

# 02: Momentum & Energy

Content Area: **Special Education**

Course(s):

Time Period: **Full Year**

Length: **4 weeks**

Status: **Published**

## **General Overview, Course Description or Course Philosophy**

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Physical Science establishes a basic approach to the fundamentals of chemistry and physics. The following concepts will be explored: atomic structure, chemical bonding, chemical reactions, the periodic table, kinetic theory, and kinematics. The use of technology to gather and analyze data will be incorporated. This course is concept-oriented with a focus on Chemistry and Physics in the real world. Laboratory work and special projects will facilitate active learning and accommodate different learning styles.

## **OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS**

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Students will understand that:

- Energy exists in various forms and can be transformed from one form to another (Law of Conservation of Energy).
- The mechanical energy of a system is the sum of its kinetic and potential.
- Kinetic and potential energy are descriptions of the forms that energy can have.
- Work is the result of the displacement of an object under the action of a force

## **CONTENT AREA STANDARDS**

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|--------------|---|
| SCI.HS-PS3-2 | Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects). |
| SCI.HS-PS2-2 | Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.   |
| SCI.HS-PS3-3 | Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.   |

## **RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)**

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| LA.RST.11-12.4 | Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11- |
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|                 |   |
|-----------------|---|
|                 | 12 texts and topics.  |
| LA.RST.11-12.7  | Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.               |
| LA.RST.11-12.8  | Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.   |
| LA.RST.11-12.9  | Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. |
| LA.WHST.11-12.4 | Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.  |
| LA.WHST.11-12.6 | Use technology, including the Internet, to produce, share, and update writing products in response to ongoing feedback, including new arguments or information.   |

## **EVIDENCE OF LEARNING**

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Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

### **Formative Assessments**

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- Checks for understanding during lesson
- Online feedback (CK-12)
- Do Now activities.
- Student-centered questioning and discussion that is facilitated by instructor.
- Exit Tickets.

### **Summative Assessments**

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Test, lab report.

## **RESOURCES (Instructional, Supplemental, Intervention Materials)**

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physicsclassroom.com

Vernier.com/experiments

Khan Academy, Crash Course Physics, and Bozeman Science

## **INTERDISCIPLINARY CONNECTIONS**

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Algebra, ELA/Literacy, Geometry

## **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

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See link to Accommodations & Modifications document in course folder.