that determines characteristic physical and chemical properties	
Evidence Outcomes	
Students Can:	
a. Develop, communicate, and justify an evidence-based scientific explanation supporting the current model of an atom (DOK 1-3)	**SE / TE:** 102-103, 128-132, 133

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b. Gather, analyze and interpret data on chemical and physical properties of elements such as density, melting point, boiling point, and conductivity (DOK 1-2)	**SE/TE:** 80-82, 321-322
c. Use characteristic physical and chemical properties to develop predictions and supporting claims about elements' positions on the periodic table (DOK 1-2)	**SE/TE:** 162, 164-166, 167-169, 170-173, 174-182, 183, 185
d. Develop a model that differentiates atoms and molecules, elements and compounds, and pure substances and mixtures (DOK 2-3)	**SE/TE:** Related Content: 16, 42-44, 102-103, 130-131, 133, 223-224
Prepared Graduates: Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions	
Concepts and skills students master: 3. Matter can change form through chemical or nuclear reactions abiding by the laws of conservation of mass and energy	
Evidence Outcomes	
Students Can:	
a. Recognize, analyze, interpret, and balance chemical equations (synthesis, decomposition, combustion, and replacement) or nuclear equations (fusion and fission) (DOK 1-2)	**SE/TE:** 346-347, 348-351, 352-353, 354-355, 356-359, 360, 361, 364-367, 369-373, 374, 375, 376, 384-389, 415
b. Predict reactants and products for different types of chemical and nuclear reactions (DOK 1-2)	**SE/TE:** 369, 370-373, 374-375, 376-377, 384-389
c. Predict and calculate the amount of products produced in a chemical reaction based on the amount of reactants (DOK 1-2)	**SE/TE:** 48, 346-347, 348-351, 352-355, 356-359, 360-363, 364-366, 367
d. Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate the conservation of mass and energy (DOK 1-2)	**SE/TE:** 405, 557

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Prepared Graduates: Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions	
Concepts and skills students master: 4. Atoms bond in different ways to form molecules and compounds that have definite properties	
Evidence Outcomes	
Students Can:	
a. Develop, communicate, and justify an evidence-based scientific explanation supporting the current models of chemical bonding (DOK 1-3)	**SE/TE:** 201-202, 223, 251, 846
b. Gather, analyze, and interpret data on chemical and physical properties of different compounds such as density, melting point, boiling point, pH, and conductivity (DOK 1-2)	**SE/TE:** 42-43, 80-82, 321-322, 428-431, 496, 656
c. Use characteristic physical and chemical properties to develop predictions and supporting claims about compounds' classification as ionic, polar or covalent (DOK 1-2)	**SE/TE:** 201, 222, 248-250, 264, 494-495
d. Describe the role electrons play in atomic bonding (DOK 1)	**SE/TE:** 201-203, 209, 213
e. Predict the type of bonding that will occur among elements based on their position in the periodic table (DOK 1-2)	**SE/TE:** 170-173, 177-178, 181-182
Prepared Graduates: Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable	
Concepts and skills students master: 5. Energy exists in many forms such as mechanical, chemical, electrical, radiant, thermal, and nuclear, that can be quantified and experimentally determined	
Evidence Outcomes	
Students Can:	
a. Develop, communicate, and justify an evidence-based scientific explanation regarding the potential and kinetic nature of mechanical energy (DOK 1-3)	**SE/TE:** Related Content: 142-143, 420-426, 451, 452, 520, 556, 596
b. Use appropriate measurements, equations and graphs to gather, analyze, and interpret data on the quantity of energy in a system or an object (DOK 1-3)	**SE/TE:** Related Content: 77, 558

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c. Use direct and indirect evidence to develop predictions of the types of energy associated with objects (DOK 2-3)	**SE/TE:** Related Content: 142-143, 420-426, 451, 452, 520, 556, 596
d. Identify different energy forms, and calculate their amounts by measuring their defining characteristics (DOK 1-2)	**SE/TE:** Related Content: 142-143, 420-426, 451, 452, 520, 556, 596
Prepared Graduates: Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable	
Concepts and skills students master: 6. When energy changes form, it is neither created not destroyed; however, because some is necessarily lost as heat, the amount of energy available to do work decreases	
Evidence Outcomes	
Students Can:	
a. Use direct and indirect evidence to develop and support claims about the conservation of energy in a variety of systems, including transformations to heat (DOK 1-3)	**SE/TE:** 10, 77, 142-143, 177, 420, 423-424, 556-557, 565, 567-568, 570-571, 573, 576-577, 578-583, 627, 732-733, 839-840
b. Evaluate the energy conversion efficiency of a variety of energy transformations (DOK 1-2)	**SE/TE:** Related Content: 556-557, 565, 567-568, 570-571, 573, 576-577, 578-583
c. Describe energy transformations both quantitatively and qualitatively (DOK 1-2)	**SE/TE:** 556-558, 565-568, 569-571, 576-577, 583
d. Differentiate among the characteristics of mechanical and electromagnetic waves that determine their energy (DOK 2)	**SE/TE:** Related Content: 138-139
e. Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate energy conservation and loss (DOK 1-2)	**SE/TE:** Related Content: 557